



Volume 1 of 1 Project Manual

**DVA ADA Improvements – Bldgs. 2, 3 & 4
287 West Street
Rocky Hill, CT
Project No.: BI-C-291**

**Prepared By:
Friar Architecture Inc.
21 Talcott Notch Road
Farmington, CT
06032**

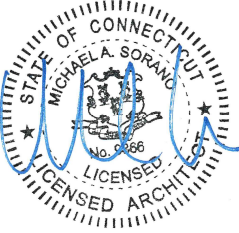


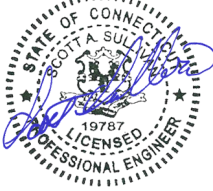

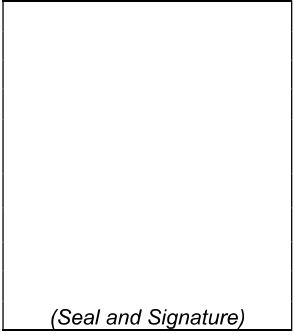
Melody A. Currey – Commissioner

**State of Connecticut
Department of Administrative Services
Construction Services
Office of Legal Affairs, Policy, and Procurement
450 Columbus Boulevard, Suite 1302
Hartford, CT 06103**

Project Manual Date: November 1, 2018

| | |
|----------------------------|--|
| Project Title: | DVA ADA Improvements – Bldgs. 2,3 & 4 |
| Project Location: | 287 West Street, Rocky Hill, CT 06067 |
| Project Number: | BI-C-291 |
| Architect/Engineer: | Friar Architecture Inc.; 21 Talcott Notch Road, Farmington, CT 06032 |

SEALS, SIGNATURES, AND DATES OF DESIGN PROFESSIONALS OF RECORD

| | | | |
|---|--|--|--|
|  (Seal and Signature) | <p>Architect Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly registered Architect.</p> <p>Michael A. Sorano (Print Consultant Name) ARI.0009866 License No. 07/31/2019 Expiration Date</p> |  (Seal and Signature) | <p>Civil Engineer Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly registered Professional Engineer.</p> <p>Richard E. Couch (Print Consultant Name) PEN.0015480 License No. 1/31/2019 Expiration Date</p> |
|  (Seal and Signature) | <p>Structural Engineer Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly registered Professional Engineer.</p> <p>_____ (Print Consultant Name) _____ License No. _____ Expiration Date</p> |  (Seal and Signature) | <p>Electrical Engineer Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly registered Professional Engineer.</p> <p>Scott A. Sullivan (Print Consultant Name) 19787 License No. 1/31/19 Expiration Date</p> |
|  (Seal and Signature) | <p>Mechanical Engineer Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly registered Professional Engineer.</p> <p>Scott A. Sullivan (Print Consultant Name) 19787 License No. 1/31/19 Expiration Date</p> |  (Seal and Signature) | <p>Fire-Protection Engineer Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly registered Professional Engineer.</p> <p>_____ (Print Consultant Name) _____ License No. _____ Expiration Date</p> |

End of Section
00 01 07 Seals Page

VOLUME 1 of 1

DIVISION 00 PROCUREMENT AND CONTRACTING REQUIREMENTS

| Section No. | Title | Page Count | Not Used |
|-------------|---|------------|-------------------------------------|
| 00 01 01 | Title Page | 1 | <input type="checkbox"/> |
| 00 01 07 | Seals Page | 1 | <input type="checkbox"/> |
| 00 01 10 | Table of Contents | 8 | <input type="checkbox"/> |
| 00 01 15 | List of Drawing Sheets | 2 | <input type="checkbox"/> |
| 00 11 16 | Invitation to Bid | 3 | <input type="checkbox"/> |
| 00 21 13 | NEW: Instructions To Bidders | 16 | <input type="checkbox"/> |
| 00 25 13 | NEW: Pre-Bid Meeting Agenda | 4 | <input type="checkbox"/> |
| 00 30 00 | General Statements for Available Information | 3 | <input type="checkbox"/> |
| 00 30 10 | General Statement for Existing Conditions Survey | | <input checked="" type="checkbox"/> |
| 00 30 20 | General Statement for Environmental Assessment Information | | <input checked="" type="checkbox"/> |
| 00 30 30 | General Statement for Hazardous Building Materials Inspection and Inventory | | <input type="checkbox"/> |
| 00 30 40 | General Statement for Subsurface Geotechnical Report | | <input checked="" type="checkbox"/> |
| 00 30 50 | General Statement for Elevator Agreement | | <input type="checkbox"/> |
| 00 30 60 | General Statement for FM Global Checklist for Roofing Systems | | <input checked="" type="checkbox"/> |
| 00 30 70 | General Statement for "Statement of Special Inspections" | | <input checked="" type="checkbox"/> |
| 00 30 80 | General Statement for Additional Information | | <input checked="" type="checkbox"/> |
| 00 40 14 | Certificate (of Authority) (<i>Bidder Uploads to Biznet</i>) | 2 | <input type="checkbox"/> |
| 00 40 15 | CT DAS Contractor Prequalification Forms (<i>Bidder Uploads to Biznet</i>) | 4 | <input type="checkbox"/> |
| 00 41 00 | Bid Proposal Form (<i>Bidder Uploads to Biznet</i>) | 9 | <input type="checkbox"/> |
| 00 41 10 | NEW: Bid Package Submittal Requirements | 4 | <input type="checkbox"/> |
| 00 43 16 | Standard Bid Bond (<i>Bidder Uploads to Biznet</i>) | 1 | <input type="checkbox"/> |
| 00 45 14 | General Contractor Bidder's Qualification Statement (<i>Bidder Uploads to Biznet</i>) | 7 | <input type="checkbox"/> |
| 00 45 15 | Objective Criteria Established for Evaluating Qualifications of Bidders | 3 | <input type="checkbox"/> |
| 00 45 17 | Named Subcontractor Bidder's Qualification Statement | 7 | <input type="checkbox"/> |
| 00 52 03 | Contract | 3 | <input type="checkbox"/> |
| 00 52 73 | Subcontract Agreement Form | 3 | <input type="checkbox"/> |
| 00 62 16 | Certificate of Insurance | 1 | <input type="checkbox"/> |
| 00 62 16.1 | Asbestos Attachment to Acord Form | 1 | <input type="checkbox"/> |
| 00 72 13 | General Conditions of the Contract for Construction – For Design-Bid-Build | 25 | <input type="checkbox"/> |
| 00 72 13.1 | Supplementary Conditions | 2 | <input type="checkbox"/> |
| 00 73 27 | Set-Aside Contractor Schedule – <i>SAMPLE</i> | 1 | <input type="checkbox"/> |
| 00 73 38 | CHRO Contract Compliance Regulations | 7 | <input type="checkbox"/> |
| 00 73 44 | Prevailing Wage Rates/Contractor's Wage Certification/Payroll Certification | 44 | <input type="checkbox"/> |
| 00 73 63 | CT DOC Security Requirements | 3 | <input checked="" type="checkbox"/> |
| 00 92 10 | Additional Forms To be Submitted After Bond Commission Funding Approval | 7 | <input type="checkbox"/> |
| 00 92 30 | Procedures Regarding Taxation for Nonresident General/Prime Contractor and Subcontractors | 2 | <input type="checkbox"/> |

VOLUME 1 of 1
(continued)

DIVISION 01 GENERAL REQUIREMENTS

| Section No. | Title | Page Count | Not Used |
|-------------|--|---------------|-------------------------------------|
| 01 11 00 | Summary of Work | 8 | <input type="checkbox"/> |
| 01 20 00 | Contract Considerations | 5 | <input type="checkbox"/> |
| 01 23 13 | Supplemental Bids | 2 | <input type="checkbox"/> |
| 01 25 00 | Substitution Procedures | 4 | <input type="checkbox"/> |
| 01 26 00 | Contract Modification Procedures | 3 | <input type="checkbox"/> |
| 01 29 76 | Progress Payment Procedures | 5 | <input type="checkbox"/> |
| 01 31 00 | Project Management and Coordination | 5 | <input type="checkbox"/> |
| 01 31 19 | Project Meetings | 4 | <input type="checkbox"/> |
| 01 32 16 | Construction Progress Schedules | 3 | <input type="checkbox"/> |
| 01 32 16.13 | CPM Schedules | - | <input checked="" type="checkbox"/> |
| 01 32 33 | Photographic Documentation | 2 | <input type="checkbox"/> |
| 01 33 00 | Submittal Procedures | 8 | <input type="checkbox"/> |
| 01 35 16 | Alteration Project Procedures | 6 | <input type="checkbox"/> |
| 01 35 26 | Government Safety Requirements | 12 | <input type="checkbox"/> |
| 01 42 20 | Reference Standards & Definitions | 3 | <input type="checkbox"/> |
| 01 45 00 | Quality Control | 4 | <input type="checkbox"/> |
| 01 45 23.13 | Testing for Indoor Air Quality, Baseline Indoor Air Quality, and Materials | - | <input checked="" type="checkbox"/> |
| 01 50 00 | Temporary Facilities & Controls | 9 | <input type="checkbox"/> |
| 01 57 30 | Indoor Environmental Control | 2 | <input type="checkbox"/> |
| 01 57 40 | Construction Indoor Air Quality Management Plan | 2 | <input type="checkbox"/> |
| 01 60 00 | Product Requirements | 3 | <input type="checkbox"/> |
| 01 71 23 | Field Engineering | 2 | <input type="checkbox"/> |
| 01 73 29 | Cutting and Patching | 4 | <input type="checkbox"/> |
| 01 74 19 | Construction Waste Management & Disposal | 5 | <input type="checkbox"/> |
| 01 75 00 | Starting & Adjusting | - | <input checked="" type="checkbox"/> |
| 01 77 00 | Closeout Procedures | 5 | <input type="checkbox"/> |
| 01 78 23 | Operation & Maintenance Data | 5 | <input type="checkbox"/> |
| 01 78 30 | Warranties & Bonds | 4 | <input type="checkbox"/> |
| 01 80 13 | Sustainable Design Requirements | - | <input checked="" type="checkbox"/> |
| 01 91 00 | Commissioning | - | <input checked="" type="checkbox"/> |

VOLUME 1 of 1
(continued)

TECHNICAL SPECIFICATIONS

DIVISION 02 **EXISTING CONDITIONS** **Not Used**

| Section No. | Title | Page Count |
|-------------|----------------------|------------|
| 02 41 19 | SELECTIVE DEMOLITION | 7 |
| 02 82 13 | ASBESTOS ABATEMENT | 19 |
| 02 83 19 | LEAD PAINT AWARENESS | 12 |

DIVISION 03 **CONCRETE** **Not Used**

| Section No. | Title | Page Count |
|-------------|------------------------|------------|
| 03 33 00 | CAST-IN-PLACE CONCRETE | 9 |

DIVISION 04 **MASONRY** **Not Used**

| Section No. | Title | Page Count |
|-------------|--------------|------------|
| 04 20 00 | UNIT MASONRY | 16 |

DIVISION 05 **METALS** **Not Used**

| Section No. | Title | Page Count |
|-------------|------------------------|------------|
| 05 50 00 | METAL FABRICATIONS | 4 |
| 05 52 13 | PIPE AND TUBE RAILINGS | 11 |

DIVISION 06 **WOOD, PLASTICS AND COMPOSITES** **Not Used**

| Section No. | Title | Page Count |
|-------------|-------------------------------|------------|
| 06 10 53 | MISCELLANEOUS ROUGH CARPENTRY | 6 |

DIVISION 07 **THERMAL AND MOISTURE PROTECTION** **Not Used**

| Section No. | Title | Page Count |
|-------------|------------------------------|------------|
| 07 21 00 | THERMAL INSULATION | 4 |
| 07 84 13 | PENETRATION FIRESTOPPING | 9 |
| 07 84 46 | FIRE RESISTIVE JOINT SYSTEMS | 7 |
| 07 92 00 | JOINT SEALANTS | 9 |

DIVISION 08 **OPENINGS** **Not Used**

| Section No. | Title | Page Count |
|-------------|-------------------------------|------------|
| 08 06 00 | OPENINGS SCHEDULE | 1 |
| | OPENINGS SCHEDULE | 26 |
| 08 11 13 | HOLLOW METAL DOORS AND FRAMES | 9 |

| | | |
|----------|--------------------------|----|
| 08 14 16 | FLUSH WOOD DOORS | 6 |
| 08 31 13 | ACCESS DOORS AND FRAMES | 5 |
| 08 42 29 | AUTOMATIC ENTRANCES | 14 |
| 08 71 00 | DOOR HARDWARE | 28 |
| 08 71 13 | AUTOMATIC DOOR OPERATORS | 8 |
| 08 80 00 | GLAZING | 11 |
| 08 84 00 | PLASTIC GLAZING | 5 |

| | | |
|--------------------|-----------------|--|
| DIVISION 09 | FINISHES | Not Used <input type="checkbox"/> |
|--------------------|-----------------|--|

| Section No. | Title | Page Count |
|-------------|--------------------------------|------------|
| 09 01 20.91 | PLASTER REPAIR | 6 |
| 09 21 16 | GYP SUM BOARD ASSEMBLIES | 11 |
| 09 31 00 | TILING | 12 |
| 09 51 13 | ACOUSTICAL PANEL CEILINGS | 7 |
| 09 65 13 | RESILIENT BASE AND ACCESSORIES | 5 |
| 09 65 19 | RESILIENT TILE FLOORING | 8 |
| 09 67 23 | RESINOUS FLOORING | 8 |
| 09 91 00 | PAINTING | 10 |

| | | |
|--------------------|--------------------|--|
| DIVISION 10 | SPECIALTIES | Not Used <input type="checkbox"/> |
|--------------------|--------------------|--|

| Section No. | Title | Page Count |
|-------------|-----------------------------|------------|
| 10 14 00 | SIGNAGE | 5 |
| 10 21 13.19 | PLASTIC TOILET COMPARTMENTS | 5 |
| 10 28 00 | TOILET AND BATH ACCESSORIES | 5 |

| | | |
|--------------------|------------------|---|
| DIVISION 11 | EQUIPMENT | Not Used <input checked="" type="checkbox"/> |
|--------------------|------------------|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
| | | |
| | | |

| | | |
|--------------------|--------------------|---|
| DIVISION 12 | FURNISHINGS | Not Used <input checked="" type="checkbox"/> |
|--------------------|--------------------|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
| | | |
| | | |

| | | |
|--------------------|-----------------------------|---|
| DIVISION 13 | SPECIAL CONSTRUCTION | Not Used <input checked="" type="checkbox"/> |
|--------------------|-----------------------------|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
| | | |
| | | |

| | | |
|--------------------|--------------------------|--|
| DIVISION 14 | CONVEYING SYSTEMS | Not Used <input type="checkbox"/> |
|--------------------|--------------------------|--|

| Section No. | Title | Page Count |
|-------------|-------------------------|------------|
| 14 01 20.71 | ELEVATOR REHABILITATION | 7 |
| 14 42 00 | WHEELCHAIR LIFTS | 6 |

| | | |
|--------------------|-----------------|--|
| DIVISION 15 | RESERVED | |
|--------------------|-----------------|--|

| | | |
|--------------------|-----------------|--|
| DIVISION 16 | RESERVED | |
|--------------------|-----------------|--|

| | | |
|-------------|----------|--|
| DIVISION 17 | RESERVED | |
|-------------|----------|--|

| | | |
|-------------|----------|--|
| DIVISION 18 | RESERVED | |
|-------------|----------|--|

| | | |
|-------------|----------|--|
| DIVISION 19 | RESERVED | |
|-------------|----------|--|

| | | |
|-------------|----------|--|
| DIVISION 20 | RESERVED | |
|-------------|----------|--|

| | | |
|-------------|------------------|--|
| DIVISION 21 | FIRE SUPPRESSION | Not Used <input checked="" type="checkbox"/> |
|-------------|------------------|--|

| Section No. | Title | Page Count |
|-------------|-------|------------|
| | | |
| | | |

| | | |
|-------------|----------|-----------------------------------|
| DIVISION 22 | PLUMBING | Not Used <input type="checkbox"/> |
|-------------|----------|-----------------------------------|

| Section No. | Title | Page Count |
|-------------|--|------------|
| 22 05 00 | COMMON WORK RESULTS FOR PLUMBING | 3 |
| 22 05 03 | PIPES AND TUBES FOR PLUMBING PIPING AND EQUIPMENT | 9 |
| 22 05 16 | EXPANSION FITTINGS AND LOOPS FOR PLUMBING PIPING | 6 |
| 22 05 23 | GENERAL DUTY VALVES FOR PLUMBING PIPING | 5 |
| 22 05 29 | HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT | 11 |
| 22 05 48 | VIBRATION AND SEISMIC CONTROLS FOR PLUMBING PIPING AND EQUIPMENT | 11 |
| 22 05 53 | IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT | 5 |
| 22 07 00 | PLUMBING INSULATION | 7 |
| 22 30 00 | PLUMBING SPECIALTIES | 7 |
| 22 40 00 | PLUMBING FIXTURES | 6 |

| | | |
|-------------|---|--|
| DIVISION 23 | HEATING, VENTILATING AND AIR CONDITIONING | Not Used <input checked="" type="checkbox"/> |
|-------------|---|--|

| Section No. | Title | Page Count |
|-------------|-------|------------|
| | | |
| | | |

| | | |
|-------------|----------|--|
| DIVISION 24 | RESERVED | |
|-------------|----------|--|

| | | |
|-------------|-----------------------|--|
| DIVISION 25 | INTEGRATED AUTOMATION | Not Used <input checked="" type="checkbox"/> |
|-------------|-----------------------|--|

| Section No. | Title | Page Count |
|-------------|-------|------------|
| | | |
| | | |

| | | |
|-------------|------------|-----------------------------------|
| DIVISION 26 | ELECTRICAL | Not Used <input type="checkbox"/> |
|-------------|------------|-----------------------------------|

| Section No. | Title | Page Count |
|-------------|--|------------|
| 26 05 19 | BUILDING WIRE AND CABLE | 6 |
| 26 05 26 | GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS | 4 |
| 26 05 29 | HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS | 6 |
| 26 05 33 | RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS | 8 |
| 26 05 53 | ELECTRICAL IDENTIFICATION | 5 |
| 26 24 16 | PANELBOARDS | 4 |
| 26 27 26 | WIRING DEVICES | 4 |
| 26 28 13 | FUSES | 2 |
| 26 28 19 | ENCLOSED SWITCHES | 3 |

| | | |
|--------------------|-----------------------|---|
| DIVISION 27 | COMMUNICATIONS | Not Used <input checked="" type="checkbox"/> |
|--------------------|-----------------------|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|--------------------|---------------------------------------|---|
| DIVISION 28 | ELECTRONIC SAFETY AND SECURITY | Not Used <input checked="" type="checkbox"/> |
|--------------------|---------------------------------------|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|--------------------|-----------------|--|
| DIVISION 29 | RESERVED | |
|--------------------|-----------------|--|

| | | |
|--------------------|-----------------|--|
| DIVISION 30 | RESERVED | |
|--------------------|-----------------|--|

| | | |
|--------------------|------------------|--|
| DIVISION 31 | EARTHWORK | Not Used <input type="checkbox"/> |
|--------------------|------------------|--|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|----------|-----------------------------------|--|
| 31 20 05 | SEDIMENTATION AND EROSION CONTROL | |
|----------|-----------------------------------|--|

| | | |
|--------------------|------------------------------|--|
| DIVISION 32 | EXTERIOR IMPROVEMENTS | Not Used <input type="checkbox"/> |
|--------------------|------------------------------|--|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|----------|-----------------------------|---|
| 32 31 13 | CHAIN LINK FENCES AND GATES | 6 |
|----------|-----------------------------|---|

| | | |
|--------------------|------------------|---|
| DIVISION 33 | UTILITIES | Not Used <input checked="" type="checkbox"/> |
|--------------------|------------------|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|--------------------|-----------------------|---|
| DIVISION 34 | TRANSPORTATION | Not Used <input checked="" type="checkbox"/> |
|--------------------|-----------------------|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|--------------------|-----------------------------|---|
| DIVISION 35 | WATERWAYS AND MARINE | Not Used <input checked="" type="checkbox"/> |
|--------------------|-----------------------------|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|--------------------|-----------------|--|
| DIVISION 36 | RESERVED | |
|--------------------|-----------------|--|

| | | |
|--------------------|-----------------|--|
| DIVISION 37 | RESERVED | |
|--------------------|-----------------|--|

| | | |
|--------------------|-----------------|--|
| DIVISION 38 | RESERVED | |
|--------------------|-----------------|--|

| | | |
|--------------------|-----------------|--|
| DIVISION 39 | RESERVED | |
|--------------------|-----------------|--|

| | | |
|--------------------|----------------------------|---|
| DIVISION 40 | PROCESS INTEGRATION | Not Used <input checked="" type="checkbox"/> |
|--------------------|----------------------------|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|--------------------|----------------------------|---|
| DIVISION 41 | MATERIAL PROCESSING | Not Used <input checked="" type="checkbox"/> |
|--------------------|----------------------------|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|--------------------|---|---|
| DIVISION 42 | PROCESS HEATING, COOLING, AND DRYING | Not Used <input checked="" type="checkbox"/> |
|--------------------|---|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|--------------------|---|---|
| DIVISION 43 | PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT | Not Used <input checked="" type="checkbox"/> |
|--------------------|---|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|--------------------|------------------------------------|---|
| DIVISION 44 | POLLUTION CONTROL EQUIPMENT | Not Used <input checked="" type="checkbox"/> |
|--------------------|------------------------------------|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|--------------------|--|---|
| DIVISION 45 | INDUSTRY SPECIFIC MANUFACTURING EQUIPMENT | Not Used <input checked="" type="checkbox"/> |
|--------------------|--|---|

| Section No. | Title | Page Count |
|-------------|-------|------------|
|-------------|-------|------------|

| | | |
|--------------------|-----------------|--|
| DIVISION 46 | RESERVED | |
|--------------------|-----------------|--|

| | | |
|--------------------|-----------------|--|
| DIVISION 47 | RESERVED | |
|--------------------|-----------------|--|

| | | |
|--------------------|-----------------|--|
| DIVISION 48 | RESERVED | |
|--------------------|-----------------|--|

| | | |
|--------------------|-----------------|--|
| DIVISION 49 | RESERVED | |
|--------------------|-----------------|--|

| | | | |
|--------------------|---|-------------------|--|
| DIVISION 50 | PROJECT-SPECIFIC AVAILABLE INFORMATION | Page Count | Not Used <input type="checkbox"/> |
|--------------------|---|-------------------|--|

| | | | |
|----------|---|----|-------------------------------------|
| 50 10 00 | Existing Conditions Survey | | <input checked="" type="checkbox"/> |
| 50 20 00 | Environmental Assessment Information | | <input checked="" type="checkbox"/> |
| 50 30 00 | Hazardous Building Materials Inspection and Inventory | 82 | <input type="checkbox"/> |
| 50 40 00 | Subsurface Geotechnical Report | | <input checked="" type="checkbox"/> |
| 50 50 00 | Elevator Agreement | 1 | <input type="checkbox"/> |
| 50 60 00 | FM Global Checklist For Roofing Systems | | <input checked="" type="checkbox"/> |

| | | |
|----------|----------------------------------|-------------------------------------|
| 50 70 00 | Statement of Special Inspections | <input checked="" type="checkbox"/> |
| 50 80 00 | Additional Info: | <input checked="" type="checkbox"/> |
| | 50 80 00.1 | <input checked="" type="checkbox"/> |
| | 50 80 00.2 | <input checked="" type="checkbox"/> |
| | 50 80 00.3 | <input checked="" type="checkbox"/> |
| | | |
| | | |
| | | |

00 01 10 Table Of Contents

| List of Drawing Sheets | |
|------------------------|---|
| Sheet No. | Title |
| | COVER SHEET |
| | |
| R1.1 | REFERENCE SHEET |
| R1.2 | CODE INFORMATION – BUILDING 2 – COMMISSARY |
| R1.3 | CODE INFORMATION – BUILDING 3 – WEST DOMICILE |
| R1.4 | CODE INFORMATION – BUILDING 4 – EAST DOMICILE |
| R1.5 | BUILDING 2 – COMMISSARY – EGRESS PLANS |
| R1.6 | BUILDING 3 – WEST DOMICILE – EGRESS PLANS |
| R1.7 | BUILDING 4 – EAST DOMICILE – EGRESS PLANS |
| R1.8 | WALL TYPES / FIRE RATINGS |
| | |
| HM-001 | ASBESTOS ABATEMENT PLAN |
| | |
| VF101 | TOPOGRAPHIC SURVEY |
| CJ101 | SOIL EROSION AND SEDIMENT PLAN |
| CX101 | EROSION & SEDIMENTATION CONTROL NOTES AND DETAILS |
| | |
| A0.1A | BUILDING 2 – COMMISSARY – LOWER LEVEL KEY PLAN |
| A0.1B | BUILDING 2 – COMMISSARY – FIRST FLOOR KEY PLAN |
| A0.1C | BUILDING 2 – COMMISSARY – SECOND & THIRD FLOOR KEY PLAN |
| A0.2A | BUILDING 3 – WEST DOMICILE – FIRST FLOOR KEY PLAN |
| A0.2B | BUILDING 3 – WEST DOMICILE – SECOND FLOOR KEY PLAN |
| A0.3A | BUILDING 4 – EAST DOMICILE – FIRST FLOOR KEY PLAN |
| A0.3B | BUILDING 4 – EAST DOMICILE – SECOND FLOOR KEY PLAN |
| | |
| A1.1 | LOWER LEVEL PLANS - BUILDING 2 – COMMISSARY |
| A1.2 | FIRST FLOOR PLANS – BUILDING 2 – COMMISSARY |
| A1.3 | SECOND & THIRD FLOOR PLANS – BUILDING 2 – COMMISSARY |
| A1.4 | FIRST & SECOND FLOOR PLANS – BUILDING 3 – WEST DOMICILE |
| A1.5 | FIRST & SECOND FLOOR PLANS – BUILDING 4 – EAST DOMICILE |
| A1.6 | EXTERIOR RAMP & STAIRS – BUILDING 2 – COMMISSARY |
| | |
| A2.1 | EAST CONNECTOR / WEST CONNECTOR PLANS |
| A2.2 | EAST CONNECTOR PLANS & SECTIONS |
| A2.3 | WEST CONNECTOR PLANS & SECTIONS |
| A2.4 | CONNECTOR RAMP AND STAIR SECTIONS & DETAILS |
| | |
| A6.1 | STAIR / RAMP PLANS - BUILDING 2 – COMMISSARY |
| A6.2 | STAIR / RAMP PLANS - BUILDING 3 – WEST DOMICILE |
| A6.3 | STAIR / RAMP PLANS - BUILDING 4 – EAST DOMICILE |
| A6.4 | BUILDING 3 – EXTERIOR RAMP PLAN & DETAILS |
| A6.5 | BUILDING 3 – RAMP & STAIR ELEVATIONS |
| A6.6 | BUILDING 4 – RAMP & STAIR ELEVATIONS |
| A6.7 | STAIR ELEVATIONS AND DETAILS |

| List of Drawing Sheets | |
|------------------------|---|
| Sheet No. | Title |
| A8.1 | DOOR / ELEVATOR ELEVATION & DETAILS |
| A12.1 | FINISH SCHEDULE & LEGEND |
| P1.1 | BUILDING 2 – COMMISSARY – LOWER LEVEL PLUMBING PLAN |
| P1.2 | BUILDING 2 – COMMISSARY – FIRST FLOOR PLUMBING PLAN |
| P1.3 | BUILDING 2 – COMMISSARY – SECOND & THIRD FLOOR PLUMBING PLAN |
| P1.4 | BUILDING 3 – WEST DOMICILE – FIRST & SECOND FLOOR PLUMBING PLAN |
| P1.5 | BUILDING 4 – EAST DOMICILE – FIRST & SECOND FLOOR PLUMBING PLAN |
| P6.1 | PLUMBING SPECIFICATIONS AND SCHEDULES |
| E0.0 | ELECTRICAL SYMBOLS, DETAILS AND ABBREVIATIONS |
| E1.1 | BUILDING 2 – COMMISSARY – LOWER LEVEL ELECTRICAL |
| E1.2 | BUILDING 2 – COMMISSARY – FIRST FLOOR ELECTRICAL PLAN |
| E1.3 | BUILDING 2 – COMMISSARY – SECOND & THIRD FLOOR ELECTRICAL PLAN |
| E1.4 | BUILDING 3 – WEST DOMICILE – FIRST FLOOR ELECTRICAL PLAN |
| E1.5 | BUILDING 3 – WEST DOMICILE – SECOND FLOOR ELECTRICAL PLAN |
| E1.6 | BUILDING 4 – EAST DOMICILE – FIRST FLOOR ELECTRICAL PLAN |
| E1.7 | BUILDING 4 – EAST DOMICILE – SECOND FLOOR ELECTRICAL PLAN |
| E1.8 | CONNECTOR – ELECTRICAL PLAN |

**End of Section
00 01 15 List of Drawing Sheets**



| | | | |
|--------------------|-------|---------------------|-------------------|
| Advertisement No.: | 19-04 | Advertisement Date: | December 14, 2018 |
|--------------------|-------|---------------------|-------------------|

| |
|--|
| <p>INVITATION TO BID</p> <p>Connecticut Department of Administrative Services (DAS) Construction Services (CS) Office of Legal Affairs, Policy and Procurement 450 Columbus Blvd, Suite 1302, Hartford, CT 06103-1835</p> |
|--|

| | |
|---|--|
| Find Invitations to Bid on the State Contracting Portal: | Go to the DAS website www.ct.gov/das Click on “ State Contracting Portal ”; Select “ Administrative Services, Construction Services ”; Select the appropriate Invitation to Bid . |
|---|--|

| | |
|--|--|
| Instructions for On-Line Bidding: | Follow the instructions in 6001 Construction On-line Bidding Instructions . (http://portal.ct.gov/-/media/DAS/Construction-Services/DAS-CS-Library/6000-Series/6001-Construction-On-Line-Bidding-Instructions.pdf) For questions, call 860-713-5794. |
|--|--|

| | | | | | | | | | | | |
|--------------------------------------|---|----------------|----------------|-----------|--------------|-------------|---------------|--------------|--|-------------|-------------|
| Date and Time of Bid Opening: | <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td style="text-align: center;">January</td></tr> <tr><td style="text-align: center;"><i>(Month)</i></td></tr> </table> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td style="text-align: center;">30</td></tr> <tr><td style="text-align: center;"><i>(Day)</i></td></tr> </table> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td style="text-align: center;">2019</td></tr> <tr><td style="text-align: center;"><i>(Year)</i></td></tr> </table> | January | <i>(Month)</i> | 30 | <i>(Day)</i> | 2019 | <i>(Year)</i> | Time: | <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td style="text-align: center;">1:00</td></tr> <tr><td style="text-align: center;"><i>(ET)</i></td></tr> </table> PM | 1:00 | <i>(ET)</i> |
| January | | | | | | | | | | | |
| <i>(Month)</i> | | | | | | | | | | | |
| 30 | | | | | | | | | | | |
| <i>(Day)</i> | | | | | | | | | | | |
| 2019 | | | | | | | | | | | |
| <i>(Year)</i> | | | | | | | | | | | |
| 1:00 | | | | | | | | | | | |
| <i>(ET)</i> | | | | | | | | | | | |

| |
|---|
| This Invitation to Bid is for the following Project: |
|---|

| | | | |
|---|--|--------------|------------|
| Construction Costs: | Greater Than \$500,000 | | |
| Bidding Limited To: | Contractors Prequalified by DAS for General Building Construction (Group A) | | |
| Threshold Limits: (C.G.S. §29-276b) | This Project DOES NOT exceed Threshold Limits. | | |
| Project Title: | DVA ADA Improvements – Bldgs. 2, 3, & 4 | | |
| Project Location: | 287 West Street Rocky Hill, CT | | |
| Project Number: | BI-C-291 | | |
| Project Description: | Design and construction of life safety and ADA upgrades to Buildings 2, 3 and 4 of the State Veterans Home in Rocky Hill | | |
| Work Includes But Is Not Limited To The Following: | Building 2, 3 and 4 ADA Improvements: Asbestos Abatement, Concrete, Reinforcing Sitework, Masonry, Metal Fabrication, Pipe/Tube Railing, Carpentry, Insulation, Fire-stopping, HMF, Doors and Hardware/Operators, Glazing, Gypsum Board, Tiling and Base, Acoustical Clg, Flooring, Painting, Signage, Toilet Compartments/Specialties/Accessories, Plumbing, Electrical, Lifts, Elevator Rehab. | | |
| Date DAS Began Planning Project: | 5-29-2018 | | |
| Special Requirements: | N/A | | |
| Cost Estimate Range: | 2,025,626. | To \$ | 2,259,131. |
| Date Plans & Specs Ready: | December 19, 2018 | | |
| Plans and Specs Download: | Plans and Specs are available for electronic download on the DAS State Contracting Portal. | | |



| | | | |
|--------------------|-------|---------------------|-------------------|
| Advertisement No.: | 19-04 | Advertisement Date: | December 14, 2018 |
|--------------------|-------|---------------------|-------------------|

| |
|--------------------------------------|
| Invitation to Bid (continued) |
|--------------------------------------|

| | | |
|---|---|--|
| Contract Time Allowed: | Calendar Days: | 365 |
| Liquidated Damages: | \$ 1,689.00 | Per Calendar Day Beyond Substantial Completion. |
| | \$ 1,689.00 | Per Calendar Day Beyond 90 days After Substantial Completion |
| Pre-Bid Meeting Date: | December 28, 2018 | |
| | <input type="checkbox"/> | Bidders are strongly encouraged to attend the Pre-Bid Meeting. |
| | <input checked="" type="checkbox"/> | Bidders are required to attend a MANDATORY Pre-Bid Meeting. |
| Pre-Bid Meeting Time: | 10:00 | <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM |
| Pre-Bid Meeting Location: | 287 West Street, Rocky Hill, CT – Meet at Building 2 – Commissary- Mess Hall | |
| Pre-Bid Meeting Contact: | DAS/CS Project Manager: | Ronald Wilfinger |
| | Phone No.: | 860.713.5648 |
| Pre-Bid Meeting Registration: | At the Pre-Bid Meeting, all prospective bidders shall <i>sign</i> his or her name on the official roster and <i>list</i> the name and address of the company he or she represents. For MANDATORY Pre-Bid Meetings, this shall be done no later than the designated start time of the Pre-Bid Meeting. No attendee will be allowed to register <i>after</i> the advertised start time. Bids submitted by contractors who have <i>not properly</i> registered and attended the MANDATORY Pre-Bid Meeting <i>shall be rejected</i> as non-responsive . See Section 00 25 13 Pre-Bid Meeting Agenda for additional details. | |
| Subcontractor and/or Supplier Small Business Enterprise (SBE) & Minority Business Enterprise (MBE) Set-Aside Requirements: | See 00 41 00 Bid Proposal Form | |
| Bid Proposal Submission and Other Bid Submittal Requirements: | See Sections 00 21 13 Instructions to Bidders, 00 41 00 Bid Proposal Form, and 00 41 10 Bid Package Submittal Requirements for Bid Proposal submission requirements, including requirements for Affidavits, Certifications, Addenda, Pre-Bid Equals and Substitution Requests, and other bidding documents. | |
| Bid Upload and Bid Opening: | Bids can be uploaded and edited electronically in BizNet UNTIL 1:00 p.m. on the Bid Opening Date and thereafter shall be locked down and publicly opened in the State Contracting Portal. | |
| Bid Results: | Within approximately two (2) days after the Bid Opening Date, the Bid Results will be posted on the State Contracting Portal. | |
| Guide to the Code of Ethics For Current or Potential State Contractors (for contracts greater than \$500,000): | Anyone seeking a contract with a value of more than \$500,000 shall electronically download the “Guide to the Code of Ethics For Current or Potential State Contractors” from the of Office of State Ethics (OSE) website www.ct.gov/ethics , then click on the “Publications” link: | |
| Prevailing Wage Rates: | Prevailing wages are required on this project, in accordance with the schedule provided in the bid documents, pursuant to Connecticut General Statutes Section 31-53 (a) through (h), as amended. Each contractor who is awarded a contract on or after October 1, 2002 shall be subject to provisions of the Connecticut General Statutes, Section 31-55a concerning annual adjustments to prevailing wages. Wage Rates will be posted each July 1st on the Department of Labor website www.ctdol.state.ct.us . Such prevailing wage adjustment shall not be considered a matter for any contract amendment. | |
| To access Executive Orders: | Go to www.ct.gov > Governor Dannel P. Malloy > Press Room > Executive Orders. | |



| | | | |
|--------------------|-------|---------------------|-------------------|
| Advertisement No.: | 19-04 | Advertisement Date: | December 14, 2018 |
|--------------------|-------|---------------------|-------------------|

Invitation to Bid (continued)

| | |
|---------------------------|---|
| Important Notices: | <p>UPDATED DOCUMENTS: Many Division 00 and Division 01 documents have been updated. Read all of the contents of the Project Manual <i>carefully!</i> All Contractors are cautioned that any modifications or alterations made to either the Project Manual or any of the forms and documents contained herein may be just cause to reject the bid!</p> <p>NEW PROCESS FOR CONSTRUCTION STORMWATER GENERAL PERMIT: See Section 01 50 00 Temporary Facilities and Controls. For all DAS/CS construction projects disturbing one or more total acres of land area on a site regardless of project phasing, the Architect/Engineer shall be responsible for filing a Department of Energy and Environmental Protection (DEEP) <i>General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (DEEP-WPED-GP-015)</i> registration and Stormwater Pollution Control Plan (SPCP) through the online DEEP ezFile Portal prior to bidding. Once the Contractor is under contract with DAS/CS, and prior to the commencement of any construction activities, the Contractor (and all other contractors and subcontractors listed on the SPCP) shall assume responsibility for storm water pollution control and conform to the general permit obligations and requirements by signing the SPCP "Contractor Certification Statement" and License Transfer Form as directed by the Architect/Engineer. At completion of the project, the Contractor shall file a Notice of Termination (DEP-PED-NOT-015) with the DEEP in order to terminate the Construction Stormwater General Permit. A project shall only be considered complete after all post-construction measures are installed, cleaned, and functioning and the site has been stabilized for at least three (3) months following the cessation of construction activities.</p> |
|---------------------------|---|

IMPORTANT NOTE: *The Commissioner of the CT Department of Administrative Services reserves the right to do any of the following without liability, including but not limited to: (a) waive technical defects in the bid proposal as he or she deems best for the interest of the State; (b) negotiate with a contractor in accordance with Connecticut General Statutes Section 4b-91; (c) reject any or all bids; (d) cancel the award or execution of any contract prior to the issuance of the "Notice To Proceed;" and, (e) advertise for new bids.*

All Project Questions, Bid Questions, and Pre-Bid Equals and Substitution Requests must be submitted fourteen (14) Calendar Days prior to the Bid Due Date.

All **Project Questions** and **Pre-Bid Equals and Substitution Requests** must be emailed (not phoned) to the **Architect/Engineer** with a **copy** to the **Construction Administrator** and the **DAS/CS Project Manager** listed below.

| | | | |
|------------------------------------|-------------------------|---------------|---|
| Architect/Engineer: | Friar Architecture Inc. | Email: | Mike Sorano, mas@friar.com /Bryce Sens, brs@friar.com |
| Construction Administrator: | Friar Architecture Inc. | Email: | mas@friar.com / brs@friar.com |
| DAS/CS Project Manager: | Ronald Wilfinger | Email: | Ronald.Wilfinger@ct.gov |

All **Bid Questions** must be emailed to the **DAS/CS Associate Fiscal Administrative Officer** listed below.

| | | | |
|--|-----------------|---------------|--|
| DAS/CS Associate Fiscal Administrative Officer: | Mellanee Walton | Email: | Mellanee.Walton@ct.gov |
|--|-----------------|---------------|--|

Instructions to Bidders

DAS | Construction Services | Office of Legal Affairs, Policy, and Procurement

1.0 General Bid Proposal Information

1.1 On-Line Bidding:

1.1.1 The Department of Administrative Services (DAS) Construction Services (CS) has streamlined the Bid process by allowing contractors to submit their **Bid Package Documents on line** through the **State Contracting Portal** and **BizNet**. Rather than submitting paper Bid Package Documents, contractors simply respond to an **Invitation to Bid** on the **State Contracting Portal** by retrieving and uploading their documents electronically through their **BizNet** account. Once completed, the Bid Proposal must be **electronically signed prior** to the date and time of the **Bid Opening**. See **Page 1** of the **Invitation to Bid** for the **Date and Time of the Bid Opening**.

1.1.2 All Bidders shall **electronically** upload their **Bid Package Documents** to BizNet following the **instructions** in the DAS/CS publication, [6001 Construction On-line Bidding Instructions](#), available for download here: Go to the DAS Homepage (www.ct.gov/DAS), Doing Business With The State > State Building Construction > Publications and Forms > DAS Construction Services Library > 6000 Series > **6001 Construction On Line Bidding Instructions**. For questions, call 860-713-5794 or 860-713-5783.

1.2 Bid Opening:

All Bids shall be publicly opened in BizNet by the awarding authority as stated in **Section 00 11 16 Invitation to Bid**.

1.3 Withdrawal of Bid:

Any **Bid** once uploaded into BizNet cannot be deleted. A Bid may only be **withdrawn** by uploading a written **Letter of Withdrawal** to BizNet using the "**Other Solicitation Document**" link **prior** to the date and time of the Bid Opening.

1.4 Disqualification from Bidding:

Any contractor who violates any provision of **Connecticut General Statutes (C.G.S.) § 4b-95**, as revised, shall be **disqualified** from bidding on other contracts for a period not to exceed **twenty-four (24) months**, commencing from the date on which the violation is discovered, for each violation.

1.5 Waive Minor Irregularities:

1.5.1 The awarding authority **shall** be authorized to **waive minor irregularities** which he or she considers in the best interest of the State, provided the reasons for any such waiver are stated in writing by the awarding authority and made a part of the contract file.

1.5.2 **No** such bid shall be rejected because of the failure to submit prices for, or information relating to, any item or items for which no specific space is provided in the bid form furnished by the awarding authority, but this sentence shall not be applicable to any failure to furnish prices or information required by **C.G.S. § 4b-95**, as revised, to be furnished in the bid form provided by the awarding authority.

1.6 Minimum Percentage of Work:

The awarding authority **may** require in the **Bid Proposal Form** that the contractor agree to perform a stated, minimum percentage of work with its **own forces**, in accordance with **C.G.S. § 4b-95(b)**.

1.7 Set-Aside Contracts:

The awarding authority **may also** require the contractor to set aside a portion of the contract for subcontractors who are eligible for **set-aside contracts**.

1.8 Connecticut Sales And Use Taxes:

1.8.1 **All Bidders shall** familiarize themselves with the current statutes and regulations of the **Connecticut Department of Revenue Services (DRS)**, including the Regulations of Connecticut State Agencies (R.C.S.A.) §12-426-18 and all relevant state statutes. The tax on materials or supplies exempted by such statutes and regulations shall not be included as part of a bid; see the **Contractor's Exempt Purchase Certificate (CERT-134)**, available for download from the DRS website (www.ct.gov/drs).

1.8.2 The State of Connecticut construction contract has the following tax exemptions: (1) Purchasing of materials which will be physically incorporated and become a permanent part of the project; and (2) Services that are resold by the contractor. For example, if a General Contractor hires a plumber, carpenter or electrician, a resale certificate may be issued to the subcontractor because these services are considered to be integral and inseparable component parts of the building contract.

1.8.3 The following items are **not** exempt from taxes when used to fulfill a State of Connecticut construction contract: Tools, supplies and equipment used in fulfilling the construction contract.

| | |
|--|---|
| 1.9 Union Labor: | |
| Attention is called to the fact that there may or could be construction work carried on at the site by union labor. This fact must be kept in mind by all Bidders. | |
| 1.10 Rejection of Bids: | |
| The awarding authority <i>shall reject</i> every such Bid Proposal , including but not limited to, the following reasons: | |
| 1.10.1 | A Bid Proposal Form that does <i>not</i> contain the signature of the bidder or its authorized representative. |
| 1.10.2 | A Bid Proposal Form that is <i>not</i> accompanied by the following documents in BizNet: <ul style="list-style-type: none"> .1 Section 00 43 16 Standard Bid Bond, completed for <i>either</i> the Bid Bond option <i>or</i> Certified Check option; .2 A Certified Check (if applicable) delivered to the DAS/CS Office of Legal Affairs, Policy, and Procurement <i>prior</i> to the date and time of the Bid Opening; .3 Section 00 45 14 General Contractor Bidder’s Qualification Statement .4 A DAS Contractor Prequalification Certificate for the Bidder for Projects <i>greater</i> than \$500,000; .5 A DAS Update (Bid) Statement for the Bidder for Projects <i>greater</i> than \$500,000; .6 A Gift and Campaign Contribution Certification – Office of Policy and Management (OPM) Ethics Form 1; .7 A Consulting Agreement Affidavit – OPM Ethics Form 5. NOTE: If the Bidder fails to submit or upload the Consulting Agreement Affidavit required under C.G.S. § 4a-81, such bidder shall be <i>disqualified</i> and the award shall be made to the next lowest responsible qualified bidder or new bids or proposals shall be sought; .8 An Ethics Affidavit (Regarding State Ethics) – OPM Ethics Form 6; .9 An Iran Certification – OPM Ethics Form 7. |
| 1.10.3 | A Bid Proposal Form that: <ul style="list-style-type: none"> .1 Fails to acknowledge all Addenda in the space provided in the Bid Proposal Form; .2 Fails to correctly list the Named Subcontractors on the Bid Proposal Form; .3 Fails to correctly state a Named Subcontractor’s price on the Bid Proposal Form; and .4 Fails to list Named Subcontractors who are DAS Prequalified at the time of the bid. |
| 1.10.4 | A Bid Proposal Form that is <i>not</i> submitted on the forms furnished for the specific project. NOTE: In no event will bids or changes in bids be made by telephone, telegraph, facsimile or other communication technology except through BizNet. All pages of the Bid Proposal Form <i>must</i> be uploaded to BizNet prior to the date and time of the Bid Opening. |
| 1.10.5 | A Bid Proposal Form that has omitted items, omitted pages, added items not called for, altered the form, contains conditional bids, contains alternative bids, or contains obscure bids. |
| 1.10.6 | A <i>paper Bid Package</i> sent to the DAS/CS Office of Legal Affairs, Policy, and Procurement. Such bids will be returned to the bidder unopened. |
| 1.10.7 | Any Bidder that does <i>not</i> make all required pre-award submittals <i>within</i> the designated time period. DAS/CS <i>may</i> reject such bids as non-responsive . |
| 1.11 Pre-Bid Meeting: | |
| 1.11.1 | See Section 00 11 16 Invitation to Bid and Section 00 25 13 Pre-Bid Meeting Agenda for details. |
| 1.11.2 | When a Pre-Bid Meeting is “ strongly encouraged ”, all attendees shall sign his or her name to the official roster and list the name and address of the company he or she represents. |
| 1.11.3 | When a Pre-Bid Meeting is MANDATORY , all attendees will be required to register. Proper registration means that the attendee has signed his or her name to the official roster and listed the name and address of the company he or she represents on the official roster no later than the designated start time of the MANDATORY Pre-Bid Meeting . Bidders are advised to register early as no attendee will be allowed to register <i>after</i> the advertised start time of the MANDATORY Pre-Bid Meeting . All bids submitted by all contractors who have <i>not</i> properly registered and attended the MANDATORY Pre-Bid Meeting shall be rejected as non-responsive . |
| 1.11.4 | All Bidders Attending a Pre-Bid Meeting at a Connecticut Department of Corrections (DOC) Facility: Prior to the Pre-Bid Meeting , download the “ Security Background Questionnaire ” from the CT DOC website (www.ct.gov/doc under “ Forms ”), complete and submit the form as directed, and obtain approval, otherwise admission to the Pre-Bid Meeting will be denied . It is recommended that the approved form be brought as evidence of approval to attend the Pre-Bid Meeting. |

| | |
|---|---|
| 1.12 Pre-Bid Equals and Substitution Requests Procedures: | |
| 1.12.1 | All submissions requesting "Equals and/or Substitutions" shall be made by the Bidder in accordance with Section 01 25 00 Substitution Procedures of the Division 01 General Requirements and Article 15, Materials: Standards of Section 00 72 13 General Conditions . Every submission shall contain all the information necessary for DAS/CS to evaluate the submission and the request. Failure to submit sufficient information to make a proper evaluation, including submittal of data for the first manufacturer listed as well as the data for the " Equals and/or Substitutions " proposed, shall result in a rejection of the submission and request. Upon receipt of the submission and request, DAS/CS shall notify the Bidder that the request has been received and as soon as possible shall render a decision on such submission and request. |
| 1.12.2 | Pre-Bid-Opening Substitution of Materials and Equipment: The Owner will consider requests for equals or substitutions <i>if received fourteen (14) Calendar Days prior</i> to the Bid Opening Due Date , as stated in the Invitation To Bid . The Equal or Substitute Product Request (Form 7001) must be used to submit requests. Download Form 7001 from the DAS Homepage (www.ct.gov/DAS) > Doing Business With The State > State Building Construction > Publications and Forms > DAS Construction Services Library > 7000 Series. |
| 1.12.3 | Equals and/or Substitutions Requests Submittal: Requests for Equals or Substitutions shall be submitted to the DAS/CS Project Manager, Architect / Engineer, and Construction Administrator . |
| 1.12.4 | Substitution Request Deadline: Any substitution request not complying with requirements will be denied. Substitution requests sent after the Deadline will be denied. |
| 1.12.5 | Addendum: An Addendum shall be issued to inform all prospective bidder of any accepted substitution in accordance with our addenda procedures. |
| 1.12.6 | Time Extensions: No extensions of time will be allowed for the time period required for consideration of any Substitution or Equal. |
| 1.12.7 | Post Contract Award Substitution of Materials and Equipment: All requests for "Equals and Substitutions" after the Award of the Contract shall be made only by the Prime Contractor for materials or systems specified that are no longer available. The requests will not be considered if the product was not purchased in a reasonable time after award, in accordance with Article 15, Materials: Standards of Section 00 72 13 General Conditions . |
| 1.13 Joint Ventures: | |
| 1.13.1 | Each entity in a Joint Venture shall submit with the Venture's bid a letter on their respective company letterheads stating: <ul style="list-style-type: none"> · Their agreement to bid as a Joint Venture with the other named Joint Venture, and set forth the name and address of the other Joint Venture(s). · The respective percentage of the project work that would be the responsibility of each of the Joint Ventures. |
| 1.13.2 | Prequalification: Each entity in a Joint Venture shall submit its Prequalification Certificate and Update (Bid Statement) . Each entity in a Joint Venture shall be prequalified at the time of the bid and during the entire project construction. Each entity in a Joint Venture shall have the prequalification single project limit , and remaining aggregate capacity balance to meet the value of its respective percentage of the joint proposed bid. |
| 1.13.3 | Each entity in a Joint Venture shall submit Section 00 45 14 General Contractor Bidder's Qualification Statement . |
| 1.13.4 | Bonding: The Joint Venture shall obtain the required bonding from a surety for the total amount of the contract price. |
| 1.13.5 | Insurance: Each entity in a Joint Venture shall have the required insurance coverages and limits to meet the insurance requirements of the contract. The Joint Venture shall provide Builder's Risk insurance . |
| 1.13.6 | Bid Submission and Contract Signing: If a Joint Venture submits a bid proposal, it shall be considered to be a proposal by each of the Joint Ventures, jointly and severally, for the performance of the entire contract as a Joint Venture in accordance with the terms and conditions of the contract. Each entity in a Joint Venture is required to sign the contract acknowledging that each Joint Venture shall be jointly and severally liable for the performance of the entire contract. |
| 1.13.7 | Certificate of Legal Existence: Each entity in a Joint Venture shall obtain a Certificate of Legal Existence and submit it with the contract documents. |
| 1.14 Procedure for Alleged Violation(s) of Part II Chapter 60 of C.G.S. Bidding and Contracts: | |
| 1.14.1 | The Regulations of Connecticut State Agencies establishes a procedure for promptly hearing and ruling on claims alleging a violation or violations of the contract bidding provisions of Part II of Chapter 60 of the Connecticut General Statutes (hereinafter "Chapter 60"). In view of the fact that time is normally of the essence in awarding construction contracts under Chapter 60, the grievance procedures are intended to be quick, informal and conclusive so as to avoid delays which can increase costs and jeopardize the very ability of the State to proceed with needed public works projects. |
| 1.14.2 | Download " 6510 Procedure for Alleged Violation(s) " and " 6505 Petition for Alleged Violation(s) " from the DAS Homepage (www.ct.gov/DAS) > Doing Business With The State > State Building Construction > Publications and Forms > DAS Construction Services Library > 6000 Series > Scroll down to locate documents. |

| | |
|--|--|
| 1.15 Labor Market Area: | |
| 1.15.1 | All Bidders <i>shall</i> have read C.G.S. §§ 31-52 and 31-52a , as revised. These sections relate to the preference of State citizens and the preference of residents of the labor market area in which the work under the contract is to be done and the penalties for violations thereof. |
| 1.15.2 | In order to avoid violations by the contractor and to cooperate with and assist the State in the implementation of the statutory mandates, any bidder awarded a contract with the State shall be required to provide the State with the following information: <ul style="list-style-type: none"> .1 The names and addresses of employees utilized by the contractor and by its subcontractors and how long each such employee has resided in Connecticut. .2 How long each employee has resided in the labor market area, as established by the State Labor Commissioner, in which the work under the contract is to be done. Labor market areas are indicated on the end of this section. .3 Within thirty (30) days after the start of work, the contractor shall submit a signed statement setting forth the procedures the contractor and its subcontractors have taken to assure that they have sought out qualified residents of the labor market area. Also, the statement shall include information as to how many persons were considered for employment and how many were actually hired. Such procedures will include, but not be limited to, obtaining names of available persons from area Employment Security Offices. .4 In the same manner as Subsection 3.9.2.3 above, the statement shall indicate the steps taken to assure that the contractor and its subcontractors have sought out qualified residents of this State. |
| 1.15.3 | The contractor shall cooperate with and provide information to the DAS/CS Project Manager or their designee assigned to collect and verify the information required. The State may request that all such information be updated during the term of the contract at reasonable times. |
| 1.15.4 | All such information gathered and compiled by the State shall be forwarded to the Labor Commissioner. |
| 1.15.5 | Pursuant to C.G.S. § 31-52b, as revised: <p style="padding-left: 40px;">“The provisions of C.G.S. § 31-52 and 31-52a shall not apply where the State or any subdivision thereof may suffer the loss of revenue granted or to be granted from any agency or department of the federal government as a result of said sections or regulative procedures pursuant thereto.”</p> <p>However, no exception shall be determined to be applicable unless stated in writing by the Commissioner of the Department of Administrative Services.</p> |
| 1.15.6 | Website Link: For guidance on the CT DOL Labor Market Areas (LMA) go to the CT DOL website http://www.ctdol.state.ct.us/ , under “Program Services”, click on “Labor Market information”. |
| 1.16 Executive Orders: | |
| 1.16.1 | All Executive Orders of which are incorporated into and are made a part of the Contract as if they had been fully set forth in it. The Contract is subject to the provisions of the following: <ul style="list-style-type: none"> .1 Executive Order No. 3: Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices; .2 Executive Order No. 17: Governor Thomas J. Meskill promulgated February 15, 1973, concerning the listing of employment openings; .3 Executive Order No. 16: Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace; .4 Executive Order No. 14: Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services; and .5 Executive Order No. 49: Governor Dannel P. Malloy, promulgated May 22, 2015, concerning the requirement for certain state contractors to disclosure campaign contributions to candidates for statewide public office or The General Assembly and to ensure convenient public access to information related to gifts and campaign contribution disclosure affidavits by state contractors. |
| 1.16.2 | All Executive Orders are available for download from the State of Connecticut website. Go to www.ct.gov , click on “Governor Dannel P. Malloy”, click on “Press Room”, and click on “Executive Orders”. |
| 1.17 Retaliation For Disclosure of Information: | |
| 1.17.1 | Each contract between a state or quasi-public agency and a large state contractor shall provide that, if an officer, employee, or appointing authority of a large state contractor takes or threatens to take any personnel action against any employee of the contractor in retaliation for such employee’s disclosure of information to the Auditors of Public Accounts or the Attorney General under the provisions of C.G.S. § 4-61dd (a) , the contractor shall be liable for a civil penalty of not more than five thousand dollars for each offense, up to a maximum of twenty per cent of the value of the contract. Each violation shall be a separate and distinct offense and in the case of a continuing violation each calendar day’s continuance of the violation shall be deemed to be a separate and distinct offense. The executive head of the state or quasi-public agency may request the Attorney General to bring a civil action in the Superior Court for the judicial district of Hartford to seek imposition and recovery of such civil penalty. |
| 1.17.2 | Each large state contractor shall post a notice of the provisions of C.G.S. § 4-61dd relating to large state contractors in a conspicuous place that is readily available for viewing by the employees of the contractor. |

1.18 Laws of the State of Connecticut:

Forum and Choice of Law. The Bidder agrees that in the event it is awarded a Contract, the Bidder and the State deem the Contract to have been made in the City of Hartford, State of Connecticut. Both parties agree that it is fair and reasonable for the validity and construction of the Contract to be, and it shall be, governed by the laws and court decisions of the State of Connecticut, without giving effect to its principles of conflicts of laws. To the extent that any immunities provided by Federal law or the laws of the State of Connecticut do not bar an action against the State, and to the extent that these courts are courts of competent jurisdiction, for the purpose of venue, the complaint shall be made returnable to the Judicial District of Hartford only or shall be brought in the United States District Court for the District of Connecticut only, and shall not be transferred to any other court, provided, however, that nothing here constitutes a waiver or compromise of the sovereign immunity of the State of Connecticut. The Bidder waives any objection which it may now have or will have to the laying of venue of any claims in any forum and further irrevocably submits to such jurisdiction in any suit, action or proceeding.

1.19 State's Sovereign Immunity:

Nothing in this Agreement shall be construed as a waiver or limitation upon the **State's sovereign immunity**. To the extent this Section is found to be inconsistent with any other part of this Agreement, this Section shall control. This Section of the Agreement shall survive the completion and/or termination of this Agreement.

2.0 Bid Proposal Form Instructions:

2.1 Bid Proposal Form:

2.1.1 All Bidders shall upload **ALL** pages of **Section 00 41 00 Bid Proposal Form** to BizNet, prior to the date and time of the Bid Opening.

2.2 Threshold Projects:

2.2.1 See **page 1** of the **Bid Proposal Form** to determine if this Project exceeds the **Threshold Limits**.

2.2.2 If this Project exceeds Threshold Limits, **all Bidders** shall list their Firm's **Major Contractor Registration License Number** in the **Bid Proposal Form**.

2.2.3 The **Apparent Low Bidder** shall also provide the Subcontractor(s) **Major Contractor Registration License** number(s) to the DAS/CS Office of Legal Affairs, Policy, and Procurement within **ten (10) business days after** receipt of the Letter of Intent from DAS/CS.

2.2.4 Summary of Registration Requirements for Major Contractors: Any person engaged in the business of construction, structural repair, structural alteration, dismantling or demolition of a structure or addition that exceeds the threshold limits provided in **C.G.S §29-276b**, or any person who, under the direction of a general contractor, performs or offers to perform any work that impacts upon the structural integrity of a structure or addition, including repair, alteration, dismantling or demolition of a structure or addition that exceeds the threshold limits shall engage in or offer to perform the work of a Major Contractor unless such person has first obtained a license or certificate of registration from the Connecticut Department of Consumer Protection (DCP). Individuals must be licensed under the requirements of **C.G.S §20-341gg "Registration of Major Contractors"**. DCP shall issue a certificate of registration to any person who is prequalified pursuant to section 4a-100 who applies for registration in accordance with this section.

2.2.5 The Bidder and all Subcontractors that engage in work that impacts upon the structural integrity of a structure or addition must register as a **Major Contractor** with DCP and obtain a **Major Contractor License** issued by DCP **PRIOR** to the date and time of the Bid Opening for this Project.

2.2.6 For further information go to the DCP Website: <http://www.ct.gov/dcp>

2.3 Proposed Lump Sum Base Bid, Allowances, and Contingent Work:

2.3.1 The proposed **Lump Sum Base Bid** shall be set forth in the space **provided on Section 00 41 00 Bid Proposal Form**.

2.3.2 The **Proposed Lump Sum Base Bid** shall *include* all **Allowances**, all work indicated on the drawings and/or described in the specifications *except* for **Contingent Work**. See the **Bid Proposal Form, Section 01 20 00 Contract Considerations, and Section 01 23 13 Supplemental Bids** of Division 01 General Requirements for details regarding **Contingent Work**.

2.3.3 "**Contingent Work**" includes **Unit Prices** (for Earth and Rock Excavation, Environmental Remediation, and/or Hazardous Building Materials Abatement) and **Supplemental Bids**. See **Section 01 20 00 Contract Considerations** and **Section 01 23 13 Supplemental Bids**, respectively, for applicability.

2.3.4 The **Proposed Lump Sum Base Bid** shall be shown in *both numerical figures* and "**printed**" words **dollar amount**. In the event of any discrepancy the "**printed**" words **dollar amount** shall govern.

| | |
|--|---|
| 2.4 Addenda and Interpretations: | |
| 2.4.1 | The Number of Addenda issued by the State of Connecticut shall be set forth in the space provided on the Bid Proposal Form . It shall be the Bidder's responsibility to make inquiry as to, and to obtain, the Addenda issued, if any. |
| 2.4.2 | Addenda , if issued, will be posted on the State Contracting Portal. |
| 2.4.3 | Failure to acknowledge all Addenda in the space provided in the Bid Proposal Form shall be cause for rejection of the bid. |
| 2.4.4 | Attaching Addenda to the Bid Proposal Form does not constitute an acknowledgement of all Addenda and does not relieve the Bidder from the requirement for the Bidder to acknowledge all Addenda in the space provided on the Bid Proposal Form. |
| 2.4.5 | No interpretations of the meaning of the plans, specifications or other contract documents will be made orally at any time. Every request for such interpretation shall be in writing to the awarding authority and to be given consideration shall be received at least fourteen (14) Calendar Days <i>prior</i> to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written Addenda to the specifications which, if issued, will be posted on the State Contracting Portal. |
| 2.4.6 | Contractors who have subscribed through BizNet to receive daily e-mail alert notices when new Bids/RFPs are issued will be notified via a daily CT DAS " Connecticut Procurement Portal Daily Notice ". |
| 2.5 Bidder's Qualification Statement and Objective Criteria for Evaluating Bidders: | |
| 2.5.1 | All Bidders shall download, complete, and upload Section 00 45 14 General Contractor Bidder's Qualification Statement to BizNet prior to the date and time of the Bid Opening. See BizNet for a template. This information shall be considered as part of the Bid Proposal Form . Failure of a Bidder to answer any question or provide required information may be grounds for the awarding authority to disqualify and reject the bid. |
| 2.5.2 | All Bidders shall comply with Section 00 45 15 Objective Criteria Established for Evaluating Qualifications of Bidders . The Objective Criteria Established for Evaluating Qualifications of Bidders are to assure that the State of Connecticut will secure the "lowest responsible and qualified bidder" who has the ability and capacity to successfully complete the Bid Proposal Form and the Work. Failure to comply with any portion of this requirement may cause rejection of the bid. Note: Individual Specification Sections may contain General Contractor and/or Subcontractor Qualification requirements that <i>exceed</i> those in Section 00 45 15 Objective Criteria Established for Evaluating Qualifications of Bidders . |
| 2.6 Bidder's Prequalification Requirements for Projects exceeding \$500,000: | |
| 2.6.1 | All Bidders for Projects with estimated Construction Costs greater than \$500,000 shall upload a current copy of their " DAS Prequalification Certificate " and " DAS Update (Bid) Statement " for the applicable Class of Work on page 1 of Section 00 11 16 Invitation to Bid to Biznet <i>prior</i> to the date and time of the Bid Opening. |
| 2.6.2 | Pursuant to C.G.S. § 4b-91(a)(2) and C.G.S. §4a-100 , as revised, every contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or any other public work by the state that is estimated to exceed five hundred thousand dollars (\$500,000) shall be awarded only to the lowest responsible and qualified Bidder who is " prequalified " by DAS in the Class of Work for this Project , as specified in Section 00 11 16 Invitation to Bid . No person who's Contract or Subcontract exceeds \$500,000 in value may perform work as a Contractor or Subcontractor, unless the person is prequalified , <i>at the time of bid submission</i> , in accordance with C.G.S. § 4a-100 , as amended, C.G.S. § 4b-91(a)(2) , and C.G.S. §4b-91 (j) . "Prequalified" includes the contractor's or substantial subcontractor's prequalification classifications, aggregate work capacity ratings and single project limits. |
| 2.6.3 | Failure to upload either the " DAS Prequalification Certificate " or " DAS Update (Bid) Statement " to Biznet prior to the date and time of the Bid Opening shall cause rejection of the bid and shall not be considered a minor irregularity under C.G.S. § 4b-95 . |
| 2.6.4 | See Section 00 40 15 CT DAS Prequalification Forms for instructions on preparing and/or downloading your Firm's " DAS Contractor Prequalification Certificate " and " DAS Update (Bid) Statement ". |
| 2.6.5 | Bidder's Certification: Within ten (10) business days after receipt of the Letter of Intent from DAS/CS, the Apparent Low Bidder shall submit a Bidder's Certification certifying that the information in the bid is true, that there has been no substantial change in the Bidder's financial position or corporate structure since its most recent DAS Prequalification Certificate and DAS Update (Bid) Statement and that the bid was made without fraud or collusion with any person. See Section 00 92 10 Additional Forms of this Project Manual for a sample form. |

| | |
|--|--|
| 2.7 Named Subcontractor Requirements: | |
| 2.7.1 | All Bid Proposals shall be for the complete work as specified and shall include the names of any Subcontractors for the four (4) Classes of Work specified in C.G.S. § 4b-93(a) , as revised, and for each other class of work for which the awarding authority has required a separate section pursuant to said subsection, together with the dollar amounts of their subcontracts. The contractor shall be selected on the basis of such bids. |
| 2.7.2 | The Named Subcontractor Bid Price shall be the price set forth in the space provided on the Bid Proposal Form . |
| 2.7.3 | No bid shall be rejected because of an error in setting forth the Name of a Subcontractor as long as the Subcontractor or Subcontractors designated are clearly identifiable. |
| 2.7.4 | No bid shall be rejected because the Named Subcontractor's plans and specifications do not accompany the bid or are not submitted with the bid. |
| 2.7.5 | Failure to correctly state a Named Subcontractor's price on the Bid Proposal Form shall be cause for rejection of the Bid. |
| 2.7.6 | Named Subcontractor Replacement: The awarding authority may require the Bidder to replace a Named Subcontractor whenever the awarding authority determines in their sole discretion that such replacement is in the best interest of the State . |
| 2.7.7 | Named Subcontractor Substitution: |
| .1 | The awarding authority shall not permit substitution of a subcontractor for one Named in accordance with the provisions of C.G.S. § 4b-95 , as revised, except for "Good Cause" . |
| .2 | The awarding authority shall not permit substitution of a subcontractor for any designated sub-trade work bid to be performed by the Bidder's own forces in accordance with the provisions of C.G.S. § 4b-95 except for "Good Cause" . |
| .3 | "Good Cause": The term "good cause" includes but is not limited to, a subcontractor's or, where appropriate, a Bidder's: (1) death or physical disability, if the listed subcontractor is an individual; (2) dissolution, if a corporation or partnership; (3) bankruptcy; (4) inability to furnish any performance and payment bond shown on the bid form; (5) inability to obtain, or loss of, a license necessary for the performance of the particular category of work; (6) failure or inability to comply with a requirement of law applicable to contractors, subcontractors, or construction, alteration, or repair projects; and (7) failure to perform its agreement to execute a subcontract under C.G.S. § 4b-96, as revised. |
| 2.7.8 | Named Subcontractor DAS Prequalification Requirement for Subcontracts exceeding \$500,000: |
| .1 | The Three (3) Apparent Lowest Bidders shall receive <i>VIA EMAIL</i> a "Set-Aside Contractor Schedule Request" ("Request") from the DAS/CS Office of Legal Affairs, Policy, and Procurement. For Subcontracts greater than \$500,000 , the Three (3) Apparent Lowest Bidders shall submit within ten (10) Calendar Days after receipt of the Request current DAS Prequalification Certificate(s) and Update (Bid) Statement(s) for each Named Subcontractor in Table 2.7 of the Bid Proposal Form , to the extent the Class of Work for the Named Subcontractor is a Prequalification Classification . This information shall be considered as part of the Bid Proposal Form and failure to comply with any portion of this requirement may cause rejection of the bid. |
| .2 | Instructions for downloading "DAS Contractor Prequalification Certificates" and "DAS Update (Bid) Statement" can be found in Section 00 40 15 CT DAS Prequalification Forms . |
| .3 | In accordance C.G.S. §4b-91 (j) , no person whose subcontract <i>exceeds</i> five hundred thousand dollars in value may perform work as a subcontractor on a project, which project is estimated to cost more than five hundred thousand dollars and is paid for, in whole or in part, with state funds, <i>unless, at the time of bid submission</i> , the person is prequalified in accordance with C.G.S. §4a-100 , as amended. "Prequalified" includes the contractor's or substantial subcontractor's prequalification classifications, aggregate work capacity ratings and single project limits. For Subcontracts estimated to exceed \$500,000 , the Named Subcontractor must be "prequalified" by DAS in the Class of Work specified in Table 2.7 of Section 00 41 00 Bid Proposal Form <i>at the time of bid submission</i> , pursuant to C.G.S. §4b-91(j) and C.G.S. § 4a-100 , as amended. This requirement also applies to the Bidder, if the Bidder is a Named Subcontractor. |
| 2.7.9 | Named Subcontractor Bidder's Qualification Statements (Section 00 45 17) |
| .1 | The Three (3) Apparent Lowest Bidders shall receive <i>VIA EMAIL</i> a "Set-Aside Contractor Schedule Request" ("Request") from the DAS/CS Office of Legal Affairs, Policy, and Procurement. For Projects with estimated Construction Costs greater than \$500,000 , the Three (3) Apparent Lowest Bidders shall submit within ten (10) Calendar Days after receipt of the Request completed Section 00 45 17 Named Subcontractor Bidder's Qualification Statement(s) of this Project Manual for each Named Subcontractor in Table 2.7 of the Bid Proposal Form . This information shall be considered as part of the Bid Proposal Form and failure to comply with any portion of this requirement may cause rejection of the bid. |
| .2 | Important Note: Individual Technical Specification Sections may contain qualification requirements that exceed those from Section 00 45 17 Named Subcontractor Bidder's Qualification Statement . |

| | |
|---|--|
| 2.7 Named Subcontractor Requirements (continued): | |
| 2.7.10 Bidder Performing Work as Named Subcontractor: | |
| .1 | In accordance with C.G.S. § 4b-95(c) , it shall be presumed that the Bidder intends to perform, with its own employees, all work in such four (4) Classes of Work and such other classes, for which no Subcontractor is named in Table 2.7 of the Bid Proposal Form . In accordance with C.G.S. § 4b-92 , as revised, the Bidder's qualifications for performing such work shall be subject to review. |
| .2 | If the Bidder has listed itself as a Named Subcontractor(s) for a Class(es) of Work in Table 2.7 of the Bid Proposal Form and the proposed dollar value of the Subcontract(s) is greater than \$500,000, then to the extent the Class(es) of Work is a Prequalification Classification , the Bidder shall provide a current DAS Prequalification Certificate and Update (Bid) Statement for each of the applicable Class(es) of Work within ten (10) Calendar Days after receipt of the "Set-Aside Contractor Schedule Request" from DAS/CS. |
| 2.8 Set-Aside Requirements: | |
| 2.8.1 Bidder's DAS Set-Aside Certificate: | All Small Business Enterprise (SBE) / Minority Business Enterprise (MBE) Bidders shall upload a copy of their Firm's current " DAS Set-Aside Certificate " to BizNet prior to the date and time of the Bid Opening. |
| 2.8.2 Bidder Contract Compliance Monitoring Report For Projects With Construction Costs Estimated To Be Less Than \$500,000: | All Firm's shall upload a completed copy of the CHRO Employment Information Form, " Bidder Contract Compliance Monitoring Report " <i>with</i> their Bid Proposal Form prior to the date and time of the Bid Opening. The report is posted on the CHRO <i>Webpage</i> (http://www.ct.gov/chro/cwp/view.asp?a=2525&Q=315900&chroPNavCtr= #45679). |
| 2.8.3 All Bidders shall be required | to award not less than the percentage(s) stated on page 1 of Section 00 41 00 Bid Proposal Form to Subcontractors who are currently certified and eligible to participate under the State of Connecticut Set-Aside Program for SBE and/or MBE contractors, in accordance with C.G.S. § 4a-60g. Failure to meet these requirements shall cause rejection of the bid. The MBE participation does count as part of the SBE participation. |
| 2.8.4 Set-Aside Contractor Schedule Request: | The SBE/MBE participation requirement <i>must be met</i> even if the Bidder is <i>certified</i> and <i>eligible</i> to participate in the Small Business Set-Aside Program . To facilitate compliance with this requirement for set-aside subcontractors, the Three (3) Apparent Lowest Bidders shall receive VIA EMAIL a "Set-Aside Contractor Schedule Request" ("Request") from the DAS/CS Office of Legal Affairs, Policy, and Procurement. As directed in the Request, the Three (3) Apparent Lowest Bidders shall submit within ten (10) Calendar Days after receipt of the Request, a list of certified set-aside contractors to be used on this project along with the dollar amounts to be paid to each. (See Section 00 73 27 Set-Aside Contractor Schedule for a sample Request.) A copy of the current DAS Set-Aside Certificate for each Subcontracted SBE and/or MBE firm(s) listed in the " Set-Aside Contractor Schedule " must be attached to the Request. This information will be considered as part of your Bid Proposal Form and failure to comply with any portion of this requirement within the ten (10) days, including but not limited to failure to list or meet the necessary dollar amount or percentage of the bid price, will be cause to reject your bid. |
| 2.8.5 Percentage of Work Performed by SBE/MBE Contractors and Subcontractors: | The percentage of the work performed by the SBE/MBE Contractors and Subcontractors on this project shall not be less than the percentage noted in Subsection 5.1 Amount of Work Required to Be Done by "Set-Aside" Contractors of Section 00 73 38 Commission on Human Rights (CHRO) Contract Compliance Regulations . |
| 2.8.6 To view and/or download a Set-Aside Certificate: | Go to the DAS Homepage (www.ct.gov/DAS) > Small and Minority Businesses > Apply for Small Business Enterprise or Minority Business Enterprise Certification (SBE or MBE) > View/Search SBE/MBE Directory. |
| 2.9 Insurance Coverages: | |
| 2.9.1 | The Insurance coverages required for this project shall be those listed in Article 35 Contractors Insurance of Section 00 73 13 General Conditions of this Project Manual. See Section 00 41 00 Bid Proposal Form and Section 00 62 16 Certificate of Insurance of this Project Manual for additional details. |
| 2.9.2 | The Apparent Low Bidder shall submit the Firm's Certificate of Liability Insurance Acord® form within ten (10) business days after receipt of the Letter of Intent from DAS/CS. |

3.0 All Other Required Bid Documents, Affidavits, and Certifications:

3.1 Affidavits and Certifications:

3.1.1 Gift and Campaign Contribution Certification – OPM Ethics Form 1: All Bidders

- .1 **All Bidders:** In accordance with Executive Order No. 49, and pursuant to C.G.S. §§ 4-250, 4-252(c) and 9-612(f)(2), as revised, any principal or key personnel of the person, firm or corporation submitting a bid or proposal for a contract that has a value of **\$50,000** or more, shall be required to upload to BizNet a **Gift and Campaign Contribution Certification** prior to the date and time of the Bid Opening.
- .2 Any bidder or proposer that **does not** upload the **Gift and Campaign Contribution Certification** to BizNet prior to the date and time of the Bid Opening as required under this section shall be **disqualified** and DAS shall award the contract to the next highest ranked proposer or the next lowest responsible qualified bidder or seek new bids or proposals. Failure to upload this form to BizNet **prior** to the date and time of the Bid Opening shall not be considered a minor irregularity under CGS 4b-95.
- .3 Once uploaded, an updated **Gift and Campaign Contribution Certification** shall be uploaded within **30 days** of any changes to the submitted information.
- .4 **Annually**, on or within **two (2)** weeks of the **anniversary** date of the execution of this contract, the Contractor shall upload a completed **Annual Certification** with authorizing resolution. For the purposes of this paragraph, the execution date of the contract will be the date the DAS Commissioner signs the contract.

3.1.2 Consulting Agreement Affidavit – OPM Ethics Form 5: All Bidders

- .1 **All Bidders:** Pursuant to C.G.S. §§ 4a -81a and 4a -81b, as revised, a **Consulting Agreement Affidavit** must be completed and uploaded to BizNet prior to the date and time of the Bid Opening for contracts with a value of **\$50,000** or more.
- .2 In the event that a Bidder or vendor fails or refuses to upload the **Consulting Agreement Affidavit** to BizNet prior to the date and time of the Bid Opening, as required under C.G.S. § 4a-81, such bidder shall be **disqualified** and the award shall be made to the next lowest responsible qualified bidder or new bids or proposals shall be sought. Failure to upload this form to BizNet **prior** to the date and time of the Bid Opening shall not be considered a minor irregularity under CGS 4b-95.
- .3 Once uploaded, an updated **Consulting Agreement Affidavit** shall be amended and uploaded not later than (1) **thirty (30) days** after the effective date of any such change or (2) upon the submittal of any new bid or proposal, whichever is earlier. For the purposes of this paragraph, the **execution date** of the contract will be the date the DAS Commissioner signs the contract.
- .4 Other Contributions by Individuals. Principals of Investment Services Firms, State Contractors, Principals Of State Contractors, Prospective State Contractors Or Principals Of Prospective State Contractors. Lists. Subcontracts Study. State Officials or Employees: All acquisitions, agreements and contracts are subject to the provisions of the C.G.S. § 9-612 regarding **Campaign Contribution or Contributions**.

3.1.3 Ethics Affidavit – OPM Ethics Form 6: All Bidders and Apparent Low Bidder

- .1 **All Bidders:** Pursuant to C.G.S. §§ 1-101mm and 1-101qq, as revised, when DAS/CS is seeking a contract for a large state construction or procurement contract having a cost of more than **\$500,000**, DAS shall inform all potential consultant and contractor firms of the summary of state ethics laws developed by the Office of State Ethics (OSE) pursuant to C.G.S. § 1-81b. "Large State Contract" means an agreement or a combination or series of agreements between a state agency and a person, firm or corporation, having a total value of more than **\$500,000** in a calendar or fiscal year a project for the construction, alteration or repair of any public building or public work. For a **Guide to the Code of Ethics For Current or Potential State Contractors** go to the Office of State Ethics (OSE) website (www.ct.gov/ethics), then click on the "**Publications**" link.
- .2 **All Bidders:** Pursuant to C.G.S. § 1-101qq, as revised, DAS is also required to notify all potential consultant and contractor firms or a large state construction or procurement contract that they must upload an **Affirmation of Receipt of State Ethics Laws Summary** to BizNet prior to the date and time of the Bid Opening affirming that their key employees have read and understand the summary and agree to comply with the provisions of state ethics law.
- .3 Failure to upload this affidavit to BizNet prior to the date and time of the Bid Opening **shall** result in **rejection** of the bid and shall not be considered a minor irregularity under CGS 4b-95.
- .4 **Apparent Low Bidder:** Furthermore, the **Apparent Low Bidder** shall provide the **Summary of the State Ethics Laws** to each **Named Subcontractor** and any other **Subcontractor** or **Subconsultant** with a contract valued over **\$500,000** and obtain a **Subcontractor and Subconsultant State Ethics Affidavit** stating that the key personnel of the subcontractor have read, understand, and agree to comply with provisions of the state ethics laws. The **Apparent Low Bidder** shall submit such subcontractor(s) affidavits to the DAS/CS Office of Legal Affairs, Policy, and Procurement within **ten (10) business days** after receipt of the Letter of Intent from DAS/CS.

| | |
|---|--|
| 3.1 Affidavits and Certifications Forms (continued): | |
| 3.1.4 Iran Certification – OPM Ethics Form 7: All Bidders | |
| .1 | All Bidders: Pursuant to C.G.S. § 4-252a, when DAS/CS is seeking a contract for a large state construction or procurement contract having a cost of more than \$500,000 , an Iran Certification must be completed and uploaded to BizNet prior to the date and time of the Bid Opening . |
| .2 | Pursuant to C.G.S. § 4-252a, <i>“This form must always be submitted with the bid or proposal, or if there was no bid process, with the resulting contract, regardless of where the principal place of business is located. Entities whose principal place of business is located outside of the United States are required to complete the entire form, including the certification portion of the form. United States subsidiaries of foreign corporations are exempt from having to complete the certification portion of the form. Those entities whose principal place of business is located inside of the United States must also fill out the form, but do not have to complete the certification portion of the form.”</i> |
| 3.1.5 Nondiscrimination Certification – Form A, B, C, D, or E: All Bidders | |
| .1 | All Bidders: Pursuant to C.G.S. §§ 4a-60 and 4a-60a, as amended, a contractor must provide an awarding State agency with written representation or documentation that certifies the contractor complies with the State's nondiscrimination agreements and warranties prior to the award of any contract with the State. A Nondiscrimination Certification is required for all State contracts, regardless of type, term, cost or value. The appropriate form must be uploaded to BizNet prior to the date and time of the Bid Opening. |
| .2 | Once uploaded, an updated Nondiscrimination Certification shall be uploaded within 30 days of any changes to the submitted information. |
| .3 | Annually , on or within two (2) weeks of the anniversary date of the execution of this contract, the Contractor shall upload a completed Annual Certification with authorizing resolution. For the purposes of this paragraph, the execution date of the contract will be the date the DAS Commissioner signs the contract. |
| 3.1.6 | For instructions on how to electronically download <i>and</i> upload Affidavits and Non-Discrimination Forms , go to the DAS Homepage (www.ct.gov/DAS) > Doing Business with the State > Create a BizNet Account for Doing Business with the State > Documents/Forms > Vendor Guide to Uploading Affidavits and Nondiscrimination Forms Online. |
| 3.2 Security For Faithful Performance: | |
| 3.2.1 Certified Check or Bid Bond: All Bidders | |
| .1 | All Bidders for bids in excess of \$50,000 shall submit <i>either</i> a Certified Check or a Bid Bond , in the form required by the awarding authority. See Section 00 43 16 Standard Bid Bond in BizNet for a template and important instructions regarding submitting the Bid Bond or Certified Check. Complete and upload Section 00 43 16 Standard Bid Bond to Biznet prior to the date and time of the Bid Opening for either the Bid Bond option or the Certified Check option. |
| .2 | Certified Check Option: The Certified Check shall be drawn to the order of “Treasurer, State of Connecticut” , in which it is understood shall be cashed and the proceeds thereof used so far as may be necessary to reimburse the State of Connecticut for losses and damages arising by virtue of the Bidder's failure to file the required Bonds and execute the required contract if this proposal is accepted by the Awarding Authority. |
| .3 | Bid Bond Option: The Bid Bond shall be in the form required by the awarding authority, having as surety thereto such surety company or companies acceptable to the DAS Commissioner and as are authorized to do business in this State, for an amount not less than 10 percent of the bid. |
| .4 | Return of Certified Check: All checks submitted by unsuccessful Bidders shall be returned to them <i>after</i> the contract has been awarded. |
| .5 | Failure to submit the Bid Bond or Certified Check prior to the date and time of the Bid Opening shall cause rejection of the bid and shall not be considered a minor irregularity under CGS 4b-95. |
| .6 | Forfeiture of Certified Check or Bid Bond: Failure of the successful bidder to execute a contract awarded as specified and bid shall result in the forfeiture of the certified check or bid bond. |
| 3.2.2 Performance Bond: Apparent Low Bidder: | Within ten (10) business days after receipt of the Letter of Intent from DAS/CS, the Apparent Low Bidder shall substitute for the certified check or bid bond accompanying its bid an executed performance bond , in the amount not less than 100 percent of the contract price, conditioned upon the faithful performance of the contract, and having as surety thereto such surety company or companies satisfactory to the Commissioner and as are authorized to transact business in this State. This bond is to be furnished pursuant to C.G.S. § 49-41 , as revised. See Section 00 92 10 Additional Forms of this Project Manual for a template. |
| 3.2.3 Labor and Material Bond: Apparent Low Bidder: | Within ten (10) business days after receipt of the Letter of Intent from DAS/CS, the Apparent Low Bidder shall submit a labor and material bond in the amount not less than 100 percent of the contract price which shall be binding upon the award of the contract to such bidder, with surety or sureties satisfactory to the Commissioner and as are authorized to transact business in this State, for the protection of persons supplying labor or materials in the prosecution of the work provided for in the contract for the use of each such person. Any such bond furnished shall have as principal the name of the successful Bidder. This bond is to be furnished pursuant to C.G.S. § 49-41 , as revised. See Section 00 92 10 Additional Forms of this Project Manual for a template. |

3.2 Security For Faithful Performance (continued):

3.2.4 The following section of the General Statutes of Connecticut, as revised, is inserted as information concerning this bond and will be incorporated into the Contract for the Work:

C.G.S. § 49-41a. Enforcement of payment by general contractor to subcontractor and by subcontractor to his subcontractors. (a) When any public work is awarded by a contract for which a payment bond is required by section 49-41, the contract for the public work shall contain the following provisions: (1) A requirement that the general contractor, within thirty days after payment to the contractor by the State or a municipality, pay any amounts due any subcontractor, whether for labor performed or materials furnished, when the labor or materials have been included in a requisition submitted by the contractor and paid by the State or a municipality; (2) a requirement that the general contractor shall include in each of its **subcontracts** a **provision** requiring each **subcontractor** to pay any amounts due any of its subcontractors, whether for labor performed or materials furnished, within thirty days after such subcontractor receives a payment from the general contractor which encompasses labor or materials furnished by such subcontractor.

(b) If payment is not made by the general contractor or any of its subcontractors in accordance with such requirements, the subcontractor shall set forth his claim against the general contractor and the subcontractor of a subcontractor shall set forth its claim against the subcontractor through notice by registered or certified mail. Ten days after the receipt of that notice, the general contractor shall be liable to its subcontractor, and the subcontractor shall be liable to its subcontractor, for interest on the amount due and owing at the rate of one percent per month. In addition, the general contractor, upon written demand of its subcontractor, or the subcontractor, upon written demand of its subcontractor, shall be required to place funds in the amount of the claim, plus interest of one per cent, in an interest-bearing escrow account in a bank in this State, provided the general contractor or subcontractor may refuse to place the funds in escrow on the grounds that the subcontractor has not substantially performed the work according to the terms of his or its employment. In the event that such general contractor or subcontractor refuses to place such funds in escrow, and the party making a claim against it under this section is found to have substantially performed its work in accordance with the terms of its employment in any arbitration or litigation to determine the validity of such claim, then such general contractor or subcontractor shall pay the attorney's fees of such party.

(c) No payment may be withheld from a subcontractor for work performed because of a dispute between the general contractor and another contractor or subcontractor.

(d) This section shall not be construed to prohibit progress payments prior to final payment of the contract and is applicable to all subcontractors for material or labor whether they have contracted directly with the general contractor or with some other subcontractor on the work.

3.2.5 Surety Sheet: Apparent Low Bidder: Within **ten (10) business days after** receipt of the Letter of Intent from DAS/CS, the **Apparent Low Bidder shall** submit a Surety Sheet that provides information regarding the Surety Company and Agent. See **Section 00 92 10 Additional Forms** of this Project Manual for a template.

3.3 Certificate (of Authority):

3.3.1 All Bidders for bids in excess of \$50,000 shall upload a signed and scanned **Section 00 40 14 Certificate (of Authority)** to BizNet prior to the date and time of the Bid Opening. See BizNet for a template.

3.3.2 The Apparent Low Bidder shall submit a *second* Certificate (of Authority) within ten (10) business days after receipt of the Letter of Intent from DAS/CS.

3.4 Security Requirements for CT Department of Correction (CT DOC) Facilities:

3.4.1 All Bidders for Projects at a CT DOC Facility shall read and comply with **Section 00 73 63 CT DOC Security Requirements** for Contract Forces on CT DOC Facilities.

3.4.2 *NEW:* All Bidders for Projects at a CT DOC Facility: Prior to the Pre-Bid Meeting, all Bidders shall download the "Security Background Questionnaire" from the CT DOC website (www.ct.gov/doc , under "Forms"), complete and submit the form as directed, and obtain approval, otherwise admission to the Pre-Bid Meeting will be denied. It is recommended that the approved form be brought as evidence of approval to attend the Pre-Bid Meeting.

3.5 Affirmative Action Plan & Employment Information Form (DAS-45): Apparent Low Bidder

3.5.1 For Projects greater than \$500,000 and/or Firms with 50 or more employees, the Apparent Low Bidder shall submit the Firm's Affirmative Action Plan and Employment Information Form (DAS-45) to CHRO within fifteen (15) calendar days after receipt of the "Request for the *Affirmative Action Plan and Employment Information Form* Letter" from DAS/CS. See **Section 00 73 38 Commission on Human Rights and Opportunities/ Contract Compliance Regulations**.

3.5.2 The Apparent Low Bidder shall submit a copy of the Transmittal Letter to the DAS/CS Office of Legal Affairs, Policy, and Procurement within fifteen (15) calendar days after receipt of the "Request for the *Affirmative Action Plan and Employment Information Form* Letter" from DAS/CS.

| | |
|---|--|
| 3.6 Prevailing Wage: Apparent Low Bidder | |
| 3.6.1 | The Apparent Low Bidder shall submit the “ Contractor’s Wage Certification Form ” to CT Department of Labor (CT DOL) within fifteen (15) calendar days after receipt of the “Request for the <i>Affirmative Action Plan and Employment Information Form</i> Letter” from DAS/CS. See Section 00 73 44 Prevailing Wage Rates/Contractor’s Wage Certification/Payroll Certification of this Project Manual. |
| 3.6.2 | Each contractor who is awarded a contract on or after October 1, 2002 shall be subject to provisions of C.G.S. § 31-53, as revised . See Section 00 73 44 Prevailing Wage Rates/Contractor’s Wage Certification/Payroll Certification of this Project Manual. |
| 3.6.3 | Annual Adjustment Of Prevailing Wage Rates: In determining bid price, consideration should be given to C.G.S. § 31-53 and 31-55a , as revised, regarding annual adjustment of prevailing wage rates . Annual adjustments of prevailing wage rates will not be considered a matter for a contract amendment. |
| 3.7 NEW PROCESS: General Permit for the Discharge of Stormwater & Dewatering Wastewaters from Construction Activities: Apparent Low Bidder | |
| 3.7.1 | All DAS/CS construction projects disturbing one or more total acres of land area on a site regardless of project phasing must file a Department of Energy and Environmental Protection (DEEP) <i>General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (DEEP-WPED-GP-015)</i> (“Construction Stormwater General Permit”) registration and Stormwater Pollution Control Plan (SPCP) with the DEEP. The DAS/CS Architect/Engineer (A/E) shall be responsible for registering the Construction Stormwater General Permit and SPCP through the online DEEP ezFile Portal prior to bidding. |
| 3.7.2 | Once the Apparent Low Bidder is under contract with DAS/CS, and prior to the commencement of any construction activities, the Apparent Low Bidder (“Contractor”) shall be required to provide the necessary information from all applicable contractors and/or subcontractors working on the Project to the DAS/CS A/E in order to finalize the SPCP and transfer the Construction Stormwater General Permit obligations to the Contractor. |
| 3.7.3 | All Contractors and Subcontractors listed on the SPCP shall be required to sign the SPCP “Contractor Certification Statement” and License Transfer Form prior to commencement of any construction activity. |
| 3.8 Section 00 52 73 Subcontract Agreement Forms: Apparent Low Bidder | |
| 3.8.1 | The Apparent Low Bidder shall submit a completed Section 00 52 73 Subcontract Agreement Form of this Project Manual for each Named Subcontractor within ten (10) Business Days after receipt of the “Letter of Intent” from DAS/CS. This information shall be considered as part of the Bid Proposal Form and failure to comply with any portion of this requirement may cause rejection of the bid. |
| 3.8.2 | Each Named Subcontractor shall be the matter of a Subcontract as required by C.G.S. § 4b-96 . |
| 3.9 Non-Resident Contractors and Taxation: Apparent Low Bidder | |
| 3.9.1 | Nonresident contractors must comply with the provisions C.G.S. § 12-430 (7), Procedures for Nonresident Contractors , and the regulations established pursuant to that section. See Section 00 92 30 Procedures Regarding Taxation for Nonresident General/Prime Contractor and Subcontractors of this Project Manual for additional details. |
| 3.9.2 | Apparent Low Bidder who is a Nonresident Contractor: Within ten (10) business days after receipt of the “ Letter of Intent ” from DAS/CS, a certificate(s) from DRS must be provided which evidences that C.G.S. §12-430 for non-resident contractors has been met. As described in Section 00 92 30 “Procedures Regarding Taxation for Nonresident General/Prime Contractor and Subcontractors”, Verified Nonresident General/Prime Contractors must submit a copy of their “ Notice of Verified Status ” (Verification Letter) from DRS. Unverified Nonresident General/Prime Contractors must submit a copy of Form AU-965 “Acceptance of Surety Bond” from DRS. |
| 3.10 Certificate of Legal Existence: Apparent Low Bidder | |
| 3.10.1 | A corporation that is awarded the contract must comply with the laws of this State regarding the procurement of a certificate of authority to transact business in this State from the Secretary of the State . A “ Certificate of Legal Existence ” which is not older than ninety (90) calendar days from the date of the contract signing must be filed with the DAS/CS Office of Legal Affairs, Policy, and Procurement within ten (10) business days after receipt of the “Letter of Intent” from DAS/CS. |

3.11 State Election Enforcement Commission (SEEC) Form 10: Apparent Low Bidder

3.11.1 The **Apparent Low Bidder** shall submit a **State Election Enforcement Commission's (SEEC) Form 10** "Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations" within **ten (10) business days after** receipt of the "Letter of Intent" from DAS/CS for contracts with a value of \$50,000 or more.

3.11.2 Pursuant to C.G.S. § 9-612, as revised, a State Contract means an agreement or contract with the state or any state agency or any quasi-public agency having a value in a calendar year of **\$50,000** or more, or a combination or series of such **agreements** or **contracts** having a value of **\$100,000** or more, the **authorized signatory** to this **submission** in response to the State's solicitation expressly **acknowledges receipt** of, and must submit **in writing**, the **SEEC Form 10 notice** advising prospective state contractors of the state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the **notice**.

3.11.3 For instructions on how to download "**SEEC Form 10**", go to the SEEC Homepage (www.ct.gov/seec); click on "Forms" at the top of the page; click on "Contractor Reporting Forms"; click on "SEEC Form 10" and follow the directions.

3.12 OSHA Training Course: Successful Bidder

3.12.1 Pursuant to **C.G.S. §. 31-53b (a)**, as revised, each contract entered into for the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public building project by the state or any of its agents, or by any political subdivision of the state or any of its agents, where the total cost of all work to be performed by all contractors and subcontractors in connection with the contract is at least **one hundred thousand dollars (\$100,000)**, shall contain a provision requiring that, not later than **thirty (30) days** after the date such contract is awarded, **each contractor furnish proof to the Labor Commissioner** that all employees performing manual labor on or in such public building, pursuant to such contract, have completed a **course of at least ten (10) hours** in duration in **construction safety and health** approved by the federal Occupational Safety and Health Administration or, in the case of telecommunications employees, have completed at **least ten (10) hours** of training in accordance with 29 CFR 1910.268.

4.0 Nondiscrimination and Affirmative Action

This contract is subject to Federal and state laws, including Title VII of the 1964 Civil Rights Act, 42 U.S.C. § 2000e-2(a)(1), and the Connecticut Fair Employment Practices Act, C.G.S. §46a-60 et seq., prohibit various forms of discrimination and illegal harassment in employment.

4.1 Nondiscrimination and Affirmative Action Provisions:

4.1.1 This section is inserted in connection with C.G.S. § 4a-60, as revised.

4.1.2 References in this section to "contract" **shall** mean this Contract and references to "contractor" **shall** mean the Contractor/Bidder.

4.1.3 **C.G.S. § 4a-60, as revised:**

(a) Every contract to which the state or any political subdivision of the state other than a municipality is a party shall contain the following provisions:

(1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the state of Connecticut; and the contractor further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such contractor that such disability prevents performance of the work involved;

(2) The contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the commission;

(3) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the commission advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

- (4) The contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to sections 46a-56, 46a-68e and 46a-68f; and
- (5) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor as relate to the provisions of this section and section 46a-56.
- (b) If the contract is a public works contract, the contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works project.
- (c) (1) Any contractor who has one or more contracts with the state or a political subdivision of the state that is valued at less than fifty thousand dollars for each year of the contract shall provide the state or such political subdivision of the state with a written or electronic representation that complies with the nondiscrimination agreement and warranty under subdivision (1) of subsection (a) of this section, provided if there is any change in such representation, the contractor shall provide the updated representation to the state or such political subdivision not later than thirty days after such change.
- (2) Any contractor who has one or more contracts with the state or a political subdivision of the state that is valued at fifty thousand dollars or more for any year of the contract shall provide the state or such political subdivision of the state with any one of the following:
 - (A) Documentation in the form of a company or corporate policy adopted by resolution of the board of directors, shareholders, managers, members or other governing body of such contractor that complies with the nondiscrimination agreement and warranty under subdivision (1) of subsection (a) of this section;
 - (B) Documentation in the form of a company or corporate policy adopted by a prior resolution of the board of directors, shareholders, managers, members or other governing body of such contractor if (i) the prior resolution is certified by a duly authorized corporate officer of such contractor to be in effect on the date the documentation is submitted, and (ii) the head of the agency of the state or such political subdivision, or a designee, certifies that the prior resolution complies with the nondiscrimination agreement and warranty under subdivision (1) of subsection (a) of this section; or

4.1.3 - C.G.S. § 4a-60, as revised: (continued)

- (C) Documentation in the form of an affidavit signed under penalty of false statement by a chief executive officer, president, chairperson or other corporate officer duly authorized to adopt company or corporate policy that certifies that the company or corporate policy of the contractor complies with the nondiscrimination agreement and warranty under subdivision (1) of subsection (a) of this section and is in effect on the date the affidavit is signed.
- (3) Neither the state nor any political subdivision shall award a contract to a contractor who has not provided the representation or documentation required under subdivisions (1) and (2) of this subsection, as applicable. After the initial submission of such representation or documentation, the contractor shall not be required to resubmit such representation or documentation unless there is a change in the information contained in such representation or documentation. If there is any change in the information contained in the most recently filed representation or updated documentation, the contractor shall submit an updated representation or documentation, as applicable, either (A) not later than thirty days after the effective date of such change, or (B) upon the execution of a new contract with the state or a political subdivision of the state, whichever is earlier. Such contractor shall also certify, in accordance with subparagraph (B) or (C) of subdivision (2) of this subsection, to the state or political subdivision, not later than fourteen days after the twelve-month anniversary of the most recently filed representation, documentation or updated representation or documentation, that the representation on file with the state or political subdivision is current and accurate.
- (d) For the purposes of this section, "contract" includes any extension or modification of the contract, "contractor" includes any successors or assigns of the contractor, "marital status" means being single, married as recognized by the state of Connecticut, widowed, separated or divorced, and "mental disability" means one or more mental disorders, as defined in the most recent edition of the American Psychiatric Association's "Diagnostic and Statistical Manual of Mental Disorders", or a record of or regarding a person as having one or more such disorders. For the purposes of this section, "contract" does not include a contract where each contractor is (1) a political subdivision of the state, including, but not limited to, a municipality, (2) a quasi-public agency, as defined in section 1-120, (3) any other state, as defined in section 1-267, (4) the federal government, (5) a foreign government, or (6) an agency of a subdivision, agency, state or government described in subparagraph (1), (2), (3), (4) or (5) of this subsection.
- (e) For the purposes of this section, "minority business enterprise" means any small contractor or supplier of materials fifty-one per cent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) Who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise, and (3) who are members of a minority, as such term is defined in subsection (a) of section 32-9n; and "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations. "Good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements.
- (f) Determination of the contractor's good faith efforts shall include but shall not be limited to the following factors: The contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.

- (g) The contractor shall develop and maintain adequate documentation, in a manner prescribed by the commission, of its good faith efforts.
- (h) The contractor shall include the provisions of subsections (a) and (b) of this section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the state and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the commission. The contractor shall take such action with respect to any such subcontract or purchase order as the commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with section 46a-56; provided, if such contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the commission, the contractor may request the state of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the state and the state may so enter.

4.2 Nondiscrimination Provisions Regarding Sexual Orientation:

4.2.1 This section is inserted in connection with C.G.S. § 4a-60a, as revised.

4.2.2 References in this section to "contract" **shall** mean this Contract and references to "contractor" **shall** mean the Contractor/Bidder.

4.2.3 C.G.S. § 4a-60a, as revised:

- (a) Every contract to which the state or any political subdivision of the state other than a municipality is a party shall contain the following provisions:
 - (1) The contractor agrees and warrants that in the performance of the contract such contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or of the state of Connecticut, and that employees are treated when employed without regard to their sexual orientation;
 - (2) The contractor agrees to provide each labor union or representative of workers with which such contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;
 - (3) The contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said commission pursuant to section 46a-56; and
 - (4) The contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the contractor which relate to the provisions of this section and section 46a-56.
- (b) (1) Any contractor who has one or more contracts with the state or a political subdivision of the state that is valued at less than fifty thousand dollars for each year of the contract shall provide the state or such political subdivision of the state with a written representation that complies with the nondiscrimination agreement and warranty under subdivision (1) of subsection (a) of this section.
- (2) Any contractor who has one or more contracts with the state or a political subdivision of the state that is valued at fifty thousand dollars or more for any year of the contract shall provide the state or such political subdivision of the state with any of the following:
 - (A) Documentation in the form of a company or corporate policy adopted by resolution of the board of directors, shareholders, managers, members or other governing body of such contractor that complies with the nondiscrimination agreement and warranty under subdivision (1) of subsection (a) of this section;
 - (B) Documentation in the form of a company or corporate policy adopted by a prior resolution of the board of directors, shareholders, managers, members or other governing body of such contractor if (i) the prior resolution is certified by a duly authorized corporate officer of such contractor to be in effect on the date the documentation is submitted, and (ii) the head of the agency of the state or such political subdivision, or a designee, certifies that the prior resolution complies with the nondiscrimination agreement and warranty under subdivision (1) of subsection (a) of this section; or
 - (C) Documentation in the form of an affidavit signed under penalty of false statement by a chief executive officer, president, chairperson or other corporate officer duly authorized to adopt company or corporate policy that certifies that the company or corporate policy of the contractor complies with the nondiscrimination agreement and warranty under subdivision (1) of subsection (a) of this section and is in effect on the date the affidavit is signed.
- (3) Neither the state nor any political subdivision shall award a contract to a contractor who has not provided the representation or documentation required under subdivisions (1) and (2) of this subsection, as applicable. After the initial submission of such representation or documentation, the contractor shall not be required to resubmit such representation or documentation unless there is a change in the information contained in such representation or documentation. If there is any change in the information contained in the most recently filed representation or updated documentation, the contractor shall submit an updated representation or documentation, as applicable, either (A) not later than thirty days after the effective date of such change, or (B) upon the execution of a new contract with the state or a political subdivision of the state, whichever is earlier.

Such contractor shall also certify, in accordance with subparagraph (B) or (C) of subdivision (2) of this subsection, to the state or political subdivision, not later than fourteen days after the twelve-month anniversary of the most recently filed representation, documentation or updated representation or documentation, that the representation on file with the state or political subdivision is current and accurate.

- 4) For the purposes of this section, "contract" includes any extension or modification of the contract, and "contractor" includes any successors or assigns of the contractor. For the purposes of this section, "contract" does not include a contract where each contractor is (A) a political subdivision of the state, including, but not limited to, a municipality, (B) a quasi-public agency, as defined in section 1-120, (C) any other state, as defined in section 1-267, (D) the federal government, (E) a foreign government, or (F) an agency of a subdivision, agency, state or government described in subparagraph (A), (B), (C), (D) or (E) of this subdivision.
- (c) The contractor shall include the provisions of subsection (a) of this section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the state and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the commission. The contractor shall take such action with respect to any such subcontract or purchase order as the commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with section 46a-56; provided, if such contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the commission, the contractor may request the state of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the state and the state may so enter.

End of Section
00 21 13 Instructions to Bidders

Pre-Bid Meeting Agenda:

DAS | Construction Services | Office of Legal Affairs, Policy, and Procurement

1.0 Pre-Bid Meeting:

1.1 The Owner will conduct a Pre-Bid Meeting.
For the Pre-Bid Meeting Date, Time, and Location see Section 00 11 16 Invitation To Bid for this Specific Bid.

1.2 Attendance:

| | | |
|--------------|---------------------------------------|---|
| 1.2.1 | General Contractor: | Attendance at the Pre-Bid Meeting is MANDATORY . At the Pre-Bid Meeting, all prospective bidders shall <i>sign</i> his or her name on the official roster and <i>list</i> the name and address of the company he or she represents. For MANDATORY Pre-Bid Meetings, this shall be done no later than the designated start time of the Pre-Bid Meeting. Prospective bidders are advised to register early as no attendee will be allowed to register <i>after</i> the advertised start time. Bids submitted by contractors who have <i>not properly</i> registered and attended the MANDATORY Pre-Bid Meeting <i>shall be rejected</i> as non-responsive . |
| 1.2.2 | Subcontractors: | Attendance at the Pre-Bid Meeting is recommended. |
| 1.2.3 | Pre-Bid Meeting Sign-in Sheet: | It is MANDATORY that all attendees sign the Pre-Bid Meeting Sign-in Sheet . |

1.3 Site/Facility Visit or Walkthrough: Please **do not** make any Site/Facility Visits without notifying the DAS/CS Project Manager prior to your visit.

- 1.3.1** A Site/Facility Visit or Walkthrough is scheduled for the Pre-Bid Meeting
- 1.3.2** A Site/Facility Visit or Walkthrough is **NOT** scheduled for the Pre-Bid Meeting

1.4 Bidder Questions:

1.4.1 Submit **written** questions to be discussed at the **Pre-Bid Meeting** a **minimum of two (2) Calendar Days prior** to **Pre-Bid Meeting date**. See the **Invitation to Bid** for instructions on submitting questions.

IMPORTANT NOTE: In accordance with DAS Regulations, **no** participants in any Selection, Proposal, or Bidding process, including User Agency representative(s), shall communicate with any potential Offeror prior to, during, or upon conclusion of the entire Selection, Proposal, or Bidding procedure, with the exception of information necessary to complete the administrative steps of the Selection process.

2.0 Pre-Bid Meeting Agenda:

The Pre-Bid Meeting Agenda will include a review of topics, **as applicable to the Project**, which may affect proper preparation and submittal of bids, including, but not limited to, the following:

2.1 Introduction of Participants:

| | |
|--------------|--|
| 2.1.1 | Architect/Engineer: Friar Architecture Inc. |
| 2.1.2 | CA: N/A |
| 2.1.3 | DAS Representative: Ronald J. Wilfinger |
| 2.1.4 | Agency Representative: Joeseeph Danao |

2.0 Pre-Bid Meeting Agenda (continued):

| | |
|------------|---|
| 2.2 | Project Summary: |
| 2.2.1 | Summary of Work: See General Requirements Section 01 11 00 |
| 2.2.2 | Temporary Facilities and Controls: See General Requirements Section 01 50 00 |
| 2.2.3 | Work Sequence: See General Requirements Section 01 11 00 |
| 2.2.4 | Contractor Use of Premises: See General Requirements Section 01 11 00 |
| 2.2.5 | Project Schedule |
| 2.2.6 | Contract Time |
| 2.2.7 | Liquidated Damages: See General Conditions Section 00 73 13, Articles 1 and 8, and 00 41 00 Bid Proposal Form. |

| | |
|------------|--|
| 2.3 | Procurement and Contracting Requirements: |
| 2.3.1 | Section 00 11 16 – Invitation to Bid |
| 2.3.2 | Section 00 21 13 – Instructions to Bidders |
| 2.3.3 | Section 00 41 00 – Bid Proposal Form |
| 2.3.4 | Section 00 41 10 – Bid Package Submittal Requirements |
| 2.3.5 | Section 00 30 00 – General Statements for Available information |
| 2.3.6 | Division 50 – Project-Specific Available Information |
| 2.3.7 | Bonding |
| 2.3.8 | Insurance |
| 2.3.9 | Bid Security |
| 2.3.10 | Notice of Award |

| | |
|------------|---|
| 2.4 | Communication During Bidding Period: |
| 2.4.1 | Obtaining Bid Documents |
| 2.4.2 | Access to DAS Website, BizNet, and State Contracting Portal |
| 2.4.3 | Bidder's Requests for Information: See General Requirements Sections 01 26 00 |
| 2.4.4 | <p>Substitution Procedures (Prior to Bid): See General Requirements Section 01 25 00 & General Conditions Section 00 73 13, Article 15.</p> <p>The Owner will consider Pre-Bid Equals or Substitutions Requests, if made fourteen (14) Calendar Days prior to the Bid Due Date. The information on all materials shall be consistent with the information herein.</p> |
| 2.4.5 | <p>Substitutions following Contract Award: See General Requirements Section 01 25 00 & General Conditions Section 00 73 13, Article 15.</p> <p>Subject to the Architect or Engineer's determination, if the material or equipment is Equal to the one specified or pre-qualified and the DAS/CS Project Manager's approval of such determination, Substitution of Material or Equipment may be allowed after the Letter of Award is issued, as specified in the Conditions Section 00 73 13, Article 15.</p> |
| 2.4.6 | Addenda Procedures: See Item No. 2.7 of this form |

2.0 Pre-Bid Meeting Agenda (continued):

2.5 Contract Considerations:

- 2.5.1 **Allowances:** See General Requirements Section 01 20 00
- 2.5.2 **Unit Prices:** See General Requirements Section 01 20 00
- 2.5.3 **Supplemental Bid:** See General Requirements Section 01 23 13 and 00 41 00 Bid Proposal Form.

2.6 Separate Contracts:

- 2.6.1 **Work by Owner**
- 2.6.2 **Work of Other Contracts**

2.7 Post Pre-Bid Meeting Addendum:

- 2.7.1 **No Interpretations** of the meaning of the plans, specifications or other contract documents will be made orally at any time. Every bidder **request** for such interpretation **shall** be in writing to the awarding authority and to be given consideration **shall** be received at least **fourteen (14)** Calendar Days **prior** to the Bid Due Date. Any and all such **interpretations** and any **supplemental instructions** will be in the form of written **addenda** to the specifications which, *if* issued, will be posted on the State Contracting Portal.
- 2.7.2 **Other Bidder Questions**

2.8 Other Agenda Topics and Notes:

- 2.8.1
- 2.8.2

3.0 Pre-Bid Meeting Minutes:

3.1 Recording and Distribution of Pre-Bid Meeting Minutes:

- 3.1.1 The **Owner** is responsible for conducting the Pre-Bid Meeting and will record and distribute meeting minutes to attendees and others known by the issuing office to have received a complete set of Procurement and Contracting Documents.

3.2 Pre-Bid Meeting Minutes as “Available Information”

- 3.2.1 Minutes of the Pre-Bid Meeting are issued as “Available Information” and **do not** constitute a modification to the Procurement and Contracting Documents. **Modifications to the Procurement and Contracting Documents are issued by written Addendum only.**

3.3 Pre-Bid Meeting Sign-in Sheet:

- 3.3.1 Minutes will include the list of meeting attendees.

3.4 List of Planholders:

- 3.4.1 Minutes will include the list of planholders.

00 25 13 Pre-Bid Meeting Agenda

00 30 00 GENERAL STATEMENTS FOR AVAILABLE INFORMATION

NOT USED

- A. **Summary:** This Section is **not** a Bidding Document, but directs Bidders to **Division 50 00 00 Project-Specific Available Information** that provides project-specific information available for review by Bidders.
- B. **Bidder Responsibility:** The Bidder is responsible for information, including but not limited to, any interpretations and opinions of information contained in any plans, reports, evaluations, and logs, or shown on any drawings, or indicated on any drawings. **Division 50 00 00 Project-Specific Available Information** is provided to Bidders for their use in the preparation of a Bid.
- C. **Measurement:** **Division 50 00 00 Project-Specific Available Information** **shall** be utilized for determination of payment for the Work during construction of the project.
- D. **Payment:** **No** separate payment will be made for **any** Work under **Division 50 00 00 Project-Specific Available Information**.
- E. **Related Sections:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section. **See Division 50 00 00 Project-Specific Available Information** for information that is available for this Project.
- F. Please read the following **General Statement(s)** that describe the type of project-specific information that is available in **Division 50 00 00 Project-Specific Available Information**:

| 00 30 00 | General Statements For Available Information Table Of Contents | Not Used |
|----------|---|-------------------------------------|
| 00 30 10 | General Statement for Existing Conditions Survey | <input checked="" type="checkbox"/> |
| 00 30 20 | General Statement for Environmental Assessment Information | <input checked="" type="checkbox"/> |
| 00 30 30 | General Statement for Hazardous Building Materials Inspection and Inventory | <input type="checkbox"/> |
| 00 30 40 | General Statement for Subsurface Geotechnical Report | <input checked="" type="checkbox"/> |
| 00 30 50 | General Statement for Elevator Agreement | <input checked="" type="checkbox"/> |
| 00 30 60 | General Statement for FM Global Checklist for Roofing Systems | <input checked="" type="checkbox"/> |
| 00 30 70 | General Statement for "Statement of Special Inspections" | <input checked="" type="checkbox"/> |
| 00 30 80 | General Statement for Additional Information | <input checked="" type="checkbox"/> |

| | | |
|-----------------|--|--|
| 00 30 10 | GENERAL STATEMENT FOR EXISTING CONDITIONS SURVEY | Not Used <input checked="" type="checkbox"/> |
| 00 30 20 | GENERAL STATEMENT FOR ENVIRONMENTAL ASSESSMENT INFORMATION | Not Used <input checked="" type="checkbox"/> |
| 00 30 30 | GENERAL STATEMENT FOR HAZARDOUS BUILDING MATERIALS INSPECTION AND INVENTORY | Not Used <input type="checkbox"/> |

A. Related Documents:

- Section 01 20 00 Contract Considerations
- Section 01 35 16 Alteration Project Procedures
- Section 02 41 13 Selective Demolition
- Section 02 81 00 Transport and Disposal of Hazardous Materials
- Section 02 82 13 Asbestos Abatement
- Section 02 83 19 Lead Paint Awareness

B. Description of Work:

1. Work Involving Asbestos Containing Material (ACM):

- 1.1 Testing for asbestos has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair. Results of the asbestos testing are summarized in **Division 50 00 00 Project-Specific Available Information, Section 50 30 00 Hazardous Building Materials Inspection and Inventory** at the end of the Technical Specification Sections.
- 1.2 Under no circumstance shall this information be the sole means used by the Contractor for determining the extent of asbestos. The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.

2. Work Involving Lead-Based Paint (LBP):

- 2.1 If this facility was constructed **prior to 1978** it is likely to have painted surfaces containing lead-based paint (LBP).
- 2.2 Testing for lead-based paint has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair. Results of the LBP testing are summarized in **Division 50 00 00 Project-Specific Available Information, Section 50 30 00 Hazardous Building Materials Inspection and Inventory** at the end of the Technical Specification Sections. Under no circumstance shall this information be the sole means used by the Contractor for determining the extent of LBP.
- 2.3 The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.

3. Work Involving Polychlorinated Biphenyls (PCBs) in Building Materials:

- 3.1 If this facility was constructed **between 1950 and 1978** it is likely to have caulk and/or glazing containing PCBs.
- 3.2 Testing for PCBs has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair. Results of the PCB testing are summarized in **Division 50 00 00 Project-Specific Available Information, Section 50 30 00 Hazardous Building Materials Inspection and Inventory** at the end of the Technical Specification Sections.
- 3.3 The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.

4. Work Involving Mold:

- 4.1 Testing for Mold has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair. Results of the Mold testing are summarized in **Division 50 00 00 Project-Specific Available Information, Section 50 30 00 Hazardous Building Materials Inspection and Inventory** at the end of the Technical Specification Sections.
- 4.2 The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.

5. Work Involving Hazardous Materials, Wastes, and Items and Universal Wastes (Including Products Containing Persistent Bioaccumulative Toxic Chemicals (PBT's)):

- 5.1 A **Hazardous Materials, Wastes, and Items and Universal Wastes** Inventory for products containing Persistent Bioaccumulative Toxic Chemicals (PBTs) such as Polychlorinated Biphenols (PCBs), Di-2-ethylhexyl Phthalate (DEHP), and Mercury, has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair. Results of the inventory are summarized in **Division 50 00 00 Project-Specific Available Information, Section 50 30 00 Hazardous Building Materials Inspection and Inventory** at the end of the Technical Specification Sections.
- 5.2 The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.
- 5.3 Examples of Hazardous Materials, Wastes, and Items and Universal Wastes include, but are not limited to, fluorescent light fixtures and exit signs, ballasts, high-intensity discharge (HID) lamps, certain types of construction products containing vinyl, mercury containing electrical switches, gauges, and thermostats; PCB Capacitors, refrigerants, pressurized cylinders, smoke/carbon dioxide detectors, used electronics, batteries, transformer/hydraulic fluids/oils, and miscellaneous household hazardous waste.
- 5.4 For the purposes of this subsection, **PCB's in building material such as caulk and glazing or any other type of material not listed above is not applicable to this subsection.**

00 30 40 GENERAL STATEMENT FOR SUBSURFACE GEOTECHNICAL REPORT Not Used

00 30 50 GENERAL STATEMENT FOR ELEVATOR AGREEMENT Not Used

A. Related Documents:

- 1. **Division 14: Section 14 01 20.71 Elevator Rehabilitation**

B. Description of Work:

1. Elevator:

- 1.1 The Work of this Project includes an Elevator(s).

2. Elevator Agreement:

- 2.1 This Project contains elevator specifications that mandate that the general contractor must obtain a signed copy of the Elevator Agreement from the elevator manufacturer prior to their submittal of elevator shop drawings for review. Failure to receive a signed agreement will result in an automatic rejection of the submittal.
- 2.2 The Elevator Agreement is located in **Division 50 00 00 Project-Specific Available Information, Section 50 50 00 Elevator Agreement** at the end of the Technical Specification Sections.

00 30 60 GENERAL STATEMENT FOR FM GLOBAL CHECKLIST FOR ROOFING SYSTEMS Not Used

00 30 70 GENERAL STATEMENT FOR "STATEMENT OF SPECIAL INSPECTIONS" Not Used

00 30 80 GENERAL STATEMENT FOR ADDITIONAL INFORMATION Not Used

End of Section
00 30 00 General Statements for Available Information

Certificate (of Authority)

DAS Construction Services Project No.: _____

I _____, _____
(Signer's Name)¹ (Signer's Title)

of _____, an entity lawfully organized and existing under the laws
(Name of Entity)

of _____, do hereby certify that the following is a true and correct
(Name of State or Commonwealth)

copy of a resolution adopted on the _____ day of _____, 20 _____ by the governing body of
(Day)² (Month)² (Year)²

_____, in accordance with all of its documents of governance and
(Name Of Entity)

management and the laws of _____ and further certify that such resolution has not
(Name of State or Commonwealth)

been modified, rescinded or revoked, and is at present in full force and effect.

RESOLVED: that _____, _____
(Name of Signer of Contract Documents)³ (Title of Signer of Contract Documents)³

of _____ is empowered and authorized, on behalf of the entity,
(Name of Entity)

to execute and deliver contracts and amendments thereto, and all documents required by the Governor, the Connecticut Department of Administrative Services, the Connecticut State Properties Review Board and the Office of the Attorney General associated with such contracts and amendments.

IN WITNESS WHEREOF, the undersigned has executed this certificate this _____ day of _____, 20 _____.
(Day)⁴ (Month)⁴ (Year)⁴

(Signature)

(Print Name)

(Title)

Reference Notes:

- 1 The signer of this certificate must be someone *other than* the signer of the contract documents *except for* a sole managing member of an LLC or the sole officer or sole principal of a corporation. *If* the signer is a sole managing member of an LLC, *then* along with this certificate the signer must provide a letter on company letterhead that indicates the signer is a sole member and managing member. If the signer is the sole officer or sole principal of a corporation, then the signer must provide with the certificate a letter on company letterhead setting forth this fact.
- 2 This date must be on or before the **date of signing** of the Bid Proposal (or Contract).
- 3 This person shall sign the Contract and other required documents.
- 4 This date must be on or after the **date of signing** of the Bid Proposal (or Contract).

For Your Information:

Certificate (of Authority)

All Bidders:

Complete page 1, print, sign, and scan to PDF. Upload the PDF form to BizNet.

What the **Certificate** is saying is that the organization authorized the signatory to sign the pertinent **documents other than** the Certificate (of Authority) and that, as of the date of **execution** of the CERTIFICATE (i.e., the date set forth in the "In Witness Whereof" blanks) there has been no change in that authorization.

Instructions For Completing The Certificate (of Authority)

The Certificate (of Authority) to Accompany the Bid Proposal Form:

1. 1st Paragraph:

- 1.1 First, enter the name and title of the individual signing the Certificate (of Authority).
- 1.2 Second, enter the legal name of the entity (exactly as it is shown on the Secretary of State registry).
- 1.3 Third, enter the name of the state or commonwealth the entity is registered in.
- 1.4 Fourth, enter the date the resolution was adopted by the governing body. This **date** is **on or before** the date the **Bid Proposal** is signed.
- 1.5 Fifth, enter the name of the state or commonwealth the entity is registered in.

2. 2nd Paragraph:

- 2.1 First, enter the name and title of the individual signing bid documents for the entity.
- 2.2 Second, enter the legal name of the entity (exactly as it is shown on the Secretary of State registry).

3. Last Paragraph:

- 3.1 Enter the **Witness Date**¹. This date will likely be the date of execution of the **Bid Proposal form**.

¹ This Witness Date Should Not Be Before The Date Of Execution Of The Bid Proposal.

The Certificate (of Authority) to Accompany the Contract:

1. 1st Paragraph:

- 1.1 First, enter the name and title of the individual signing the Certificate (of Authority).
- 1.2 Second, enter the legal name of the entity (exactly as it is shown on the Secretary of State registry).
- 1.3 Third, enter the name of the state or commonwealth the entity is registered in.
- 1.4 Fourth, enter the date the resolution was adopted by the governing body. This **date** is **on or before** the date the **Contract** is signed.
- 1.5 Fifth, enter the name of the state or commonwealth the entity is registered in.

2. 2nd Paragraph:

- 2.1 First, enter the name and title of the individual signing contract documents for the entity.
- 2.2 Second, enter the legal name of the entity (exactly as it is shown on the Secretary of State registry).

3. Last Paragraph:

- 3.1 Enter the **Witness Date**¹. This date will likely be the date of execution of the **Contract**.

¹ This Witness Date Should Not Be Before The Date Of Execution Of The Contract.

End of Section 00 40 14 Certificate (of Authority)

State of Connecticut Department of Administrative Services (DAS) Contractor Prequalification Forms

IMPORTANT INFORMATION – PLEASE READ
For Projects with estimated Construction Costs greater than \$500,000

WHEN YOU SUBMIT A BID YOU MUST INCLUDE WITH YOUR OTHER DOCUMENTS THE FOLLOWING:

1. A copy of your “DAS Contractor Prequalification Certificate”.

This document may be found at the [DAS Contractor Prequalification Search](#):

Go to the DAS Homepage (www.ct.gov/DAS), click on “Doing Business with the State”, click on “Apply for DAS Construction Contractor Prequalification”, click on “How To”, and then click on “Search Prequalified Companies”.

To search for your company, just type in your company name and click on “Go” to pull up your company. When your company information appears you will notice that your company name is shown as a blue link. Just click on this link and it will take you to your Prequalification Certificate.

2. A “DAS Update (Bid) Statement”.

This document may be found and completed on-line at the [Bid Statement Online Application](#).

Go to the DAS Homepage (www.ct.gov/DAS), click on “Doing Business with the State”, click on “Apply for DAS Construction Contractor Prequalification”, click on “Documents/Forms”, click on “Update Bid Statement”, and then click on “Bid Statements”.

Follow instructions in the [“Instructions for Prequalification”](#).

Go to the DAS Homepage (www.ct.gov/DAS), click on “Doing Business with the State”, click on “Apply for DAS Construction Contractor Prequalification”, click on “How To”, and then click on “View Instructions for Prequalification”.

Should you have any questions or concerns, please call (860) 713-5280.



» DAS Contractor Prequalification Certificate

Contractor Prequalification Company Information

Company: **Sample Corporation**

Address: 165 Capitol Avenue
 Hartford, CT 06106

Prequalification Contact: **John T. Reed**

Telephone: (860) 111-2222 **Fax:** (860) 111-3333

Email: jreed@samplecorp.com

Web Addr: www.samplecorp.com

Contractor Prequalification History

| Active Date | Expiration Date | Single Project | AWC |
|-------------|-----------------|-----------------|-----------------|
| Oct 8, 2004 | Oct 7, 2005 | \$20,000,000.00 | \$50,000,000.00 |

Prequalification Classification(s)

| Classification | Description |
|---|--|
| GENERAL BUILDING CONSTRUCTION (GROUP C) | The undertaking of general contracts for the construction of buildings (i.e. new construction, renovation, rehabilitation, alteration, addition, etc.). The contract must include a variety of construction practices and supervision of a minimum of three sub-trades. Includes buildings that are truly custom, requiring extensive detailing, or that have large amounts of integrated scientific or complex mechanical/electrical equipment in order for them to function. Examples include hospitals, chemistry buildings, special collections buildings, historic preservation to a landmark structure, and/or any other structure that is truly one of a kind within the State's inventory. |

Note: If you are prequalified for General Building Construction under Group C, you are automatically prequalified for Group A and Group B.

Prequalification Licenses

| License # | Trade | Active | Expire |
|-------------|-----------------------|-------------|--------------|
| 000009 | Asbestos Contractor | Sep 8, 2004 | Aug 31, 2005 |
| 900235 | Major Contractor | Jul 1, 2004 | Jun 30, 2005 |
| 667 Class A | Demolition Contractor | Apr 1, 2004 | Mar 31, 2005 |

This certificate prequalifies the named company to bid solely. It is not a statement of the company's capacity to perform a specific project. That responsibility lies with the awarding authority.

It is the Department of Administrative Services' (DAS) recommendation that all awarding authorities verify the above information by visiting the DAS website: <http://www.das.state.ct.us> - click on contractor prequalification (under the business section).

For information regarding the DAS Contractor Prequalification Program visit the above mentioned website or call (860) 713-5280.

[eProcurement](#) | [Business](#) | [Event Services](#) | [Jobs](#) | [Human Resources](#) | [Resource Director](#) | [News](#)

[CT.gov Home](#) | [About DAS](#) | [Contact DAS](#) | [Press Room](#) | [DAS Home](#) | [Quick Links](#) | [FAQ](#) | [Site Map](#)

The Department of Administrative Services. [Review our Privacy Policy.](#)
 All State disclaimers and permissions apply.
 Need to contact us? Send e-mail to das.webmaster@das.state.ct.us

Copyright ©2001, 2002, 2003, 2004 - Last Updated: Saturday, October 09, 2004

The software to view and print Adobe Acrobat documents (PDF Files) is available free from the Adobe website. To get a free copy of the software, click the "Get Acrobat" image.

State of Connecticut
Department of Administrative Services (DAS) Contractor Prequalification
Update Bid Statement
 (Statement to be included with the bid)

Public Act No. 04-141 - AN ACT REVISING PREQUALIFICATION REQUIREMENTS FOR STATE CONSTRUCTION CONTRACTS.

On and after October 1, 2004, each bid submitted for a contract shall include a copy of a prequalification certificate issued by the Commissioner of Administrative Services. The bid shall also be accompanied by an update statement in such form as the Commissioner of Administrative Services prescribes. The form for such update statement shall provide space for information regarding all projects completed by the bidder since the date the bidder's prequalification certificate was issued or renewed, all projects the bidder currently has under contract, including the percentage of work on such projects not completed, the names and qualifications of the personnel who will have supervisory responsibility for the performance of the contract, any significant changes in the bidder's financial position or corporate structure since the date the certificate was issued or renewed, any change in the contractor's qualification status, and such other relevant information as the Commissioner of Administrative Services prescribes. Any bid submitted without a copy of the prequalification certificate and an update statement shall be invalid.

| | | |
|--|----------------------|---|
| Name of Project that company | SAMPLE | |
| Project Number: | | |
| Name of Company: | | |
| FEIN: | | |
| Company Address: | | |
| Prequalification Contact and Telephone Number | | |
| Date of Prequalification with the DAS: | Single Limit: | Aggregate Work Capacity (AWC): |
| * This amount equals your company's AWC minus the Total \$ Amount of Work Remaining. | | * Remaining Aggregate Work Capacity: |

Please list all of your company's (100%) completed projects since date of Prequalification:
 (Please add additional page(s) if required)

| Name of Project | Owner of Project | Date Project Completed | Total Contract Amount |
|-----------------|------------------|------------------------|-----------------------|
| | | | |
| | | | |

(Please add additional page(s) if required. Please total the Work Remaining column)

| Name of Project | Owner of Project | Total Contract Amount | % Complete | Work Remaining (\$) |
|--|------------------|-----------------------|------------|---------------------|
| | | | | |
| | | | | |
| Total \$ Amount of Work Remaining → | | | | |

Please list the names and titles of the personnel who will have supervisory responsibility for the performance of the contract being bid on:
(Please add additional page(s) if required)

| Individual Name | Individual |
|-----------------|------------|
| SAMPLE | |
| | |
| | |
| | |
| | |

Have there been any other business organizations, which might affect your company's ability to successfully complete this contract?

Yes or No

If yes, please explain:

I, certify under penalty of law that all of the information contained in this Update Statement is true and accurate to the best of my knowledge as of the date below.

Signature

Date

It is the responsibility of the Awarding Authority to determine if any of the information provided above will impact the contractor's performance on this project.

The DAS' Contractor Prequalification Program can be reached at (860) 713-5280

Rev.12.22.2004

Bid Proposal Form

DAS ● Construction Services ● Office of Legal Affairs, Policy, and Procurement
 450 Columbus Boulevard, Suite 1302 ● Hartford, CT 06103

| | |
|--|---|
| Date and Time of Bid Opening: | See page 1 of Section 00 11 16 Invitation To Bid. |
| Instructions for On-Line Bidding: | Follow the instructions in 6001 Construction On-line Bidding Instructions , available for download from the DAS/CS Library (http://portal.ct.gov/DASCSLibrary) > 6000 Series – Bid Phase Forms. For questions, call 860-713-5794 or 860-713-5783. |

- Instructions for Completing This Bid Proposal Form:**
- **Download** and **save** the Bid Proposal Form to your computer. Close the form. Open your *saved* Bid Proposal Form and type required information in blue boxes. (Remember to keep saving to your computer.)
 - On your Word Toolbar, **click “View” then “Edit Document” or “Print Layout”** in order to edit the form.
 - When your Bid Proposal Form is complete, perform a final “save” to your computer! **Print ALL pages and sign** your Bid Proposal Form. **Scan ALL** pages of your Bid Proposal Form to **PDF**. Upload the **PDF** Bid Proposal Form to BizNet.
 - **Duly Authorized Signature:** A duly authorized representative of the Bidder or Bidder’s partnership, firm, corporation or business organization must sign the Bid Proposal Form.
 - **No Facsimile Signature** is permitted. **All information below** is to be filled in by the **Bidder**.
 - *If an Addendum is issued that **changes** the **Bid Proposal Form** then the **Revised Bid Proposal Form** (issued with the Addendum) **must** be uploaded instead.*
 - Upload to BizNet **only** the additional **Bid Package Documents** as described in **Table 1** of **Section 00 41 10 Bid Package Submittal Requirements**.
 - A signed and scanned **Certificate (of Authority), Section 00 40 14, must** be uploaded to Biznet **prior** to the date and time of the Bid Opening.
 - *Any **Bid Proposal Form** that has omitted or added items, altered the form, contains conditional, alternative, or obscure bids, or is submitted *without* the signature of the bidder or its authorized representative, **will be rejected**.*
 - See **Section 00 21 13 Instructions to Bidders** for additional information.

| 1.0 General Bid Proposal Information: | |
|--|---|
| Construction Costs: | Greater Than \$500,000 |
| Bidding Limited To : | Contractors Prequalified by DAS for General Building Construction (Group A) |
| Threshold Limits: (C.G.S. §29-276b) | This Project DOES NOT exceed Threshold Limits. |
| Set Aside Requirements: | SBE Subcontractors &/or Suppliers: 25%; MBE Subcontractors &/or Suppliers: 6.25% |
| Project Title: | DVA ADA Improvements – Bldgs. 2, 3 & 4 |
| Project Location: | 287 West Street Rocky Hill, CT |
| Project Number: | BI-C-291 |
| Pre-Bid Meeting: | See Section 00 11 16 Invitation to Bid and Section 00 25 13 Pre-Bid Meeting . |
| Plans and Specifications prepared by A/E: | Friar Architecture Inc., 21 Talcott Notch Road, Farmington, CT 06032 |

1.1 Commencement and Acceptance: (See Section 00 73 13 General Conditions, Article 4 - Commencement and Progress of Work and Article 1 - Definitions)

The Selected Bidder shall commence Work within **fourteen (14) Calendar Days** after receiving a “**Construction Start Date and Notice to Proceed**” by the Commissioner or authorized representative and continue for

| |
|-----|
| 365 |
| 90 |

Calendar Days for “**Substantial Completion**” of the project; and then continue

| |
|----|
| 90 |
|----|

Calendar Days for “**Acceptance**” of the Work.

1.2 Liquidated Damages: (See Section 00 73 13 General Conditions, Article 8 – Damages & Article 1 - Definitions)

1.2.1 Liquidated Damages – Substantial Completion:

The Selected Bidder shall be assessed \$

| |
|----------|
| 1,689.00 |
|----------|

 per **Calendar Day** beyond the date established for Substantial Completion of the Contract according to the **Contract Time** as defined in **Article 1.28 of Section 00 73 13 General Conditions**, and not otherwise excused or waived pursuant to the Contract Documents, as defined in **Article 1.23 of Section 00 73 13 General Conditions**.

1.2.2 Liquidated Damages – Acceptance:

The Selected Bidder shall be assessed \$

| |
|----------|
| 1,689.00 |
|----------|

 per **Calendar Day** beyond ninety (90) days after the date of said Substantial Completion that the Selected Bidder fails to achieve **Acceptance**, as defined in **Article 1.1 of Section 00 73 13 General Conditions** and not otherwise excused or waived as described above.

1.3 Bid Proposal Statements and Conditions: This **Bid Proposal Form** shall be submitted according to, and in compliance with, the foregoing and following statements, conditions, and/or information:

1.3.1 This Bid Proposal Form is submitted in accordance with Chapter 60 Construction And Alterations Of State Buildings, Part II Bidding And Contracts of the Connecticut General Statutes (C.G.S.), as amended, particularly C.G.S. § 4b-91(a)(5)(A) – (C), and pursuant to, and in compliance with, the **Invitation to Bid** (Section 00 11 16), the **Instructions to Bidders** (Section 00 21 13), the **Bid Package Submittal Requirements** (Section 00 41 10), and the **Contract** (Section 00 52 03).

1.3.2 The Bidder proposes to furnish the labor and/or materials, installed as required for the Project named and numbered on this **Bid Proposal Form**, submitted herein, furnishing all necessary equipment, machinery, tools, labor and other means of construction, and all materials specified in the manner and at the time prescribed strictly in accordance with the provisions of the **Contract** including, but not limited to, the specifications and/or drawings together with all **Addenda** issued by the Awarding Authority and received by the Bidder, prior to the scheduled **Date and Time of the Bid Opening** as stated on **page 1** of the **Invitation To Bid**, and in conformity with requirements of the Awarding Authority and any laws or Departmental regulations of the State of Connecticut or of the United States which may affect the same, for and in consideration of the price(s) stated on this **Bid Proposal Form**, hereof.

1.3.3 The Bidder acknowledges that the **Proposed Lump Sum Base Bid** submitted on this **Bid Proposal Form** includes all work indicated on the drawings and/or described in the specifications, except for the **Contingent Work** described in **Subsection 2.4**.

1.3.4 The Bidder acknowledges and agrees to furnish all labor and materials required for this **Project**, in accordance with the accompanying **Plans and Specifications** prepared by the **Architect/Engineer** listed on **page 1** of this Bid Proposal Form, for the **Contract Sum** specified in the **Proposed Lump Sum Base Bid** in **Subsection 2.1** of this Bid Proposal Form, subject to **additions** and **deductions** according to the terms of the specifications, and including the number of **Addenda** stated in **Subsection 2.2** of this Bid Proposal Form.

1.4 Award:

1.4.1 All Bid Proposals shall be subject to the provisions of **Section 00 21 13 Instructions to Bidders** and for purpose of award, consideration shall be given only to Bid Proposals submitted by qualified and responsible Bidders.

1.4.2 The award shall be made on the **lowest Lump Sum Bid** and any or all **Supplemental Bid(s)** as stated in **Subsection 2.4.2** of this **Bid Proposal Form**, taken sequentially, as applicable, provided funds are available.

1.4.4 In the event of any **discrepancy** between the amount written in words and the amount written in numerical figures, the amount written in words shall be controlling.

2.0 Bid Proposal Requirements:

Bidder Information:

Bid Uploaded On:
 (Month) (Day) (Year)

Proposal Of:
 (Complete Bidder's Legal Company Name As Registered With the CT Secretary of State)

Firm Address: , ,
 (Avenue / Street) (Town / City) (State) (Zip Code)

Contact Person:
 (Name) (Title)

Contact Information:
 (Phone Number) (Fax Number) (Email Address)

Threshold Project: Major Contractor Registration License No.:

All Bidders for Projects that exceed Threshold Limits (see page 1 of this Bid Proposal Form): Insert your Firm's Major Contractor Registration License Number in the space provided above. **NOTE: If this Project does NOT exceed Threshold Limits, insert "Not Applicable" in the blue box above. Delete this note by pressing the spacebar.**

2.1 Proposed Lump Sum Base Bid:

2.1.1 All Bidders: Insert the **Proposed Lump Sum Base Bid** in the spaces provided below, including **both numerical figures** and **"printed words" dollar amount**. The **Proposed Lump Sum Base Bid** shall include all **Allowances**, all work indicated on the drawings and/or described in the specifications **except for Contingent Work**.

2.1.2 The **Proposed Lump Sum Base Bid** shall be shown in **both numerical figures** and **"printed words" dollar amount**. In the event of any discrepancy the **"printed" words dollar amount** shall govern.

2.1.3 The **Proposed Lump Sum Base Bid** is:

\$
 (Place Numerical Figures in the Box Above)

Dollars
 (Insert "Printed Words" Dollar Amount in the Box Above)

2.2 Number of Addenda:

2.2.1 All Bidders: Insert the **Number of Addenda** issued by the State of Connecticut in the space provided below.

2.2.2 Failure to acknowledge the **correct number** of all **Addenda** in **the box below** in this **Bid Proposal Form** shall cause **rejection** of the bid.

2.2.3 The Bidder acknowledges that their **Proposed Lump Sum Base Bid Proposal** **includes:**

Number of Addenda. If none, enter "0".

2.3 Allowances:

See Section 01 20 00 Contract Considerations in Division 01 General Requirements for Allowances for applicability.

2.4 Contingent Work:

2.4.1 Base Bid Quantities and Defined Unit Prices: See **Section 01 20 00 Contract Considerations** in Division 01 General Requirements for **applicability** regarding Base Bid Quantities and Defined Unit Prices for Earth and Rock Excavation, Miscellaneous Items, Alterations Items, Environmental Remediation, and/or Hazardous Building Materials Abatement.

2.4.2 Supplemental Bids:

.1 See **Section 01 23 13 Supplemental Bids** in Division 01 General Requirements for **applicability**.

.2 **All Bidders: If Supplemental Bids are applicable** to this Project, insert the **Supplemental Bids** in the spaces provided below. Any **Supplemental Bids** listed below, *if* accepted by the Owner, will be taken cumulatively and in numerical order as scheduled. No Supplemental Bid will be skipped or taken out of numerical order as scheduled.

| | | |
|---|---|---|
| Supplemental Bid No. 1: Enter information in blue boxes below: | | |
| ADD: \$ | <input style="width: 90%;" type="text"/> <i>(Insert Numerical Figures)</i> | <input style="width: 90%;" type="text"/> <i>(Insert "Printed Words" Dollar Amount)</i> |
| | | Dollars |
| Supplemental Bid No. 2: Enter information in blue boxes below: | | |
| ADD: \$ | <input style="width: 90%;" type="text"/> <i>(Insert Numerical Figures)</i> | <input style="width: 90%;" type="text"/> <i>(Insert "Printed Words" Dollar Amount)</i> |
| | | Dollars |
| Supplemental Bid No. 3: NOT APPLICABLE | | |
| ADD: \$ | <input style="width: 90%;" type="text"/> <i>(Insert Numerical Figures)</i> | <input style="width: 90%;" type="text"/> <i>(Insert "Printed Words" Dollar Amount)</i> |
| | | Dollars |
| Supplemental Bid No. 4: NOT APPLICABLE | | |
| ADD: \$ | <input style="width: 90%;" type="text"/> <i>(Insert Numerical Figures)</i> | <input style="width: 90%;" type="text"/> <i>(Insert "Printed Words" Dollar Amount)</i> |
| | | Dollars |

2.5 Bidder's Qualification Statement and Objective Criteria for Evaluating Bidders:

2.5.1 All Bidders: Download **Section 00 45 14 General Contractor Bidder's Qualification Statement** from BizNet for a template and instructions. Complete and upload **Section 00 45 14 General Contractor Bidder's Qualification Statement** to Biznet **prior** to the date and time of the Bid Opening. Information with regards to the **General Contractor's Bidder's Qualification Statement** is submitted and is made part of this **Bid Proposal Form**. Failure of a Bidder to answer any question or provide required information **shall** be grounds for the awarding authority to **disqualify** and **reject** the bid, pursuant to Connecticut General Statutes §4b-92.

2.5.2 All Bidders shall comply with **Section 00 45 15 Objective Criteria Established for Evaluating Qualifications of Bidders**. **Note:** Individual Specification Sections may contain General Contractor and/or Subcontractor Qualification requirements that exceed those in **Section 00 45 15 Objective Criteria Established for Evaluating Qualifications of Bidders**.

2.6 Bidder's Prequalification Requirements for Projects Exceeding \$500,000:

All Bidders for Projects with estimated Construction Costs greater than \$500,000: Upload to BizNet a current copy of your Firm's "**DAS Contractor Prequalification Certificate**" and "**Update (Bid) Statement**" for the applicable **Class of Work** on **page 1** of this **Bid Proposal Form** **prior** to the date and time of the Bid Opening. Failure to comply with this requirement **shall** cause rejection of the bid and shall not be considered a minor irregularity under **C.G.S. § 4b-95**. See **Section 00 40 15 CT DAS Prequalification Forms** for instructions on preparing and/or downloading your Firm's "**DAS Contractor Prequalification Certificate**" and "**DAS Update (Bid) Statement**".

2.7 Named Subcontractors and Classes of Work:
 2.7.1 All Bidders for Projects with one or more Classes of Work checked in Table 2.7 below: Complete Table 2.7 according to the instructions below. Failure to properly provide all of the **required information** in Table 2.7 may cause rejection of the bid.

| Table 2.7: Named Subcontractors and Classes of Work: | |
|--|--|
| <input checked="" type="checkbox"/> | Electrical Work: Enter information in blue boxes below: Complete Subcontractor Name: _____ Proposed Dollar Value of Subcontract: \$ _____ |
| <input type="checkbox"/> | HVAC Work: NOT APPLICABLE Complete Subcontractor Name: _____ Proposed Dollar Value of Subcontract: \$ _____ |
| <input type="checkbox"/> | Masonry Work: NOT APPLICABLE Complete Subcontractor Name: _____ Proposed Dollar Value of Subcontract: \$ _____ |
| <input checked="" type="checkbox"/> | Plumbing Work: Enter information in blue boxes below: Complete Subcontractor Name: _____ Proposed Dollar Value of Subcontract: \$ _____ |
| <input type="checkbox"/> | Environmental Remediation: NOT APPLICABLE Complete Subcontractor Name: _____ Proposed Dollar Value of Subcontract: \$ _____ |
| <input type="checkbox"/> | Hazardous Materials Abatement: NOT APPLICABLE Complete Subcontractor Name: _____ Proposed Dollar Value of Subcontract: \$ _____ |

- 2.7.2 Instructions For Table 2.7:**
- .1 Each **Class of Work** set forth in a separate section of the specifications pursuant to this Section shall be a **subtrade** designated in **Table 2.7** of this **Bid Proposal Form** and shall be the matter of a **subcontract**.
 - .2 When a box is checked in **Table 2.7**, the Bidder shall insert the name of the Subcontractor with the **largest** proposed Subcontract Value; this is known as the **“Named Subcontractor”**. The Bidder shall provide all of the information for each **checked Class of Work**.
 - .3 If a **Bidder** intends to use a **Subcontractor** to perform **any portion** of the Named **Classes of Work**, including circumstances where the Subcontractor is a Small Business Enterprise (SBE) or a Minority Business Enterprise (MBE), *then* it must list the Subcontractor or SBE/MBE Subcontractor as the case may be, for such Class of Work. A **Bidder** may **not** substitute itself for any of the Named Classes of Work. The Bidder **should not list itself** as the **Named Subcontractor** if it intends to use a **Subcontractor** to perform any portion of the Classes of Work listed in **Table 2.7**. The Bidder should name the Subcontractor.
 - .4 For each **Class of Work** specified in **Table 2.7**, the Bidder shall list the **Subcontractor** with the **largest Proposed Dollar Value of Subcontract** for each Class of Work as the **Named Subcontractor** and the **Proposed Dollar Value** of its Subcontract. If the Bidder intends to use **more than one** Subcontractor to perform a Class of Work, then it shall indicate the Subcontractor Name and Subcontract Value for the **largest** single Named Subcontractor.
 - .5 If a Bidder customarily performs any of the specified Classes of Work and is Prequalified by DAS for the Class of Work at the time of the Bid Opening Date if the work is greater than \$500,000, the Bidder may list **itself** as a Subcontractor together with its **price** in the space provided in **Table 2.7**. Failure to properly provide all of the **required information** in **Table 2.7** shall cause **rejection** of the bid.
 - .6 If the Bidder does **not** name **itself** or a **Subcontractor** for a specified Class of Work, it shall be presumed that the Bidder intends to perform with its own employees **all work** in such specified classes. The Bidder shall be required to perform with its own employees **all** of the work of the specified class. Subcontracting any portion of such specified class of work subsequently, will be considered a violation of **C.G.S. § 4b-95** and subject the Bidder to disqualification under **C.G.S. § 4b-95(e)**.
 - .7 In the event the Bidder either lists itself or is presumed to perform with its own employees all work in a specified class, no such sub-bid by a Bidder shall be considered unless the Bidder can show to the satisfaction of the awarding authority, based on objective criteria established for such purpose, that it customarily performs such subtrade work and is qualified to do the character of work required by the applicable section of the specifications.

2.8 Set Aside Requirements: (see Section 00 73 38 "CHRO Contract Compliance Regulations")

2.8.1 For Projects Less Than \$500,000: Submit a current copy of your Firm's "DAS Set-Aside Certificate" *with* your Bid Proposal Form *prior* to the date and time of the Bid Opening.

2.8.2 For Projects Less Than \$500,000: Upload a completed copy of the CHRO Employment Information Form, "Bidder Contract Compliance Monitoring Report" *with* your Bid Proposal Form *prior* to the date and time of the Bid Opening. The report is on the CHRO Webpage (<http://www.ct.gov/chro/cwp/view.asp?a=2525&Q=315900&chroPNavCtr=#45679>).

2.8.3 All Bidders shall be required to award not less than the percentage(s) stated on **page 1 of this Bid Proposal Form** to Subcontractors who are currently certified and eligible to participate under the State of Connecticut Set-Aside Program for **SBE and/or MBE** contractors, in accordance with C.G.S. § 4a-60g. **Failure** to meet these requirements **shall** cause rejection of the bid.

2.9 Insurance Coverages: The **limits of liability** for the Insurance required for this project shall be those listed in **Article 35 Contractors Insurance of Section 00 73 13 General Conditions**. Also see Section 00 62 16 Certificate of Insurance.

2.9.1 Special Hazards Insurance:

None is Required.

"X-C-U" Coverage (explosion, collapse, and underground damage) **shall be required** in accordance with **Article 35 Contractors Insurance of Section 00 73 13 General Conditions**.

Asbestos Abatement Insurance is required.

2.9.2 Builders Risk Insurance:

None is Required.

The Bidder **shall be required to maintain Builder's Risk Insurance** providing coverage for the entire Work at the project site, portions of the Work located away from the site but intended for use at the site, and portions of the Work in transit. Coverage shall be written on an All-Risk, Replacement Cost, and completed Value Form basis in an amount at least equal to the projected completed value of the Work and the policy shall state that the State of Connecticut shall be named as a loss payee not as an additional insured for these coverages.

2.9.3 Commercial General Liability Insurance:

NOTE: There is a new requirement regarding **commercial general liability (CGL) insurance:** All selected firms are required to provide an endorsement to the CGL insurance stating that the State of Connecticut is an additional insured. Please be advised that a blanket endorsement **may not** be acceptable.

2.9.4 Owners and Contractors Protective Liability Insurance:

The Bidder shall maintain **Owner's and Contractor's Protective Liability** insurance providing a total limit of **\$1,000,000** for all damages arising out of bodily injury or death of persons in any one accident or occurrence and for all damages arising out of injury or destruction of property in any one accident or occurrence and subject to a total (aggregate) limit of **\$2,000,000** for all damages arising out of bodily injury to or death of persons in all accidents or occurrences and out of injury to or destruction of property during the policy period. This coverage shall be for and in the name of the State of Connecticut.

2.9.5 Umbrella Liability Insurance:

This project requires **Umbrella Liability Insurance**. The Bidder shall provide an endorsement to the Umbrella Liability Insurance stating that the State of Connecticut is an additional insured. Select the correct **Umbrella Limit** for this **Project's Contract Value** using the "Umbrella Liability Insurance Table" below.

| Umbrella Liability Insurance Table: | | | |
|-------------------------------------|----|----------------|-----------------|
| Contract Value | | | Umbrella Limit |
| \$1.00 | to | \$500,000.00 | \$1,000,000.00 |
| \$500,000.01 | to | \$1,000,000.00 | \$2,000,000.00 |
| \$1,000,000.01 | to | \$10,000,000 | \$5,000,000.00 |
| \$10,000,000.01 | to | \$30,000,000 | \$10,000,000.00 |
| \$30,000,000.01 | to | \$80,000,000 | \$15,000,000.00 |
| \$80,000,000.01 | to | \$150,000,000 | \$20,000,000.00 |
| \$150,000,000.01 | to | \$300,000,000 | \$25,000,000.00 |

3.0 Bid Proposal Acknowledgements:

The Bidder *acknowledges and agrees* to the following:

3.1 To Upload to BizNet Submit the Bid Proposal Form (all pages), All Other Bid Documents, Affidavits, and Certifications:

3.1.1 The Bidder acknowledges and agrees to electronically upload to DAS BizNet all pages of the **Bid Proposal Form**, and all other **Bid Documents, Affidavits, and Certifications** as directed in **Section 00 11 16 Invitation to Bid, Section 00 21 13 Instructions to Bidders**, and **Section 00 41 10 Bid Package Submittal Requirements**.

3.1.2 The State may waive minor irregularities which it considers in the best interest of the State and, when applicable, are corrected by the Bidder within seven (7) Calendar Days after the Bid Due Date. Failure to properly complete, sign and upload any of the items marked with an asterisk (*) in **Table 1 of Section 00 41 10 Bid Package Submittal Requirements** *shall* cause rejection of the bid and *shall not* be considered a minor irregularity under **C.G.S. § 4b-95**.

3.1.3 If there are any delays in the receipt of other documents then the Bid shall remain valid for the same additional number of days. For example, if the documents are submitted four (4) Calendar Days later; then the bid shall remain valid for ninety-four (94) Calendar Days.

3.1.4 Failure to submit the documents before the stated deadline **may** result in rejection of the bid at the sole discretion of the Commissioner of Administrative Services.

3.2 To Hold Bid Price:

The Bidder acknowledges and agrees to hold the **Proposed Lump Sum Base Bid** in **Subsection 2.1** of this Bid Proposal Form for **ninety (90) Calendar Days** and any extensions caused by the Bidder's delays in required submissions. The Bidder and the State may mutually agree to extend this period. The agreement to extend the **ninety (90) Calendar Day** period may occur after the expiration of the original **ninety (90) Calendar Day** period.

3.3 To Use and Accept Allowances:

When applicable to this Project, the Bidder **acknowledges and agrees** to accept and use the **Allowances** as shown in **Section 01 20 00 Contract Considerations** of Division 01 General Requirements as part of the **Proposed Lump Sum Base Bid** listed in **Subsection 2.1** of this Bid Proposal Form.

3.4 To Use and Accept the Following Contingent Work:

3.4.1 **Unit Prices:** When applicable to this Project, the Bidder **acknowledges and agrees** to accept and use the **Units, Add Unit Prices, and Deduct Unit Prices** as shown in **Section 01 20 00 Contract Considerations** of Division 01 General Requirements in evaluating either additions to or deductions from the Work.

3.4.2 **Supplemental Bid:** When applicable to this Project and if accepted by the Owner, the Bidder **acknowledges and agrees** to provide all labor, material and equipment to complete the Work in accordance with the **Supplemental Bid** described in **Section 01 23 13 Supplemental Bids** of Division 01 General Requirements and provided by the Bidder in **Subsection 2.4.2** of this Bid Proposal Form.

3.5 To Use the Named Subcontractors Listed in Table 2.7:

The Bidder **agrees** that each of the **Named Subcontractors** stated in **Table 2.7** of this Bid Proposal Form will be used for the **Class of Work** indicated, for the **Proposed Total Subcontract Value dollar amount stated**, unless a **substitution** is permitted by the awarding authority as provided for in and in accordance with C.G.S. § 4b-96, as amended.

3.6 To Make Good Faith Efforts to Employ MBEs:

The Bidder acknowledges and agrees to make **good faith efforts** to employ **Minority Business Enterprises (MBEs)** as **Subcontractors** and **Suppliers** of materials under such Contract.

3.7 To Submit a Certified Check or Bid Bond (if required):

The Bidder acknowledges and agrees to submit a **Certified Check** or **Standard Bid Bond** *prior* to the due date and time of the Bid Opening (if required). Download **Section 00 43 16 Standard Bid Bond** from BizNet for a template and instructions.

3.0 Bid Proposal Acknowledgements (continued):**3.8 To Accept the Current Prevailing Wage Rate Schedule:**

The U. S. Secretary of Labor's latest decision and the State of Connecticut Department of Labor (DOL) Prevailing Wage Rate Schedule are all incorporated in the documents. The higher rate (Federal or State) for any given occupation shall prevail. At the time of bidding, the Bidder agrees to accept the current Prevailing Wage Rate Schedule, as well as the annual adjustment to the prevailing wage rate that is in effect each July 1st, as provided by DOL. See **Section 00 73 44 Prevailing Wage Rates/Contractor's Wage Certification/Payroll Certification**. Annual adjustments of prevailing wage rates will *not* be considered a matter for a contract amendment with DAS/CS.

3.9 To Comply With CHRO Requirements:

If applicable, the Apparent Low Bidder acknowledges and agrees to provide the Commission on Human Rights and Opportunities with such information as is requested by the Commission concerning their **employment practices and procedures** as they relate to the current provisions of the Connecticut General Statutes governing Contract requirements within **fifteen (15) calendar days after** receipt of the "Request for the *Affirmative Action Plan and Employment Information Form Letter*" from the DAS/CS Office of Legal Affairs, Policy, and Procurement.

3.10 To Ensure Executive Order No. 11246 for Equal Employment Opportunity & Non-Segregated Facilities Has Been Met:

The Apparent Low Bidder acknowledges and agrees to ensure that Executive Order No. 11246 for Equal Employment Opportunity & Non-Segregated Facilities has been met for their firm and their Subcontractors. The Apparent Low Bidder also agrees to certify (if required) to the compliance of non-segregated facilities.

3.11 To Obtain and Maintain Required Insurance Coverages:

The Bidder acknowledges and agrees to obtain and maintain the required Insurance Coverages and submit the Firm's "**Certificate of Liability Insurance Acord® form**" within **ten (10) business days after** receipt of the "Letter of Intent" from the DAS/CS Office of Legal Affairs, Policy, and Procurement, as discussed in **Section 00 62 16 Certificate of Insurance** and **Article 35, "Contractors Insurance"** in **Section 00 73 13 General Conditions**.

3.12 To Comply With Security Requirements for CT Department of Correction Facilities:

When applicable to this Project, the Bidder acknowledges and agrees to comply with **Section 00 73 63 CT Department of Correction (CT DOC) Security Requirements** for Contract Forces on CT DOC Facilities.

3.13 To Ensure C.G.S. § 12-430 for Non-Resident Contractors Has Been Met:

If applicable, the Apparent Low Bidder acknowledges and agrees to provide either a copy of the "**Notice of Verified Status**" (Verification Letter) from the Connecticut Department of Revenue Services (DRS) (for **Verified Nonresident** General/Prime Contractors) or a copy of **Form AU-965 "Acceptance of Surety Bond"** from DRS (for **Unverified Nonresident** General/Prime Contractors) within **ten (10) business days after** receipt of the "Letter of Intent" from the DAS/CS Office of Legal Affairs, Policy, and Procurement which evidences that **C.G.S. § 12-430** for non-resident contractors has been met, as described in **Section 00 92 30 Procedures Regarding Taxation for Nonresident General/Prime Contractor and Subcontractors**.

3.14 To Execute Contract:

If selected as the Prime Contractor, the Bidder acknowledges and agrees to **execute a Contract** in accordance with the terms of this **Bid Proposal Form** and the **Contract** within **ten (10) Calendar Days** (legal State holidays excluded) **after** notification thereof by the awarding authority. See **Section 00 52 03 Contract** for a sample.

4.0 Confidentiality of Documents:

- 4.1** The **undersigned** agrees that if not selected as the Prime Contractor for this project, all plans and specifications in their possession for the project shall be destroyed.
- 4.2** The **undersigned** agrees that if selected as the Prime Contractor for this project:
- 4.2.1** The **plans and specifications** shall not be disseminated to anyone except for construction of this project.
- 4.2.2** The **following provision** shall be included in all of its contracts with subcontractors and sub-consultants:
- “Any and all drawings, specifications, maps, reports, records or other documents associated with the contract shall only be utilized to the extent necessary for the performance of the work and duties under this contract. Said drawings, specifications, maps, reports, records and other documents may not be released to any other entity or person except for the sole purpose of the work described in this contract. No other disclosure shall be permitted without the prior written consent of DAS Construction Services. When any such drawings, specifications, maps, reports, records or other documents are no longer needed, they shall be destroyed.”*
- 4.2.3** Upon completion of the construction and the issuance of a certificate of occupancy, the plans and specifications shall be returned to DAS Construction Services, or destroyed, or retained in a secure location and not released to anyone without first obtaining the permission of DAS Construction Services.

5.0 Bid Proposal Declarations:

I (we), the undersigned, hereby declare that I am (we are) the only person(s) interested in the Bid Proposal and that it is made without any connection with any other person making any Bid Proposal for the same work. No person acting for, or employed by, the State of Connecticut is directly or indirectly interested in this Bid Proposal, or in any Contract which may be made under it, or in expected profits to arise therefrom. This Bid Proposal is made without directly or indirectly influencing or attempting to influence any other person or corporation to bid or refrain from bidding or to influence the amount of the Bid Proposal of any other person or corporation. This Bid Proposal is made in good faith without collusion or connection with any other person bidding for the same work and this proposal is made with distinct reference and relation to the plans and specifications prepared for this Contract. I (we) further declare that in regard to the conditions affecting the Work to be done and the labor and materials needed, this Bid Proposal is based solely on my (our) own investigation and research and not in reliance upon any representations of any employee, officer or agent of the State.

6.0 Duly Authorized Signature:

Type of Business: *(Check Applicable Box)*

| | |
|--|---|
| <input type="checkbox"/> Limited Liability Corporation (LLC) <input type="checkbox"/> Partnership <input type="checkbox"/> Sole Proprietor <input type="checkbox"/> Doing Business As (d/b/a) <i>(If d/b/a box is checked provide complete name below)</i> <input style="width: 100%;" type="text"/> <i>(Doing Business As Name)</i> | <input type="checkbox"/> Corporation <i>(If Checked, Provide Corporate Seal Below)</i> <div style="border: 1px solid black; width: 100px; height: 100px; margin: 0 auto;"></div> <i>(Provide <u>exact</u> corporate name from corporate seal below)</i> <input style="width: 100%;" type="text"/> <i>(Name On Corporate Seal)</i> |
|--|---|

| | | | |
|----------------------------|---|---|---|
| Signed: | <input style="width: 100%;" type="text"/> <i>(Month)</i> | <input style="width: 100%;" type="text"/> <i>(Day)</i> | <input style="width: 100%;" type="text"/> <i>(Year)</i> |
| Bidder's Signature: | <input style="width: 100%;" type="text"/> <i>(Duly Authorized)</i> | | <input style="width: 100%;" type="text"/> <i>(Title)</i> |
| | <input style="width: 100%;" type="text"/> <i>(Print Named)</i> | | <input style="width: 100%;" type="text"/> <i>(Date)</i> |

Bid Package Submittal Requirements:

DAS | Construction Services | Office of Legal Affairs, Policy, and Procurement
450 Columbus Boulevard, Suite 1302 | Hartford, CT 06103

| | |
|------------|---|
| 1.1 | On-Line Bidding: |
| 1.1.1 | All Bidders shall electronically upload their Bid Package Documents to BizNet following the instructions in the DAS/CS publication, 6001 Construction On-line Bidding Instructions , available for download here: Go to the DAS Homepage (www.ct.gov/DAS) > Doing Business With The State > State Building Construction > Publications and Forms > DAS Construction Services Library > 6000 Series > 6001 Construction On Line Bidding Instructions . |
| 1.1.2 | For questions, call 860-713-5794. |

| | |
|---|--|
| 1.2 | Bid Package Submittal Requirements: |
| All Bidders are required to electronically upload Bid Package Documents to BizNet prior to the date and time of the Bid Opening. Additional documents must be either electronically uploaded to BizNet or submitted as paper copies to the appropriate Agency . See Tables 1, 2, and 3 for specific submittal requirements. | |
| 1.2.1 | All Bidders: See Table 1. All Documents in Table 1 <u>must be electronically uploaded to BizNet.</u> |
| 1.2.2 | Three (3) Apparent Lowest Bidders: See Table 2. |
| 1.2.3 | Apparent Low Bidder: See Table 3. |

| | |
|------------|---|
| 1.3 | Deadlines for Receipt of Bid Package Documents: |
| 1.3.1 | Table 1: Bid Package Documents must be uploaded to BizNet prior to the date and time of the Bid Opening. Failure to upload to BizNet any of the items marked with an asterisk (*) prior to the Bid Opening shall cause rejection of the bid and shall not be considered a minor irregularity under Connecticut General Statutes (C.G.S.) 4b-95. |
| 1.3.2 | Tables 2 and 3: See the tables for additional deadlines. Failure to submit the documents before the stated deadlines may result in rejection of the bid at the sole discretion of the Commissioner of Administrative Services. |

| | | | |
|------------|--|----|--|
| 1.4 | Delays in Receipt of Supportive Documents from the Three Apparent Lowest Bidders: | | |
| 1.4.1 | If there are any delays in the receipt of the supportive documents specified in Tables 2 and 3, then the Bids shall remain valid for the same additional number of days. <table border="0" style="margin-left: 20px;"> <tr> <td style="width: 20px;">.1</td> <td>For example, since the Three (3) Apparent Lowest Bidders are required to Hold The Bid Price for ninety (90) calendar days, if supportive documents are submitted four (4) calendar days later, then the bid shall remain valid for ninety-four (94) calendar days.</td> </tr> </table> | .1 | For example, since the Three (3) Apparent Lowest Bidders are required to Hold The Bid Price for ninety (90) calendar days , if supportive documents are submitted four (4) calendar days later , then the bid shall remain valid for ninety-four (94) calendar days . |
| .1 | For example, since the Three (3) Apparent Lowest Bidders are required to Hold The Bid Price for ninety (90) calendar days , if supportive documents are submitted four (4) calendar days later , then the bid shall remain valid for ninety-four (94) calendar days . | | |
| 1.4.2 | Failure to submit the documents before the stated deadline may result in rejection of the bid at the sole discretion of the Commissioner of Administrative Services. | | |

| TABLE 1 ALL BIDDERS | | | |
|---|-------------------------------------|---|---------------|
| Construction Costs: | | The Bid Proposal Form, Other Bid Package Documents, Affidavits, and Certifications <u>shall</u> be electronically uploaded to BizNet by <u>all</u> Bidders prior to the Date and Time of the Bid Opening. | Form Location |
| Less Than \$500,000 | Greater Than \$500,000 | | |
| Bid Proposal Form and Other Bid Package Documents | | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | * Section 00 41 00 Bid Proposal Form | BizNet |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | * Section 00 43 16 Standard Bid Bond or Certified Check | BizNet |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | * Section 00 45 14 General Contractor Bidder's Qualification Statement | BizNet |
| | <input checked="" type="checkbox"/> | * DAS Prequalification Certificate | BizNet |
| | <input checked="" type="checkbox"/> | * DAS Update (Bid) Statement | BizNet |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Section 00 40 14 Certificate (of authority) | BizNet |
| <input checked="" type="checkbox"/> | | DAS Set-Aside Certificate | BizNet |
| <input checked="" type="checkbox"/> | | Bidder Contract Compliance Monitoring Report | CHRO Website |
| Affidavits and Certifications | | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | * Gift and Campaign Contribution Certification – OPM Ethics Form 1 | BizNet |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | * Consulting Agreement Affidavit – OPM Ethics Form 5 | BizNet |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | * Ethics Affidavit (Regarding State Ethics) – OPM Ethics Form 6 | BizNet |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | * Iran Certification – OPM Ethics Form 7 | BizNet |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Nondiscrimination Certification – Form A, B, C, D, or E | BizNet |

*** NOTE:** Failure to electronically upload any of the items marked above with an asterisk (*) prior to the date and time of the Bid Opening shall cause rejection of the bid and shall not be considered a minor irregularity under CGS 4b-95.

| TABLE 2 | | | |
|-----------------------------------|-------------------------------------|--|---|
| THREE (3) APPARENT LOWEST BIDDERS | | | |
| Construction Costs: | | WHEN APPLICABLE: | Form Location |
| Less Than \$500,000 | Greater Than \$500,000 | Submit within ten (10) Calendar Days <i>after</i> receipt of the “ Set-Aside Contractor Schedule Request ” from the DAS/CS Procurement Unit: | Form Location |
| | <input checked="" type="checkbox"/> | Set-Aside Contractor Schedule for each subcontracted SBE and/or MBE firm(s) (See Section 00 73 27 Set-Aside Contractor Schedule for a sample Request.) | Email From DAS/CS Procurement Unit |
| | <input checked="" type="checkbox"/> | DAS Set-Aside Certificate(s) for each subcontracted SBE and/or MBE firm(s) listed in the Set-Aside Contractor Schedule. | Download from BizNet |
| | <input checked="" type="checkbox"/> | Section 00 45 17 Named Subcontractor Bidder’s Qualification Statements for each Named Subcontractor listed in the Bid Proposal Form. | Copy from Project Manual |
| | <input checked="" type="checkbox"/> | DAS Prequalification Certificate(s) and Update (Bid) Statement(s) for each Named Subcontractor listed in the Bid Proposal Form with Subcontracts greater than \$500,000. | Download from BizNet |

| TABLE 3 | | | |
|---------------------|------------------------|---|---------------|
| APPARENT LOW BIDDER | | | |
| Construction Costs: | | When Applicable, submit the following documents as noted: | Form Location |
| Less Than \$500,000 | Greater Than \$500,000 | When Applicable, submit the following documents as noted: | Form Location |

| Submit within fifteen (15) calendar days <i>after</i> receipt of the “ Request for the Affirmative Action Plan and Employment Information Form Letter ” from the DAS/CS Procurement Unit: | | | |
|---|-------------------------------------|---|-------------------------------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | If Contractor has 50 or more employees and/or the Project is equal to or greater than \$500,000, submit to CHRO: Affirmative Action Plan and Employment Information Form (DAS-45). | CHRO Website & BizNet |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Submit to DAS/CS Procurement Unit: Copy of Transmittal Letter to confirm the Affirmative Action Plan was filed with CHRO. | (copy of transmittal letter) |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Submit to CT Department of Labor: Contractors Wage Certification Form. See Section 00 73 44 Prevailing Wage Rates/Contractor’s Wage Certification/Payroll Certification. | Copy from Project Manual |

| TABLE 3 APPARENT LOW BIDDER (continued) | | | |
|---|-------------------------------------|--|---|
| Construction Costs: | | Submit within ten (10) business days <i>after</i> receipt of the “Letter of Intent” from the DAS/CS Procurement Unit: | Form Location |
| Less Than \$500,000 | Greater Than \$500,000 | | |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Section 00 40 14 Certificate (of authority) | Email From DAS/CS Procurement Unit |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Section 00 52 03 Contract | Email From DAS/CS Procurement Unit |
| | <input checked="" type="checkbox"/> | Section 00 52 73 Subcontract Agreement Form (Named & Listed) | Email From DAS/CS Procurement Unit |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Certificate of Liability Insurance Acord® form (See Section 00 62 16 Insurance Certificate Form for details) | Email From DAS/CS Procurement Unit |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Certificate of Asbestos Abatement Liability Insurance (for asbestos abatement only) (See Section 00 62 16.1 Asbestos Abatement Liability Insurance for details) | Email From DAS/CS Procurement Unit |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Section 00 92 10: Additional Forms | Performance Bond |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | Labor & Material Bond |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | Surety Sheet |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | Bidder’s Certification: Financial Position & Corporate Structure |
| | | Section 00 92 10: Additional Forms | Email From DAS/CS Procurement Unit |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Power of Attorney from the Surety Company | Surety Company |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Nonresident (Out of State) Contractors: <u>Verified Nonresident</u> General/Prime Contractors must submit a copy of their “ Notice of Verified Status ” (Verification Letter) from the CT Department of Revenue Services (DRS). <u>Unverified Nonresident</u> General/Prime Contractors must submit a copy of Form AU-965 “Acceptance of Surety Bond” from the DRS. (See Section 00 92 30 Procedures Regarding Taxation for Nonresident General/Prime Contractor and Subcontractors for additional details.) | CT Department of Revenue Services |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | NEW: General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities: For projects disturbing one or more total acres of land area , submit a copy of the signed Stormwater Pollution Control Plan “Contractor Certification Statement” and License Transfer Form , as directed by the DAS/CS Architect/Engineer, prior to commencement of any construction activities. | DAS/CS Architect/Engineer |
| | <input checked="" type="checkbox"/> | Ethics Affidavit (Regarding State Ethics) OPM Ethics Form 6 for each Named Subcontractor | BizNet |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Threshold Projects Only: Submit Major Contractor Registration License Number(s) for Subcontractors | CT Department of Consumer Protection |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | SEEC Form 10 | SEEC Website |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Certificate of Legal Existence from Corporations | Secretary of the State |

End of Section
 00 41 10 Bid Package Submittal Requirements

INSTRUCTIONS FOR CERTIFIED CHECK OR BID BOND (select one):
All Bidders:
Edit this page, print, sign, and scan to PDF. Upload the PDF form to BizNet.

- CERTIFIED CHECK OPTION:** *Prior* to the Date and Time of the Bid Opening:
 - (1) Check the box for "Certified Check Option";
 - (2) Print, scan to PDF, and upload the PDF form to Biznet; and
 - (3) Deliver the Certified Check, made payable to "Treasurer, State of Connecticut", to the following address:
 State of Connecticut
 Department of Administrative Services, Construction Services
 Office of Legal Affairs, Policy, and Procurement
 450 Columbus Boulevard, North Tower, Suite 1302
 Hartford, CT 06103-1835
- BID BOND OPTION** (see template below): *Prior* to the Date and Time of the Bid Opening:
 - (1) Check the box for "Bid Bond Option";
 - (2) Complete the **Standard Bid Bond** (below), print, sign, scan to PDF, and upload the PDF Bid Bond to Biznet.

Standard Bid Bond

DAS | Construction Services | Office of Legal Affairs, Policy, and Procurement

KNOW ALL MEN BY THESE PRESENTS, That we, _____

_____, hereinafter called the Principal,

of _____, as Principal,

and _____, hereinafter

called the Surety, a corporation organized and existing under the laws of the

State of _____, and duly authorized to transact a

surety business in the State of Connecticut, as Surety, are held and firmly bound unto the State of

Connecticut, as Obligee, in the penal sum of ten (10) percent of the amount of the bid set forth in a

proposal hereinafter mentioned, _____

_____,

lawful money of the United States of America, for the payment of which, well and truly to be made to the Obligee,

the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns,

jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, That, whereas the Principal has submitted

or is about to submit a proposal to the Obligee related to a contract for Project No.: _____

NOW, THEREFORE, if the said contract be awarded to the Principal and the Principal shall, within such time as

may be specified, enter into the said contract in writing with the State of Connecticut and give the required

bonds, with surety acceptable to the Obligee, or if the Principal shall fail to do so, pay to the Obligee the

damages which the Obligee may suffer by reason of such failure not exceeding the penalty of this bond, then

this obligation shall be void, otherwise to remain in full force and effect.

SIGNED, SEALED AND DELIVERED this _____ day of _____, 20 _____

(Principal's Signature)

(Print Name)

Company Name

Surety

by _____
Its attorney in fact Signature

(Print Name)

General Contractor Bidder's Qualification Statement

DAS | Construction Services | Office of Legal Affairs, Policy, and Procurement

Instructions:

- All Bidders are **required** to **upload this form to BizNet**, properly completed, **prior to the date and time of the Bid Opening**.
- Failure of a Bidder to answer any question or provide required information **shall** be grounds for the awarding authority to disqualify and reject the bid, pursuant to Connecticut General Statutes §4b-92.
- If a question or request for information does not pertain to your organization in any way, use the symbol "NA" (Not Applicable).
- Attach additional information on 8 ½" x 11" sheets with your letterhead as necessary and reference specific section and subsection numbers.
- **NOTE:** The Department reserves the right to request any additional or supplemental information necessary to complete its evaluation of a Bidder's qualification.

1.0 Project Information:

1.1 DAS/CS Project Number:

1.2 Project Name:

1.3 Project Location:

2.0 Projects with Construction Costs Estimated To Be Greater than \$500,000:

- Select the applicable **Class of Work** as stated in the **00 11 16 Invitation to Bid**.
- Select **YES** if your Firm has the applicable the **DAS Prequalification Certificate and Update (Bid) Statement** or **NO** if it does not.
- If **YES**, upload the applicable **DAS Prequalification Certificate and Update (Bid) Statement** to BizNet **prior** to the date and time of the Bid Opening.

Not Applicable - Construction Costs Less than \$500,000

| | Class of Work: | Does your Firm have the applicable DAS Prequalification Certificate and Update (Bid) Statement? |
|-----|---|---|
| 2.1 | <input type="checkbox"/> General Building Construction (Group A): | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| 2.2 | <input type="checkbox"/> General Building Construction (Group B): | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| 2.3 | <input type="checkbox"/> General Building Construction (Group C): | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| 2.4 | <input type="checkbox"/> General Trades (Interior Work Only): | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| 2.5 | <input type="checkbox"/> CPS Projects ONLY: Insert Class of Work | YES <input type="checkbox"/> NO <input type="checkbox"/> |

3.0 Firm's Present Legal Name: (the *complete legal name exactly* as it appears with the **Secretary of State registry**. The appropriate **title** must be used throughout the documents, for example: General Partner, Member, Manager, Sole Member, etc.)

Name:

4.0 How many years has your Firm been in business under its **Present Legal Name**?

Years:

5.0 How many years has your Firm been in business as a General Contractor?

Years:

6.0 Indicate **all** other **names** by which your Firm has been known and the **length of time** known by each name:

6.1

| | |
|-------|--------|
| | |
| Years | Months |

6.2

| | |
|-------|--------|
| | |
| Years | Months |

6.3

| | |
|-------|--------|
| | |
| Years | Months |

7.0 This Firm's **Certification** with the CT Secretary of State:

**Check
Box**

Type of Business Entity:

**Certification
Year**

Corporation

Partnership

Sole Proprietorship

Limited Liability Company (LLC)

Other:

8.0 Attach resumes of all **supervisory personnel**, such as **Principals, Project Managers, and Superintendents**, who will be directly involved with the project on which you are now a bidder. Indicate their construction related training, certifications and licenses and the number of years of actual construction experience. Indicate the number of years of this actual construction experience which were in a Supervisory capacity.

9.0 Named Subcontractor – Bidder Intends to Self-Perform:

Check **YES** or **NO** for each “Named Subcontractor” **Class of Work** which your firm intends to perform with its own employees for this Contract; see **Section 2.7** of **Section 00 41 00 Bid Proposal Form**.

NOTE: For Projects with Construction Costs estimated to be greater than \$500,000, complete **Section 00 45 17 Named Subcontractor Bidder's Qualification Statement** for each **Named Subcontractor Class of Work** checked **YES** and submit within ten (10) calendar days *after* receipt of the “Set-Aside Contractor Schedule Request” from DAS/CS Office of Legal Affairs, Policy, and Procurement.

| | | |
|--------------------------|--|--|
| <input type="checkbox"/> | Not Applicable – No Named Subcontractors &/or Not Self-Performing | |
| | Named Subcontractor Class of Work | Does your Firm intend to self-perform this Named Subcontractor Class of Work? |
| 9.1 | Electrical: | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| 9.2 | HVAC: | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| 9.3 | Masonry: | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| 9.4 | Plumbing: | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| 9.5 | Environmental Remediation: | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| 9.6 | Hazardous Materials Abatement: | YES <input type="checkbox"/> NO <input type="checkbox"/> |

10.0 Named Subcontractor - Class of Work Greater than \$500,000 and Self-Performing:

- Select the applicable **Named Subcontractor Class of Work** which your firm intends to perform with its own employees for this Contract.
- Select **YES** if your Firm has the applicable the **DAS Prequalification Certificate and Update (Bid) Statement** or **NO** if it does not.
- If **YES**, submit the applicable **DAS Prequalification Certificate and Update (Bid) Statement** within ten (10) calendar days *after* receipt of the “Set-Aside Contractor Schedule Request” from DAS/CS Office of Legal Affairs, Policy, and Procurement.

| | | |
|--------------------------|---|--|
| <input type="checkbox"/> | Not Applicable – No Class of Work Greater \$500,000 &/or Not Self-Performing | |
| | Named Subcontractor Class of Work Greater Than \$500,000 | Does your Firm have the applicable DAS Prequalification Certificate and Update (Bid) Statement? |
| 10.1 | <input type="checkbox"/> Electrical: | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| 10.2 | <input type="checkbox"/> HVAC: | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| 10.3 | <input type="checkbox"/> Masonry: | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| 10.4 | <input type="checkbox"/> Plumbing: | YES <input type="checkbox"/> NO <input type="checkbox"/> |

11.0 List all construction projects your Firm has completed in the **past five (5) years**. Provide **all** of the information listed below. DAS/CS *may* reject a bid as **non-responsive** if the bidder does not make **all** required pre-award submittals within the designated time period. Attach additional sheets as necessary **using the following format**:

IMPORTANT NOTE: **Two (2)** of the construction projects completed in the past five (5) years shall be (1) single project contracts that have reached substantial completion, not aggregate projects; (2) of commercial and/or institutional construction work (this includes compliance with general requirements); (3) within the Cost Estimate Range stated in Section 00 11 16 Invitation to Bid for this project; and (4) of the size and complexity of this Project. Failure to identify to **two** such projects **shall** result in rejection of the bid.

| | | |
|---|---------------|-----------------------|
| 11.1 Project Title: | | |
| 11.2 Project Location: | | |
| 11.3 Construction Start Date: | | |
| 11.4 Construction Finish Date: | | |
| 11.5 Describe the Scope of Work your Firm performed: | | |
| 11.6 Original Contract Amount: | | |
| 11.7 Final Contract Amount: | | |
| 11.8 Original Contract Duration (Calendar Days): | | |
| 11.9 Final Contract Duration (Calendar Days): | | |
| 11.10 Owner: | | |
| 11.11 Owner's Representative: | | |
| | <i>(Name)</i> | <i>(Phone Number)</i> |
| 11.12 Design Firm: | | |
| 11.13 Design Firm's Representative: | | |
| | <i>(Name)</i> | <i>(Phone Number)</i> |

12.0 References:

Furnish references from **architects, engineers or owners** indicating that your Firm has satisfactorily completed in a timely manner contract work for projects within the cost estimate range, size and complexity of this project. Provide explanations where delays have occurred. This information should cover work done over the past five years.

13.0 Construction Scheduler:

For Projects greater than \$5 Million: Submit the **name, resume and references** of the **Construction Scheduler** in accordance with the requirements called for in Section **01 32 16.13 Critical Path Method Schedules** of the General Requirements.

Not Applicable – Project Less Than \$5 Million

14.0 List and explain if your Firm has ever failed to complete a contract or if any officer or partner of your Firm has ever been an officer or partner of another organization that failed to complete a contract. Indicate below the circumstances leading to the project failure and the name of the company which provided the bonding for the failed contract(s):

Not Applicable

15.0 List and explain if your Firm has ever had a contract terminated, indicating the circumstances leading to the project termination of contract(s):

Not Applicable

16.0 List and explain all legal or administrative proceedings against your Firm or any officers, principals, partners, members, or employees of the organization currently pending or concluded adversely within the last five years, and any judicial or administrative sanctions that are still in effect against such organization, and any of its officers, principals, partners, members, or employees. (Exclude Occupational Safety and Health Act [OSHA] violations which are called for elsewhere in this statement). Add attachments as necessary.

Not Applicable

17.0 List and explain any disbarments or suspensions that have been imposed on your Firm in the past five years or that were still in effect during the five year period or that are still in effect. Such list must include disbarments and suspensions of officers, principals, partners, members, and employees of your Firm:

Not Applicable

18.0 List and explain any other reason(s) that precludes your Firm or any officer, principal, partner, member, or employees thereof from bidding on a contract in Connecticut or any other jurisdiction:

Not Applicable

19.0 List and explain all willful or serious violations your Firm has had of any OSHA or of any standard, order or regulation promulgated pursuant to such act, during the three year period preceding the bid, provided such violations were cited in accordance with the provisions of any State Occupational Safety and Health Act or Occupational Safety and Health Act of 1970. Indicate whether these were abated within the time fixed by the citation or whether the citation was appealed. If appealed what is the status or disposition. Add attachments as necessary.

Not Applicable

20.0 List and explain any criminal convictions your Firm has had related to the injury or death of any employee in the three-year period preceding the bid: Add attachments as necessary.

Not Applicable

21.0 List and explain any changes in your Firm's financial condition or business organization, which might affect your Firm's ability to successfully complete this contract:

Not Applicable

22.0 **NEW:** List and explain if your Firm has ever failed to submit an Affirmative Action Plan to the Commission on Human Rights and Opportunities (CHRO). Indicate below the circumstances leading to the failure to submit the Affirmative Action Plan to CHRO:

Not Applicable

23.0 **NEW:** List and explain if your Firm's Affirmative Action Plan has ever been disapproved by CHRO or determined to be noncompliant. Indicate below the circumstances leading to the disapproval or finding of noncompliance of your Affirmative Action Plan by CHRO:

Not Applicable

24. Signature

Dated at

Signed this

 day of , 20

Name of Firm:

Firm Address:

Signature:

Print or Type Name:

Title:

25. Notary Statement

Mr./Mrs./Ms. being duly sworn

deposes and says that he/she is the of
(Position or Title)

, and that the answers to the foregoing
(Firm Name)

questions and all statements therein contained are true and correct.

Subscribed and sworn before me this day of , 20

Notary Public

My Commission Expires , 20

End of Section

00 45 14 General Contractor Bidder's Qualification Statement

Objective Criteria Established for Evaluating Qualifications of Bidders:

CT DAS | Construction Services | Office of Legal Affairs, Policy, and Procurement

The following items are established pursuant to Sections 4b-92, 4b-94 and 4b-95a of the Connecticut General Statutes (C.G.S.) as amended.

The **Objective Criteria Established for Evaluating Qualifications of Bidders** (Section 00 45 15) are to assure that the State of Connecticut will secure the "lowest responsible and qualified bidder" who has the ability and capacity to successfully complete the Bid Proposal Form and the Work. Failure to comply with any portion of this requirement **may** cause **rejection** of the bid. **Note:** Individual Specification Sections **may** contain General Contractor and/or Subcontractor Qualification requirements that **exceed** those in **Section 00 45 15 Objective Criteria Established for Evaluating Qualifications of Bidders**.

THE BIDDER MUST HAVE OR HAVE COMPLETED THE FOLLOWING:

1.1 DAS Prequalification Requirements:

For Projects with Construction Costs greater than \$500,000, **all Bidders** shall upload to BizNet a valid Department of Administrative Services (DAS) **Prequalification Certificate** and **Update (Bid) Statement** *prior* to the date and time of the Bid Opening.

1.2 Evaluation:

1.2.1 All Bidders shall upload to BizNet **Section 00 45 14 General Contractor's Bidder Qualifications Statement** *prior* to the date and time of the Bid Opening.

1.2.2 If applicable, the **Three (3) Lowest Bidders** shall submit **Section 00 45 17 Named Subcontractor's Bidder Qualification Statement(s)** to DAS Construction Services (DAS/CS) Office of Legal Affairs, Policy, and Procurement within **ten (10)** calendar days **after** receipt of the "Set-Aside Contractor Schedule Request" *from* DAS/CS.

1.2.3 The Bidder must demonstrate that the Bidder and, if applicable, its Named Subcontractors, meet the **objective criteria** for this specific project.

1.2.4 The **responses** to the Statement(s) must identify two (2) **projects completed** – single project contracts that have reached substantial completion, not aggregate projects – of commercial and/or institutional construction work (this includes compliance with general requirements) during the past five (5) years within the Cost Estimate Range stated in Section 00 11 16 **Invitation to Bid** for this project, and of the size and complexity of this project. The failure to identify to such projects shall result in rejection of the bid.

1.2.5 If the Bidder identifies two projects that meet the above criteria, the **State's evaluation** shall be based on the **performance record** of the prospective Bidder as a general, prime contractor and its named subcontractors during the course of the two (2) comparable projects, and not just the end result. The state will conduct the evaluation based on its interpretation of its objective criteria. **Evaluation criteria** shall include: Faithful and efficient performance; fulfilment of contract obligations; financial, managerial and technical abilities; and integrity and the absence of any conflicts of interest. Any one or all of the factors noted in this paragraph as well as in the other criteria set forth in this **Section 00 45 15** may be grounds for the determination by the State, in its sole discretion, of the Bidder's responsibility and qualifications necessary for the faithful performance of the work required of this project.

1.3 References:

Furnished **references from architects, engineers or owners** indicating that it has satisfactorily completed in a timely manner contract work for projects and provide explanations where delays have occurred. This information should cover work done over the **past five years**. Review of DAS/CS projects shall be included in the evaluation of the bidder's qualifications and anticipated future performance.

| | |
|-------------|---|
| 1.4 | Qualified Personnel: |
| 1.4.1 | Shown that it customarily employs or has on its payroll supervisory personnel, qualified to perform the work required for this project and to coordinate the work called for in the Bid Specifications. |
| 1.4.2 | If the project is for \$5 Million or more, submit the name, resume and references of the Construction Scheduler in accordance with the requirements called for in Section 01 32 16.13 Critical Path Method Schedules of the General Requirements. |
| 1.5 | Past Performance: |
| | Demonstrated a good track record of past performance on State or other projects relative to quantity, quality, timeliness, cost, cooperation and harmonious working relationships with subcontractors, suppliers and client agencies. DAS/CS will review the Bidders past performance ratings prepared by DAS/CS or prepared as part of the DAS Contractor Prequalification Program. This review may focus on the comments relative to: Quality of Supervision, Adherence to Contract Documents, On Time Project Completion, Subcontractor performance, and the handling of Change Orders. Unacceptable ratings for several criteria shall be sufficient cause to deem a bidder not responsible. |
| 1.6 | Financial Responsibility: |
| | Shown that it is financially responsible to perform the work as bid. If requested, additional financial information shall be provided. Prompt and proper payments to its subcontractors and material suppliers is a critical factor to be considered by DAS/CS. |
| 1.7 | [Left Blank] |
| 1.8 | Equipment Requirements: |
| | Shown that it owns or possesses, rented, or leased equipment of the type customarily required by contractors in the performance of contract work and that such equipment, if needed, is available for this project. |
| 1.9 | Materials and Suppliers: |
| | Purchased materials over the past three years from suppliers who customarily sell such materials in quantity to contractors. |
| 1.10 | Physical Facilities: |
| | Control of adequate physical facilities from which the work can be performed. |
| 1.11 | Compliance with Subcontractor Requirements: |
| | Demonstrated that on previous state projects the bidder complied in good faith with the requirements of listing subcontractors as outlined in C.G.S. Sections 4b-93 and 4b-95. |
| 1.12 | Threshold Building and Major Contractor Requirements: |
| | Demonstrated that all major subcontractors are in compliance with the provisions of C.G.S. Section 20-341gg, as revised, concerning licensure requirements to perform work on any structure that exceeds the threshold limits contained in C.G.S. Section 29-276b, as revised. |
| 1.13 | OSHA Requirements: |
| | Proven that the Bidder has not been found to be in violation of three or more willful or serious violations of Occupational Safety and Health Administration (OSHA) regulations in the past three years. |

1.14 Criminal Convictions and Injuries or Death of Employees:

Not received a **criminal conviction** related to the injury or death of any employee in the three-year period preceding the bid.

1.15 Legal or Administrative Proceedings:

Listed all **legal** (court and/or arbitration) or **administrative proceedings** currently pending as well as any legal (court and/or arbitration) or administrative proceeding related to procurement or performance of any public or private construction contracts which has concluded adversely within the last three years.

1.16 Contract Performance and Surety:

Identified any situations where: (1) the bidder failed to complete a construction contract; or (2) bonds were called during the past three years. If applicable, attach a sheet providing explanation including date(s) and location(s).

1.17 State Tax Requirements:

Not been found to be in violation of any **state tax** requirements of the Connecticut Department of Revenue Services in the five (5)-year period preceding the bid.

1.18 State and Federal Labor Requirements:

Not been found to be in violation of any State or Federal **labor laws** as required through the Department of Labor including violations of prevailing wage laws in the five (5)-year period preceding the bid.

1.19 Change Order Pricing and State Ethics:

Been found to be in compliance with all statutory and regulatory requirements. This Item shall include, but not be limited to, any DAS/CS determinations related to improper Change Order pricing relative to C.G.S. Section 1-101nn of The State Ethics Statutes.

1.20 Internal Revenue Services (IRS) Requirements:

Not been found in violation of any of the **Internal Revenue Service Tax Requirements** regarding classification of employees and independent contractors in the five (5)-year period preceding the bid.

1.21 Workers Compensation and Insurance Requirements:

Not been found to be in any violation of C.G.S. Section 31-288 relating to employee classification for purposes of Workers' Compensation insurance premiums in the five (5)-year period preceding the bid.

NOTE: The foregoing Item Numbers **1.13** and **1.14** are meant to comport with C.G.S. Section 31-57b.

End of Section
00 45 15 Objective Criteria Established for Evaluating Qualifications of Bidders

Named Subcontractor Bidder's Qualification Statement

DAS | Construction Services | Office of Legal Affairs, Policy, and Procurement

Instructions:

- This Section is **only applicable** to Projects with Construction Costs **Greater than \$500,000.00**. See **Subsection 2.7 Named Subcontractors and Classes of Work** of **00 41 00 Bid Proposal Form** for applicability.
- If a question or request for information does not pertain to your organization in any way, use the symbol "NA" (Not Applicable). Attach additional information on 8 ½" x 11" sheets with your letterhead as necessary and reference specific subsection number.
- Submit this form for **each** of the Named Subcontractors, within **ten (10)** calendar days **after** receipt of the "Set-Aside Contractor Schedule Request" to:

State of Connecticut
Department of Administrative Services, Construction Services
Office of Legal Affairs, Policy, and Procurement
450 Columbus Boulevard, Suite 1302
Hartford, CT 06103

1.0 Project Information:

1.1 DAS/CS Project Number:

1.2 Project Name:

1.3 Project Location:

2.0 Named Subcontractor Class of Work:

Check the applicable Class of Work:

2.1 Electrical Work:

2.2 HVAC Work:

2.3 Masonry Work:

2.4 Plumbing Work:

2.5 Environmental Remediation:

2.6 Hazardous Materials Abatement:

3.0 Subcontractor's Present Legal Name:

Name:

4.0 How many years has the **Subcontractor** been in business under its **Present Legal Name**?

Years:

5.0 How many years has the **Subcontractor** been in business as a Subcontractor for this Class of Work?

Years:

6.0 If the **Subcontractor** has not always been a Subcontractor for this Class of Work then list the trade(s) that your firm customarily performed prior to the time that you became a Subcontractor in this **Class of Work**:

6.1

6.2

6.3

7.0 Indicate **all other names** by which this **Subcontractor** has been known and the **length of time** known by each name:

| | | | |
|------------|--|---|---|
| 7.1 | <input style="width: 95%; height: 40px;" type="text"/> | <input style="width: 40px; height: 20px;" type="text"/> | <input style="width: 40px; height: 20px;" type="text"/> |
| | | <i>Years</i> | <i>Months</i> |
| 7.2 | <input style="width: 95%; height: 40px;" type="text"/> | <input style="width: 40px; height: 20px;" type="text"/> | <input style="width: 40px; height: 20px;" type="text"/> |
| | | <i>Years</i> | <i>Months</i> |
| 7.3 | <input style="width: 95%; height: 40px;" type="text"/> | <input style="width: 40px; height: 20px;" type="text"/> | <input style="width: 40px; height: 20px;" type="text"/> |
| | | <i>Years</i> | <i>Months</i> |

8.0 The **Subcontractor's Certification** with the CT Secretary of State:

| Check Box | Type of Business Entity: | Certification Year |
|--------------------------|--|---|
| <input type="checkbox"/> | Corporation | <input style="width: 100%; height: 25px;" type="text"/> |
| <input type="checkbox"/> | Partnership | <input style="width: 100%; height: 25px;" type="text"/> |
| <input type="checkbox"/> | Sole Proprietorship | <input style="width: 100%; height: 25px;" type="text"/> |
| <input type="checkbox"/> | Limited Liability Company (LLC) | <input style="width: 100%; height: 25px;" type="text"/> |
| <input type="checkbox"/> | Other: <input style="width: 350px; height: 25px;" type="text"/> | <input style="width: 100%; height: 25px;" type="text"/> |

9.0 Attach resumes of all supervisory personnel, such as Principals, Project Managers, and Superintendents, who will be directly involved with this project on which you are now a **Named Subcontractor Bidder** for a specific **Class of Work**. Indicate the number of years of construction experience and number of years of which they were in a Supervisory capacity.

10.0 List all sub-trades which your firm customarily performs with own employees – **this table must be completed for electrical and plumbing trades for all projects.**

| | Trade Name | License Holder Name | Connecticut D.C.P. License No.: Format: Prefix - Number - Suffix |
|------|------------|---------------------|--|
| 10.1 | | | |
| 10.2 | | | |
| 10.3 | | | |
| 10.4 | | | |
| 10.5 | | | |

11.0 Trade References:
 Names, addresses and telephone numbers of several firms with whom your organization has regular business dealings (attach separate sheets as necessary).

12.0 List all construction projects your firm currently has under contract. Provide **all** of the information listed below. DAS/CS *may* reject a bid as **non-responsive** if the bidder does not make **all** required pre-award submittals within the designated time period. Attach additional sheets as necessary **using the following format:**

| | | |
|---|--|-----------------------|
| 12.1 Project Title: | | |
| 12.2 Project Location: | | |
| 12.3 Construction Start Date: | | |
| 12.4 Construction Finish Date: | | |
| 12.5 Describe the Scope of Work your Firm performed: | | |
| 12.6 Original Contract Amount: | | |
| 12.7 Final Contract Amount: | | |
| 12.8 Original Contract Duration (Calendar Days): | | |
| 12.9 Final Contract Duration (Calendar Days): | | |
| 12.10 *Briefly describe any complaints about your Firm's quality control or construction management. | | |
| | <i>*Attach a separate sheet if more space is required.</i> | |
| 12.11 Owner: | | |
| 12.12 Owner's Representative: | | |
| | <i>(Name)</i> | <i>(Phone Number)</i> |
| 12.13 Design Firm: | | |
| 12.14 Design Firm's Representative: | | |
| | <i>(Name)</i> | <i>(Phone Number)</i> |
| 12.15 General Contractor: | | |
| 12.16 G.C.'s Representative: | | |
| | <i>(Name)</i> | <i>(Phone Number)</i> |

13.0 List all construction projects your firm has completed in the **past five (5) years or list the ten (10) projects** your firm has most recently completed. Provide **all** of the information listed below. DAS/CS *may* reject a bid as **non-responsive** if the bidder does not make **all** required pre-award submittals within the designated time period. Attach additional sheets as necessary **using the following format:**

| | | |
|---|--|-----------------------|
| 13.1 Project Title: | | |
| 13.2 Project Location: | | |
| 13.3 Construction Start Date: | | |
| 13.4 Construction Finish Date: | | |
| 13.5 Describe the Scope of Work your Firm performed: | | |
| 13.6 Original Contract Amount: | | |
| 13.7 Final Contract Amount: | | |
| 13.8 Original Contract Duration (Calendar Days): | | |
| 13.9 Final Contract Duration (Calendar Days): | | |
| 13.10 *Briefly describe any complaints about your Firm's quality control or construction management. | | |
| | <i>*Attach a separate sheet if more space is required.</i> | |
| 13.11 Owner: | | |
| 13.12 Owner's Representative: | | |
| | <i>(Name)</i> | <i>(Phone Number)</i> |
| 13.13 Design Firm: | | |
| 13.14 Design Firm's Representative: | | |
| | <i>(Name)</i> | <i>(Phone Number)</i> |
| 13.15 General Contractor: | | |
| 13.16 G.C.'s Representative: | | |
| | <i>(Name)</i> | <i>(Phone Number)</i> |

14.0 Has your Firm ever failed to complete a contract or has any officer or partner of your Firm ever been an officer or partner of another organization that failed to complete a contract? If so, indicate below the circumstances leading to the project failure and the name of the company which provided the bonding for the failed contract(s):

Not Applicable

15.0 List all legal or administrative proceedings currently pending or concluded adversely within the last five years which relate to procurement or performance of any public or private construction contracts. (Exclude Occupational Safety and Health Act [OSHA] violations which are called for elsewhere in this statement). Add attachment as necessary.

Not Applicable

16.0 List all willful or serious violations of any OSHA or of any standard, order or regulation promulgated pursuant to such act, during the three year period preceding the bid, provided such violations were cited in accordance with the provisions of any State Occupational Safety and Health Act or Occupational Safety and Health Act of 1970. Indicate whether these were abated within the time fixed by the citation or whether the citation was appealed. If appealed what is the status or disposition. Add attachments as necessary.

Not Applicable

17.0 Has your Firm had any criminal convictions related to the injury or death of any employee in the three-year period preceding the bid? Please list any such convictions below. Add attachments as necessary.

Not Applicable

18. Signature

Dated at

Signed this day of , 20

Name of Firm:

Firm Address:

(Signature)

(Print or Type Name)

(Title)

19. Notary Statement

Mr./Mrs./Ms. being duly sworn

deposes and says that he/she is the of

(Position or Title)

, and that the answers to the foregoing

(Firm Name)

questions and all statements therein contained are true and correct.

Subscribed and sworn before me this day of , 20

Notary Public

My Commission Expires , 20

Contract

DAS | Construction Services | Office of Legal Affairs, Policy, and Procurement

Contract For:

Dated as of by and between the **State of Connecticut** (herein called the
(Month, Day, Year)

“State”) acting herein by its Commissioner, Department of Administrative Services under the provisions of the Connecticut General Statutes (C.G.S.) Sections 4-8, 4a-1, 4a-1a, 4a-2, 4b-1, and 4b-3, as revised, and (herein called the “Contractor”).

(Print Name of Contractor)

WITNESSETH, that the State and the Contractor in consideration of the hereinafter contained mutual promises and covenants, do hereby agree as follows:

1. CONTRACT AND CONTRACT DOCUMENTS:

The **Invitation for Bids**, the enumerated **Plans**, the **Specifications** and **Amendments** thereto, the **Addenda**, the **Bid Proposal** as accepted by the Commissioner, Department of Administrative Services, **Order of Award**, which Order is made a part of this **Contract**, the **General Conditions**, the **General Requirements**, the **Contract** and the **Bonds** shall form part of this **Contract** and the **provisions** thereof shall be as binding upon the parties as if they were fully set forth herein. The tables of contents, titles, headings, running headlines and marginal notes contained herein and in said Documents, are solely to facilitate to various provisions of the Contract Documents and in no way affect, limit, or cast light upon the interpretations of the provisions to which they refer. Whenever the term “Contract Documents” is used, it shall mean and include this **Contract**, the **Invitation for Bids**, the enumerated **Plans**, **Specifications** and **Amendments** thereto, the **Addenda**, the **Bid Proposal** as accepted by the Commissioner, Department of Administrative Services, the **General Conditions**, the **General Requirements**, the **Bonds**, the **Notice to Bidders**, the **Wage Scales**, the **Supplementary Conditions**, and the **Insurance Certificates**.

2. SCOPE OF THE WORK:

The Contractor shall furnish all plant, labor, materials, supplies, equipment, and other facilities and things necessary or proper for or incidental to the work contemplated by this Contract as required by and in strict accordance with applicable Plans, Specifications and Amendments thereto, and Addenda (hereinafter enumerated), and as required by and in strict accordance with such changes as are ordered and approved pursuant to this Contract, and will perform all other obligations imposed on him by this Contract.

3. ENUMERATION OF PLANS, SPECIFICATIONS AND ADDENDA:

The following is an enumeration of the Plans, Specifications, and Addenda:

| | |
|----------------------------------|--|
| Prepared By: | <input type="text"/> <i>(Print Name of Architect/Engineer Firm)</i> |
| Plans and Specifications: | <input type="text"/> |
| Addenda: | <input type="text"/> |

4. COMPENSATION TO BE PAID THE CONTRACTOR

The State will pay and the Contractor will accept in full consideration for the performance of the Contractor's obligation hereunder the sum of:

| | | | |
|----------------------|------------------------|----------------------|---|
| <input type="text"/> | Dollars and 00/100 (\$ | <input type="text"/> |) |
|----------------------|------------------------|----------------------|---|

5. PROVISIONS REQUIRED BY LAW DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion.

For all State contracts as defined in the **C.G.S. §9-612(f)(1)(C)**, having a value in a calendar year of \$50,000 or more or a combination or series of such agreements or contracts having a value of \$100,000 or more, the authorized signatory to this Agreement expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice. See **SEEC Form 10**.

Contractor hereby irrevocably assigns to the State of Connecticut all rights, title and interest in and to all **Claims* associated with this Contract** that Contractor now has or may or will have and that arise under the antitrust laws of the United States, **15 USC Section 1, et seq.** and the antitrust laws of the State of Connecticut, **C.G.S. §35-24, et seq.**, including but not limited to any and all Claims for overcharges. This assignment shall become valid and effective immediately upon the accrual of a Claim without any further action or acknowledgment by the parties.

***Definition of Claims associated with this Contract:** "All actions, suits, claims, demands, investigations and proceedings of any kind, open, pending or threatened, whether mature, unmaturing, contingent, known or unknown, at law or in equity, in any forum."

IN WITNESS WHEREOF, the Commissioner, Department of Administrative Services for and on behalf of the State of Connecticut, and the Contractor have executed this contract on the day and year first written.

| Attested By: | | State Of Connecticut | |
|----------------------------------|--------------------|--|---|
| WITNESS: <input type="text"/> | <i>(Signature)</i> | By: <input type="text"/> | <i>(Signature)</i> |
| Print Name: <input type="text"/> | | Print Name: Melody A. Currey | |
| WITNESS: <input type="text"/> | <i>(Signature)</i> | Its: Commissioner | |
| Print Name: <input type="text"/> | | Department of Administrative Services | |
| | | Date Signed: <input type="text"/> | |
| | | | <div style="border: 1px solid black; width: 100%; height: 100%;"></div> |
| | | | SEAL |
| WITNESS: <input type="text"/> | <i>(Signature)</i> | Contractor: <input type="text"/> | |
| Print Name: <input type="text"/> | | By: <input type="text"/> | <i>(Signature)</i> |
| WITNESS: <input type="text"/> | <i>(Signature)</i> | Its: <input type="text"/> | , Duly Authorized |
| Print Name: <input type="text"/> | | Print Name: <input type="text"/> | |
| | | Date Signed: <input type="text"/> | |

**End of Section
00 52 03 Contract**

Subcontract Agreement Form

DAS | Construction Services | Office of Legal Affairs, Policy, and Procurement

In accordance with the requirements of the Connecticut General Statutes (C.G.S.) §4b-96, the Contractor selected for the Contract shall provide to each of its listed or substitute Named Subcontractors the relevant subcontract, along with a notice setting forth the time limit for execution of such subcontract. The Contractor selected for the Contract shall file with the State of Connecticut Department of Administrative Services (DAS) Construction Services Office of Legal Affairs, Policy, and Procurement an executed copy of each subcontract within ten (10) days (Saturdays, Sundays and legal holidays excluded) of presentation of the subcontract to each subcontractor. Each subcontract shall include at least the provisions set forth in the **Subcontract** form found in C.G.S. §4b-96 and shall follow the order of this **Subcontract Agreement Form**.

C.G.S. §4b-96. Subcontract, form. Procedure on failure of subcontractor to execute subcontract. General bidder's responsibilities.

Within five days after being notified of the award of a general contract by the awarding authority, or, in the case of an approval of a substitute subcontractor by the awarding authority, within five days after being notified of such approval, the general bidder shall present to each listed or substitute subcontractor (1) a subcontract in the form set forth in this section and (2) a notice of the time limit under this section for executing a subcontract. If a listed subcontractor fails within five days, Saturdays, Sundays and legal holidays excluded, after presentation of a subcontract by the general bidder selected as a general contractor, to perform his agreement to execute a subcontract in the form hereinafter set forth with such general bidder, contingent upon the execution of the general contract, the general contractor shall select another subcontractor, with the approval of the awarding authority. When seeking approval for a substitute subcontractor, the general bidder shall provide the awarding authority with all documents showing (A) the general bidder's proper presentation of a subcontract to the listed subcontractor and (B) communications to or from such subcontractor after such presentation. The awarding authority shall adjust the contract price to reflect the difference between the amount of the price of the new subcontractor and the amount of the price of the listed subcontractor if the new subcontractor's price is lower and may adjust such contract price if the new subcontractor's price is higher. The general bidder shall, with respect to each listed subcontractor or approved substitute subcontractor, file with the awarding authority a copy of each executed subcontract within ten days, Saturdays, Sundays and legal holidays excluded, of presentation of a subcontract to such subcontractor. The subcontract shall be in the following form:

(See page 2 and page 3)

SUBCONTRACT

THIS AGREEMENT made this day of , 20, by and between a corporation organized and existing under the laws of (a partnership consisting of) (an individual doing business as) hereinafter called the "Contractor" located at (insert complete address) _____, and a corporation organized and existing under the laws of (a partnership consisting of) (an individual doing business as) hereinafter called the "Subcontractor", located at (insert complete address) _____.

WITNESSETH that the Contractor and the Subcontractor for the considerations hereafter named, agree as follows:

1. The Subcontractor agrees to furnish all labor and materials required for the completion of all work specified in Section No. of the specifications for (Name of Subtrade) and the plans referred to therein and addenda No. , and for the (Complete title of project and the project number taken from the title page of the specifications) all as prepared by (Name of Architect or Engineer) for the sum of (\$) and the Contractor agrees to pay the Subcontractor said sum for said work. This price includes the following alternates:

Supplemental No. (s) , , , , , .

(a) The Subcontractor agrees to be bound to the Contractor by the terms of the hereinbefore described plans, specifications (including all general conditions stated therein which apply to his trade) and addenda No. , , , and , and , and to assume to the Contractor all the obligations and responsibilities that the Contractor by those documents assumes to the (Awarding Authority) , hereinafter called the "Awarding Authority", except to the extent that provisions contained therein are by their terms or by law applicable only to the Contractor.

(b) The Contractor agrees to be bound to the Subcontractor by the terms of the hereinbefore described documents and to assume to the Subcontractor all the obligations and responsibilities that the Awarding Authority by the terms of the hereinbefore described documents assumes to the Contractor, except to the extent that provisions contained therein are by their terms or by law applicable only to the Awarding Authority.

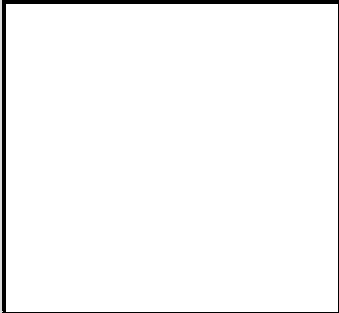
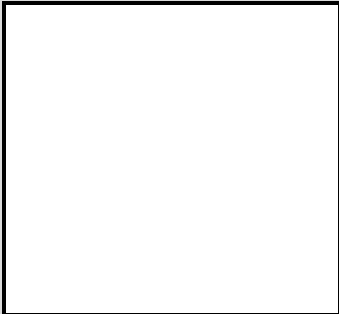
2. The Contractor agrees to begin, prosecute and complete the entire work specified by the Awarding Authority in an orderly manner so that the Subcontractor will be able to begin, prosecute and complete the work described in this subcontract; and, in consideration thereof, upon notice from the Contractor, either oral or in writing, the Subcontractor agrees to begin, prosecute and complete the work described in this Subcontract in an orderly manner in accordance with completion schedules prescribed by the general contractor for each subcontract work item, based on consideration to the date or time specified by the Awarding Authority for the completion of the entire work.

3. The Subcontractor agrees to furnish to the Contractor, within a reasonable time after the execution of this subcontract, evidence of workers' compensation insurance as required by law and evidence of public liability and property damage insurance of the type and in limits required to be furnished to the Awarding Authority by the Contractor.

4. The Contractor agrees that no claim for services rendered or materials furnished by the Contractor to the Subcontractor shall be valid unless written notice thereof is given by the Contractor to the Subcontractor during the first forty (40) days following the calendar month in which the claim originated.

5. This agreement is contingent upon the execution of a general contract between the Contractor and the Awarding Authority for the complete work.

IN WITNESS WHEREOF, the parties hereto have executed this agreement the day and year first above-written.

| | |
|---|----------------------------------|
| Subcontractor | |
|  | <input type="text"/> |
| | Subcontractor |
| | By: <input type="text"/> |
| | <i>(Print Name)</i> |
| | Its: <input type="text"/> |
| | Duly Authorized |
| ATTEST: <input type="text"/> | <input type="text"/> |
| <i>(Signature)</i> | <i>(Subcontractor Signature)</i> |
| Date: <input type="text"/> | Date: <input type="text"/> |
| Contractor | |
|  | <input type="text"/> |
| | Contractor |
| | By: <input type="text"/> |
| | <i>(Print Name)</i> |
| | Its: <input type="text"/> |
| | Duly Authorized |
| ATTEST: <input type="text"/> | <input type="text"/> |
| <i>(Signature)</i> | <i>(Contractor Signature)</i> |
| Date: <input type="text"/> | Date: <input type="text"/> |

**End of Section
00 52 73 Subcontract Agreement Form**



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

| | | | | | | | | | | | | | | | | | | | | | |
|--|--|---------------|--|-----------------------|-----------------|-----------------|--|-------------------------------|--------|------------|--|------------|--|------------|--|------------|--|------------|--|------------|--|
| PRODUCER INSURED Contractor's Legal Name and Address | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">CONTACT NAME:</td> </tr> <tr> <td>PHONE (A.C. No. EXT):</td> <td>FAX (A.C. No.):</td> </tr> <tr> <td colspan="2">E-MAIL ADDRESS:</td> </tr> <tr> <td style="text-align: center;">INSURER(S) AFFORDING COVERAGE</td> <td style="text-align: center;">NAIC #</td> </tr> <tr> <td>INSURER A:</td> <td></td> </tr> <tr> <td>INSURER B:</td> <td></td> </tr> <tr> <td>INSURER C:</td> <td></td> </tr> <tr> <td>INSURER D:</td> <td></td> </tr> <tr> <td>INSURER E:</td> <td></td> </tr> <tr> <td>INSURER F:</td> <td></td> </tr> </table> | CONTACT NAME: | | PHONE (A.C. No. EXT): | FAX (A.C. No.): | E-MAIL ADDRESS: | | INSURER(S) AFFORDING COVERAGE | NAIC # | INSURER A: | | INSURER B: | | INSURER C: | | INSURER D: | | INSURER E: | | INSURER F: | |
| CONTACT NAME: | | | | | | | | | | | | | | | | | | | | | |
| PHONE (A.C. No. EXT): | FAX (A.C. No.): | | | | | | | | | | | | | | | | | | | | |
| E-MAIL ADDRESS: | | | | | | | | | | | | | | | | | | | | | |
| INSURER(S) AFFORDING COVERAGE | NAIC # | | | | | | | | | | | | | | | | | | | | |
| INSURER A: | | | | | | | | | | | | | | | | | | | | | |
| INSURER B: | | | | | | | | | | | | | | | | | | | | | |
| INSURER C: | | | | | | | | | | | | | | | | | | | | | |
| INSURER D: | | | | | | | | | | | | | | | | | | | | | |
| INSURER E: | | | | | | | | | | | | | | | | | | | | | |
| INSURER F: | | | | | | | | | | | | | | | | | | | | | |

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

| INSR LTR | TYPE OF INSURANCE | ADDL SUIN INSR WORD | POLICY NUMBER | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS |
|----------|--|---------------------|--------------------------------|--|---|--|
| | GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-WIDE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC | | Policy Number must be provided | Policy Effective Date must be provided | Policy Expiration Date must be provided | EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADY INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMPYOP AGG \$ 2,000,000 |
| | AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS | | Policy Number must be provided | Policy Effective Date must be provided | Policy Expiration Date must be provided | COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ |
| | <input type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> EXCESS LIAB OCCUR CLAIMS-MADE DED: \$ RETENTION: \$ | | | | | EACH OCCURRENCE \$ AGGREGATE \$ |
| | WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N If yes, describe under DESCRIPTION OF OPERATIONS below | N/A | Policy Number must be provided | Policy Effective Date must be provided | Policy Expiration Date must be provided | <input checked="" type="checkbox"/> WC STATUTORY LIMITS E.L. EACH ACCIDENT \$ 100,000 E.L. DISEASE - EA EMPLOYEE \$ 100,000 E.L. DISEASE - POLICY LIMIT \$ 500,000 |
| | Owner's and Contractor's Protective Liability Builder's Risk (include here when applicable) | | | | | Bodily Injury or Death (per occ.) Total \$ 1,000,000 Property Damages Total (aggregate) \$ 2,000,000 Completed Value |

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES: (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Indicate Project Number and Title here

The State of Connecticut is an Additional Insured with respect to General Liability and Umbrella/Excess Liability Insurance coverage.

If Builder's Risk and or Inland Marine/Transit Insurance is required then the State is endorsed as a Loss Payee.

| | |
|---|---|
| CERTIFICATE HOLDER State of Connecticut Department of Administrative Services, Construction Services Office of Legal Affairs, Policy and Procurement 450 Columbus Boulevard, Suite 1302 Hartford, CT 06103-1838 | CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE Agent of Producer |
|---|---|

© 1988-2010 ACORD CORPORATION. All rights reserved.

ACORD 25 (2010/05)

The ACORD name and logo are registered marks of ACORD

End of Section
00 62 16 Certificate of Insurance

Asbestos Abatement Liability Insurance

DAS | Construction Services | Office of Legal Affairs, Policy, and Procurement

Contractor shall provide Asbestos Abatement Liability insurance **with limits of no less than \$1,000,000.00 per occurrence**. Such insurance shall include all operations associated with hazardous materials removal and shall be written on an **occurrence basis form**. The State of Connecticut shall be named as an Additional Insured.

Asbestos abatement coverage may alternatively be provided under a Commercial General Liability policy provided the policy is specifically endorsed to provide asbestos abatement coverage.

End of Section
00 62 16.1 Asbestos Attachment To Accord Form

**General Conditions of the Contract for Construction
 For Design-Bid-Build
 Department of Construction Services
 State of Connecticut
 TABLE OF CONTENTS**

| ARTICLE | TITLE | PAGE |
|---------|---|------|
| 1 | Definitions | 2 |
| 2 | Conditions of Work | 5 |
| 3 | Correlation of Contract Documents | 5 |
| 4 | Commencement and Progress of Work | 6 |
| 5 | Submittals, Product Data, Shop Drawings and Samples | 7 |
| 6 | Separate Contracts | 7 |
| 7 | Cooperation of Trades | 7 |
| 8 | Damages | 7 |
| 9 | Minimum Wage Rates | 8 |
| 10 | Posting Minimum Wage Rates | 8 |
| 11 | Construction Schedules | 8 |
| 12 | Preference in Employment | 9 |
| 13 | Compensation for Changes in the Work | 9 |
| 14 | Deleted Work | 11 |
| 15 | Materials: Standards | 11 |
| 16 | Inspection and Tests | 12 |
| 17 | Royalties and Patents | 13 |
| 18 | Surveys, Permits, and Regulations | 13 |
| 19 | Protection of the Work, Persons and Property | 13 |
| 20 | Temporary Utilities | 14 |
| 21 | Correction of Work | 14 |
| 22 | Guarantees and Warranties | 14 |

| ARTICLE | TITLE | PAGE |
|-------------------|--|------|
| 23 | Cutting, Fitting, Patching, and Digging | 14 |
| 24 | Cleaning Up | 15 |
| 25 | All Work Subject to Control of the Commissioner | 15 |
| 26 | Authority of the Construction Administrator | 15 |
| 27 | Schedule of Values: Application for Payment | 15 |
| 28 | Partial Payments | 16 |
| 29 | Delivery of Statement Showing Amounts Due for Wages, Materials, and Supplies | 17 |
| 30 | Substantial Completion and Acceptance | 17 |
| 31 | Final Payment | 17 |
| 32 | Owner's Right to Withhold Payments | 18 |
| 33 | Owner's Right to Stop Work or Terminate Contract | 18 |
| 34 | Subletting or Assigning of Contract | 19 |
| 35 | Contractor's Insurance | 19 |
| 36 | Foreign Materials | 20 |
| 37 | Hours of Work | 21 |
| 38 | Claims | 21 |
| 39 | Diesel Vehicle Emissions Control | 23 |
| Appendixes | | |
| | Appendix 1 – CT DCS 7048 General Contractor Retainage Reduction Request Form | 25 |

ARTICLE 1
DEFINITIONS

WHENEVER THE FOLLOWING TERMS, OR PRONOUNS IN PLACE OF THEM, ARE USED THE INTENT AND MEANING SHALL BE AS FOLLOWS:

1.1 ACCEPTANCE: The Owner's acknowledgement of the Work from the Contractor upon certification by the Construction Administrator and Architect or Engineer that all Work has been completed.

1.2 ADDITIONAL OR DELETED WORK: Work required by the Department that, in the judgment of the Commissioner, involves any addition to, deduction from, or modification of the Work required by the Contract Documents.

1.3 AGENCY: The (User) Agency of the State of Connecticut having administrative authority of the facility in which the Work is being performed.

1.4 APPLICATION FOR PAYMENT, PARTIAL PAYMENT OR REQUISITION: Contractor's certified request for payment for completed portions of the Work and, if the Contract so provides, for materials or equipment suitably stored pending their incorporation into the Work.

1.5 ARCHITECT OR ENGINEER: A sole proprietor, partnership, firm, corporation or other business organization under Contract with the Owner, commissioned to prepare Contract Drawings and Specifications, to advise the Owner and in certain cases, to perform regular inspections during construction and when authorized to perform the duties of the Construction Administrator.

1.6 AS-BUILT DRAWINGS: Construction Drawings revised by the Contractor to show all significant Modifications made during the construction process.

1.7 BASE BID: Monetary value stated in the Bid Proposal Form as the sum for which the Bidder offers to perform the Work described in the Bidding Documents, exclusive of adjustments for Supplemental Bids.

1.8 BID BOND: Form of Bid Security executed by the Bidder as Principal and by a Surety to guarantee that the Bidder will enter into a Contract within a specified time and furnish any required bond as mandated by Connecticut General Statute Section 4b-92.

1.9 BIDDER: A sole proprietor, partnership, firm, corporation or other business organization submitting a Bid on the Bid Proposal Form for the Work contemplated.

1.10 BIDDING DOCUMENTS: Collectively, the Bidding Requirements and the proposed Contract Documents, including any addenda issued prior to receipt of Bids.

1.11 BID OR BID PROPOSAL FORM: A complete and duly signed proposal to perform Work (or a designated portion thereof) for a stipulated sum submitted in accordance with the Bidding Documents.

1.12 BID SECURITY: Certified check or Bid Bond submitted with Bid Proposal Form, which provides that the Bidder, if awarded the Contract, will execute such Contract in accordance with the requirements of the Bidding Documents.

1.13 BUILDER'S RISK INSURANCE: A specialized form of property insurance which provides coverage for loss or damage to the Work pursuant to the Contract Documents.

1.14 CASH ALLOWANCE: An amount established in the Contract Documents for inclusion in the Contract Sum to cover the cost of prescribed items not specified in detail, and as shown in the Allowance Schedule.

1.15 CERTIFICATE OF ACCEPTANCE: A document issued by the Owner to the Contractor stating that all Work specified in the Certificate of Acceptance has been completed and accepted by the Owner.

1.16 CERTIFICATE OF COMPLIANCE: A document stating that for the portion of the Project completed, either the design portion or the construction portion, has been performed in substantial compliance with all applicable building codes.

1.17 CERTIFICATE OF OCCUPANCY: Document issued by the authority having jurisdiction certifying that all or a designated portion of a building is approved for its designated use.

1.18 CERTIFICATE OF SUBSTANTIAL COMPLETION: A document prepared by the Architect or Engineer and approved by the Owner on the basis of an inspection stating:

1.18.1 that the Work, or a designated portion thereof, is determined to be Substantially Complete;

1.18.2 the date of Substantial Completion;

1.18.3 the responsibilities of the Owner and the Contractor for security maintenance, heat, utilities, damage to the Work and insurance; and

1.18.4 the time within which the Contractor shall complete the remaining Work.

1.19 CHANGE ORDER: Written authorization signed by the Owner, authorizing a modification in the Work, an adjustment in the Contract Sum, or an adjustment in the Contract Time.

1.20 COMMISSIONER: The State of Connecticut, Department of Construction Services (CT DCS) Commissioner acting directly or through specifically authorized CT DCS personnel or agent(s) having authority to perform duties defined in Article 25.

1.21 COMMISSIONING AGENT (CxA): An independent entity under contract directly with the Owner or Owner's Representative responsible for performing the specified commissioning procedures.

1.22 CONSTRUCTION ADMINISTRATOR: A sole proprietor, partnership, firm, corporation or other business organization, under Contract or employed by the Owner commissioned and/or authorized to oversee the fulfillment of all requirements

of the Contract Documents. The authorized Construction Administrator may be a Department of Construction Services Assistant Project Manager, Department of Construction Services Project Manager, a Clerk of the Works, an Architect, a Consulting Architect, a Consulting Construction Administrator, a Consulting Engineer etc. or any other designee as authorized and identified by the Owner.

1.23 CONSTRUCTION CHANGE DIRECTIVE: A written authorization signed by the Owner, directing a modification in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum, Contract Time or both. Any Construction Change Directive effecting an adjustment to the Contract Sum or Contract Time shall result in a Change Order.

1.24 CONTRACT DOCUMENTS OR CONTRACT: The Agreement between Owner and Contractor, Conditions of the Contract (General Conditions, Supplementary Conditions, General Requirements and other Conditions), Drawings, Specifications, and Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract, all of which shall constitute the Contract.

1.25 CONTRACTOR OR GENERAL CONTRACTOR: A sole proprietor, partnership, firm or Corporation, under direct Contract with the Department of Construction Services, responsible for performing the Work under the Contract Documents. Whenever the words "Contractor" or "General Contractor" are used it shall be understood to mean Contractor.

1.26 CONTRACTOR'S LIABILITY INSURANCE: Insurance purchased and maintained by the Contractor that insures the Contractor for claims for property damage, bodily injury or death.

1.27 CONTRACT START DATE OR DATE OF COMMENCEMENT OF THE WORK: The date, specified by the Owner in the Notice to Proceed, on which the Contractor is required to start the Work.

1.28 CONTRACT SUM: The sum stated in the Contract, which is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

1.29 CONTRACT TIME: The period of time allotted in the Contract Documents for Substantial Completion of the Work, including authorized adjustments thereto. The Contract Time is the sum of all Working Days and Non-Working Days as further defined herein and specified in the Contract Documents.

1.30 DAY: Whenever the word Day is used it shall be understood to mean calendar day stated on the Bidding Documents, unless stated otherwise.

1.31 DEPARTMENT OF CONSTRUCTION SERVICES (CT DCS) PROJECT MANAGER: The individual employed by the Owner, designated and authorized by the Commissioner, to be

responsible for the overall management and oversight of the Project, and to represent the (User) Agency.

1.32 DIESEL VEHICLE EMISSIONS CONTROL: The reduction of air pollution emissions from diesel powered vehicles through the use of diesel engine emission control technologies.

1.33 EQUAL(S): Any deviation from the Specification which is defined as follows: A replacement for the specified material, device, procedure, equipment, etc., which is recognized and accepted as substantially equal to the first listed manufacturer or first listed procedure specified after review by the Architect/Engineer, and may be rejected or approved at the sole discretion of the Owner. All equals must be substantially equivalent to the first manufacturer or first procedure listed in the Specifications with reference to all of the following areas: the substance and function considering quality, workmanship, economy of operation, durability, and suitability for purposes intended; size, rating, and cost. The equal does not constitute a modification in the scope of Work, the Schedule, or Architect/Engineer's design intent of the specified material, device, procedure, equipment, etc.

1.34 FINAL INSPECTION: Review of the Work by the Architect or Engineer and Owner to determine whether Acceptance has been achieved.

1.35 FINAL PAYMENT: The last payment made by the Owner to the Contractor, made after notice of the Acceptance. Payment shall include the entire unpaid balance of the Contract Sum as adjusted by modifications.

1.36 GENERAL CONDITIONS: The General Conditions of the Contract for Construction, part of Division 00 of the Specifications.

1.37 GENERAL REQUIREMENTS: That part of the Contract Documents entitled General Requirements, which is Division 01 of the Specifications.

1.38 GUARANTEE: See Warranty.

1.39 LIQUIDATED DAMAGES: A sum established in a Contract, usually as a fixed sum per Day, as the predetermined measure of damages to be paid to the Owner due to the Contractor's failure to complete the Work within the Contract Time.

1.40 LUMP SUM: An item or category priced as a whole rather than broken down into its elements.

1.41 MOBILE SOURCE: A source designed or constructed to move from one location to another during normal operation except portable equipment and includes, but is not limited to, automobiles, buses, trucks, tractors, earth moving equipment, hoists, cranes, aircraft, locomotives operating on rails, vessels for transportation on water, lawnmowers, and other small home appliances.

1.42 NON-WORKING DAYS: All Saturdays, Sundays, Legal State Holidays (12), and any other Days identified in the

Contract Documents that the Contractor is not permitted to execute the Work. The restriction of Non-Working Days may be suspended upon the approval or direction of the Commissioner.

1.43 NOTICE TO BIDDER: A notice contained in the Bidding Document informing prospective Bidders of the opportunity to submit Bids on a Project.

1.44 NOTICE TO PROCEED: Written notice, issued by the Commissioner or the Commissioner's authorized representative, to the Contractor authorizing the Contractor to proceed with the Work and establishing the date for commencement of the Contract Time.

1.45 OWNER OR DEPARTMENT: The State of Connecticut, Department of Construction Services acting through its Commissioner or specifically authorized Department personnel or agent.

1.46 OVERHEAD: Indirect costs including: supervision (any position over the foreman), field and home office expense, insurance, and small tools and consumables.

1.47 PAYMENT, BOND, LABOR BOND OR MATERIAL BOND: A bond in which the Contractor and the Contractor's surety guarantee to the Owner that the Contractor will pay for labor and materials furnished for use in the performance of the Contract, as required by Connecticut General Statutes Section 49-41.

1.48 PERFORMANCE BOND OR SURETY BOND: A bond in which the Contractor and the Contractor's surety guarantee to the Owner that the Work will be performed in accordance with the Contract Documents, as required by Connecticut General Statutes Section 49-41.

1.49 PERFORMANCE SPECIFICATION: A description of the desired results or performance of a product, material, assembly, procedure, or a piece of equipment with criteria for identifying the standard.

1.50 PLANS OR DRAWINGS: All Drawings or reproductions of Drawings pertaining to the construction of the Work contemplated and its appurtenances.

1.51 PROJECT: The total construction of which the Work performed under the Contract Documents may be the whole or a part.

1.52 PROJECT MANUAL: The set of documents assembled for the Work which includes, but is not limited to, Contract Documents, Bidding Requirements, Sample Forms, General Conditions of the Contract for Construction, General Requirements, and the Specifications.

1.53 PROPRIETARY SPECIFICATION: A specification that describes a product, procedure, function, material, assembly, or piece of equipment by trade name and/or by naming the manufacturer(s) or manufacturer's procedure, exact model number, item, etc., of those products acceptable to the Owner.

1.54 RETAINAGE: A percentage of each Application for Payment and a percentage of the total Contract Sum retained by the Owner.

1.55 SCHEDULE: A Critical Path Method (CPM) or Construction Schedule as required by the Contract Documents which shall be a diagram, graph or other pictorial or written Schedule showing all events expected to occur and operations to be performed and indicating the Contract Time, start dates, durations and finish dates as well as Substantial Completion and Acceptance of the Work, rendered in a form permitting determination of the optimum sequence and duration of each operation.

1.56 SCHEDULE OF VALUES: A document furnished by the Contractor to the Architect or Engineer and Owner stating the portions of the Contract Sum allocated to the various portions of the Work, which is to be used for reviewing the Contractor's Applications for Payment.

1.57 SECONDARY SUBCONTRACTOR: A sole proprietor, partnership, firm or Corporation under direct Contract with the Subcontractor to the General Contractor.

1.58 SENSITIVE RECEPTOR SITES: Areas where concentrations of diesel emissions may be harmful to sensitive populations, including, but not limited to, hospitals, school and university buildings being occupied during a student semester, residential structures, daycare facilities, elderly housing, and convalescent facilities.

1.59 SHOP DRAWINGS: Drawings provided to Architect or Engineer and Owner by a Contractor that illustrate construction, materials, dimensions, installation, and other pertinent information for the incorporation of an element or item into the construction as detailed Contract Documents.

1.60 SPECIFICATIONS: The description, provisions and other requirements pertaining to the method and manner of performing the Work and/or to the quantities and quality of materials to be furnished under the Contract.

1.61 SUBCONTRACTOR: A sole proprietor, partnership, corporation or other business organization under direct Contract with the Contractor supplying labor and/or materials for the Work at the site of the Project.

1.62 SUBMITTALS: Documents including, but not limited to, samples, manufacturer's data, Shop Drawing, or other such items submitted to the Owner and Architect or Engineer by the Contractor for the purpose of approval or other action, as required by the Contract Documents.

1.63 SUBSTANTIAL COMPLETION: The stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents.

1.64 SUBSTITUTION: Any deviation from the specified requirements, which is defined as follows: A replacement for

the specified material, device, procedure, equipment, etc., which is not recognized or accepted as equal to the first manufacturer or procedure listed in the Specification after review by the Architect/Engineer, and may be rejected or approved by the Owner. The Substitution is not equal to the specified requirement in comparison to the first manufacturer or first procedure listed in the Specifications in one or more of the following areas: the substance and function considering quality, workmanship, economy of operation, durability, and suitability for purposes intended; size, cost, and rating. The Substitution constitutes a modification in the scope of Work, the Schedule, or the Architect/Engineer's design intent of the specified material, device, procedure, equipment, etc.

1.65 SUPERINTENDENT: The Contractor's representative at the site who is responsible for continuous field supervision, coordination, in, completion of the Work, and, unless another person is designated in writing by the Contractor to the Owner and the Construction Administrator, for the prevention of accidents.

1.66 SUPPLEMENTAL BID: The monetary value stated in the Bid to be added to the amount of the Base Bid if the corresponding Work, as described in the Bidding Documents, is accepted.

1.67 SUPPLEMENTARY CONDITIONS: An extension in the Bid to be added to the amount of the Base Bid if the corresponding Work, as described in the Bidding Documents, is accepted.

1.68 THRESHOLD LIMIT BUILDING: Any proposed (new) structures or additions as defined by the Connecticut General Statutes Section 29-276b.

1.69 UNIT PRICE: The monetary value stated by the Owner or the Contractor, as a price per unit of measurement for materials or services as described in the Contract Documents and/or Bidding Documents.

1.70 WARRANTY: A written, legally enforceable assurance of specified quality or performance of a product or Work or of the duration of satisfactory performance.

1.71 WORK: The construction and services required by the Contract Documents, and including all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

ARTICLE 2 CONDITIONS OF WORK

2.1 The Contractor shall carefully examine and study the conditions under which the Work is to be performed and the site of the Work, and compare the Contract Documents with each other and to information furnished by the Owner including but not limited to the Plans and Specifications, the form of the Contract, General Conditions, Supplementary Conditions, General Requirements, Bonds and all other Contract Documents associated with the Work.

2.2 The Contractor shall report to the Construction Administrator all errors, inconsistencies or omissions discovered. The Contractor shall not be liable to the Owner for damage resulting from errors, inconsistencies or omissions in the Contract Documents unless the Contractor recognized such errors, inconsistencies or omission and failed to report it to the Construction Administrator. If the Contractor performs any actions or construction activity knowing it involves an error, inconsistency or omission in the Contract Documents without notice to the Construction Administrator, the Contractor shall assume responsibility for such performance and related costs for the correction and shall not be allowed to submit any claim related to error, inconsistencies or omission.

2.3 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Construction Administrator at once; and it will be assumed that the Contractor has been satisfied as to all requirements of the Contract Documents. Any deterrent conditions at the site of the Work which are obvious and apparent upon examination of the site but are not indicated on the Plans shall be corrected by the Contractor without additional compensation.

2.4 In performing the Work, the Contractor must employ such methods or means as will not cause any interruption of or interference with the Work of any other Contractor, nor any inordinate disruption with the normal routine of the Owner, institution or Agency operating at the site.

2.5 No claims for additional compensation will be considered when additional costs result from conditions made known to, discovered by, or which should have been discovered by, the Contractor prior to Contract signing.

2.6 All Communications from the Contractor concerning proposed changes to the Contract Sum, Contract Time, or Work shall be in writing.

2.7 The Contractor shall perform the Work in accordance with the Contract Documents and approved Submittals pursuant to Article 5.

ARTICLE 3 CORRELATION OF CONTRACT DOCUMENTS

3.1 The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all. Where discrepancies or conflict occur in the Contract Documents the following order of precedence shall be utilized:

3.1.1 Amendments and addenda shall take precedence over previously issued Contract Documents.

3.1.2 The Supplementary Conditions take precedence over the General Conditions.

3.1.3 The General Conditions take precedence over the General Requirements.

3.1.4 The Specifications shall take precedence over the Plans.

3.1.5 Stated dimensions shall take precedence over scaled dimensions.

3.1.6 Large-scale detail Drawings shall take precedence over small-scale Drawings.

3.1.7 The Schedules contained in the Contract Documents shall take precedence over other data on the Plans.

3.2 Neither party to the Contract shall take advantage of any obvious error or apparent discrepancy in the Contract Documents. The Contractor shall give immediate written notification of any error or discrepancy discovered to the Construction Administrator, who shall take the necessary actions to obtain such corrections and interpretations as may be deemed necessary for the completion of the Work in a satisfactory and acceptable manner. The Contractor shall then promptly proceed under the direction of the Owner and the provisions of Article 13. The Contractor's failure to provide immediate notice shall mean the Contractor will not be entitled to any additional compensation, either monetary or Contract Time adjustment, with respect to any discrepancy.

3.3 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

3.4 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings, shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

3.5 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

ARTICLE 4 **COMMENCEMENT AND PROGRESS OF WORK**

4.1 The Work shall start upon the date given in the Notice to Proceed. The Contractor shall complete all the Work necessary for Final Payment, including but not limited to Substantial Completion, Contract close-out, testing and demonstration of all systems as required for Acceptance, punchlist Work, training and submission of Record Documents, manuals, Guarantees and Warranties as stated in the Contract Document.

4.2 Time is of the essence with respect to the Contract Time. By executing the Contract, the Contractor confirms and agrees that the Contract Time is a reasonable period to perform the Work. The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. The Contractor may, at his discretion, plan to complete the Work and achieve Substantial Completion in less time than the Contract Time.

4.3 The Contractor's early completion Schedule

notwithstanding, the Owner reserves the right to order Modifications to the Work in accordance with Article 13 at any time during the Contract Time.

4.4 The Contractor shall not be entitled to costs for delay due to Owner ordered Modifications or any other circumstances for the period of time between the Contractor's elected early completion and the end of the Contract Time. Such costs include, but are not limited to, extended home office costs, field office costs, or supervisory and management costs incurred in performance of the Work. Early completion of the Work shall not merit additional compensation.

4.5 If the Contractor is delayed at any time in the progress of Work by acts of God, such as fire or flood or any action, injunction or stop order issued by any court, judge or officer of the court or any other court action beyond the Owner's control, then the Contract Time may be extended by Change Order for such reasonable time as demonstrated by the Contractor's Schedule and as the Owner may determine that such event has delayed the Work. In any event, the granting of an extension of time shall be solely within the discretion of the Owner.

4.6 Except as otherwise may be provided herein, extensions of time shall be the Contractor's sole remedy for such delay. No payment or compensation of any kind shall be made to the Contractor for damages because of hindrance in the orderly progress of Work caused by the aforesaid causes.

4.7 The Contractor acknowledges that the Contract amount includes and anticipates any and all delays, whether avoidable or unavoidable, from said orders, which may issue from any court, judge, court officer, or act of God, and that such delays shall not, under any circumstances, be construed as compensable delays.

4.8 Any extension of the Contract Time shall be by Change Order pursuant to Article 13.

4.9 The Contractor shall employ a competent project manager who shall represent the Contractor. Communications given to the project manager shall be binding as if given to the Contractor. The project manager will be employed full time on the Project and be located and assigned to the Project site during and for the duration of the Work.

4.10 The Contractor shall employ a competent Superintendent and necessary assistants who will be in attendance at the project site during the performance of the Work.

4.11 Upon execution of the Contract, materials may be purchased. No material escalation costs will be valid or compensable unless the Owner directs, in writing, a delay in the procurement.

ARTICLE 5 **SUBMITTALS, PRODUCT DATA, SHOP** **DRAWINGS AND SAMPLES**

5.1 Contractor shall review, approve, and submit to the Construction Administrator all Submittals including but not limited to, product data, Shop Drawings, and samples, with such promptness as to cause no delay in the Work.

5.2 Correction or approval of such Submittals, Shop Drawings, product data and samples will be made with reasonable promptness by the Architect or Engineer. Approval will be general only and shall not relieve the Contractor from responsibility for errors in dimensions, for construction and field coordination of the Work or for any departure from the Contract Documents, unless such departure has received the Owner's written approval.

5.3 No Work governed by such Shop Drawings, Schedules or samples shall be fabricated, delivered or installed until approved by the Architect or Engineer.

5.4 No damages for delays or time extensions will be granted, even if approvals deviate from the approved Schedule.

ARTICLE 6 SEPARATE CONTRACTS

6.1 The Owner reserves the right to perform Work in connection with the Contract with the Owner's own forces, or to let separate contracts relating to the Contract (Project) site or in connection with Work on adjoining sites. In such cases, the Contractor shall afford such parties reasonable opportunity for storage of materials and equipment and coordinate and connect the Work with the work on adjoining sites or other Projects, and shall fully cooperate with such parties in the matter required under Article 7 herein.

6.2 Contractors working in the same vicinity shall cooperate with one another and, in case of dispute, decision of the Owner shall be final and binding to all Contractors involved, including Contractors under separate Contracts.

6.3 The Contractor shall assume all liability, financial or otherwise, in connection with this Contract and shall protect and hold harmless the Owner from any and all damages or claims that may arise because of inconvenience or delay which the Contractor may cause other Contractors. If the Contractor experiences a loss because of the presence and operations of other Contractors working adjacent to or within the limits of the same Project, then as between the Owner and the Contractor, the Contractor shall bear such loss.

6.4 Insofar as possible, the Contractor shall arrange the Work and shall place and dispose of the materials being used so as not to interfere with the operations of other Contractors adjacent to or within the limits of the same Project. The Contractor shall join its Work with that of others in an acceptable manner, and perform the Work in proper accordance with that of the others.

6.5 In no event shall the Owner be responsible for any claim or damages that are the result of the Contractor's failure

to coordinate the Work with any other Contractor or Subcontractor.

ARTICLE 7 COOPERATION OF TRADES

7.1 The Contractor shall be responsible for and shall control all activities of their Subcontractors. The Subcontractors shall consult and cooperate with one another. Each Subcontractor shall furnish all necessary information to other Subcontractors and shall lay out and install their own Work so as to avoid any delays or interference with the Work of others.

7.2 Any cost or changes, cutting and/or repairing, made necessary by the failure to observe the above requirements shall be borne by the party or parties responsible for such failure or neglect or their faulty Work installed.

ARTICLE 8 DAMAGES

8.1 The Liquidated Damages, provided in the Bidding Documents, will be assessed at two distinct times, as follows:

8.1.1 Liquidated Damages – Substantial Completion:

If the Contractor fails to achieve Substantial Completion of the Work by the Substantial Completion Date, and such delay is not otherwise excused under this Contract, then the Contractor agrees to pay to the Owner Liquidated Damages for the dollar amount specified in the Bid Proposal Form for this Project, for each Day beyond Substantial Completion that the Contractor fails to achieve Substantial Completion. The parties to this Contract acknowledge and agree that the actual damages that are to be anticipated as a result of the neglect, failure, or refusal of the Contractor to substantially complete the Project by the established Substantial Completion Date are uncertain in amount or extremely difficult to determine. Accordingly, the parties to this Contract do intend and in fact now agree to liquidate damages in advance and stipulate that the amount set forth in this subparagraph is reasonable and an appropriate remedy and is intended to constitute compensatory damages and does not constitute a penalty of any kind. The parties understand and agree that, by including a provision for Liquidated Damages in this Contract, or in pursuing any relief pursuant to such provision:

.1 the parties do not intend to set a price for the privilege not to perform;

.2 the availability of Liquidated Damages may not be relied upon as a basis for argument that the Owner has an adequate remedy at law; and

.3 the remedies available to the Owner under this Agreement are cumulative and not exclusive.

8.1.2 Liquidated Damages – Acceptance:

If the Contractor fails to complete all of the Work required for Acceptance of the Work within ninety (90) Days of Substantial Completion then the Contractor agrees to pay

to the Owner Liquidated Damages for the dollar amount specified in the Bid Proposal Form for each Day in excess of ninety (90) Days beyond the Substantial Completion Date that the Contractor fails achieve Acceptance. The parties to this Contract acknowledge and agree that the actual damages that are to be anticipated as a result of the failure of the Contractor to complete all of the Work required for Acceptance within ninety (90) Days of the established Substantial Completion Date are uncertain in amount or extremely difficult to determine. Accordingly, the parties to this Contract do intend and in fact now agree to liquidate damages in advance and stipulate that the amount set forth in this subparagraph is reasonable and an appropriate remedy and is intended to constitute compensatory damages and does not constitute a penalty of any kind. The parties understand and agree that, by including a provision for Liquidated Damages in this Contract, or in pursuing any relief pursuant to such provision:

- .1 the parties do not intend to set a price for the privilege not to perform;
- .2 the availability of Liquidated Damages may not be relied upon as a basis for argument that the Owner has an adequate remedy at law; and
- .3 the remedies available to the Owner under this Agreement are cumulative and not exclusive.

8.2 The Liquidated Damages or any portion thereof may be waived at the sole discretion of the Commissioner.

8.3 No payment by the Owner, either partial or final, shall be construed to waive the Owner's right to seek Liquidated Damages.

8.4 In the event a court determines that the Contract herein is null and void for any reason, Contractor agrees that Contractor will not seek or pursue any lawsuit or claim for damages, including, but not limited to, claims for loss of Overhead or anticipated profits, against the Owner and the Owner shall not be liable for any damages which Contractor may incur as a result of such decision. In addition, if the court enjoins the Owner from entering into or proceeding with the Contract herein, the Owner shall not be liable for any damages arising out of or relating to the award of such Contract which Contractor may have incurred as a result of the injunction.

ARTICLE 9 **MINIMUM WAGE RATES**

9.1 In accordance with the provisions of the Connecticut General Statutes Section 31-53, the following applies:

"The wages paid on an hourly basis to any person performing the work of any mechanic, laborer, or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in subsection (h) of this section, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement

to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each payday."

9.2 Each Contractor who is awarded a Contract on or after October 1, 2002 shall be subject to provisions of the Connecticut General Statutes, Section 31-53 as amended by Public Act 02-69, "An Act Concerning Annual Adjustments to Prevailing Wages."

No wage adjustment will be made to the Contract for any wage increase under this Article.

ARTICLE 10 **POSTING MINIMUM WAGE RATES**

10.1 The Contractor shall post at conspicuous points on the site of the Contract a Schedule showing all determined wage rates for all trades and all authorized deductions, if any, from wages to be paid.

10.2 The Contractor shall provide weekly certified payrolls to the Owner for all persons working on the site.

ARTICLE 11 **CONSTRUCTION SCHEDULES**

11.1 Unless otherwise specified in the Contract Documents, within twenty-one (21) Days from the Contract Start Date, the Contractor shall submit the following to the Owner for approval:

11.1.1 A comprehensive Schedule of Submittals required by the Specifications. Said Schedule shall include Submittal dates, required approval dates and date material must be on site.

11.1.2 The Contractor shall allow a minimum of 14 Days for the Owner and its agents' review of Submittals. No extension of the Contract Time shall be granted for revisions and resubmission. Further, the Contractor shall allow a minimum of eight weeks for testing and Acceptance of the Work by the Owner.

11.1.3 When the Contract Documents specify a "CPM Schedule" a detailed Critical Path Method Schedule is required using software approved by the Owner and/or Construction Administrator with as many activities as necessary to make the Schedule an effective tool for planning and monitoring the progress of the Work. The Contractor shall show all pertinent activities requiring coordination between trades.

11.1.4 When the Contract Documents specify a "Construction Schedule" a detailed Construction Schedule is required using software approved by the Owner as a horizontal bar chart with a separate bar for each major portion of the Work or operation to make the Schedule an effective

tool for planning and monitoring the progress of the Work.

11.2 Unless otherwise specified under the Contract Documents, the Contractor shall provide a monthly update of the CPM Schedule or Construction Schedule in the format required by the Owner as well as a disk of the updated Schedule and program. If, in the opinion of the Owner, the Work is falling behind Schedule, the Contractor shall submit a revised Schedule demonstrating a recovery plan to ensure Substantial Completion of the Work within the Contract Time.

11.3 Overtime, increased manpower, and additional shifts: If ordered by the Owner in writing, the Contractor shall work overtime, and/or add additional manpower and/or shifts:

11.3.1 If the Contractor is not behind Schedule, the Owner will pay the Contractor the actual additional premium portion of the wages for overtime or additional shift work not included in the Contract price, but the Contractor shall not be entitled to Overhead and Profit.

11.3.2 If the Contractor, through its sole or partial fault or neglect is behind Schedule, the Owner may order the Contractor, at the Contractor's expense, to increase its manpower or to work any overtime or additional shifts or take other action necessary to expedite the Work to meet the Project Schedule.

11.3.3 If the Schedule is shown to be more than 21 Days behind in any critical activity, overtime, increase manpower and/or additional shifts shall be implemented immediately regardless of who is at fault. A disagreement over the cause of the impact will not relieve the Contractor from the obligation of complying with this Article. Once liability for the impact is determined, compensation will be determined in accordance with 11.3.1 or 11.3.2.

11.3.4 The Owner reserves the right to suspend activity under Paragraph 11.3. Suspension shall be in writing and at the sole discretion of the Commissioner.

11.4 Requisitions for partial payment will not be processed until the Contractor has complied with this requirement.

ARTICLE 12 **PREFERENCE IN EMPLOYMENT**

12.1 Should this Contract be for the construction or repair of any building, then in the employment of labor to perform the Work specified herein, preference shall be given to citizens of the United States, who are, and continuously for at least three (3) months prior to the date hereof, have been residents of the labor market area, as established by the State of Connecticut Labor Commissioner, in which such Work is to be done, and if no such qualified person is available, then to citizens who have continuously resided in the county in which the Work is to be performed for at least three (3) months prior to the date hereof, and then to citizens of the state who have continuously resided in the State at least three months prior to the date hereof.

12. Should this Contract be for a Construction Services

Project other than for the construction, remodeling or repairing of public buildings covered by Connecticut General Statutes 31-52, then in the employment of mechanics, laborers or workmen to perform the Work specified herein, preference will be given to residents of the state who are, and continuously for at least six (6) months prior to the date hereof have been residents of this State, and if no such person is available then to residents of other states.

12.3 The provisions of this Article shall not apply where the state or any subdivision thereof may suffer the loss of revenue granted or to be granted from any Agency or Department of the federal government as a result of this Article or regulations related thereto.

ARTICLE 13 **COMPENSATION FOR CHANGES** **IN THE WORK**

13.1 At any time, without invalidating the Contract and by a written order and without notice to the sureties, the Owner, through the Construction Administrator, may order modifications in the Work consisting of additions, deletions or other revisions. Upon request, the Contractor shall supply the Construction Administrator promptly with a detailed proposal for the same, showing quantities of and Unit Prices for the Work and that of any Subcontractor involved.

13.2 Modifications to the Work will be authorized by a written Change Order, or if necessary to expedite the Work, a written Construction Change Directive, issued by the Owner as provided for in Article 25. Change Orders and Construction Change Directives shall be processed in accordance with the terms of the Contract Documents. Upon receipt of the written Change Order, the Contractor shall proceed with the Work when and as directed.

13.3 If a Change Order makes the Work less expensive for the Contractor, the proper deductions shall be made from the Contract Sum, said deductions to be computed in accordance with the provisions listed in this Article 13.

13.4 The Contractor shall not be entitled to an extension of time if in the opinion of the Owner the Additional Work in conjunction with the Work can be performed without impact on the Contract Time.

13.5 The Contractor may request, and the Owner may grant additional Contract Time when, in the opinion of the Owner, the Contractor has demonstrated that the Additional Work cannot be performed in conjunction with the Work without impact on the original Substantial Completion and/or Acceptance (if applicable) date.

13.6 The amount of compensation to be paid to the Contractor for any Additional or Deleted Work that results in a Change Order shall be determined in one of the following manners:

13.6.1 **AMOUNT OF COMPENSATION FOR CHANGE ORDER COSTS: LABOR, EQUIPMENT, BENEFITS AND MATERIAL:**

13.6.1.1 Unit Price: As stated in the Contract Documents.

13.6.1.2 Unit Price: As subsequently agreed upon by the Contractor and Owner

13.6.1.3 Lump Sum: Agreed upon sum by the Owner and the Contractor. The Owner may rely on costs, prices, and documentation provided by the Contractor or Subcontractor in agreeing to a Lump Sum. If the Owner believes that additional information is necessary to substantiate the accuracy of the cost, the Owner reserves the right to request and receive additional information from the Contractor. The Lump Sum must be based upon the following itemized costs:

13.6.1.3.1 Labor: (Contractor's or Subcontractor's own forces) No Change Order Proposal shall be negotiated if the request is solely for the increased labor rate over those originally carried by the Contractor in its original bid. Additional foreman hours shall not be included unless additional crews are added and/or a compensable time extension is granted. Project Executive time shall not be included as a direct cost as it is part of the overhead mark-up allowed. Project manager hours shall not be included unless a compensable time extension is granted.

13.6.1.3.2 Material: (Actual cost to the Contractor or Subcontractor) Cost shall not be based upon list pricing unless it reflects the actual prices being paid and no discounts or other offsets are being received by the Contractor or Subcontractor. No Change Order Proposal shall be negotiated if the request is solely for the escalation of material prices over those originally carried by the Contractor in its original bid.

13.6.1.3.3 Benefits: (The established rates of the following benefit costs inherent to the particular labor involved):

- 13.6.1.3.3.1** Workers Compensation.
- 13.6.1.3.3.2** Federal Social Security.
- 13.6.1.3.3.3** Connecticut Unemployment Compensation.
- 13.6.1.3.3.4** Fringe Benefits.

13.6.1.4 Rented Equipment: (Used directly on the Work and by the Contractor's or Subcontractor's own forces).

13.6.1.5 Owned Equipment: (Used directly on the Work and by the Contractor's or Subcontractor's own forces). Daily rate is not to exceed 3% of the monthly rental rate as identified by a nationally recognized construction cost estimating guide or service.

13.6.1.6 Small Tools:
Include items such as shovels, picks, rakes, ladders, and power tools which are expected to be utilized on a project. Trade related equipment, hand tools, and power tools normally supplied with the labor or are normally expected to be owned in the performance of the typical work for a trade are not compensable. These costs shall not be approved as part of the Direct Cost of a Change Order as they are included in the Contractor's overhead mark-up percentage.

13.6.2 OVERHEAD AND PROFIT PERCENTAGES: (Maximum allowable percentages applied to labor, equipment, and material)

13.6.2.1 Contractor's mark-up for Work performed by its own forces:

| Change Order Amount | Overhead and Profit |
|----------------------|---------------------|
| \$0 to \$ 5,000 | 20% |
| \$5,001 to \$15,000 | 17% |
| \$15,001 to \$25,000 | 15% |
| \$25,000 and greater | 12% |

13.6.3 OVERHEAD AND PROFIT PERCENTAGES: (Maximum allowable percentages applied to labor, equipment, benefits and material)

13.6.3.1 Contractor's mark-up for Work performed by its Subcontractor's forces and not allowable for any subsidiary in which the Contractor has a majority ownership:

| Change Order Amount | Overhead and Profit |
|---------------------|---------------------|
| \$0 and greater | 6% |

13.6.4 OVERHEAD AND PROFIT PERCENTAGES: (Maximum allowable percentages applied to labor, equipment, benefits and material) Subcontractor's mark-up for Work performed by its own forces:

| Change Order Amount | Overhead and Profit |
|----------------------|---------------------|
| \$0 to \$ 5,000 | 20% |
| \$5,001 to \$15,000 | 17% |
| \$15,001 to \$25,000 | 15% |
| \$25,000 and greater | 12% |

13.6.5 OVERHEAD AND PROFIT PERCENTAGES: (Maximum allowable percentages applied to labor, equipment, benefits and material)

13.6.5.1 Subcontractor's mark-up for Work performed by its Secondary Subcontractor's forces. Limited to one level (tier) below the Subcontractor and not allowable for any subsidiary in which the Subcontractor has a majority ownership.

| Change Order Amount | Overhead and Profit |
|---------------------|---------------------|
| \$0 and greater | 6% |

13.7 BOND COSTS

13.7.1 Actual additional bonding costs associated with the value of the Change Order will be compensable only when supported by written documentation by the bonding company that the Change Order requires an increase to the original Performance, Payment, Labor or Material Bond.

13.7.2 The Contractor shall notify the bonding company at each \$500,000 increase to the contract value as the cumulative result of change orders. A copy of the Consent of Surety must be provided to the Owner prior to the execution of any change order which exceeds each cumulative \$500,000.

13.8 Trade discounts, rebates, and amounts received from the sales by the Contractor of surplus materials and equipment shall accrue to the Owner.

13.9 If the parties cannot agree upon a Lump Sum, then the Commissioner, through the Project Manager, may at the option of the Commissioner take the following action(s):

13.9.1 Issue a Construction Change Directive for the Additional or Deleted Work. The amount of compensation shall be computed by the actual net costs to the Contractor determined by time and material or Unit Prices based upon the same information required in Subparagraphs 13.6.1.3.3.1 through 13.6.1.5:

13.9.1.1 Labor: (Contractor's or Subcontractor's own forces).

13.9.1.2 Material: (Used by Contractor's or Subcontractor's own forces).

13.9.1.3 Benefits: (The established rates of the following benefit costs inherent to the particular labor involved):

13.9.1.3.1 Workers Compensation.

13.9.1.3.2 Federal Social Security.

13.9.1.3.3 Connecticut Unemployment Compensation.

13.9.1.3.4 Fringe Benefits.

13.9.1.4 Rented Equipment: (Used directly on the Work and by the Contractor's or Subcontractor's own forces).

13.9.1.5 Owned Equipment: (Used directly on the Work and by the Contractor's or Subcontractor's own forces). Daily rate is not to exceed 3% of the monthly rental rate that can be identified by a nationally recognized construction cost estimating guide or service.

13.9.2 Issue a Change Order adjusting the Contract Sum in the amount as determined by the Commissioner.

13.10 For any Change Order or Construction Change Directive the Contractor shall, when requested, promptly furnish in a form satisfactory to the Construction Administrator and the Owner a complete detailed accounting of all costs relating to the Additional Work, including but not limited to certified payrolls and copies of accounts, bills and vouchers to substantiate actual costs. Further, the Owner reserves the right to access and make copies of the Contractor's records at any time upon written request from the Commissioner.

13.11 Failure of the Contractor to negotiate in good faith issues of time and costs or failure to provide requested documentation within fourteen (14) Days, or a time period accepted by the Commissioner, shall constitute a waiver by the Contractor of any claim. In such cases the Owner may elect to issue a unilateral Change Order in an amount deemed to be fair and equitable by the Commissioner. The provisions hereof shall not affect the power of the Contractor to act in case of emergency, threatened injury to persons, or damage to Work on any adjoining property. In this case the Commissioner, through the Project Manager, shall issue a Change Order for such amount as the Commissioner finds to be reasonable cost of such Work.

ARTICLE 14 DELETED WORK

14.1 Without invalidating any of the terms of the Contract, the Commissioner may order deleted from the Contract any items or portions of the Work deemed necessary by the Commissioner.

14.2 The compensation to be deducted from the Contract Sum for such deletions shall be determined in the manner provided for under the provisions of Article 13 or in the event none of the provisions of Article 13 are applicable then by the value as estimated by the Owner.

ARTICLE 15 MATERIALS: STANDARDS

15.1 Unless otherwise specifically provided for in the Specifications, all equipment, materials and articles incorporated in the Work are to be new and of the best grade of their respective kinds for the purposes. Wherever in the Contract Documents a particular brand, make of material, device, or equipment is shown or specified, the first manufacturer listed in the specification section is to be regarded as the standard. When the specification is proprietary and only one manufacturer is listed, the Contractor shall use the named manufacturer and no Substitutions or Equals will be allowed.

15.2 Any other brand, make of material, device, equipment, procedure, etc. which is a deviation from the specified requirement is prohibited from use, but may be considered by the Owner for approval as an Equal or Substitution. The Contractor is to adhere to the specific requirements of the Contract Documents. Substitutions are discouraged and are only approved by the Commissioner as an exception.

15.3 Submittals – Equals and Substitution Requests:

15.3.1 Substitution of Materials and Equipment before Bid Opening. The Owner will consider requests for Equals or Substitutions, if made prior to the receipt of the Bid. The information on all materials shall be consistent with the information herein.

15.3.1.1 Statement of Variances – a statement of variances must list all features of the proposed Substitution which differ from the Drawings, Specifications and/or product(s) specified and must further certify that the Substitution has no other variant features. A request will be denied if submitted without sufficient evidence.

15.3.1.2 Substitution Denial – any Substitution request not complying with the above requirements will be denied. Substitution request sent after the deadline established in the Notice to Bidder will be denied.

15.3.1.3 An addendum shall be issued to inform all prospective Bidders of any accepted Substitution in accordance with Owner's addenda procedures.

15.3.2 **Substitution of Materials and Equipment After Bid Opening:** Subject to the Architect or Engineer's determination, if the material or equipment is Equal to the

one specified or pre-qualified and the CT DCS Project Manager's approval of such determination, Substitution of Material or Equipment may be allowed after the Letter of Award is issued only:

15.3.2.1 If the specified or pre-qualified item is delayed by unforeseeable contingencies beyond the control of the Contractor which would cause a delay in the Project completion;

15.3.2.2 If any specified or pre-qualified item is found to be unusable or unavailable due to a change by the manufacturer or other circumstances; or

15.3.2.3 If the Contractor desires to provide a more recently developed material, equipment, or manufactured model from the same named manufacturer than the one specified or pre-qualified; or

15.3.2.4 If the specified material and/or equipment inadvertently lists only a single manufacturer.

15.4 Contractor shall submit each request for Equal or Substitution to the Architect or Engineer who shall review each request and make the following recommendations to the Owner:

15.4.1 Acceptance or non-acceptance of the adequacy of the submission and required back-up,

15.4.2 Determination of the category of the request for Substitution or Equal, and

15.4.3 Overall recommendation for approval or rejection of the Substitution or Equal. The determination of the category as a Substitution may be grounds for an immediate rejection by the Owner.

15.5 Approval of the Owner for each Equal or Substitution shall be obtained before the Contractor proceeds with the Work. The decision of the Commissioner, in this regard, shall be final and binding on the Contractor.

15.6 No extension of time will be allowed for the time period required for consideration of any Substitution or Equal. No extension of time will be allowed and no responsibility will be assumed by the Owner when a Contractor submits a request for Substitution or Equal, whether such request be approved or denied, and the Contractor shall not be entitled to any claim for damages for delay.

15.7 If the Contractor submits any request for an Equal or a Substitution, he shall bear the burden of proof that such requested Equal or Substitution meets the requirements of the Plans and Specifications.

15.8 The Contractor shall purchase no materials or supplies for the Work which is subject to any chattel mortgage or which are under a conditional sale or other agreement by which an interest is retained by the seller. The Contractor warrants that the Contractor has good title to all materials and supplies used by him in the Work.

15.9 All products and systems supplied to the State as a result of a purchase by a Contractor shall be certified that, to the best of the supplier's knowledge, there are no materials that are classified as hazardous materials being used within the assembly. Hazardous materials include, but are not limited

to, products such as asbestos, lead, and other materials that have proven to cause a health risk by their presence.

ARTICLE 16 INSPECTION AND TESTS

16.1 The purpose of the inspections will be to assure that the Work is performed in accordance with the Contract Documents. These inspections shall include, but not be limited to, all inspections and testing as required by the Owner, and any authorities have jurisdiction.

16.2 All material and workmanship, if not otherwise designated by the Specifications, shall be subject to inspection, examination and test by the Commissioner at any and all times during manufacture and/or construction and at any and all places where such manufacture and/or construction is carried on. The Contract Documents additionally identify the parties responsible for performing and paying for the required testing and inspections. All required tests performed in a laboratory will be obtained and paid for by the Owner, except when the tests show the Work to be defective. The Contractor shall pay for all the costs associated with re-tests and re-inspections for all tests and inspections which fail. The Owner will issue a deduct Change Order to recover said retesting costs from the Contractor. All other tests, unless otherwise specified, shall be made at the Contractor's expense. Notice of the time of all tests to be made at the site shall be given to all interested parties, including the Owner.

16.3 Without additional cost to the Owner, the Contractor shall promptly furnish facilities, labor and materials necessary to coordinate and perform operational tests and checkout of the Work. The Contractor shall furnish promptly all reasonable facilities, labor, and materials necessary to make all such testing safe and convenient.

16.4 If, at any time before final payment and Acceptance of the Work, the Commissioner considers it necessary or advisable to examine of any portion of the Work already completed by removing or tearing out the same, the Contractor shall, upon request, furnish promptly all necessary facilities, labor, and materials. If such Work is found to be defective in any material respect, as determined by the Owner, because of a fault of the Contractor or any of the Contractor's Subcontractors, or if any Work shall have been covered without the approval or consent of the Commissioner (whether or not it is found to be defective), the Contractor shall be liable for testing costs and all costs of correction, including removal and/or demolition of the defective Work, including labor, material, and testing, including labor, material, re-testing or re-inspecting, services of required consultants, additional supervision, the Commissioner's and the Construction Administrator's administrative costs, and other costs for services of other consultants.

16.5 Cost of Systems Commissioning Retesting: The cost to retest a pre-functional or functional test, if the Contractor is responsible for the deficiency, shall be the Contractor's. If the Contractor is not responsible, any cost

recovery for retesting costs shall be negotiated with the Contractor.

16.5.1 For a deficiency identified, not related to any pre-functional checklist or start-up fault, the following shall apply: The Commissioning Agent (CxA) and Construction Administrator will direct the retesting of the equipment once at no "charge" to the Contractor for their time. However, the Commissioning Agent's and Construction Administrator's time for additional testing will be charged to the Contractor.

16.5.2 The time for the Systems Commissioning Agent and Construction Administrator to direct any retesting required because a specific pre-functional checklist or start-up test item, reported to have been successfully completed, but determined during functional testing to be faulty, will be back charged to the Contractor.

16.5.3 Any required retesting by any Subcontractor shall not be considered a justified reason for a claim of delay or for a time extension by the Contractor.

ARTICLE 17 ROYALTIES AND PATENTS

17.1 If the Contractor desires to use any design, device, material or process covered by a patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the holder of said patent or copyright. The Contractor shall furnish a copy of this legal agreement to the Owner.

17.2 The Contractor shall indemnify and hold harmless the Owner and Construction Administrator for any costs, expenses and damage which it may be obliged to pay by reason of any infringement of a patent or a copyright, at any time during the prosecution or after the Final payment of the Work.

ARTICLE 18 SURVEYS, PERMITS AND REGULATIONS

18.1 Unless otherwise provided for, the Contractor shall furnish surveys necessary for the execution of the Work. The Owner will furnish the Contractor with two base lines and a benchmark.

18.2 The Contractor shall obtain and pay for permits and licenses necessary for the execution of the Work and the occupancy and use of the completed Work.

18.3 The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations including building and fire safety codes relating to the performance of the Work.

18.4 If underground utilities may be involved in part of the Work the Contractor is required to request "Call-Before-You-Dig" to verify the location of underground utilities at least (3) Working Days, as further defined under Paragraph 1.71 herein, prior to the start of any excavation. The Contractor shall also notify the Owner and Agency at least (3) Working Days prior to the start of any excavation. If "Call-Before-You-Dig" fails or refuses to respond to the Contractor's request, then the Contractor shall obtain the services of a qualified

underground utility locating firm, at no additional cost to the Owner, to verify locations of underground utilities prior to the start of any excavation. The Contractor shall be held responsible for providing safety, protecting the Work and protecting workmen as necessary to perform the Work. The Contractor shall be responsible for maintaining and protecting all original utility mark-out at no additional cost to the Owner.

ARTICLE 19 PROTECTION OF THE WORK, PERSONS AND PROPERTY

19.1 The Contractor shall continuously and adequately protect the Work against damage from any cause, and shall protect materials and supplies furnished by the Contractor or Subcontractors, whether or not incorporated in the Work, and shall make good any damage unless it be due directly to errors in the Contract Documents or is caused by agents or employees of the Owner.

19.2 To the extent required by law, by public authority, or made necessary in order to safeguard the health and welfare of the personnel or occupants of any of the state institutions, the Contractor shall adequately protect adjacent property and persons, and provide and maintain all facilities, including but not limited, to passageways, guard fences, lights, and barricades necessary for such protection.

19.3 The Contractor shall take all necessary precautions for the safety of employees on the Work and shall comply with applicable provisions of federal and state safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the premises where the Work is being performed. The Contractor shall also comply with the applicable provisions of the Associated General Contractors' "Manual of Accident Prevention in Construction", the standards of the Connecticut Labor Department and Occupational Safety and Hazard Association (OSHA).

19.4 The Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for the protection of employees of the State and the public, and shall post danger signs warning against any dangerous condition or hazard created by such things as protruding nails, well holes, elevator hatchways, scaffolding, window openings, excavations, tripping hazards or slipping, stairways and falling materials.

19.5 The Contractor shall designate a qualified and responsible on-site staff person, whose duty shall be the prevention of accidents. The name and position of the designated person shall be reported to the Owner by the Contractor at the commencement of the Contract.

19.6 The Contractor shall at all times protect excavations, trenches, buildings, and all items of Work from damage by rain, water from melted snow or ice, surface water run off and subsurface water usual for the vicinity at the time of operations; and provide all pumps and equipment and enclosures to insure such protection.

19.7 The Contractor shall construct and maintain all necessary temporary drainage and provide all pumping necessary to keep excavation, basements, footings and foundations free of water.

19.8 The Contractor shall remove all snow and ice as may be required for access to the site and proper protection and prosecution of the Work.

19.9 The Contractor shall install bracing, shoring, sheathing, sheet piling, caissons and any other underground facilities as required for safety and proper execution of the Work, and shall remove this portion of the Work when no longer necessary.

19.10 During cold weather the Contractor shall protect all Work from damage. If low temperature makes it impossible to continue operations safely in spite of cold weather precautions, the Contractor may cease Work upon the written approval of the Commissioner.

ARTICLE 20 **TEMPORARY UTILITIES**

20.1 Unless expressly provided for otherwise in the Contract Documents, the Contractor shall include in the proposed contract bid price as stated on the Bid Proposal Form, the costs of all temporary utilities required for Project completion and protection of the Work. Said temporary utilities include, but are not limited to, lighting, heating, cooling, electrical power, water, telephone, sanitary facilities, and potable water.

ARTICLE 21 **CORRECTION OF WORK**

21.1 The Contractor shall promptly and without expense to the Owner remove from the premises all materials rejected by or unacceptable to the Commissioner as failing to conform to the Contract Documents, whether incorporated in the Work or not.

21.2 The Contractor shall promptly and without expense to the Owner replace any such materials, which do not conform to the Contract Documents, and shall bear the expense of making good all Work of other Contractors or Subcontractors destroyed or damaged by such removal or replacement.

21.3 If the Contractor, after receipt of notice from the Owner, shall fail to remove such rejected or unacceptable materials within a reasonable time as fixed in said notice, the Owner may remove and store such materials at the expense of the Contractor.

21.4 Such action shall not affect the obligation of the Contractor to replace and complete assembly and installation of the Work and to bear the expenses referred to above. Prior to the correction of rejected or unacceptable Work or if the Commissioner deems it inexpedient or undesirable to correct any portion of the Work which was rejected, deemed unacceptable, or not done in accordance with the Contract

Documents, the Contract Sum shall be reduced by such amount as, in the judgment of the Commissioner, shall be equitable.

21.5 No extension of time will be given to the Contractor for correction of rejected or unacceptable Work. All significant punchlist Work shall be completed before Substantial Completion is determined. The remaining minor punchlist Work, as determined by the Commissioner, shall be completed within ninety (90) Days of established Substantial Completion date.

21.6 Final Payment shall not relieve the Contractor of responsibility for the defects in material or workmanship.

21.7 Unless expressly provided for otherwise in the Contract Documents, the Contractor shall remedy any rejected or unacceptable Work, and any Work found to be not conforming to the Contract Documents which is discovered within 18 Months after the date of Substantial Completion. The Contractor shall pay for any damage to other Work caused by such nonconforming Work or any damage created in correcting the nonconforming Work.

ARTICLE 22 **GUARANTEES and WARRANTIES**

22.1 Unless expressly provided for otherwise in the Contract Documents, the Contractor shall provide a Warranty on the Work for an 18-Month period from the date of Substantial Completion. The Contractor shall warrant that the equipment, materials and workmanship are of good quality and new, unless permitted elsewhere by the Contract Documents, and that the Work shall be free from defects not inherent in the quality required or permitted and that the Work conforms to the Contract Documents.

22.2 Disclaimers and limitations from manufactures, Subcontractors, suppliers or installers to the Contractor shall not relieve the Contractor of the Warranty on the Work. The Contract Documents detail the related damages, reinstatement of Warranty, replacement cost and Owner's recourse.

ARTICLE 23 **CUTTING, FITTING, PATCHING, AND DIGGING**

23.1 The Contractor will perform or will cause the Subcontractors to perform all cutting, fitting, or patching of the portion(s) of the Work that may be required to make the several parts thereof joined and coordinated in a manner satisfactory to the Commissioner and in accordance with the Plans and Specifications.

23.2 The responsibility for defective or ill-timed Work shall be with the Contractor, but such responsibility shall not in any way relieve the Subcontractor who performed such Work. Except with the consent of the Commissioner, neither the Contractor nor any of its Subcontractors shall cut or alter the Work of any other Contractor or Subcontractor.

**ARTICLE 24
CLEANING UP**

24.1 The Contractor shall, on a daily basis, keep the premises free from accumulations of waste material or rubbish.

24.2 Prior to Acceptance of the Work, the Contractor shall remove from and about the site of the Work, all rubbish, all temporary structures, tools, scaffolding, and surplus materials, supplies, and equipment which may have been used in the performance of the Work. If the Commissioner in his sole discretion determines that the Contractor has failed to clean the work site, the Owner may remove the rubbish and charge the cost of such removal to the Contractor. A deduct Change Order will be issued by the Owner to recover such cost.

**ARTICLE 25
ALL WORK SUBJECT TO CONTROL OF THE
COMMISSIONER**

25.1 The Commissioner hereby declares that the CT DCS Project Manager is the Commissioner's only authorized representative to act in matters involving the Owner's, and/or Architect's or Engineer's, ability to revoke, alter, enlarge or relax any requirement of the Contract Documents; to settle disputes between the Contractor and the Construction Administrator; and act on behalf of the Commissioner. In all such matters, the provisions of Articles 13 and 14 herein shall guide the CT DCS Project Manager.

25.2 In no event may the Contractor act on any instruction of the Agency without written consent of the Owner. In the event the Contractor acts without such consent, he does so at his own risk and at his own expense, not only for the Work performed, but for the removal of such Work as determined necessary by the Commissioner.

25.3 In the performance of the Work, The Contractor shall abide by all orders, directions, and requirements of the Commissioner at such time and places and by such methods and in such manner and sequence as the Commissioner may require.

25.4 The Commissioner shall determine the amount, quality, acceptability and fitness of all parts of the Work, shall interpret the plans, Specifications, Contract Documents and extra work orders and shall decide all other questions in connection with the Work.

25.5 The Contractor shall employ no plant, equipment, materials, methods, or persons to which the Commissioner objects and shall remove no plant materials, equipment, or other facilities from the site of the Work without the permission of the Commissioner. Upon request, the Commissioner shall confirm in writing any oral order, direction, requirement or determination.

25.6 In accordance with Section 4b-24 of the Connecticut General Statutes, the public auditors of the State of Connecticut and the auditors or accountants of the

Commissioner of Construction Services shall have the right to audit and make copies of the books of any Contractor employed by the Commissioner.

**ARTICLE 26
AUTHORITY OF THE CONSTRUCTION
ADMINISTRATOR**

26.1 The Construction Administrator employed by the Commissioner is authorized to inspect all Work for conformance to the Contract Documents. The Construction Administrator is authorized to reject all Work found to be defective, unacceptable and nonconforming to the Contract Documents. Such inspections and rejections may extend to all or any part of the Work, and to the preparation or manufacture of the material to be used.

26.2 The Construction Administrator is not empowered to revoke, alter, enlarge, or relax any requirements of the Contract Documents, or to issue instructions contrary to the Contract Documents. The Construction Administrator shall in no case act as foreman or perform other duties for the Contractor, nor shall the Construction Administrator interfere with the management of the Work by the Contractor. Any advice, which the Construction Administrator may give the Contractor, shall in no way be construed as binding the Commissioner or Owner in any way, nor releasing the Contractor from the fulfillment of the terms of the Contract.

26.3 In any dispute arising between the Contractor and the Construction Administrator with reference to inspection and rejection of the Work, the Construction Administrator may suspend Work on the non-compliant portion of the Work until the dispute can be referred to and decided by the Commissioner.

**ARTICLE 27
SCHEDULE OF VALUES,
APPLICATION FOR PAYMENT**

27.1 Immediately after the signing of the Contract, the Contractor shall furnish for the use of the Commissioner, as a basis for estimating partial payments, a certified Schedule of Values, totaling the Contract Sum and broken down into quantities and unit costs, as outlined in the Contract Documents and as directed by the Owner. The Schedule of Values must reflect true costs and be in sufficient detail to be an effective tool for monitoring the progress of the Work Upon request of the Commissioner; the Contractor shall supply copies of signed Contracts, vendor quotations, etc. as back up to the Schedule of Values.

27.2 Approval of the Schedule of Values by the Commissioner is required prior to any payment by the Owner.

27.3 The Schedule of Values shall include a breakdown of the Contractor's general condition costs.

27.3.1 Non-recurring costs, (i.e. Mobilization costs, utility hook-ups, temporary heat) will be paid at the time of occurrence.

27.3.2 Reoccurring costs will be paid in proportion to the percent of completion of the Project.

27.3.3 Further detail can be found in the General Requirements 01.29.76; paragraphs 1.3.B.4 for this project.

27.4 The Schedule of Values shall include a breakdown of Contract closeout costs including systems certification testing and acceptance, training, Warranties, Guarantees, As-Built Drawings and attic stock.

27.5 The Contractor shall make periodic applications for payment, which shall be subdivided into categories corresponding with the approved Schedule of Values and shall be in such numbers of copies as may be designated by the Commissioner.

ARTICLE 28 PARTIAL PAYMENTS

28.1 Commissioner will examine the Contractor's Applications For Payments to determine, in the opinion of the Commissioner, the amounts that properly represent the value of the Work completed and the materials suitably stored on the site.

28.2 In making such Application For Payment for the Work, there shall be deducted **seven** and **one-half** percent (7.5%) of the amount of each Application for Payment to be retained by the Owner as Retainage until Final Completion.

28.2.1 The Commissioner has the sole discretion in the determination of reduction in Retainage. At fifty percent (50%) completion of the Work the Owner shall issue a "Contractor's Performance Evaluation". If the Contractor receives a performance evaluation score of "Good" or better, then the Retainage withheld may be reduced to five percent (5%). All subsequent Applications for Payment shall be subject to five percent (5%) Retainage. Upon Substantial Completion, the Retainage may be reduced at the request of the Contractor and recommendation of the CT DCS Project Manager. In the event of a reduction in Retainage to below five percent (5%), the minimum Retainage withheld shall not be less than the CT DCS Project Manager's estimate of the remaining Work or two and one-half percent (2.5%), which ever is greater. All requests for Retainage Reduction shall be done on CT DCS Form 7048 General Contractor Retainage Reduction Request, which can be found at the end of the General Conditions.

28.2.2 Subsequent to Substantial Completion, in limited circumstances, at the sole discretion of the Commissioner, a reduction of Retainage below Two and one-half percent (2.5%) may be considered.

28.2.3 A "Good" Contractor's Performance Evaluation score shall be defined as a minimum total score of sixty percent (60%).

28.3 The decision of the Commissioner to reduce the Retainage rate will be based upon the Contractor's Performance Evaluation score for completed portions of the

Work as set out above and other factors that the Commissioner may find appropriate as follows:

28.3.1 The Contractor's timely submission of an appropriate and complete CPM Schedule or Construction Schedule and Schedule of Values, in compliance with the Contract requirements and the prompt resolution of the Owner's and/or Architect's or Engineer's comments on the submitted material resulting in an appropriate basis for progress of the Work.

28.3.2 The Contractor's timely and proper submission of all Contract Document required submissions: including, but not limited to, Shop Drawings, material certificates and material samples and the prompt resolution of the Owners and/or Architect's or Engineer's comments on the submitted material, resulting in an appropriate progress of the Work.

28.3.3 The Contractor's provision of proper and adequate supervision and home office support of the Project.

28.3.4 The Work completed to date has been installed or finished in a manner acceptable to the Owner.

28.3.5 The progress of the Work is consistent with the approved CPM Schedule or Construction Schedule.

28.3.6 All approved credit change orders have been invoiced.

28.3.7 All Change Order requests for pricing are current.

28.3.8 The Contractor has and is maintaining a clean worksite in accordance with the Contract Documents.

28.3.9 All Subcontractor payments are current at the time of reduction request.

28.3.10 Contractor is compliant with set-aside provisions of the contract.

28.3.2.11 Pursuant to C.G.S. Sec. 4a-101, the General Contractor shall compile evaluation information during the performance of the contract on each of its subcontractors who are performing work with a value in excess of five hundred thousand dollars (\$500,000.00). The General Contractor shall complete and submit to the State of Connecticut Department of Construction Services (CT DCS) evaluations of each such subcontractor upon fifty percent (50%) completion of the project and upon Substantial Completion of the project. The General Contractor acknowledges that its failure to complete and submit these evaluations in a timely manner may, by statute; result in a delay in project funding and, consequently, payment to the General Contractor.

28.4 No payments will be made for improperly stored or protected materials or unacceptable Work.

28.5 At his or her sole discretion, the Commissioner may allow to be included in the monthly requisitions payment requests for materials and equipment stored off the site.

28.5.1 In the event the Commissioner allows the Contractor to include in its requisitions payment requests for materials and equipment stored off the site, the Contractor shall also submit any additional bonds and/or insurance certificates relating to off-site stored materials

and equipment, and follow such other procedures as may be required by the State to obtain the Commissioner's approval of such requests.

28.5.2 The Architect or Engineer, or Construction Administrator shall have inspected said materials and equipment and recommended payment therefore. The Contractor shall pay for the cost of the Architect's or Engineer's, or Construction Administrator's time and expense in performing these inspection services.

ARTICLE 29
DELIVERY OF STATEMENT SHOWING
AMOUNTS DUE FOR WAGES, MATERIALS, AND
SUPPLIES

29.1 For each Application for Payment under this Contract, the Owner reserves the right to require the Contractor and every Subcontractor to submit a written verified statement, in a form satisfactory to the Owner, showing in detail all amounts then due and unpaid by such Contractor or Subcontractor for daily or weekly wages to all laborers employed by it for the performance of the Work or to other persons for materials, equipment or supplies delivered at the site.

29.2 The term "laborers" as used herein shall include workmen, workwomen, and mechanics.

29.3 Failure to comply with this requirement may result in the Owner withholding the Application for Payment pursuant to Article 28.

ARTICLE 30
SUBSTANTIAL COMPLETION AND ACCEPTANCE

30.1 Substantial Completion:

30.1.1 When the Contractor considers that the Work or a portion thereof is Substantially Complete, the Contractor shall request an inspection of said Work in writing to the Construction Administrator. The request shall certify that the Contractor has completed its own inspection prior to the request and that the Contractor is compliant with all requirements of Section 01 77 00 of the General Requirements. The request must also include a statement that a principal or senior executive of the Contractor is ready, willing and able to attend a walk through inspection with the Architect or Engineer.

30.1.2 Upon receipt of the request, the Architect or Engineer, Construction Administrator and Owner, will make an inspection to determine if the Work or designated portion thereof is Substantially Complete. A principal or senior executive of the Contractor shall accompany the Architect or Engineer during each inspection/re-inspection. If the inspection discloses any item, whether or not included on the inspection list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item.

30.1.3 The Contractor shall then submit a request for another inspection. The determination of Substantial Completion is solely within the discretion of the Owner. Any

costs for re-inspection beyond one, shall be at the expense of the Contractor and such costs will be recovered by issuance of a credit Change Order. When the Work or designated portion thereof is determined to be Substantially Complete, the Contractor will be provided a Certificate of Substantial Completion from the Owner. The Certificate of Substantial Completion shall establish the date when the responsibilities of the Contractor for security, maintenance, heat, utilities, damage to the Work, and insurance, are transferred to the Owner and shall fix the time within which the Contractor shall finish all items on the inspection list accompanying the Certificate. If the punch list is not complete in 90 Days, the Owner reserves the right to complete the outstanding punch list items with their own forces or by awarding separate contracts and to deduct the cost thereof from the amounts remaining due to the Contractor.

30.1.4 The Certificate of Substantial Completion shall be signed by the Construction Administrator, Owner, and Architect or Engineer. Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Construction Administrator and Architect or Engineer, the Owner shall make payment reflecting adjustment in Retainage, if any, for such Work or portion thereof as provided in the Contract Documents.

30.2 Acceptance:

30.2.1 Upon completion of the Work, the Contractor shall forward to the Construction Administrator a written notice that the Work is ready for inspection and Acceptance.

30.2.2 When the Work has been completed in accordance with terms and conditions of the Contract Document as determined by the Owner a Certificate of Acceptance shall be issued by the Owner.

ARTICLE 31
FINAL PAYMENT

31.1 The Owner reserves the right to retain for a period of thirty (30) Days after filing of the Certificate of Acceptance the amount therein stated less all prior payments and advances whatsoever to or for the account of the Contractor.

31.2 All prior estimates and payments, including those relating to extra or additional Work, shall be subject to correction by the Final Payment.

31.3 No Application for Payment, Final or Partial, shall act as a release to the Contractor or the Contractor's sureties from any obligations under this Contract.

31.4 The Architect or Engineer and Construction Administrator will promptly issue the Certificate for Payment, stating that to the best of their knowledge, information and belief, and on the basis of their observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said Final Payment is due and payable.

31.5 Final Payment shall not be released until a Certificate of Acceptance and a Certificate of Compliance have been issued.

31.6 Neither Final Payment nor any Retainage shall become due until the Contractor submits to the Owner the following:

31.6.1 An affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied.

31.6.2 A certificate evidencing that insurance required by the Contract Documents to remain in force after Final Payment is currently in effect and will not be canceled or allowed to expire without at least 30 Days prior written notice to the Owner.

31.6.3 A written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents.

31.6.4 Written consent of surety, if any, to Final Payment.

31.6.5 If required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorney's fees.

ARTICLE 32

OWNER'S RIGHT TO WITHHOLD PAYMENTS

32.1 The Commissioner may withhold a portion of any Payment due the Contractor that may, in the judgment of the Commissioner, be necessary:

32.1.1 To assure the payment of just claims then due and unpaid to any persons supplying labor or materials for the Work.

32.1.2 To protect Owner from loss due to defective, unacceptable or non-conforming Work not remedied by the Contractor.

32.1 To protect the Owner from loss due to injury to persons or damage to the Work or property of other Contractors, Subcontractors, or others caused by the act or neglect of the Contractor or any of its Subcontractors.

32.2 The Owner shall have the right to apply any amount withheld under this Article as the Owner may deem proper to satisfy protection from claims. The amount withheld shall be considered a payment to the Contractor.

32.3 The Owner has the right to withhold payment if the Contractor fails to provide accurate submissions of Submittals,

up date the status including but not limited to the following: As-Built Drawings, request for information (RFI) log, Schedule, submittal log, Change Order log, certified payrolls and daily reports and all other requirement of the Contract Documents.

32.4 If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorney's fees.

ARTICLE 33

OWNER'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

33.1 The Commissioner shall have the authority to suspend the Work wholly or in part, for such period or periods as the Commissioner considers being in the best interests of the State, or in the interests of public necessity, convenience or safety. During such periods the Contractor shall store all materials and equipment, in such a manner to prevent the materials and equipment from being damaged in any way, and the Contractor shall take precautions to protect the Work from damage.

33.1.1 If the Commissioner, in writing, orders the performance of all or any portion of the Work to be suspended or delayed for an unreasonable period of time (i.e. not originally anticipated, customary, or inherent in the construction industry) and the Contractor believes that additional compensation and/or Contract Time is due as a result of such suspension or delay, the Contractor shall submit to the Commissioner in writing a request for a Contract adjustment within 7 Days of receipt of the notice to resume Work. The request shall set forth the specific reasons and support for said adjustment.

33.1.2 The Commissioner shall evaluate any such requests received. If the Commissioner agrees that the cost and/or time required for the performance of the Contract has increased as a result of such suspension and that the suspension was caused by conditions beyond the control of and not the fault of the Contractor, its suppliers, or Subcontractors, and was not caused by weather, then the Commissioner will make a reasonable adjustment, excluding profit, of the Contract terms. The Commissioner will notify the Contractor of the determination as to what adjustments of the Contract, if any, that the Commissioner deems warranted.

33.1.3 No Contract adjustment will be made unless the Contractor has submitted the request for adjustment within the time prescribed.

33.1.4 No Contract adjustment will be made under this Article to the extent that performance would have been suspended or delayed by any other cause within the Contractor's control or by any factor for which the Contractor is responsible under the Contract; or that such an adjustment is provided for or excluded under other term or condition of this Contract.

33.2 Notwithstanding any provision or language in the

Contract to the contrary, the State may terminate the Contract whenever the Commissioner determines at his sole discretion that such termination is in the best interests of the State. Any such termination shall be effected by delivery to the Contractor of a written Notice of Termination specifying the extent to which performance of Work under the Contract is terminated, and the date upon which such termination shall be effective.

33.2.1 In the event of such termination, the Contractor shall be entitled to reasonable compensation as determined by the Commissioner, however, no claim for lost Overhead or profits shall be allowed.

33.2.2 All Work and materials obtained by the Contractor for the Work, that have been incorporated into the Work, inspected, tested as required, accepted by the Commissioner, and paid for by the State, shall become the property of the State.

33.2.3 Materials obtained by the Contractor for the Work that have been inspected, tested as required, and accepted by the Commissioner, and that are not incorporated into the Work, shall, at the option of the Commissioner, be purchased from the Contractor at actual cost as shown by receipted bills. To this cost shall be added all actual costs for delivery at such points of delivery as may be designated by the Commissioner, as shown by actual cost records.

33.2.4 Termination of the Contract shall not relieve the Contractor or its Surety of their responsibilities for the completed Work, nor shall it relieve the Contractor's Surety of its obligations to ensure completion of the Work and to pay legitimate claims arising out of Work.

ARTICLE 34

SUBLETTING OR ASSIGNING OF CONTRACT

34.1 The Contract or any portion thereof, or the Work provided for therein, or the right, title, or interest of the Contractor therein may not be sublet, sold, transferred, assigned, or otherwise disposed of to any person, firm, or corporation without the written consent of the Commissioner.

34.2 No person, firm, or corporation other than the Contractor to whom the Contract was awarded shall be permitted to commence Work at the site of the Contract until such consent has been granted.

ARTICLE 35

CONTRACTOR'S INSURANCE

35.1 The Contractor shall not start Work under the Contract until they have obtained insurance as stated in SECTIONS 00 62 16 CERTIFICATE OF INSURANCE and 00 40 13 BID PROPOSAL FORM, subsections 4.4.2 and 4.4.3, of the Project Manual and until the insurance has been approved by the Owner. The Contractor shall not allow any Subcontractor to start Work until the same insurance has been obtained by the Subcontractor and approved by the Owner or the Contractor's insurance provides coverage on behalf of the Subcontractor. The Contractor shall send Certificates of Liability Insurance to the Bidding and Contracts Unit, Department of Construction Services, 165 Capitol Avenue, Room G-35, Hartford, CT 06106 unless otherwise directed in

writing. Presented below is a narrative summary of the insurance required.

35.1.1 Commercial General Liability Insurance including contractual liability, products/completed operations, broad form property damage and independent Contractors. The limits shall be no less than \$1,000,000 each occurrence and \$2,000,000 annual aggregate. Coverage for hazards of explosion, collapse and underground (X-C-U) and for asbestos abatement when applicable to this Contract, must also be included when applicable to the Work to be performed. The State of Connecticut, the Department of Construction Services, and their respective officers, agents, and employees shall be named as an Additional Insured. This coverage shall be provided on a primary basis.

35.1.2 Owner's and Contractor's Protective Liability insurance providing a total limit of \$1,000,000 for all damages arising out of bodily injury or death of persons in any one accident or occurrence and for all damages arising out of injury or destruction of property in any one accident or occurrence and subject to a total (aggregate) limit of \$2,000,000 for all damages arising out of bodily injury to or death of persons in all accidents or occurrences and out of injury to or destruction of property during the policy period. This coverage shall be for and in the name of the State of Connecticut.

35.1.3 Automobile Liability The operation of all motor vehicles including those owned, non-owned and hired or used in connection with the Contract shall be covered by Automobile Liability insurance providing for a total limit of \$1,000,000 for all damages arising out of bodily injuries to or death of all persons in any one accident or occurrence and for all damages arising out of injury to or destruction of property in any one accident or occurrence. In cases where an insurance policy shows an aggregate limit as part of the automobile liability coverage, the aggregate limit must be at least \$2,000,000. This coverage shall be provided on a primary basis. Should the Contractor not own any automobiles, the automobile & liability requirement shall be amended to allow the Contractor to maintain only hired and non-owned liability coverage.

35.1.4 Excess Liability (Other than Umbrella Form) insurance in the amount of \$5,000,000 for bids of \$1,000,000 - \$10,000,000 and in the amount of \$10,000,000 for bids of \$10,000,001 - \$20,000,000. Refer to Section 00 92 00 Amendments of the Project Manual for Excess Liability insurance requirements for bids exceeding \$20,000,000.

35.1.5 Workers' Compensation and Employer's Liability as required by Connecticut Law and **Employers' Liability** with a limit of not less than \$100,000 per occurrence, \$500,000 disease policy limit and \$100,000 disease each employee. When Work is on or contiguous to navigable bodies of waterways and ways adjoining, the Contractor shall include the Federal Act endorsement for the U.S. Longshoremen's and Harbor Workers Act.

35.1.6 Special Hazards Insurance, if required, will be stated in SECTION 00 40 13 BID PROPOSAL FORM, subsection 4.4.2 of this Project Manual. This includes coverage for explosion, collapse or underground damage and for asbestos abatement when applicable to this Contract and shall be no less than \$1,000,000 each occurrence.

35.1.7 Builder's Risk Insurance, if required, will be stated in Section 00 40 13 Bid Proposal Form, subsection 4.4.3 of this Project Manual.

35.1.8 Inland Marine/Transit Insurance: With respect to property with values in excess of \$100,000 which is rigged, hauled or situated at the site pending installation, the Contractor shall maintain inland marine/transit insurance provided the coverage is not afforded by a Builder's Risk policy.

35.1.9 When required to be maintained, the Builder's Risk and/or Inland Marine/Transit Insurance policy shall endorse the State of Connecticut as a Loss Payee and the policy shall state it is for the benefit of and payable to the State of Connecticut.

35.2 Satisfying Limits Under an Umbrella Policy: If necessary, the Contractor may satisfy the minimum limits required above for either Commercial General Liability, Automobile Liability, and Employer's Liability coverage under an Umbrella or Excess Liability policy. The underlying limits may be set at the minimum amounts required by the Umbrella or Excess Liability policy provided the combined limits meet at least the minimum limit for each required policy. The Umbrella or Excess Liability policy shall have an Annual Aggregate at a limit not less than two (2) times the highest per occurrence minimum limit required above for any of the required coverages. The State of Connecticut shall be specifically endorsed as an Additional Insured on the Umbrella or Excess Liability policy, unless the Umbrella or Excess Liability policy provides continuous coverage to the underlying policies on a complete "Follow-Form" basis.

35.3 The Contractor shall, at its sole expense, maintain in full force and effect at all times during the life of the Contract or the performance of Work hereunder, insurance coverage as described herein. Certificates shall include a minimum thirty (30)-day endeavor to notify requirement to the Owner prior to any cancellation or non-renewal.

35.4 The Contractor shall be fully and solely responsible for any costs or expenses as a result of a coverage deductible, coinsurance penalty, or self-insured retention, including any loss not covered because of the operation of such deductible, coinsurance penalty, or self-insured retention.

35.5 The requirement contained herein as to types and limits of insurance coverage to be maintained by the Contractor are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by the Contractor.

35.6 Hold Harmless Provisions: The Contractor shall at all times indemnify and save harmless the State of Connecticut, the Department of Construction Services, and their respective officers, agents, and employees, on account of any and all claims, damages, losses, litigation, expenses, counsel fees and compensation arising out of injuries (including death) sustained by or alleged to have been sustained by the officers, agents, and employees of said State or Department, or of the Contractor, his Subcontractor, or materialmen and from injuries (including death) sustained by or alleged to have been sustained by the public, any or all persons on or near the Work, or by any other person or property, real or personal (including property of said State or Department) caused in whole or in part by the acts, omissions, or neglect or the Contractor including, but not limited to, any neglect in safeguarding the Work or through the use of unacceptable materials in constructing the Work of the Contractor, any Subcontractor, materialman, or anyone directly employed by them or any of them while engaged in the performance of the Contract, including the entire elapsed time from the date of the Notice to Proceed or the actual Commencement Of The Work whichever occurs first until its completion as certified by the Department of Construction Services.

ARTICLE 36 FOREIGN MATERIALS

36.1 Preference shall be given to articles or materials manufactured or produced in the United States, Canada, and Mexico, (the members of the North American Free Trade Agreement (NAFTA)); and the products shall meet all of the referenced standards and Specifications for conditions of performance, quality, and price with duty being equal.

36.2 Only articles or materials manufactured or produced in the United States, Canada, and Mexico, (the members of the North American Free Trade Agreement (NAFTA)), will be allowed. The foregoing provisions shall not apply to foreign articles or materials required by the Contract Documents.

ARTICLE 37 HOURS OF WORK

37.1 No person shall be employed to work or be permitted to work more than eight (8) hours in any Day or more than forty (40) hours in any week for any Work provided in the Contract, in accordance with Connecticut General Statute Section 31-57.

37.2 The operation of such limitation of hours of work may be suspended during an emergency, upon the approval of the Commissioner, in accordance with Connecticut General Statute Section 31-57.

ARTICLE 38 CLAIMS

38.1 General: When filing a formal claim under Section 4-61 (referred to as "Section 4-61" below) of the Connecticut

General Statutes (as revised), either as a lawsuit in the Superior Court or as a demand for arbitration, the Contractor must follow the procedures and comply with the requirements set forth in this Article. This Section does not, unless so specified, govern informal claims for additional compensation which the Contractor may bring before the Department. The Contractor should understand, however, that the Department may need, before the Department can resolve such a claim, the same kinds of documentation and other substantiation that it requires under this Article. It is the intent of the Department to compensate the Contractor for actual increased costs caused by or arising from acts or omissions on the part of the Department that violate legal or contractual duties owed to the Contractor by the Department.

38.2 Notice of Claim: Whenever the Contractor intends to file a formal claim against the Department under Section 4-61, seeking compensation for additional costs, the Contractor shall notify the Commissioner in writing (in strict compliance with Section 4-61) of the details of said claim. Such written notice shall contain all pertinent information described in Paragraph 38.5 below.

Once formal notice of a claim under Section 4-61(b) (as revised) has been given to the Commissioner, the claimant may not change the claim in any way, in either concept or monetary amount, (1) without filing a new notice of claim and demand for arbitration to reflect any such change, and (2) without the minimum period of six months after filing of the new demand commencing again and running before any hearing on the merits of the claim may be held. The only exception to this limitation will be for damages that continue to accrue after submission of the notice, in ways described and anticipated in the notice.

38.3 Record Keeping: The Contractor shall keep daily records of all costs incurred in connection with its Work on behalf of the Department. The daily records shall identify each aspect of the Project affected by matters related to any claim for additional compensation that the Contractor has filed, intends to file, or has reason to believe that it may file against the Department; the specific Project locations where Project work has been so affected; the number of people working on the affected aspects of the Project at the pertinent time(s); and the types and number of pieces of equipment on the Project site at the pertinent time(s). Any potential or anticipated effect on the Project's progress or Schedule which may result in a claim by the Contractor shall be noted contemporaneously with the cause of the effect, or as soon thereafter as possible.

38.4 Claim Compensation: The payment of any claim, or any portion thereof, that is deemed valid by the Department shall be made in accordance with the following provisions of this Article:

38.4.1 Compensable Items: The liability of the Department for claims will be limited to the following specifically identified items of cost, insofar as they have not otherwise been paid for by the Department, and insofar as they were caused solely by the actions or omissions of the Department or its agents (except that with regard to payment for extra work, the Department will pay to the Contractor the Overhead and profit percentages provided for in Article 13.):

38.4.1.1 Additional Project-site labor expenses.

38.4.1.2 Additional costs for materials.

38.4.1.3 Additional, unabsorbed Project-site Overhead (e.g., for mobilization and demobilization).

38.4.1.4 Additional costs for active equipment.

38.4.1.5 For each Day of Project delay or suspension caused solely by actions or omissions of the Department either:

38.4.1.5.1 an additional ten percent (10%) of the total amount of the costs identified in Subparagraphs 38.4.1.1 through 38.4.1.4 above; except that if the delay or suspension period prevented the Contractor from incurring enough Project costs under Subparagraphs 38.4.1.1 through 38.4.1.4 during that period to require a payment by the Department that would be greater than the payment described in Subparagraph 38.4.1.5.2 below, then the payment for affected home office Overhead and profit shall instead be made in the following *per diem* amount :

38.4.1.5.2 six percent (6%) of the original total Contract amount divided by the original number of Days of Contract Time. Payment under either 38.4.1.5.1 or 38.4.1.5.2 hereof shall be deemed to be complete and mutually satisfactory compensation for any unabsorbed home office overhead and any profit related to the period of delay or suspension.

38.4.1.6 Additional equipment costs. Only actual equipment costs shall be used in the calculation of any compensation to be made in response to claims for additional Project compensation. Actual equipment costs shall be based upon records kept in the normal course of business and in accordance with generally accepted accounting principles. Under no circumstances shall Blue Book or other guide or rental rates be used for this purpose (unless the Contractor had to rent the equipment from an unrelated party, in which case the actual rental charges paid by the Contractor, so long as they are reasonable, shall be used). Idle equipment, for instance, shall be paid for based only on its actual cost to the Contractor.

38.4.1.7 Subcontractor costs limited to, and determined in accordance with, Subparagraphs 38.4.1.1 through 38.4.1.5 above and applicable statutory and case law. Such Subcontractor costs may be paid for by the Department only: (a) in the context of an informal claims settlement; or (b) if the Contractor has itself paid or legally assumed, present unconditional liability for those Subcontractor costs.

38.4.2 Excusable But Not Compensable Items: The Contractor may be allowed Days but the Department will have no liability for the following non-compensable items:

38.4.2.1 Abnormal or unusually severe weather

38.4.2.2 Acts of God

38.4.2.3 Force Majeure

38.4.2.4 Concurrent Delay

38.4.3 Non-Compensable Items: The Department will have no liability for the following specifically-identified non-compensable items:

- 38.4.3.1** Profit, in excess of that provided for herein.
- 38.4.3.2** Loss of anticipated profit.
- 38.4.3.3** Loss of bidding opportunities.
- 38.4.3.4** Reduction of bidding capacity.
- 38.4.3.5** Home office overhead in excess of that provided for in Subparagraph 38.4.1.5 hereof.
- 38.4.3.6** Attorneys fees, claims preparation expenses, or other costs of claims proceedings or resolution.
- 38.4.3.7** Subcontractor failure to perform
- 38.4.3.8** Any other consequential or indirect expenses or costs, such as tort damages, or any other form of expense or damages not provided for in these specifications or elsewhere in the Contract.

38.5 Required Claim Documentation: All claims shall be submitted in writing to the Commissioner, and shall be sufficient in detail to enable the Department to ascertain the basis and the amount of each claim, and to investigate and evaluate each claim in detail. As a minimum, the Contractor must provide the following information for each and every claim and sub-claim asserted:

- 38.5.1** detailed factual statement of the claim, with all dates, locations and items of Work pertinent to the claim.
- 38.5.2** A statement of whether each requested additional amount of compensation or extension of time is based on provisions of the Contract or on an alleged breach of the Contract. Each supporting or breached Contract provision and a statement of the reasons why each such provision supports the claim must be specifically identified or explained.
- 38.5.3** Excerpts from manuals or other texts which are standard in the industry, if available, that support the Contractor's claim.
- 38.5.4** The details of the circumstances that gave rise to the claim.
- 38.5.5** The date(s) on which any and all events resulting in the claim occurred, and the date(s) on which conditions resulting in the claim first became evident to the Contractor.
- 38.5.6** Specific identification of any pertinent document, and detailed description of the substance of any material oral communication, relating to the substance of such claim.
- 38.5.7** If an extension of time is sought, the specific dates and number of Days for which it is sought, and the basis or bases for the extension sought. A critical path method, bar chart, or other type of graphical schedule that supports the extension must be submitted.
- 38.5.8** When submitting any claim over \$50,000, the Contractor shall certify in writing, under oath and in accordance with the formalities required by the contract, as to the following:

- 38.5.8.1** That supporting data is accurate and complete to the Contractor's best knowledge and belief;

- 38.5.8.2** That the amount of the dispute and the dispute itself accurately reflects what the Contractor in good faith believes to be the Department's liability;

- 38.5.8.3** The certification shall be executed by:

- 38.5.8.3.1** If the Contractor is an individual, the certification shall be executed by that individual.

- 38.5.8.3.2** If the Contractor is not an individual, the certification shall be executed by a senior company official in charge at the Contractor's plant or location involved or an officer or general partner of the Contractor having overall responsibility for the conduct of the Contractor's affairs.

38.6 Auditing of Claims: All claims filed against the Department shall be subject to audit by the Department or its agents at any time following the filing of such claim. The Contractor and its Subcontractors and suppliers shall cooperate fully with the Department's auditors. Failure of the Contractor, its Subcontractors, or its suppliers to maintain and retain sufficient records to allow the Department or its agents to fully evaluate the claim shall constitute a waiver of any portion of such claim that cannot be verified by specific, adequate, contemporaneous records, and shall bar recovery on any claim or any portion of a claim for which such verification is not produced. Without limiting the foregoing requirements, and as a minimum, the Contractor shall make available to the Department and its agents the following documents in connection with any claim that the Contractor submits:

- 38.6.1** Daily time sheets and foreman's daily reports.
- 38.6.2** Union agreements, if any.
- 38.6.3** Insurance, welfare, and benefits records.
- 38.6.4** Payroll register.
- 38.6.5** Earnings records.
- 38.6.6** Payroll tax returns.

- 38.6.7** Records of property tax payments.
- 38.6.8** Material invoices, purchase orders, and all material and supply acquisition contracts.
- 38.6.9** Materials cost distribution worksheets.
- 38.6.10** Equipment records (list of company equipment, rates, etc.).
- 38.6.11** Vendor rental agreements.
- 38.6.12** Subcontractor invoices to the Contractor, and the Contractor's certificates of payments to Subcontractors.
- 38.6.13** Subcontractor payment certificates.
- 38.6.14** Canceled checks (payroll and vendors).
- 38.6.15** Job cost reports.
- 38.6.16** Job payroll ledger.
- 38.6.17** General ledger, general journal (if used), and all subsidiary ledgers and journals, together with all supporting documentation pertinent to entries made in these ledgers and journals.
- 38.6.18** Cash disbursements journals.

38.6.19 Financial statements for all years reflecting the operations on the Project.

38.6.20 Income tax returns for all years reflecting the operations on the Project.

38.6.21 Depreciation records on all company equipment, whether such records are maintained by the company involved, its accountant, or others.

38.6.22 If a source other than depreciation records is used to develop costs for the Contractor's internal purposes in establishing the actual cost of owning and operating equipment, all such other source documents.

38.6.23 All documents which reflect the Contractor's actual profit and overhead during the years that the Project was being performed, and for each of the five years prior to the commencement of the Project.

38.6.24 All documents related to the preparation of the Contractor's bid, including the final calculations on which the total proposed Contract bid price as stated in the Bid Proposal Form was based.

38.6.25 All documents which relate to the claim or to any sub-claim, together with all documents that support the amount of damages as to each claim or sub-claim.

38.6.26 Worksheets used to prepare the claim, which indicate the cost components of each item of the claim, including but not limited to the pertinent costs of labor, benefits and insurance, materials, equipment, and Subcontractors' damages, as well as all documents which establish the relevant time periods, individuals involved, and the Project hours and the rates for the individuals.

38.6.27 The name, function, and pertinent activity of each Contractor's or Subcontractor's official, or employee, involved in or knowledgeable about events that give rise to, or facts that relate to, the claim.

38.6.28 The amount(s) of additional compensation sought and a break-down of the amount(s) into the categories specified as payable under Paragraph 38.4 above.

38.6.29 The name, function, and pertinent activity of each Department official, employee, or agent involved in or knowledgeable about events that give rise to, or facts that relate to, the claim.

ARTICLE 39

DIESEL VEHICLE EMISSIONS CONTROL

39.1 The Contractor shall be responsible for compliance with the following provisions:

39.1.1 All Contractor and Subcontractor diesel powered non-road construction equipment with engine horsepower (HP) ratings of 60 HP and above, that are on the Project or are assigned to the Contract for a period in excess of 30 consecutive Days, shall be retrofitted with emission control devices in order to reduce diesel emissions. In addition, all motor vehicles and/or construction equipment (both on-highway and non-road) shall comply with all pertinent State and Federal regulations relative to exhaust emission controls and safety.

39.1.2 Retrofit emission control devices shall consist of oxidation catalysts, or similar retrofit equipment control technology that is:

39.1.2.1 Included on the U.S. Environmental Protection Agency (EPA) "Verified Technology List," as may be amended from time to time
<http://www.epa.gov/otaq/retrofit/retroverifiedlist.htm>
and

39.1.2. Verified by EPA to provide a minimum emissions reduction of 20% particulate matter (PM₁₀), 40% carbon monoxide (CO), and 50% hydrocarbons (HC).

39.1.3 Construction shall not proceed until all diesel powered non-road construction equipment meeting the criteria in provision 39.1.1 have been retrofitted, unless the Commissioner grants a waiver under provision 39.2.

39.1.4 The Contractor shall at least monthly, assess which diesel powered non-road construction equipment are subject to these provisions. The Contractor shall notify the CT DCS Project Manager of any violations of these provisions.

39.1.5 Idling of delivery and/or dump trucks, or other diesel powered equipment shall be limited to three (3) minutes during non-active use in accordance with the Regulations of Connecticut State Agencies Section 22a-74-18(b)(3)(C), which states, in part:

"[N]o person shall cause or allow a Mobile Source to operate for more than three (3) consecutive minutes when such Mobile Source is not in motion, except as follows:

When a Mobile Source is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control,

When it is necessary to operate defrosting, heating or cooling equipment to ensure the safety or health of the driver or passengers,

When it is necessary to operate auxiliary equipment that is located in or on the Mobile Source to accomplish the intended use of the Mobile Source, (To bring the Mobile Source to the manufacturer's recommended)

When a Mobile Source is in queue to be inspected by U.S. military personnel prior to gaining access to a U.S. military installation."

39.1.6 All Work shall be conducted to ensure that no harmful effects are caused to adjacent Sensitive Receptor Sites. Diesel powered engines shall be located away from fresh air intakes, air conditioners, and windows.

39.1.7 If any diesel powered non-road construction equipment is found to be in non-compliance with these provisions by the CT DCS Project Manager, the Contractor will be issued a Non-Conformance Notice and given a 24 hour period in which to bring the equipment into compliance or remove it from the Project. The Contractor's failure to comply with these provisions shall be reason to withhold payment as described in Article 33.

39.1.8 Any costs associated with these provisions shall be included in the general cost of the contract. In addition, there shall be no time granted to the Contractor for compliance with these provisions. The Contractor's compliance with these provisions and any associated regulations shall not be grounds for a Change Order.

39.2 The Commissioner reserves the right to waive all or portions of these provisions at his/her discretion. The Contractor may request a waiver to all or portions of these provisions with written justification to the Commissioner as to why the Contractor cannot comply with these provisions. A waiver, to be effective, must be granted in writing by the Commissioner.

END

Appendix 1

Connecticut



Department of
Construction Services

7048

**General Contractor
Retainage Reduction Request
(SAMPLE)**

Page 25 of 25

To: Allen V. Herring, P.E., CT DCS Chief Engineer
Room 265, 165 Capitol Avenue, Hartford, CT 06106

From: (Insert GC's Name), General Contractor

Subject: Project No. () Reduction of Retainage at ()% project completion

In accordance with the General Conditions, Article 28 Progress Payments, (insert GC's name) hereby requests a reduction of retainage to an amount of insert written percent Percent (insert numerical percent%). The following list of items required under the General Conditions is in compliance with the terms of the contract and has been verified by the General Contractor.

- DAS Contractor Performance Evaluation Score is a minimum of **Sixty (60%) Percent**.
- Timely submission of an appropriate and complete CPM Schedule and Schedule of Values, in compliance with the Contract requirements and the prompt resolution of the Owner's and/or A/E's comments on the submitted material resulting in an appropriate basis for progress of the Work.
- Timely and proper submission of all Contract Document required submissions: including but not limited to Shop Drawings, material certificates and material samples and the prompt resolution of the Owner's and/or Architect's or Engineer's comments on the submitted material resulting in an appropriate progress of the Work.
- Proper and adequate supervision and home office support of the Project.
- The Work completed to date has been installed or finished in a manner acceptable to the Owner.
- The progress of the Work is consistent with the approved CPM Schedule.
- All approved credit Change Orders have been invoiced.
- All Change Order requests for pricing are current.
- The General Contractor has and is maintaining a clean worksite in accordance with the Contract Documents.
- All Subcontractor payments are current at the time of reduction request.
- General Contractor is compliant with set-aside provisions of the contract.

General Contractor Certification: _____
(Written Name) (Signature) (Date)

Project Manager Recommendation: _____
(Written Name) (Signature) (Date)

Approved:
Allen V. Herring, P.E.
CT DCS Chief Engineer

(Signature) (Date)



**Supplementary Conditions of the Contract for Construction
For Design - Bid - Build
Department of Administrative Services ● Construction Services
State of Connecticut**

1.0 Supplementary Conditions:

- 1.1 These Supplementary Conditions modify the State of Connecticut, Department of Construction Services, Section 00 72 13 General Conditions of the Contract for Construction for Design – Bid- Build (Rev. 03.26.12), and other provisions of the Contract Documents as indicated below. All provisions which are not so modified remain in full force and effect.
- 1.2 The terms used in these Supplementary Conditions which are defined in the Section 00 72 13 General Conditions of the Contract for Construction for Design – Bid- Build (Rev. 03.26.12), have the meanings assigned to them in the General Conditions.

2.0 Section 00 72 13 General Conditions Of The Contract For Construction For Design - Bid – Build:

- 2.1 **ADD:** Subsection 3.6 to **ARTICLE 3, CORRELATION OF CONTRACT DOCUMENTS**, as follows:

3.6 In accordance with Public Act No. 13-247 (Effective June 19, 2013), wherever the term "Commissioner of Construction Services" is used in the "Bidding Documents" or "Project Manual" the term "Commissioner of Administrative Services" shall be substituted in lieu thereof; and wherever the term "Department of Construction Services" is used in "Bidding Documents" or "Project Manual", the term "Department of Administrative Services" shall be substituted in lieu thereof.

- 2.2 **DELETE:** Subsection 28.2 in its entirety from **ARTICLE 28, PARTIAL PAYMENTS**.

ADD: Subsection 28.2 to **ARTICLE 28, PARTIAL PAYMENTS**, as follows:

28.2 In making such Application For Payment for the Work, there shall not be more than **seven** and **one-half percent (7.5%)** deducted from the amount of each Application for Payment to be retained by the Owner as Retainage until Final Completion.

28.2.1 At **fifty percent (50%)** completion of the Work the Retainage shall be reduced to **five percent (5%)**. All subsequent Applications for Payment shall be subject to **five percent (5%) Retainage**. Upon Substantial Completion, and in the Commissioner's sole discretion and based upon the factors set forth in **Section 28.3**, the Retainage may be reduced upon the request of the Contractor and recommendation of the CT DAS Project Manager. In the event of a reduction in Retainage to below **five percent (5%)**, the minimum Retainage withheld shall not be less than the CT DAS Project Manager's estimate of the remaining Work or **two and one-half percent (2.5%)**, whichever is greater. All requests for Retainage Reduction shall be done on **CT DAS Form 7048 General Contractor Retainage Reduction Request**, which can be found at the end of the General Conditions.

28.2.2 Subsequent to Substantial Completion, in limited circumstances, at the sole discretion of the Commissioner and based upon factors set forth in **subsection 28.3**, a reduction of Retainage below **two and one-half percent (2.5%)** may be considered.

28.2.3 A "Good" Contractor's Performance Evaluation score shall be defined as a minimum total score of sixty percent (60%).

- 2.3 **ADD** Subsections **Definitions** to **ARTICLE 1 DEFINITIONS**, as follows:

- 2.3.1 **DELETE:** 1.71 in its entirety from **ARTICLE 1 DEFINITIONS**.

ADD: Subsection 1.71 to **ARTICLE 1 PARTIAL DEFINITIONS**, as follows:

1.71 **WORK:** The construction and services required by the Contract Documents, and including all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project and "Work Phase".

ADD: Subsection 1.72 to **ARTICLE 1 DEFINITIONS**, as follows:

1.72 **WORK PHASE:** Construction of the Project by sequence or time intervals, which may include but not be limited to separate Construction Start Dates, Substantial Completion Dates, Application for Payments, Change Orders, Liquidated Damages, Retainage, and Subcontractors for each Work Phase.



2.4 **DELETE:** Appendix 1 from Section 00 72 13.1 in its entirety.
ADD: New Appendix 1 to Section 00 72 13.1 as follows:

| | |
|-------------|--|
| | 7048 General Contractor (GC) Retainage Reduction Request <i>(Sample)</i> |
| Page 2 of 1 | |

| | | | |
|-----------------|---|--|--|
| To: | Department of Administrative Services (DAS) Construction Services Office of Legal Affairs, Policy and Procurement 450 Columbus Blvd, Suite 1302 – North Tower Hartford, CT 06103 | | |
| From: | <input type="text" value="GC's Name"/> | General Contractor (GC) | |
| Subject: | DAS Project Number: <input type="text" value="DAS Project Number"/> | | |
| | Reduction of Retainage at: <input type="text" value="Written Percent"/> | Percent (<input type="text" value="##.#"/> %) | |
| Date: | <input type="text" value="Click or tap to enter a date."/> | | |

In accordance with the General Conditions, Article 28 Progress Payments,
 ,
 hereby requests a reduction of retainage to an amount of Percent (%)
 The following list of items required under the General Conditions is in compliance with the terms of the contract and has been verified by the General Contractor (GC).

- DAS Construction Services Contractor Performance Evaluation Score is a minimum of **Sixty (60%) Percent**.
- Timely submission of an appropriate and complete CPM Schedule and Schedule of Values, in compliance with the Contract requirements and the prompt resolution of the Owner's and/or A/E's comments on the submitted material resulting in an appropriate basis for progress of the Work
- Timely and proper submission of all required Contract Document submissions including but not limited to Shop Drawings, material certificates, material samples and the prompt resolution of the Owner's and/or A/E's comments on the submitted material resulting in an appropriate progress of the Work.
- Proper and adequate supervision and home office support of the Project.
- The Work completed to date has been installed or finished in a manner acceptable to the Owner.
- The progress of the Work is consistent with the approved CPM Schedule.
- All approved credit Change Orders have been invoiced.
- All Change Order requests for pricing are current.
- The GC has and is maintaining a clean worksite in accordance with the Contract Documents.
- All Subcontractor payments are current at the time of reduction request.
- GC is compliant with set-aside provisions of the contract.

| | | | |
|---|---|--|---------------------------------------|
| General Contractor Certification: | <input type="text"/> <i>(Written Name)</i> | <input type="text"/> <i>(Signature)</i> | <input type="text"/> <i>(Date)</i> |
| Project Manager Recommendation: | <input type="text"/> <i>(Written Name)</i> | <input type="text"/> <i>(Signature)</i> | <input type="text"/> <i>(Date)</i> |
| DAS Chief Engineer or Authorized Representative: | <input type="text"/> <i>(Written Name)</i> | <input type="text"/> <i>(Signature)</i> | <input type="text"/> <i>(Date)</i> |

END

CT DAS – 7048 (Rev. 05.22.17) 7000 – Construction Phase Forms

END OF SECTION

Set-Aside Contractor Schedule [SAMPLE ONLY]

VIA EMAIL

Contractor Name
Contractor Address
City, State, Zip Code

BID OPENING DATE

Re: DAS Project Description
 DAS Project Number

Date:

Dear Contractor:

Section 00 45 17 Named Subcontractor Bidders Qualification Statement(s) is / (are) required for this project, only for your Named Subcontractors listed in Table 2.7 of your Section 00 41 00 Bid Proposal Form.

No person whose subcontract exceeds five hundred thousand dollars in value may perform work as a subcontractor on a project, which project is estimated to cost more than five hundred thousand dollars and is paid for, in whole or in part, with state funds, *unless, at the time of bid submission*, the person is prequalified in accordance with the Connecticut General Statutes Section 4a-100, as amended. This includes the contractor's or substantial subcontractor's prequalification classifications, aggregate work capacity ratings and single project limits.

In accordance with **Subsection 2.9 "Set-Aside Requirements" of Section 00 21 13 Instructions to Bidders**, you are required to *list* below the names of each *currently certified set-aside contractor* to be used for this project, along with the dollar *amount* to be paid each set-aside contractor.

The **responsibility** for listing a qualified and certified set-aside contractor rests solely with the **bidder** and not the State. **Listing a set-aside contractor who does not qualify may be considered the same as not listing one at all and the bid may be considered non-responsive and subject to rejection.**

| Name | Address | * Amount | Indicate Whether: Subcontractor, Or Supplier, Or Both | ** Class of Work |
|--------|---------|----------|--|------------------|
| SAMPLE | SAMPLE | SAMPLE | SAMPLE | SAMPLE |

***Amount:** The total dollar amount to be paid to the set aside contractors must not be less than the percentage(s) stated in the Bid Proposal Form.

****Class of Work:** Means the name of the trade work to be provided by the Subcontractor or Supplier.

ATTACHMENTS:

For Each of the Named Subcontractors:

- Attach their Section 00 45 17 Named Subcontractor Bidders Qualification Statement(s)

For Each of the Named Set-Aside SBE/MBE Contractors:

- Attach their DAS Set-Aside Certificate of Eligibility (SBE and/or MBE)

For Each of the Named Subcontractors With Subcontracts Greater Than \$500,000:

- Attach their DAS Prequalification Certificate and Update (Bid) Statement for the Class of Work

 Contractor Authorized Signature & Title _____ Date

This Form Must Be Received No Later Than _____ At:

State of Connecticut
 Department of Administrative Services, Construction Services
 Office of Legal Affairs, Policy, and Procurement
 450 Columbus Boulevard, Suite 1302
 Hartford, CT 06103

Attn:

**State Of Connecticut
Department of Administrative Services
Construction Services**

March 26, 2015

To: All Department of Administrative Services, Construction Services Contractors

Subject: Set-Aside Contract Laws

Dear Sir/Madam:

The administration of Governor Dannel P. Malloy is committed to supporting the subject programs by encouraging all contractors on State projects to improve their efforts in these areas.

State law requires contractors doing business with the State to demonstrate non-discrimination by making "good faith efforts" in both hiring and in sub-contracting practices General Statute Section (C.G.S. §) 4a-60.

What does "good faith efforts" mean? It means that you, as contractors, must act affirmatively. It is not good enough to say you can't find minorities and women. You must seek them out. That is the law, and the Department of Administrative Services (DAS) / Construction Services (CS) is committed to enforcing the law. At the same time, we are ready to assist you in making "good faith efforts."

DAS is required by C.G.S. § 4a-60g (b) and (c) to set aside projects (amounting to **twenty-five percent (25%)** of its annual contract awards) for small business and **twenty-five percent (25%)** of that amount for minority business enterprises. DAS may require any general contractor to set aside a portion of the contract for subcontractors who are small businesses or minority business enterprises in lieu of setting aside a project or in addition to setting aside a project.

Therefore, unless otherwise specified in the **Bid Proposal Form**, DAS will require contractors to subcontract **twenty-five percent (25%)** of the total contract value to small businesses certified by DAS and further will require contractors to subcontract 25% of that 25% to minority and women small contractors certified as minority business enterprises by DAS. These statutory goals represent the minimum values expected to be achieved by this program.

Together, we can meet the challenge of providing equal opportunity for minority and women-owned businesses and workers in our State. We expect superior results in the areas of affirmative action, equal employment opportunity, and set-aside contracts. The DAS standard in these areas is not just minimal effort. Our goal is to uphold the letter and the spirit of the law.

For more information on Non-Discrimination and Affirmative Action Provisions for State Contracts please visit the Commission on Human Rights and Opportunities (**CHRO**) Website at www.ct.gov/chro.

Sincerely yours,

Melody A. Currey
Commissioner

PB:pb

Non-Discrimination and Affirmative Action Provisions for State Contracts

| Section 1 | CHRO – Contract Compliance Regulations Notification to Bidders: |
|-----------|---|
| 1.1 | <p>The contract to be awarded is subject to contract compliance requirements mandated by:</p> <ul style="list-style-type: none"><li>1.1.1 The Connecticut General Statutes (C.G.S.) § 4a-60 and 4a-60a;<li>1.1.2 C.G.S. § 46a-71(d) and 46a-81i (d) when the awarding agency is the State; and<li>1.1.3 The Contract Compliance Regulations codified in the Regulations of Connecticut State Agencies (RSCA) §46a-68j-21 through 43, which establish a procedure for awarding all contracts covered by C.G.S. §4a-60 and 46a-71(d). |
| 1.2 | <p>According to the Contract Compliance Regulations §46a-68j-30(9), every agency awarding a contract subject to the contract compliance requirements has an obligation to “aggressively solicit the participation of legitimate minority business enterprises as bidders, contractors, subcontractors and suppliers of materials.”</p> <p>“Minority business enterprise” is defined in C.G.S §4a-60-as a small contractor or supplier of materials fifty-one (51%) percent or more of the capital stock or assets of which is owned by a person or persons:</p> <ul style="list-style-type: none"><li>1.2.1 who are active in the daily affairs of the enterprise;<li>1.2.2 who have the power to direct the management and policies of the enterprise; and<li>1.2.3 who are members of a minority, as such term is defined in subsection (a) of C.G.S. §32-9n.” |
| 1.3 | <p>“Minority” groups are defined in C.G.S. §32-9n as:</p> <ul style="list-style-type: none"><li>1.3.1 Black Americans, including all persons having origins in any of the Black African racial groups not of Hispanic origin;<li>1.3.2 Hispanic Americans, including all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;<li>1.3.3 Persons who have origins in the Iberian Peninsula, including Portugal, regardless of race;<li>1.3.4 Women;<li>1.3.5 Asian Pacific Americans and Pacific Islanders; or<li>1.3.6 American Indians and persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification.<li>1.3.7 “Individuals with a disability” is also a minority business enterprise as provided by C.G.S. § 4a-60g (4). |
| 1.4 | <p>The above “Minority business enterprise” definitions apply to the contract compliance requirements by virtue of Contract Compliance Regulations §46a-68j-21(11).</p> <p>The awarding agency will consider the following factors when reviewing the bidder’s qualifications under the contract compliance requirements:</p> <ul style="list-style-type: none"><li>1.4.1 the bidder’s success in implementing an affirmative action plan;<li>1.4.2 the bidder’s success in developing an apprenticeship program complying with RSCA §46a-68-1 to 46a-68-17, inclusive;<li>1.4.3 the bidder’s promise to develop and implement a successful affirmative action plan;<li>1.4.4 the bidder’s submission of employment statistics contained in the “Employment Information Form”, indicating that the composition of its workforce is at or near parity when compared to the racial and sexual composition of the workforce in the relevant labor market area; and<li>1.4.5 the bidder’s promise to set aside a portion of the contract for legitimate minority business enterprises. See Contract Compliance Regulations § 46a-68j-30(10) (E). |

Note: The Commission on Human Rights and Opportunities (CHRO) “Employment Information Form” shall be submitted to the DAS/CS Office of Legal Affairs, Policy, and Procurement on behalf of the awarding agency, the Department of Administrative Services (DAS).

| | |
|------------------|---|
| Section 2 | Non-Discrimination and other Contract Compliance Requirements: |
|------------------|---|

Pursuant to **C.G.S. § 4a-60** and **§4a-60a** and the **RSCA §46a-68j-21 to 46a-68j-43**, a contractor agrees to the following:

- 2.1** Not to discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, sexual orientation, mental retardation, or physical disability including, but not limited to, blindness (unless it is shown that such disability prevents performance of the work involved) in the performance of a contract, in any manner prohibited by the federal and Connecticut anti-discrimination and contract compliance laws;
- 2.2** To undertake affirmative action which will insure that applicants with job-related qualifications are employed and that employees are treated, when employed, without regard to whether they belong to any of the groups identified in Paragraph # 1) above;
- 2.3** To include a statement that the contractor is an “affirmative action-equal opportunity employer”, in all solicitations or advertisements for employees placed by or on behalf of the contractor;
- 2.4** To provide each labor union or representative of workers with which such contractor has a collective bargaining agreement and each vendor with which such contractor has a contract, a notice advising them of the contractor’s commitments under **C.G.S. § 4a-60** and **§4a-60a**. The notice is available by contacting **CHRO**;
- 2.5** To post copies of the notice referred to in item 4) in conspicuous places available to employees and applicants;
- 2.6** To provide **CHRO** with such information requested by said agency, permit access to pertinent books, records, and accounts, concerning the employment practices and procedures of the contractor as relate to the provisions of **C.G.S. §4a-60, §4a-60a** and **§46a-56** and, cooperate fully with **CHRO**; and,
- 2.7** To include the language of **C.G.S. § 4a-60 (a)** and **§4a-60a (a)** in every subcontract or purchase order executed to fulfill any obligation of the contract with DAS.

| | |
|------------------|---|
| Section 3 | Affirmative Action Requirements for Certain Public Works Contracts for Construction: |
|------------------|---|

Pursuant to **C.G.S. § 46a-68c** and **§46a-68d** and, the **RSCA § 46a-68j-21 to 46a-68j-29**, the following must file an affirmative action plan with the Commission:

- 3.1** A successful bidder on a ¹ “**public works contract**” with a value of **\$500,000** or more. The plan must be filed within **thirty (30)** days after a bid has been accepted by an awarding agency but before a contract is awarded. A plan may be filed in advance of or, at the same time as a bid is submitted.
- 3.2** A contractor with **fifty (50)** or more employees who has been awarded a “**public works contract**” in excess of **\$50,000** in any fiscal year. A plan must be filed within **thirty (30) days** of the date a contract is awarded.

CHRO must review a plan within **sixty (60) days** of receipt and must either approve or reject a plan. Should **CHRO** approve an affirmative action plan, **CHRO** will issue a certificate of compliance. This certificate of compliance shall be proof of a successful bidder’s or a contractor’s eligibility to bid or be awarded contracts for a period of **two (2)** years from the date of the certificate. This certificate does not excuse a successful bidder or contractor from being monitored by the **CHRO** for implementation of its affirmative action plan or, from its reporting requirements under **C.G.S. 46a-68e** and **§ 46a-68f**. (Refer to Section 6) Also, **CHRO** may revoke the certificate if a successful bidder or contractor does not implement its affirmative action plan.

Should **CHRO** opt to disapprove an affirmative action plan, **CHRO** must notify the successful bidder or contractor in writing within **ten (10) days** of the disapproval. The notice will state the reason for disapproval and may provide necessary proposals to bring the plan into compliance. The successful bidder or contractor must then submit a new or amended plan, within **thirty (30) days** of the date the notice of disapproval is mailed by **CHRO**.

Section 3

(Continued):

In addition, **CHRO** may conditionally approve an affirmative action plan for a successful bidder on a public works contract valued at **\$500,000** or more. **CHRO** must notify the successful bidder in writing within **ten (10) days** of the conditional disapproval and state the reason for conditional approval and, may provide necessary proposals to bring the plan into compliance. The successful bidder must then submit a new or amended plan or, provide written assurances that it will amend its plan to conform to affirmative action requirements, within **thirty (30) days** of the date the notice is mailed by **CHRO**.

Note: The awarding agency (DAS) will provide a successful bidder or contractor with a copy of **CHRO**'s Affirmative Action Plan format. All sections of this Affirmative Action Plan format must be completed by the successful bidder or contractor and forwarded to **CHRO**. Also, the awarding agency (DAS) shall withhold **2%** of the total contract price per month from any payment made to a contractor until such time as the contractor has developed an affirmative action plan, which has been approved by **CHRO**.

¹ **“public works contract”** means any agreement between any individual, firm or corporation and the state or any political subdivision of the state other than a municipality for construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, or which is financed in whole or in part by the state, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees.-**C.G.S. § 46a-68b**.

Section 4

“Good Faith Efforts” to Include Minority Business Enterprises as Subcontractors”:

In addition to, or in the absence of, any other subcontractor requirements included in this project, contractors are required to make ² **“good faith efforts”** to include minority business enterprises in the work of this project as subcontractors (for services and/or material suppliers). For the purpose of identifying minority business enterprises, a minority business enterprise shall be a subcontractor which has a valid certification as such from DAS and/or a subcontractor for which an affidavit has been submitted by the contractor attesting that the subcontractor named as a minority business enterprise meets the minority business enterprise criteria set out in **C.G.S. § 4a-60(b)**.

² **“Good faith efforts”** means *“that **degree of diligence** which a reasonable person would exercise in the performance of legal duties and obligations”* and includes, but is not limited to, the following **factors**: the contractor's employment and subcontracting policies and practices; affirmative advertising, recruitment, training, technical assistance activities and such other reasonable activities or efforts as **CHRO** may recommend to ensure the participation of minority business enterprises in state projects.

| | |
|------------------|---------------------------|
| Section 5 | Set-Aside Program: |
|------------------|---------------------------|

This contract may be subject to the provisions the **Set-Aside Program for Small Contractors** found at **C.G.S. § 4a-60g** and may be awarded only to a contractor certified as a small and/or minority business enterprise by DAS. The notification as to this special provision will be found in the **Bid Proposal Form** for this contract. The listing of eligible "Set-Aside" contractors is found on the [DAS Website for SBE or MBE Certification](#). In the event that the **Set-Aside Program for Small Contractors** applies to this contract, the following special provisions will also apply:

5.1 Amount of Work Required to Be Done by "Set-Aside" Contractors

A contractor awarded a contract on a project pursuant to the provisions of **C.G.S. § 4a-60g**, as amended, shall be required to perform not less than **thirty (30)** per cent of the work with his/her own forces and shall ensure that not less than **fifty (50)** per cent of the work be performed by contractors or subcontractors who are certified as small contractors or minority business enterprises pursuant to **C.G.S. § 4a-60g**.

The primary product/service performed by contractors working on a contract awarded under **C.G.S. § 4a-60g** must be the same as the primary product/service described for the contractors on their "Certificate of Eligibility" which is provided to them by DAS.

5.2 Alternate Bonding Available to "Set Aside" Contractors

In lieu of a performance, bid, labor and materials or other required bond, a contractor or subcontractor awarded a contract under **C.G.S. § 4a-60g** may provide to the awarding authority (DAS) and the awarding authority shall accept a "Letter of Credit". Any such "Letter of Credit" shall be in an amount equal to **ten per cent (10%)** of the contract for any contract that is less than **one hundred thousand (\$100,000) dollars**, and in the amount of **twenty-five per cent (25%)** for any contract that is **one hundred thousand (\$100,000) dollars** or more.

5.3 Procedures to Follow Regarding Substitution of Named Project "Set-Aside" Subcontractors.

The awarding authority (DAS) may also require the contractor to set aside a portion of the contract for subcontractors who are eligible for set aside contracts. The awarding authority shall not permit substitution of a subcontractor for one named in accordance with the provisions of **C.G.S. § 4b-95** or substitution of a subcontractor for any designated sub-trade work bid to be performed by the contractor's own forces, except for good cause.

Pursuant to **C.G.S. § 4b-95**, the term "**good cause**" includes but is not limited to a subcontractor's or, where appropriate, a general contractor's:

5.3.1 Death or physical disability, if the listed subcontractor is an individual;

5.3.2 Dissolution, if a corporation or partnership;

5.3.3 Bankruptcy;

5.3.4 Inability to furnish any performance and payment bond shown on the bid form;

5.3.5 Inability to obtain, or loss of, a license necessary for the performance of the particular category of work;

5.3.6 Failure or inability to comply with a requirement of law applicable to contractors and subcontractors, or to subcontracts for construction, alteration, or repair projects;

5.3.7 Failure to perform his/her agreement to execute a subcontract under **C.G.S. § 4b-96**.

Any general contractor who violates any provision of **C.G.S. § 4b-95** shall be disqualified from bidding on other contracts that are subject to the provisions of **Chapter 60 - Construction and Alterations of State Buildings of the C.G.S.**, for a period **not to exceed twenty-four (24) months**, commencing from the date on which the violation is discovered, for each violation.

| | |
|------------------|---|
| Section 6 | Contract Monitoring and Reporting: |
|------------------|---|

- 6.1 CHRO** has the authority to monitor state contractors pursuant to **C.G.S. § 46a-68e** and **46a-68f** and **RSCA-§46a-68j-23(3)**. In addition, under the **RSCA §46a-68j-25(e)** and **46a-68j-26 (g)**, **CHRO** has the authority to monitor the implementation of an affirmative action plan regarding:
- 6.1.1** a successful bidder who has been awarded a public works contract valued at **\$500,000 or more** and;
 - 6.1.2** a contractor with **fifty (50)** or more employees who has been awarded a public works contract **in excess of \$50,000 in any fiscal year**.
- 6.2** In order to monitor the implementation of these plans **CHRO** requires that the following contract monitoring reports be compiled and submitted:
- 6.2.1 Monthly Employment Utilization Report (Form CHRO: 257):** A contractor, on behalf of itself and all subcontractors who perform work on the project during a given month, is required to report on the work hour participation of minority male and female workers in each trade category on the project. The report must be submitted to the contract awarding agency (**DAS**) and to the Commission by the 15th day following the end of each calendar month during the term of the on-site construction work of the project.
Website page: <http://www.ct.gov/chro>, then click on **Forms**, then click on **Contract Compliance Forms and Reports**.
 - 6.2.2 Quarterly Small Contractor and Minority Business Enterprise Payment Status Report (Form CHRO: 258):** A contractor is required to report on the participation of small contractors or minority business enterprises identified to participate on the project. The report must be submitted to the contract awarding agency (**DAS**) and to the Commission by the 15th day following the end of each calendar quarter during the term of the on-site construction work of the project.
Website page: <http://www.ct.gov/chro>, then click on **Forms**, then click on **Contract Compliance Forms and Reports**.
 - 6.2.3** In addition, the Commission expects that a contractor will designate an Equal Opportunity/Contract Compliance Officer for its public works project who will compile the above monthly and quarterly reports, as well as, undertake the following responsibilities for implementation of its project Affirmative Action Plan (AAP):
 - .1** Maintain a project Equal Employment Opportunity (EEO) file to include all records, correspondence and other documentation relate to the project AAP.
 - .2** Communicate to and inform all project subcontractors, regardless of tier, and labor referral organizations (if applicable) about project equal employment and AAP commitments and performance requirements.
 - .3** Participate in project job meetings to inform project subcontractors about project equal employment and AAP performance requirements.
 - .4** Track the use of employment recruitment sources identified in the project AAP regarding all employment opportunities with all subcontractors on the project. Also, maintain documentation of all contacts with these recruitment sources and their responses.

The Commission will forward a copy of the monthly and quarterly report to each contractor on a public works project.

| | |
|---------------|---|
| NOTES: | Bidders and state contractors may review the full text of the before referenced Connecticut General Statutes by accessing either the State Law Library's web site (http://www.cslib.org/psaindex.htm) or the State Legislatures' web site (http://www.cga.ct.gov). |
| | The full text of the RSCA 46a-68j-21 through 46a-68j-43 may be reviewed by accessing the Commission's web site: http://www.ct.gov/chro/cwp/view.asp?a=2525&Q=315900&chroPNavCtr=#45679 In the alternative, bidders or state contractors may request a copy of these state statutes and regulations by contacting the Commission at (860) 541-3400 (in Hartford) or 1 (800) 477-5737. |

| | |
|------------------|--|
| Section 7 | CHRO Contract Compliance Forms: |
|------------------|--|

The following CHRO Contract Compliance Forms are available on the CHRO Website:

- 7.1 **Monthly Employment Utilization Report (Form CHRO-257 and CHRO-257a):**
 - <http://www.ct.gov/chro/lib/chro/257s.pdf>
- 7.2 **Cumulative Utilization Report (Form CHRO-257b):**
 - <http://www.ct.gov/chro/lib/chro/257b.pdf>
- 7.3 **Monthly Small Contractor & MBE Payment Status Report (Form CHRO-258a) and Quarterly Small Contractor & MBE Payment Status Report (Form CHRO-258):**
 - <http://www.ct.gov/chro/lib/chro/258s.pdf>

**End of Section
00 73 38 CHRO / Contract Compliance Regulations**

**Minimum Rates and Classifications
 for Building Construction**

**Connecticut Department of Labor
 Wage and Workplace Standards Division**

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following pages are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or sub-contractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his hourly wage.

| | | | |
|--|----------|----------------------|----------------|
| Project Number: | BI-C-291 | Project Town: | Rocky Hill, CT |
| Project: DVA ADA Improvements – Bldgs. 2, 3 & 4 | | | |
| 287 West Street | | | |
| Rocky Hill, CT | | | |

The following pages contain:

| | |
|--|----------|
| Contractors Wage Certification Form | 1 page |
| Notice to all Mason Contractors reference Section 31-53 of C.G.S. (Prevailing Wages) | 1 page |
| Prevailing Wage Rates - English | 15 pages |
| Federal Wage Rates – English | 9 pages |
| Informational Bulletin - Occupational Classifications | 4 pages |
| Informational Bulletin – The 10-Hour OSHA Construction Safety and Health Course | 2 pages |
| Footnotes | 2 pages |
| Special Notice re: Wage Rate Adjustments | 1 pages |
| Weekly Payroll Certification Form (WWS-CP1) | 1 page |
| Fringe Benefits Explanation (P) | 1 page |
| Weekly Payroll Certification Form (WWS-CP2) | 1 page |

As of: December 11, 2018



Opportunity * Guidance * Support



THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

**If you have QUESTIONS regarding your wages
CALL (860) 263-6790**

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM
Construction Manager at Risk/General Contractor/Prime Contractor

I, _____ of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

Street

City

and all of its subcontractors will pay all workers on the

Project Name and Number

Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

Signed

Subscribed and sworn to before me this _____ day of _____, _____.

Notary Public

Return to:
Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

November 29, 2006

Notice
To All Mason Contractors and Interested Parties
Regarding Construction Pursuant to Section 31-53 of the
Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.
- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

Sec. 31-53b. Construction safety and health course. New miner training program. Proof of completion required for mechanics, laborers and workers on public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (g) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2009, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009.

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

**Minimum Rates and Classifications
for Building Construction**

ID# : B 25473

**Connecticut Department of Labor
Wage and Workplace Standards Division**

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:

Project Town: Rocky Hill

State#: BI-C-291

FAP#:

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

| CLASSIFICATION | Hourly Rate | Benefits |
|--|--------------------|-----------------|
| 1a) Asbestos Worker/Insulator (Includes application of insulating materials, protective coverings, coatings, & finishes to all types of mechanical systems; application of firestopping material for wall openings & penetrations in walls, floors, ceilings | 38.25 | 27.96 |
| <hr/> | | |
| 1b) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters.**See Laborers Group 7** | | |
| <hr/> | | |
| 1c) Asbestos Worker/Heat and Frost Insulator | 40.21 | 29.30 |

As of: **Tuesday, December 11, 2018**

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

| | | |
|----------------|-------|-------|
| 2) Boilermaker | 38.34 | 26.01 |
|----------------|-------|-------|

| | | |
|---|-------|-----------|
| 3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons | 33.48 | 32.06 + a |
|---|-------|-----------|

| | | |
|-----------------|-------|-------|
| 3b) Tile Setter | 34.90 | 25.87 |
|-----------------|-------|-------|

| | | |
|---|-------|-------|
| 3c) Terrazzo Mechanics and Marble Setters | 31.69 | 22.35 |
|---|-------|-------|

| | | |
|---------------------------------------|-------|-------|
| 3d) Tile, Marble & Terrazzo Finishers | 26.70 | 21.75 |
|---------------------------------------|-------|-------|

| | | |
|---------------|-------|-------|
| 3e) Plasterer | 33.48 | 32.06 |
|---------------|-------|-------|

As of: Tuesday, December 11, 2018

-----LABORERS-----

| | | |
|---|-------|-------|
| 4) Group 1: Laborers (common or general), acetylene burners, carpenter tenders, concrete specialists, wrecking laborers, fire watchers. | 30.05 | 20.10 |
|---|-------|-------|

| | | |
|--|-------|-------|
| 4a) Group 2: Mortar mixers, plaster tender, power buggy operators, powdermen, fireproofers/mixer/nozzleman (Person running mixer and spraying fireproof only). | 30.30 | 20.10 |
|--|-------|-------|

| | | |
|--|-------|-------|
| 4b) Group 3: Jackhammer operators/pavement breaker, mason tender (brick), mason tender (cement/concrete), forklift operators and forklift operators (masonry). | 30.55 | 20.10 |
|--|-------|-------|

| | | |
|---|-------|-------|
| 4c) **Group 4: Pipelayers (Installation of water, storm drainage or sewage lines outside of the building line with P6, P7 license) (the pipelayer rate shall apply only to one or two employees of the total crew who primary task is to actually perform the mating of pipe sections) P6 and P7 rate is \$26.80. | 30.55 | 20.10 |
|---|-------|-------|

| | | |
|---|-------|-------|
| 4d) Group 5: Air track operator, sand blaster and hydraulic drills. | 30.55 | 20.10 |
|---|-------|-------|

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

| | | |
|---|-------|-------|
| 4e) Group 6: Blasters, nuclear and toxic waste removal. | 31.80 | 20.10 |
|---|-------|-------|

| | | |
|--|-------|-------|
| 4f) Group 7: Asbestos/lead removal and encapsulation (except it's removal from mechanical systems which are not to be scrapped). | 31.05 | 20.10 |
|--|-------|-------|

| | | |
|--|-------|-------|
| 4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew. | 28.38 | 20.10 |
|--|-------|-------|

| | | |
|---|-------|-------|
| 4h) Group 9: Top men on open air caisson, cylindrical work and boring crew. | 27.86 | 20.10 |
|---|-------|-------|

| | | |
|---|-------|-------|
| 4i) Group 10: Traffic Control Signalman | 16.00 | 20.10 |
|---|-------|-------|

| | | |
|---|-------|-------|
| 5) Carpenter, Acoustical Ceiling Installation, Soft Floor/Carpet Laying, Metal Stud Installation, Form Work and Scaffold Building, Drywall Hanging, Modular-Furniture Systems Installers, Lathers, Piledrivers, Resilient Floor Layers. | 32.60 | 25.34 |
|---|-------|-------|

As of: Tuesday, December 11, 2018

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

| | | |
|-----------------|-------|-------|
| 5a) Millwrights | 33.14 | 25.74 |
|-----------------|-------|-------|

| | | |
|--|-------|------------------------|
| 6) Electrical Worker (including low voltage wiring) (Trade License required: E1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9) | 40.00 | 25.97+3% of gross wage |
|--|-------|------------------------|

| | | |
|---|-------|------------|
| 7a) Elevator Mechanic (Trade License required: R-1,2,5,6) | 51.71 | 32.645+a+b |
|---|-------|------------|

-----LINE CONSTRUCTION-----

| | | |
|-----------|-------|-------------|
| Groundman | 26.50 | 6.5% + 9.00 |
|-----------|-------|-------------|

| | | |
|-----------------------|-------|--------------|
| Linemen/Cable Splicer | 48.19 | 6.5% + 22.00 |
|-----------------------|-------|--------------|

As of: Tuesday, December 11, 2018

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

| | | |
|---|-------|-----------|
| 8) Glazier (Trade License required: FG-1,2) | 37.18 | 21.05 + a |
|---|-------|-----------|

| | | |
|---|-------|-----------|
| 9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection | 35.47 | 35.14 + a |
|---|-------|-----------|

----OPERATORS----

| | | |
|--|-------|-----------|
| Group 1: Crane handling or erecting structural steel or stone, hoisting engineer 2 drums or over, front end loader (7 cubic yards or over), work boat 26 ft. and over and Tunnel Boring Machines. (Trade License Required) | 39.55 | 24.05 + a |
|--|-------|-----------|

| | | |
|--|-------|-----------|
| Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required) | 39.23 | 24.05 + a |
|--|-------|-----------|

| | | |
|--|-------|-----------|
| Group 3: Excavator; Backhoe/Excavator under 2 cubic yards; Cranes (under 100 ton rated capacity), Grader/Blade; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade. (slopes, shaping, laser or GPS, etc.). (Trade License Required) | 38.49 | 24.05 + a |
|--|-------|-----------|

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

| | | |
|--|-------|-----------|
| Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper). | 38.10 | 24.05 + a |
|--|-------|-----------|

| | | |
|--|-------|-----------|
| Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" Mandrell) | 37.51 | 24.05 + a |
|--|-------|-----------|

| | | |
|--|-------|-----------|
| Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller; Pile Testing Machine. | 37.51 | 24.05 + a |
|--|-------|-----------|

| | | |
|---|-------|-----------|
| Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer). | 37.20 | 24.05 + a |
|---|-------|-----------|

| | | |
|--|-------|-----------|
| Group 7: Asphalt roller, concrete saws and cutters (ride on types), vermeer concrete cutter, Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrell). | 36.86 | 24.05 + a |
|--|-------|-----------|

| | | |
|---|-------|-----------|
| Group 8: Mechanic, grease truck operator, hydroblaster; barrier mover; power stone spreader; welding; work boat under 26 ft.; transfer machine. | 36.46 | 24.05 + a |
|---|-------|-----------|

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

| | | |
|--|-------|-----------|
| Group 9: Front end loader (under 3 cubic yards), skid steer loader regardless of attachments, (Bobcat or Similar): forklift, power chipper; landscape equipment (including Hydroseeder). | 36.03 | 24.05 + a |
|--|-------|-----------|

| | | |
|---|-------|-----------|
| Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc. | 33.99 | 24.05 + a |
|---|-------|-----------|

| | | |
|--|-------|-----------|
| Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment. | 33.99 | 24.05 + a |
|--|-------|-----------|

| | | |
|-------------------------------|-------|-----------|
| Group 12: Wellpoint operator. | 33.93 | 24.05 + a |
|-------------------------------|-------|-----------|

| | | |
|--|-------|-----------|
| Group 13: Compressor battery operator. | 33.35 | 24.05 + a |
|--|-------|-----------|

| | | |
|--|-------|-----------|
| Group 14: Elevator operator; tow motor operator (solid tire no rough terrain). | 32.21 | 24.05 + a |
|--|-------|-----------|

As of: Tuesday, December 11, 2018

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator. 31.80 24.05 + a

Group 16: Maintenance Engineer/Oiler. 31.15 24.05 + a

Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator. 35.46 24.05 + a

Group 18: Power safety boat; vacuum truck; zim mixer; sweeper; (Minimum for any job requiring a CDL license). 33.04 24.05 + a

-----PAINTERS (Including Drywall Finishing)-----

10a) Brush and Roller 33.62 21.05

As of: Tuesday, December 11, 2018

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

| | | |
|------------------------------------|-------|-------|
| 10b) Taping Only/Drywall Finishing | 34.37 | 21.05 |
|------------------------------------|-------|-------|

| | | |
|--------------------------------|-------|-------|
| 10c) Paperhanger and Red Label | 34.12 | 21.05 |
|--------------------------------|-------|-------|

| | | |
|----------------------|-------|-------|
| 10e) Blast and Spray | 36.62 | 21.05 |
|----------------------|-------|-------|

| | | |
|--|-------|-------|
| 11) Plumber (excluding HVAC pipe installation) (Trade License required: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) | 42.62 | 31.21 |
|--|-------|-------|

| | | |
|---------------------------------------|-------|-----------|
| 12) Well Digger, Pile Testing Machine | 37.26 | 24.05 + a |
|---------------------------------------|-------|-----------|

| | | |
|--------------------------|-------|-------|
| 13) Roofer (composition) | 36.70 | 19.85 |
|--------------------------|-------|-------|

As of: Tuesday, December 11, 2018

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

| | | |
|---------------------------|-------|-------|
| 14) Roofer (slate & tile) | 37.20 | 19.85 |
|---------------------------|-------|-------|

| | | |
|--|-------|-------|
| 15) Sheetmetal Worker (Trade License required for HVAC and Ductwork: SM-1,SM-2,SM-3,SM-4,SM-5,SM-6) | 37.50 | 36.79 |
|--|-------|-------|

| | | |
|---|-------|-------|
| 16) Pipefitter (Including HVAC work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4, G-1, G-2, G-8 & G-9) | 42.62 | 31.21 |
|---|-------|-------|

-----TRUCK DRIVERS-----

| | | |
|-------------|-------|-----------|
| 17a) 2 Axle | 29.13 | 23.33 + a |
|-------------|-------|-----------|

| | | |
|-------------------------------|-------|-----------|
| 17b) 3 Axle, 2 Axle Ready Mix | 29.23 | 23.33 + a |
|-------------------------------|-------|-----------|

As of: Tuesday, December 11, 2018

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

| | | |
|-----------------------|-------|-----------|
| 17c) 3 Axle Ready Mix | 29.28 | 23.33 + a |
|-----------------------|-------|-----------|

| | | |
|---|-------|-----------|
| 17d) 4 Axle, Heavy Duty Trailer up to 40 tons | 29.33 | 23.33 + a |
|---|-------|-----------|

| | | |
|-----------------------|-------|-----------|
| 17e) 4 Axle Ready Mix | 29.38 | 23.33 + a |
|-----------------------|-------|-----------|

| | | |
|--|-------|-----------|
| 17f) Heavy Duty Trailer (40 Tons and Over) | 29.58 | 23.33 + a |
|--|-------|-----------|

| | | |
|--|-------|-----------|
| 17g) Specialized Earth Moving Equipment (Other Than Conventional Type on-the-Road Trucks and Semi-Trailers, Including Euclids) | 29.38 | 23.33 + a |
|--|-------|-----------|

| | | |
|--|-------|-----------|
| 18) Sprinkler Fitter (Trade License required: F-1,2,3,4) | 43.92 | 15.84 + a |
|--|-------|-----------|

As of: Tuesday, December 11, 2018

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

| | | |
|---------------------------------|-------|------|
| 19) Theatrical Stage Journeyman | 25.76 | 7.34 |
|---------------------------------|-------|------|

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional \$1.25 per hour for truck drivers.*

***Note: Hazardous waste premium \$3.00 per hour over classified rate*

ALL Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra \$4.00 premium in addition to the hourly wage rate and benefit contributions:

1) Crane handling or erecting structural steel or stone; hoisting engineer (2 drums or over)

2) Cranes (100 ton rate capacity and over) Bauer Drill/Caisson

3) Cranes (under 100 ton rated capacity)

Crane with 150 ft. boom (including jib) - \$1.50 extra

Crane with 200 ft. boom (including jib) - \$2.50 extra

Crane with 250 ft. boom (including jib) - \$5.00 extra

Crane with 300 ft. boom (including jib) - \$7.00 extra

Crane with 400 ft. boom (including jib) - \$10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyman instructing and supervising the work of each apprentice in a specific trade.

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

As of: Tuesday, December 11, 2018

Project: DVA ADA Improvements For Buildings 2, 3 And 4 At 287 West Street

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: Tuesday, December 11, 2018

General Decision Number: CT180021 10/19/2018 CT21

Superseded General Decision Number: CT20170021

State: Connecticut

Construction Type: Building

County: Hartford County in Connecticut.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

| Modification Number | Publication Date |
|---------------------|------------------|
| 0 | 01/05/2018 |
| 1 | 01/12/2018 |
| 2 | 02/16/2018 |
| 3 | 04/13/2018 |
| 4 | 04/27/2018 |
| 5 | 05/18/2018 |
| 6 | 06/15/2018 |
| 7 | 06/22/2018 |
| 8 | 06/29/2018 |
| 9 | 07/06/2018 |
| 10 | 07/27/2018 |
| 11 | 10/19/2018 |

BOIL0237-001 01/01/2016

| | Rates | Fringes |
|------------------|----------|---------|
| BOILERMAKER..... | \$ 38.34 | 26.01 |

BRCT0001-008 01/02/2018

| | Rates | Fringes |
|------------------|----------|---------|
| TILE SETTER..... | \$ 34.90 | 25.87 |

BRCT0001-013 01/02/2018

| | Rates | Fringes |
|-----------------|----------|---------|
| BRICKLAYER..... | \$ 33.48 | 32.06 |

PAID HOLIDAY: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked on that day in addition to holiday pay.

BRCT0001-014 01/02/2018

| | Rates | Fringes |
|---|----------|---------|
| CEMENT MASON/CONCRETE FINISHER (Including Caulking).... | \$ 33.48 | 32.06 |

PAID HOLIDAY: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked on that day in addition to holiday pay.

BRCT0001-021 01/02/2018

| | Rates | Fringes |
|----------------|----------|---------|
| PLASTERER..... | \$ 33.48 | 32.06 |

CARP0326-008 05/07/2018

| | Rates | Fringes |
|---|----------|---------|
| CARPENTER (Including Drywall Hanging, Acoustical Ceiling Installation, Soft Floor/Carpet Laying, Metal Stud Installation, Form Work and Scaffold Building)..... | \$ 32.60 | 25.34 |

CARP0326-009 05/07/2018

| | Rates | Fringes |
|-----------------|----------|---------|
| MILLWRIGHT..... | \$ 33.14 | 25.74 |

ELEC0035-007 06/01/2018

Entire County excluding Berlin, Bristol, Hartland, New Britain, Newington, Plainville and Southington Townships

| | Rates | Fringes |
|---------------------------|-------|---------|
| ELECTRICIAN, Includes Low | | |

Voltage Wiring.....\$ 40.00 3%+25.97

 ELECO090-007 06/01/2018

Berlin, Bristol, New Britain, Newington, Plainville,
 Southington Townships

| | Rates | Fringes |
|--|----------|----------|
| ELECTRICIAN, Includes Low Voltage Wiring..... | \$ 37.50 | 3%+27.91 |

 ELEC0488-010 06/01/2018

Hartland Township

| | Rates | Fringes |
|--|----------|----------|
| ELECTRICIAN, Includes Low Voltage Wiring..... | \$ 38.82 | 3%+26.25 |

 ELEV0091-001 01/01/2018

| | Rates | Fringes |
|------------------------|----------|------------|
| ELEVATOR MECHANIC..... | \$ 51.71 | 32.645+a+b |

FOOTNOTE:

a. Vacation: 6%/under 5 years based on regular hourly rate for all hours worked. 8%/over 5 years based on regular hourly rate for all hours worked.

b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

 * ENGI0478-013 09/30/2018

| | Rates | Fringes |
|--|----------|---------|
| POWER EQUIPMENT OPERATOR: | | |
| Asphalt Paver..... | \$ 37.51 | 24.30 |
| Asphalt Roller..... | \$ 36.86 | 24.30 |
| Backhoe/Excavator 2 cubic yards and over..... | \$ 39.23 | 24.30 |
| Backhoe/Excavator under 2 cubic yards; Grader/Blade; Rubber Tire | | |
| Backhoe/Excavator..... | \$ 38.49 | 24.30 |
| Bobcat/Skid Loader; | | |
| Forklift..... | \$ 36.03 | 24.30 |
| Bulldozer (Rough Grade Dozer)..... | \$ 37.20 | 24.30 |
| Bulldozer Fine Grade (includes slopes, shaping, laser or gps)..... | \$ 38.49 | 24.30 |
| Concrete Pump..... | \$ 37.51 | 24.30 |
| Crane handling or erecting structural steel or stone... | \$ 39.55 | 24.30 |

| | | |
|--|----------|-------|
| Cranes (100 ton capacity & over)..... | \$ 39.23 | 24.30 |
| Cranes (under 100 ton rated capacity)..... | \$ 38.49 | 24.30 |
| Earth Roller..... | \$ 33.99 | 24.30 |
| Front End Loader (3 cubic yards up to 7 cubic yards).. | \$ 37.20 | 24.30 |
| Front End Loader (7 cubic yards or over)..... | \$ 39.55 | 24.30 |
| Front End Loader (under 3 cubic yards)..... | \$ 36.03 | 24.30 |
| Maintenance Engineer/Oiler.. | \$ 31.15 | 24.30 |
| Mechanic..... | \$ 36.46 | 24.30 |
| Vibratory Hammer..... | \$ 33.99 | 24.30 |

PAID HOLIDAYS: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday.

- Crane with boom, including jib, 150 feet - \$1.50 extra.
- Crane with boom, including jib, 200 feet- \$2.50 extra.
- Crane with boom, including jib, 250 feet - \$5.00 extra.
- Crane with boom, including jib, 300 feet - \$7.00 extra.
- Crane with boom, including jib, 400 feet - \$10.00 extra.

All Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra \$4.00 premium in addition to the hourly wage rate and benefit contributions:

- 1) Crane handling or erecting structural steel or stone, hoisting engineer(2 drums or over)
- 2) Cranes(100 ton rated capacity and over) Bauer Drill/Caisson
- 3) Cranes(under 100 ton rated capacity)

IRON0015-006 06/30/2018

| | Rates | Fringes |
|--|----------|---------|
| IRONWORKER, ORNAMENTAL, REINFORCING AND STRUCTURAL..... | \$ 35.47 | 35.14 |

PAID HOLIDAY: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

LABO0056-014 04/01/2018

| | Rates | Fringes |
|--|----------|---------|
| LABORER | | |
| Common/General Laborer..... | \$ 30.05 | 19.84 |
| Mason Tender (Brick/Concrete/Cement)..... | \$ 30.55 | 19.84 |
| Plaster Tender..... | \$ 30.30 | 19.84 |

PAIN0011-012 06/01/2018

| | Rates | Fringes |
|--------------|----------|---------|
| GLAZIER..... | \$ 37.18 | 21.05+a |

a. PAID HOLIDAYS: Labor Day and Christmas Day.

PAIN0011-020 06/01/2018

| | Rates | Fringes |
|------------------------------|----------|---------|
| PAINTER | | |
| Brush and Roller..... | \$ 33.62 | 21.05 |
| Drywall Finishing/Taping.... | \$ 34.37 | 21.05 |
| Paperhanger..... | \$ 34.12 | 21.05 |
| Spray..... | \$ 36.62 | 21.05 |

PLUM0777-006 06/01/2018

| | Rates | Fringes |
|---|----------|---------|
| PIPEFITTER (Including HVAC Pipe Installation)..... | \$ 42.62 | 31.21 |

PLUM0777-007 06/01/2018

| | Rates | Fringes |
|--|----------|---------|
| PLUMBER (Excluding HVAC Pipe Installation)..... | \$ 42.62 | 31.21 |

ROOF0009-005 06/01/2018

| | Rates | Fringes |
|---------------------|----------|---------|
| ROOFER | | |
| Composition..... | \$ 36.70 | 19.85 |
| Slate and Tile..... | \$ 37.20 | 19.85 |

SFCT0669-001 04/01/2017

| | Rates | Fringes |
|--|----------|---------|
| SPRINKLER FITTER (Fire Sprinklers)..... | \$ 43.92 | 15.84 |

PAID HOLIDAYS: Memorial Day, July 4th, Labor Day,
Thanksgiving Day and Christmas Day, provided the employee
has been in the employment of a contractor 20 working days
prior to any such paid holiday.

SHEE0040-004 07/01/2018

| | Rates | Fringes |
|---|----------|---------|
| SHEETMETAL WORKER, Including HVAC Duct Installation..... | \$ 37.50 | 36.79 |

SUCT2009-005 04/15/2009

| | Rates | Fringes |
|--|----------|---------|
| ASBESTOS WORKER/HEAT & FROST INSULATOR..... | \$ 24.25 | 10.76 |
| LABORER: Airtool Operator..... | \$ 17.04 | 6.90 |
| LABORER: Landscape..... | \$ 19.97 | 2.70 |
| LABORER: Fence Erector..... | \$ 19.65 | 7.00 |
| LINE CONSTRUCTION: Groundman.... | \$ 10.00 | 2.17 |
| LINE CONSTRUCTION: Lineman..... | \$ 22.09 | 6.18 |
| OPERATOR: Asphalt Spreader..... | \$ 25.05 | 8.90 |
| TILE FINISHER..... | \$ 24.55 | 0.00 |

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=====

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local),

a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

Information Bulletin ***Occupational Classifications***

The Connecticut Department of Labor has the responsibility to properly determine "job classification" on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

- **ASBESTOS WORKERS**

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- **ASBESTOS INSULATOR**

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- **BOILERMAKERS**

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- **BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS**

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- **CARPENTERS, MILLWRIGHTS. PILEDIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS**

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **LABORER, CLEANING**

- The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

- **DELIVERY PERSONNEL**

- If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

- An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

- **ELECTRICIANS**

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ***License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.**

- **ELEVATOR CONSTRUCTORS**

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. **License required by Connecticut General Statutes: R-1,2,5,6.*

- **FORK LIFT OPERATOR**

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

- **GLAZIERS**

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

- **IRONWORKERS**

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

- **INSULATOR**

- Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

- **LABORERS**

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal)).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

- **PAINTERS**

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

- **LEAD PAINT REMOVAL**

- Painter's Rate

1. Removal of lead paint from bridges.
2. Removal of lead paint as preparation of any surface to be repainted.
3. Where removal is on a Demolition project prior to reconstruction.

- Laborer's Rate

1. Removal of lead paint from any surface NOT to be repainted.
2. Where removal is on a *TOTAL* Demolition project only.

- **PLUMBERS AND PIPEFITTERS**

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***

- **POWER EQUIPMENT OPERATORS**

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ****License required, crane operators only, per Connecticut General Statutes.***

- **ROOFERS**

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

- **SHEETMETAL WORKERS**

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, fascia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

- **SPRINKLER FITTERS**

Installation, alteration, maintenance and repair of fire protection sprinkler systems.

****License required per Connecticut General Statutes: F-1,2,3,4.***

- **TILE MARBLE AND TERRAZZO FINISHERS**

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are requires to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ****License required, drivers only, per Connecticut General Statutes.***

For example:

- Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
- Hauling material off site is not covered provided they are not dumping it at a location outlined above.
- Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

➤ *Any questions regarding the proper classification should be directed to:*
Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6543.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007*, where the total cost of all work to be performed is at least \$100,000)

- (1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);
- (2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;
- (3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least \$100,000;
- (4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;
- (5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;
- (6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;
- (7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;
- (8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;
- (9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

- (10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;
- (11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;
- (12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;
- (13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;
- (14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and
- (15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.
- (16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of <http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm>; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTIMATELY ARISE CONCERNING THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

**Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES**

⇒ Please Note: If the “Benefits” listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the “Benefits” section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

- a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

- a. Paid Holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Veterans’ Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.
- b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

- a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

- a. Paid Holidays: New Year’s Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

- a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

- a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

- a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

- a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

- a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

STATUTE 31-55a

- SPECIAL NOTICE -

To: All State and Political Subdivisions, Their Agents, and Contractors

Connecticut General Statute 31-55a - Annual adjustments to wage rates by contractors doing state work.

Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54 of the general statutes, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 of the general statutes shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bids on or after October 1, 2002.
- Each contractor affected by the above requirement shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
- It is the **contractor's** responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's Web Site. The annual adjustments will be posted on the Department of Labor Web page: www.ctdol.state.ct.us. For those without internet access, please contact the division listed below.
- The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project. All subsequent annual adjustments will be posted on our Web Site for contractor access.

Any questions should be directed to the Contract Compliance Unit, Wage and Workplace Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109 at (860)263-6790.

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

Connecticut Department of Labor
Wage and Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

WEEKLY PAYROLL

| CONTRACTOR NAME AND ADDRESS: | | | | | | | | | | | SUBCONTRACTOR NAME & ADDRESS | | | | WORKER'S COMPENSATION INSURANCE CARRIER | | | | | | |
|------------------------------------|-------------|-----------------------|--|-----------------------|---|---|---|----|---|---|------------------------------|------------------|--------------------------------|---|--|------------------|----------------------|--------------------|------------------|--|---------------------|
| PAYROLL NUMBER | | Week-Ending Date | PROJECT NAME & ADDRESS | | | | | | | | | | | | POLICY # | | EFFECTIVE DATE: | | EXPIRATION DATE: | | |
| PERSON/WORKER, ADDRESS and SECTION | APPR RATE % | MALE/FEMALE AND RACE* | WORK CLASSIFICATION <small>Trade License Type & Number - OSHA 10 Certification Number</small> | DAY AND DATE | | | | | | | Total ST Hours | BASE HOURLY RATE | TOTAL FRINGE BENEFIT PLAN CASH | TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back) | GROSS PAY FOR ALL WORK PERFORMED THIS WEEK | TOTAL DEDUCTIONS | | | | GROSS PAY FOR THIS PREVAILING RATE JOB | CHECK # AND NET PAY |
| | | | | S | M | T | W | TH | F | S | Total O/T Hours | | | | | FICA | FEDERAL WITH-HOLDING | STATE WITH-HOLDING | LIST OTHER | | |
| | | | | HOURS WORKED EACH DAY | | | | | | | | \$ | | | | | | | | | |
| | | | | | | | | | | | | 1. \$ | | | | | | | | | |
| | | | | | | | | | | | | 2. \$ | | | | | | | | | |
| | | | | | | | | | | | | 3. \$ | | | | | | | | | |
| | | | | | | | | | | | | 4. \$ | | | | | | | | | |
| | | | | | | | | | | | | 5. \$ | | | | | | | | | |
| | | | | | | | | | | | | 6. \$ | | | | | | | | | |
| | | | | | | | | | | | | 1. \$ | | | | | | | | | |
| | | | | | | | | | | | | 2. \$ | | | | | | | | | |
| | | | | | | | | | | | | 3. \$ | | | | | | | | | |
| | | | | | | | | | | | | 4. \$ | | | | | | | | | |
| | | | | | | | | | | | | 5. \$ | | | | | | | | | |
| | | | | | | | | | | | | 6. \$ | | | | | | | | | |

12/9/2013 *IF REQUIRED
WWS-CPI

*SEE REVERSE SIDE

PAGE NUMBER ____ OF

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker’s compensation, income taxes, etc.).

Please specify the type of benefits provided:

- 1) Medical or hospital care _____ 4) Disability _____
- 2) Pension or retirement _____ 5) Vacation, holiday _____
- 3) Life Insurance _____ 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____ of _____, (hereafter known as Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

- a) The records submitted are true and accurate;
- b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;
- c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);
- d) Each such person is covered by a worker’s compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;
- e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and
- f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such persons name first appears.

 (Signature) (Title) Submitted on (Date)

Weekly Payroll Certification For
Public Works Projects (Continued)

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

Week-Ending Date:
Contractor or Subcontractor Business Name:

WEEKLY PAYROLL

| PERSON/WORKER, ADDRESS and SECTION | APPR RATE % | MALE/ FEMALE AND RACE* | WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number | DAY AND DATE | | | | | | | Total ST Hours Total O/T Hours | BASE HOURLY RATE TOTAL FRINGE BENEFIT PLAN CASH | TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back) | GROSS PAY FOR ALL WORK PERFORMED THIS WEEK | TOTAL DEDUCTIONS | | | | GROSS PAY FOR THIS PREVAILING RATE JOB | CHECK # AND NET PAY |
|---------------------------------------|-------------------|---------------------------------|--|-----------------------|---|---|---|----|---|---|---|---|--|---|------------------|-----------------------------|---------------------------|-------|--|------------------------|
| | | | | S | M | T | W | TH | F | S | | | | | FICA | FEDERAL WITH- HOLDING | STATE WITH- HOLDING | OTHER | | |
| | | | | HOURS WORKED EACH DAY | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | \$ | 1. \$ | | | | | | | | |
| | | | | | | | | | | | Base Rate | 2. \$ | | | | | | | | |
| | | | | | | | | | | | \$ | 3. \$ | | | | | | | | |
| | | | | | | | | | | | Cash Fringe | 4. \$ | | | | | | | | |
| | | | | | | | | | | | \$ | 5. \$ | | | | | | | | |
| | | | | | | | | | | | \$ | 6. \$ | | | | | | | | |
| | | | | | | | | | | | Base Rate | | | | | | | | | |
| | | | | | | | | | | | \$ | | | | | | | | | |
| | | | | | | | | | | | Cash Fringe | | | | | | | | | |
| | | | | | | | | | | | \$ | | | | | | | | | |
| | | | | | | | | | | | Base Rate | | | | | | | | | |
| | | | | | | | | | | | \$ | | | | | | | | | |
| | | | | | | | | | | | Cash Fringe | | | | | | | | | |
| | | | | | | | | | | | \$ | | | | | | | | | |
| | | | | | | | | | | | Base Rate | | | | | | | | | |
| | | | | | | | | | | | \$ | | | | | | | | | |
| | | | | | | | | | | | Cash Fringe | | | | | | | | | |
| | | | | | | | | | | | \$ | | | | | | | | | |
| | | | | | | | | | | | Base Rate | | | | | | | | | |
| | | | | | | | | | | | \$ | | | | | | | | | |
| | | | | | | | | | | | Cash Fringe | | | | | | | | | |

*IF REQUIRED

Additional Forms to Be Submitted After Bond Commission Funding Approval

DAS | Construction Services | Office of Legal Affairs, Policy, and Procurement

| Table of Contents | No. of Pages |
|---|---------------------|
| Performance Bond | 2 |
| Labor And Material Bond | 2 |
| Surety Sheet | 1 |
| Bidder's Certification: Financial Position and Corporate Structure | 1 |

PERFORMANCE BOND
Know All Men by These Presents

THAT [] of the
Town of [], County [] and
State of [], as Principal (hereinafter called the Principal),
and [], []

(Insert place of Business)

(a surety company authorized to transact business in the State Of Connecticut) as Surety(ies) (hereinafter called the Surety) are held and firmly bound unto the State of Connecticut (hereinafter called the Obligee) in the full penal sum of

[]

(\$ []) Dollars, lawful money of the United States, to be paid to said State of Connecticut, to the which payment well and truly to be made and done, the said Principal binds himself, his heirs, executors, administrators and assigns (or itself, its successors and assigns), and the said Surety (ies) binds itself, its successors and assigns jointly and severally firmly by these presents.

Signed, sealed and delivered this [] day of [] 20 [] .

THE CONDITION OF THIS OBLIGATION IS SUCH THAT

WHEREAS said Principal will enter into a certain written contract with said Obligee, to be dated-the

[] day of [] 20 [] , which written , as amended, contract shall provide for the following:

- Project Title:** []
- Project Location:** []
- Contract Number:** []
- Project Number:** []

which contract, including any hereafter made extension, modification or alteration thereof, together with all plans and specifications now made or which may hereafter be made in extension, modification or alteration thereof, is hereby referred to, incorporated in, and made a part of this bond as though herein fully set forth.

NOW, THEREFORE, if the said Principal shall well and truly keep, perform and execute all the undertaking, covenants, terms, conditions, and agreements of said contract, as it may be extended, modified or altered, and during the *period* of any guaranty required under the contract, according to its provisions on his or its part to be kept and performed or shall indemnify and reimburse the Obligee for any loss that it may suffer through the failure of the Principal to faithfully observe and perform each and every obligation and duty imposed upon the Principal by the said contract, as it may be extended, modified or altered, at the time and in the manner therein specified, then this obligation shall be null and void, otherwise it shall remain and be in full force and effect.

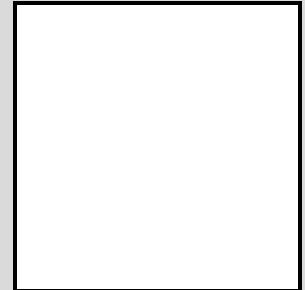
Any alterations which may be made in the terms of the contract, or in the work done or to be done under it, or the giving by the Obligee of any extension of time for the performance of the contract or any other forbearance on the part of either the Obligee or the Principal, one to the other, shall not in any way release the Principal, and/or the Surety(ies) or either of them, their representatives, heirs, executors, administrators, successors or assigns from liability hereunder, and notice to the Surety(ies) of any such alteration, modification, extension or forbearance is hereby specifically and absolutely waived.

In the event that the Surety(ies) assumes the contract or obtains a bid or bids for completion of the contract, the Surety(ies) shall ensure that the contractor chosen to complete the contract is prequalified pursuant to section 4a-100 of the Connecticut General Statutes, in the requisite classification and has the aggregate work capacity rating and single project limit necessary to complete the contract.

IN TESTIMONY WHEREOF, the said Principal has hereunto set his / its hand and seal, and the said Surety(ies) has/have caused this instrument to be signed by its/their attorney in fact and its corporate seal to be hereunto affixed, the day and year first written.

Witness as to Principle

SEAL



(Print Name)

, Its

Duly Authorized

(Print Name)

Witness as to Surety

SEAL



(Print Name)

by

Its attorney in fact

(Print Name)

Note: If more than one surety, add additional lines for additional surety name and address, person signing and title, and two witnesses. Obtain Power of Attorney for each surety.

End Performance Bond

**LABOR AND MATERIAL BOND
Know All Men by These Presents**

THAT [] of the
Town of [], County [] and
State of [], as Principal (hereinafter called the Principal),
and [], []
(Insert place of Business)

(a surety company authorized to transact business in the State Of Connecticut) as Surety(ies) (hereinafter called the Surety) are held and firmly bound unto the State of Connecticut (hereinafter called the Obligee) in the full penal sum of

[]
(\$ []) Dollars, lawful money of the United States, to be paid to said State of Connecticut, to the which payment well and truly to be made and done, the said Principal binds himself, his heirs, executors, administrators and assigns (or itself, its successors and assigns), and the said Surety (ies) binds itself, its successors and assigns jointly and severally firmly by these presents.

Signed, sealed and delivered this [] day of [] 20 [] .

THE CONDITION OF THIS OBLIGATION IS SUCH THAT

WHEREAS said Principal will enter into a certain written contract with said Obligee, to be dated the [] day of [] 20 [] , which written, as amended, contract shall provide for the following:

- Project Title:** []
- Project Location:** []
- Contract Number:** []
- Project Number:** []

which contract, including any hereafter made extension, modification or alteration thereof, together with all plans and specifications now made or which may hereafter be made in extension, modification or alteration thereof, is hereby referred to, incorporated in, and made a part of this bond as though herein fully set forth.

NOW, THEREFORE, if the said Principal shall promptly pay for all materials furnished and labor supplied or performed in the prosecution of the work included in and under the aforesaid contract, as it may be extended, modified or altered, and/or required by the General Statutes of Connecticut, as amended, whether or not the material or labor enters into and becomes a component part of the real asset, then this obligation shall be null and void, otherwise it shall remain and be in full force and effect. This bond is provided pursuant to Section 49-41 et seq. of the General Statutes of Connecticut and shall be governed thereby.

Any party, whether a subcontractor or otherwise, who furnishes materials or supplies or performs labor or services in the prosecution of the work under said contract, as it may be extended, modified or altered, and who is not paid therefor, may bring a suit on this bond in the name of the person suing and prosecute the same to final execution and judgment for such sum or sums as may be justly due.

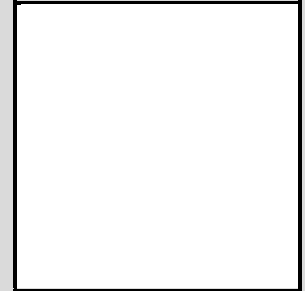
Any alterations which may be made in the terms of the contract, or in the work done or to be done under it, or the giving by the Obligee of any extension of time for the performance of the contract or any other forbearance on the part of either the Obligee or the Principal, one to the other, shall not in any way release the Principal, and/or the Surety(ies) or either of them, their representatives, heirs, executors, administrators, successors or assigns from liability hereunder, and notice to the Surety(ies) of any such alteration, modification, extension or forbearance is hereby specifically and absolutely waived.

In the event that the Surety(ies) assumes the contract or obtains a bid or bids for completion of the contract, the Surety(ies) shall ensure that the contractor chosen to complete the contract is prequalified pursuant to section 4a-100 of the Connecticut General Statutes, in the requisite classification and has the aggregate work capacity rating and single project limit necessary to complete the contract.

IN TESTIMONY WHEREOF, the said Principal has hereunto set his / its hand and seal, and the said Surety(ies) has/have caused this instrument to be signed by its/their attorney in fact and its corporate seal to be hereunto affixed, the day and year first written.

Witness as to Principle

SEAL



(Print Name)

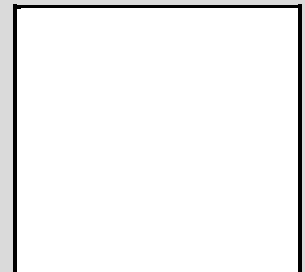
, Its

Duly Authorized

(Print Name)

Witness as to Surety

SEAL



(Print Name)

by

Its attorney in fact

(Print Name)

Note: If more than one surety, add additional lines for additional surety name and address, person signing and title, and two witnesses. Obtain Power of Attorney for each surety.

End Labor and Material Bond

Surety Sheet

State Of Connecticut
Department of Administrative Services, Construction Services
Office of Legal Affairs, Policy, and Procurement
450 Columbus Boulevard, Suite 1302
Hartford, CT 06103

1. Surety Company

Name of Surety Co.:

Address of Home Office:

Telephone Number:

2. Agent

Name of Surety Co.:

Address of Agency:

Telephone Number:

Attorney-In-Fact:

Telephone Number:

DAS Project Number:

Contractor's Name:

End Surety Sheet

**Bidder's Certification:
Financial Position and Corporate Structure**

(Your Name)

(Name Of Company)

The bidder for this contract (hereinafter "bidder"), certifies under penalty of false statement that the information in the bid is true, that there has been no substantial change in the bidder's financial position or corporate structure since its most recent prequalification certificate was issued or renewed pursuant to CGS § 4b-91, as amended, other than those changes noted in the update statement, and that the bid was made without fraud or collusion with any person.

(Signature)

(Print Name)

(Date)

(DAS Project Number)

End Bidder's Certification: Financial Position and Corporate Structure

**End of Section
00 92 10 Additional Forms To Be Submitted After Bond Commission Funding Approval**

Procedures Regarding Taxation For Nonresident General / Prime Contractor and Subcontractors

DAS | Construction Services | Office of Legal Affairs, Policy, and Procurement

According to [Connecticut General Statutes § 12-430\(7\)](#), there are two types of Nonresident Contractors and Subcontractors (*Verified* or *Unverified*) who are required to furnish security for Connecticut taxes arising from jobs performed in Connecticut.

Detailed information can be found by visiting the Connecticut Department of Revenue Services (DRS) website at www.ct.gov/drs:

- Under the “**For Businesses**” title, click on “**Withholding Tax**”;
- Click on “**Registering**”;
- Click on “**5. What tax types do I need to register for with DRS**”;
- Read the information for “**Out-of-State**” contractors.
- Click on “[SN 2012\(2\)](#)” for the “Procedure Governing Nonresident Contractors”.

Forms can be downloaded from the DRS website (www.ct.gov/drs) as follows:

- Click on “**Forms**” at the top of the page;
- Under “**Current Year Forms**”:
 - Click on “**Miscellaneous Tax Forms**”;
 - Click on “**Bond Forms**”
- Download the appropriate form.

For questions regarding the nonresident contractor bond law, call **DRS** at **860-541-7538**.

1.0 Verified Nonresident Contractors and Subcontractors

Verified Nonresident Contractors are treated just like Resident Contractors. A Verified Nonresident General or Prime Contractor is not required to file a surety bond with DRS. A Verified Nonresident Subcontractor is not required for the General or Prime Contractor to hold back a portion of the amount owed the Subcontractor under the contract.

1.1 Verification Procedure for General/Prime Contractors and Subcontractors:

1.1.1 Register with DRS via REG-1 for all appropriate taxes.

1.1.2 Submit Form AU-960 “Nonresident Contractor Request for Verified Contractor Status” to DRS. If you have a 3 year filing history with DRS and no delinquencies, then just complete **Part I & Part I**, otherwise go to **Part III**.

1.1.3 Submit Form AU-961 “Verification Bond” to DRS.

1.1.4 If Verified by DRS, submit “**Notice of Verified Status**” (Verification Letter issued by DRS) to the Connecticut Department of Administrative Services / Construction Services (DAS/CS) Office of Legal Affairs, Policy, and Procurement as specified in Section 00 41 00 Bid Proposal Form.

**2.0 Unverified Nonresident Contractors and Subcontractors
(for Contracts Greater Than \$250,000):**

The requirements for Unverified Nonresident Contractors and Unverified Nonresident Subcontractors (for Contracts greater than \$250,000) are different for General/Prime Contractors and their Subcontractors:

2.1 Unverified Nonresident General or Prime Contractors:

- 2.1.1 Submit **Form AU-964 “Surety Bond and Release” to DRS**. The Unverified Nonresident General/Prime Contractor is required to file a good and valid surety bond with DRS using Form AU-964 “Surety Bond and Release” for 5% of the contract price to secure payment of required taxes by both the General/Prime Contractor and its Subcontractors.
- 2.1.2 The General/Prime Contractor must provide proof to DAS/CS that they have posted a good and valid surety bond with DRS by providing a copy of **Form AU-965 “Acceptance of Surety Bond”** that verifies acceptance of the bond by DRS*.

2.2 Unverified Nonresident Subcontractors:

- 2.2.1 The Resident or Verified or Unverified Nonresident General/Prime Contractor is required to hold back 5% of its payments to the Unverified Nonresident Subcontractor. The General/Prime Contractor must keep the hold-backs in a special fund in trust for the state.
- 2.2.2 The Unverified Nonresident Subcontractor can request that the money be released from the General/Prime Contractor by submitting **Form AU-967 “Request for Certificate of Compliance” to DRS**. It must be signed by the General/Prime Contractor and the Nonresident Subcontractor and submitted **to DRS within 90 days of the completion date**.
- 2.2.3 If **Form AU-968 “Certificate of Compliance”** is issued by DRS, DRS will instruct the General/Prime Contractor holding back the 5% to release the withheld amount to the Nonresident Subcontractor. If the “Certificate of Compliance” is denied or not requested within **90 days of the completion date of the contract**, the General/Prime Contractor holding back the 5% will remit the withheld amount on their own Sales & Use tax returns.
- 2.2.4 The 5% holdback does not take the place of any tax returns due from the Unverified Nonresident Contractor.
- 2.2.5 The General/Prime Contractor must give the Unverified Nonresident Subcontractor written notice of the hold-back requirements by the time the Subcontractor begins work under the contract.

*Document(s) must be submitted to the DAS/CS Office of Legal Affairs, Policy, and Procurement as specified in Section 00 41 00 “Bid Proposal Form”.

End of Section

**00 92 30 Procedures Regarding Taxation
For Nonresident General/Prime Contractor & Subcontractors**

PART 1 – GENERAL

1.1 DEFINITIONS

A. Contractor:

Whenever the term "**Contractor**" is used in these Division 01 General Requirements and the Contract Documents, it may be understood to mean either the **Design-Bid-Build (D-B-B) "General Contractor"** or the **Construction Manager at Risk ("CMR")** as applicable to the specific Project.

B. Contract:

Whenever the term "**Contract**" is used in these Division 01 General Requirements and the Contract Documents, it may be understood to mean either the **D-B-B General Contractor's Contract Sum** as stated in their Contract or the **CMR's Contract Sum** as stated in their CMR Agreement, as applicable to the specific Project.

1.2 RELATED DOCUMENTS

- A. The Contract Documents are defined in the D-B-B and CMR Division 00 General Conditions, as applicable to the specific Project.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Delivery Method:

- 1. Design-Bid-Build (DBB);
- 2. Construction Manager at Risk (CMR)

B. Project Number: **BI-C-291**.

C. Project Title: **DVA-ADA Improvements Buildings 2, 3, & 4**.

D. Project Location: The **DVA - 287 West Street**, located in **Rocky Hill**, Connecticut.

E. The Project Description:

- 1. Design and construction of life safety and ADA upgrades to Buildings 2, 3 and 4 of the State Veterans' Home in Rocky Hill.
- 2. The work of each Building includes hazardous materials abatement and selective demolition.
- 3. Building 2 Scope:
 - a. Replace hardware on doors throughout the building that don't have lever handles.
 - b. Move the public phone from the main corridor to a less disruptive location and mount at accessible height.
 - c. Fit all interior stairs with proper handrails and guardrails, including proper extensions to all handrails. Upgrade handrails on all exterior stairs and ramps to meet code requirements.
 - d. Install proper signage to clearly indicate an accessible route throughout the building. Label all accessible public facilities with proper signage.
 - e. Add visible and audible signals and tactile information for the visually impaired at each hoistway entrance to existing elevator cabs.
 - f. Install proper landings and handrails at each ramp and reconstruct to meet the 1:12 requirement.
 - g. Install proper accessible water coolers/drinking fountains.
 - h. Make toilets accessible
- 4. Building 3 Scope:
 - a. Fit all interior stairs with proper handrails and guardrails, including proper extensions to all handrails. Upgrade handrails on all exterior stairs and ramps to meet code requirements.
 - b. Install proper signage to clearly indicate an accessible route throughout the building. Label all accessible public facilities with proper signage.
 - c. Add visible and audible signals and tactile information for the visually impaired at each hoistway entrance to existing elevator cabs.
 - d. Install automatic door openers for toilet and cross corridor doors.
 - e. Install proper landings and handrails at the main entrance ramp and reconstruct to meet the 1:12 requirement.

- f. Install proper accessible water coolers/drinking fountains.
- g. Add 18-inch vertical grab bars to accessible toilet rooms where they aren't currently installed.
- h. Replace hardware on any door that doesn't have the correct hardware already installed.

5. Building 4 Scope:

- a. Fit all interior stairs with proper handrails and guardrails, including proper extensions to all handrails. Upgrade handrails on all exterior stairs and ramps to meet code requirements.
- b. Install proper signage to clearly indicate an accessible route throughout the building. Label all accessible public facilities with proper signage.
- c. Add visible and audible signals and tactile information for the visually impaired at each hoist-way entrance to existing elevator cabs.
- d. Install automatic door openers for toilet and cross corridor doors.
- e. Add depth to the platform at the ambulance access door that allows for the opening 'of out-swinging ambulance doors.
- f. Install proper accessible water coolers/drinking fountains.
- g. Add 18-inch vertical grab bars to accessible toilet rooms where they aren't currently installed.
- h. Replace hardware on any door that doesn't have the correct hardware already installed.

5. The Authorities Having Jurisdiction for Threshold Projects, Non-Threshold Projects, and/or Connecticut State University System (CSUS) 2020 Projects, as defined by the Connecticut General Statutes, are the Connecticut Department of Administrative Services (DAS) / Construction Services (CS) Office of State Building Inspector (OSBI) and Office of State Fire Marshal (OSFM).

F. Owner:

- 1. **Owner's Name:** The Owner is the State of Connecticut, Department of Administrative Services.
- 2. **Authorized Representative for the Owner: DAS/CS Project Manager Name:** [Ronald J. Wilfinger](#).
 - a. **DAS/CS Project Manager's Location:** The DAS/CS Project Manager is located at 450 Columbus Blvd, Suite 1201, Hartford, CT, 06103.
 - b. **Phone:** [\(860\) 422-5306](#);
 - c. **Fax:** [\(860\) 707-1932](#);
 - d. **Email(s):** Ronald.Wilfinger@ct.gov.
- 3. **Authority:** The DAS/CS Project Manager is the only authorized representative for the Department of Administrative Services Commissioner to act in matters involving revoking, altering, enlarging or relaxing any requirement of the Contract Documents.
 - a. **Related Section: Article 25, All Work Subject To Control of the Commissioner**, Division 00 General Conditions of the Contract for Construction.

G. Agency:

- 1. **Agency Name:** The Connecticut State (User) Agency is [Department of Veterans Affairs \(DVA\)](#).
- 2. **Agency Representative Name and Title:** [Joeseeph Danao](#). The Agency Representative's Title is [Director of Projects and Operations](#).
 - a. **Agency Representative Location:** The Agency Representative is located at [Connecticut DVA, Building 1, 287 West Street Rocky Hill, CT 06067](#).
 - b. **Phone:** [\(860\) 616-3606](#);
 - c. **Fax:** [N/A](#);
 - d. **Email(s):** Joeseeph.Danao@ct.gov.
- 3. **Authority:** The Agency Representative has the administrative authority for the facility and or site where the work is being performed but does not have the authority to change the Contract Documents or direct the Contractor.

H. Architect and Engineer (A/E):

- 1. **Architect's Name:** The Architect representing the firm for this project is [Friar Architecture Inc.](#)
 - a. **Architect's Location:** The Architect is located at [21 Talcott Notch Road, Farmington, CT 06032](#).

- b. **Phone:** 860-678-1291;
 - c. **Fax:** N/A;
 - d. **Email(s):** Mike Sorano, mas@friar.com / Bryce Sens brs@friar.com.
2. The Architect and Engineer (A/E) or their accredited representative is referred to in the Contract Documents as "Architect" or "Architects" or "Engineer" or "Engineers" or by pronouns which imply them. As information for the Contractor, the Architect's or Engineer's status is defined as follows:
- a. The Architect and Engineer will not make interpretations or decisions directly to the Contractor. All interpretations or decisions will be conveyed through the Construction Administrator to the DAS/CS Project Manager.
 - b. As the authorized representative of the Department of Administrative Services Commissioner, the Architect and Engineer is responsible for review of shop drawings, materials, and equipment intended for the work, in accordance with the Division 00 "General Conditions" and "Supplementary Conditions".
3. Wherever the Architect or Engineer is mentioned in the documents in connection with an administrative function, it shall include the Construction Administrator in that function except for shop drawings.
- I. **Construction Administrator (CA):**
1. **Construction Administrator Name:** [Friar Architecture Inc.](#)
- a. **Construction Administrator Location:** The Construction Administrator is located at [21 Talcott Notch Road, Farmington, CT 06032](#).
 - b. **Phone:** 860-678-1291;
 - c. **Fax:** N/A;
 - d. **Email(s):** Mike Sorano, mas@friar.com / Bryce Sens brs@friar.com.
2. **Authority:** As information to the Contractor, the Construction Administrator's status is defined as follows:
- a. The Construction Administrator (CA) is referred to in the Contract Documents as "Construction Administrator" or by pronouns which imply it. All communications concerning the project will be directed through the Construction Administrator or a designated representative(s).
 - b. The Construction Administrator is the Owner's Agent who will, among other things, monitor and analyze the Contractor's performance, scheduling and construction, process shop drawings, material, and equipment submittals, review and process periodic billings, review, analyze, and recommend cost changes.
 - c. **Related Section: Article 26 "Authority of the Construction Administrator"** of Division 00 "General Conditions of the Contract for Construction".
3. The Construction Administrator will process all requests for information, interpretations and decisions regarding the meaning and intent of the Contract Documents, consulting with appropriate parties prior to rendering the interpretations or decisions for the Project Manager to the Contractor. All such requests and replies shall be in writing.
- K. **Work:** The Work Includes but is not limited to the following:
- 1 **Sitework;**
 - 2 **Hazardous materials abatement;**
 - 3 **Selective demolition;**
 - 4 **Cast-in-Place Concrete;**
 - 5 **Masonry;**
 - 6 **Miscellaneous Metals; Pipe and Tube Railings;**
 - 7 **Rough Carpentry;**
 - 8 **Insulation, Firestopping, and Joint Sealants;**
 - 9 **Doors and Frames, Hardware, and Glazing;**
 - 10 **Gypsum Board, Plaster Repair, Acoustical Ceilings, Floor Coverings, and Painting;**
 - 11 **Signage, Toilet Compartments and Toilet Accessories;**
 - 12 **Modifications to Elevators, Wheelchair Lifts;**

13 Plumbing; and
14 Electrical.

- L. The Contractor will include in their bid, all items required in order to carry out the intent of the Work as described, shown and implied in the Contract Documents.
- M. It shall be the Contractor's responsibility upon discovery to immediately notify the Construction Administrator, in writing, of errors, omissions, discrepancies, and instances of noncompliance with applicable codes and regulations within the documents, and of any work which will not fit or properly function if installed as indicated on the Contract Documents. Any additional costs arising from the Contractor's failure to provide such notification shall be borne by the Contractor.
- N. The Work will be constructed under the Contractor's Contract as applicable to this Project.
- O. The Work will be performed in accordance with the Connecticut Department of Energy and Environmental Protection's (DEEP) "**General Permit for the Discharge of Stormwater and Dewatering Wastewater from Construction Activities**" (DEEP-WPED-GP-015) and **Stormwater Pollution Control Plan (SPCP)**, including, but not limited to, implementing, maintaining, and updating the SPCP, performing regular inspections, conducting and reporting stormwater monitoring activities, retaining records for the required period of time, and performing all post-construction measures and inspections. See **Section 01 50 00 "Temporary Facilities and Controls"** for additional information.

1.7 CONTRACTOR'S USE OF PREMISES

- A. **General:** During the construction period the Contractor shall have full use of the newly constructed premises for construction operations, including use of the site. The Contractor's use of the premises is limited only by the Owner's right to perform work or to retain other contractors on portions of the Project.
- B. **Use of the Site:** Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.
 - 1. **Owner Occupancy:** Allow for Owner occupancy and use by the public of the existing facility.
 - 2. The Contractor shall confine his operations including storage of materials, supplies, equipment, and apparatus to the areas bounded by the contract limits indicated and as directed in the Contract Documents.
 - 3. Existing roads, drives, walks, and parking areas which are not within the contract limit line are to be kept free and clear at all times. All deliveries for the project are to enter the **DVA** property from **the Entrance Gate**. The Contractor shall check all **DVA** roadways for accessibility and clearances for deliveries of all large material and equipment. The Contractor shall inform the Construction Administrator at least **seventy-two (72)** hours in advance of these deliveries so they can be coordinated with the Agency so appropriate traffic control, etc. can be provided. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
 - 4. The Contractor shall be responsible for keeping the premises clean and shall pick up rubbish and debris and promptly remove from site.
 - 5. Parking for the Contractor's employees will be limited to an area designated by the Construction Administrator, and the Contractor may be required to provide identification stickers for all employees' cars.
 - 6. Special precautions shall be taken to protect all wetland areas designated to remain. Prevent any and all sediment, debris, or other materials from getting into these areas. Should any sediment, debris, or other materials get into these areas or if any damage occurs to the vegetation therein, the Contractor shall immediately contact the Construction Administrator for direction.
 - 7. The Contractor shall comply with local working hour restrictions, unless specifically approved otherwise in writing by the Owner.
 - 8. No signs, other than those approved by the Construction Administrator, will be visible on the premises.
- C. **Use of the Existing Building:** Maintain the existing building in a weather-tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period. Note: Check with Agency special types of conditions. Contractor personnel are not allowed to use the Cafeteria or vending machines within the existing buildings unless authorized in writing by the agency.

1.8 OCCUPANCY REQUIREMENTS

A. Full Agency Occupancy During Construction: The Owner reserves the right to allow the Agency to occupy the site and existing building during the entire construction period. Cooperate with the Agency during construction operations to minimize conflicts and facilitate Agency usage. Perform the Work so as not to interfere with the Agency's operations.

1. Provide adequate building and fire code egress from the buildings during the renovation process and/or as indicated on the Contract Documents. The Contractor will be responsible to maintain and protect egress ways during the construction sequence as required and/or indicated in the Contract documents. The Contractor shall be responsible for preparing egress plans for Owner approval and for DAS/CS Office of State Building Official and Office of State Fire Marshal for approval if required.

B. Partial Agency Occupancy: The Owner reserves the right to allow the Agency to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Should it become necessary or advisable, as the work nears final completion, for the Agency to occupy a portion of the building prior to final acceptance, the Contractor shall cooperate in completing such areas and making same accessible.
2. The Construction Administrator will determine whether such occupancy or use is possible and, if so, will make arrangements for holding a job inspection with the DAS/CS Project Manager, Agency Representative, and Contractor.
3. A comprehensive list of items to be completed or corrected as issued by the Contractor, together with the status of completion and terms of occupancy, will be forwarded to the DAS/CS Project Manager by the Construction Administrator. A letter will be issued by the DAS/CS Project Manager and Contractor to Construction Administrator granting such occupancy and will state the terms and conditions of occupancy.
4. Prior to partial Agency occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Agency will operate and maintain mechanical and electrical systems serving occupied portions of the building.
5. The Architect will prepare a "Certificate of Substantial Completion" for each specific portion of the Work to be occupied prior to Agency occupancy. Use the "Certificate of Substantial Completion" form as required by the Owner and forward the Certificate to the DAS/CS Office of State Building Inspector for a Certificate of Occupancy and obtain the same after his review and approval.
6. The DAS/CS Project Manager will request a signed "Certificate of Compliance" from Commissioner of the Department of Administrative Services, Architect, and Contractor, if required.
7. A letter from the DAS/CS Project Manager to the Agency Representative with copy to the Contractor granting occupancy will state the terms and conditions of occupancy and that fire insurance coverage has been requested, the effective date of which will indicate to the Contractor that they may cancel fire insurance coverage for that portion of the project.
8. Upon occupancy, the Agency will assume responsibility for maintenance and custodial service for occupied portions of the building.
9. **Work after Partial Agency Occupancy:**
 - 9.1 For all work to complete the area occupied, warranty work, the balancing and Commissioning (Cx) of systems, repair of latent defects and adjustments after partial occupancy, the Contractor is responsible for all costs associated with working in occupied buildings.

C. Agency Occupancy:

1. The Construction Administrator will determine whether such occupancy is possible and, if so, will make arrangements for holding a job inspection with the DAS/CS Project Manager, Agency Representative, and Contractor.
2. A comprehensive list of items to be completed or corrected as issued by the Contractor, together with the status of completion and terms of occupancy, will be forwarded to the DAS/CS Project Manager and the Contractor by the Construction Administrator. A letter will be issued by the DAS/CS Project Manager and Contractor to Construction Administrator granting such occupancy and will state the terms and conditions of occupancy.

3. Prior to Agency occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Agency will operate and maintain mechanical and electrical systems serving occupied portions of the building.
4. The Architect will prepare a "Certificate of Substantial Completion" for the Work to be occupied prior to Agency occupancy. Use the "Certificate of Substantial Completion" form as required by the Owner.
5. The DAS/CS Project Manager will request a signed "Certificate of Compliance" from Commissioner of the Department of Administrative Services, Architect, and Contractor, if required.
6. A letter from the DAS/CS Project Manager to the Agency Representative with copy to the Contractor granting occupancy will state the terms and conditions of occupancy and that fire insurance coverage has been requested, the effective date of which will indicate to the Contractor that they may cancel fire insurance coverage for the project.
7. Upon occupancy, the Agency will assume responsibility for maintenance and custodial service for occupied portions of the building.
8. **Work after Agency Occupancy:**
 - 8.1 For all work to complete the occupied building, warranty work, the balancing and commissioning of systems, repair of latent defects and adjustments after occupancy, the Contractor is responsible for all costs associated with working in occupied buildings.

1.11 MISCELLANEOUS PROVISIONS

A. Examination of Site:

1. It is not the intent of the Documents to show all existing conditions. All Contractors and Subcontractors are advised to attend the Pre-Bid Meeting prior to submitting their Bid Proposals. This is the only official opportunity to visit and examine the site with the Owner, Agency, Architect, Engineer and Construction Administrator.
2. The Contractor should investigate and satisfy himself as to the conditions affecting the work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, uncertainties of weather, roads or similar physical conditions of the ground, the character of equipment, and facilities needed preliminary to and during the prosecution of the Work. The Contractor should further satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, as well as from information presented by the Contract Documents. Any failure by the Contractor to acquaint himself with the available information shall not relieve him from the responsibility for estimating properly the difficulty and cost of successfully performing the Work.
3. If tests have been done for Asbestos Containing Material (ACM), Lead-Based Paint (LBP) Containing Material, Polychlorinated Biphenyls (PCBs) in Building Materials and/or Mold, then the results are referenced in [Section 00 30 00 Available Information and provided in Division 50 00 00 Project-Specific Available Information](#). See [Section 01 35 16 "Alteration Project Procedures"](#) for **removal responsibility** and additional information.
4. If tests have been done for Contaminated Soils and/or Contaminated Groundwater, then the results are referenced in [Section 00 30 00 Available Information and provided in Division 50 00 00 Project-Specific Available Information](#). See [Section 01 35 16 "Alteration Project Procedures"](#) for **removal responsibility** and additional information.
5. If tests have been done for Work Involving Hazardous Materials, Wastes, and Items and Universal Wastes (Including Products Containing Persistent Bioaccumulative Toxic Chemicals" [PBTs] such as PCBs, Di-2-ethylhexyl Phthalate [DEHP], and Mercury), the results are referenced in [Section 00 30 00 Available Information and provided in Division 50 00 00 Project-Specific Available Information](#). See [Section 01 35 16 "Alteration Project Procedures"](#) for **exposure limits and removal responsibility**.
6. No attempt has been made to locate hazardous material associated with existing site utilities, though it is presumed that at least some asbestos may be discovered associated with underground piping during the course of site and site utilities work. If and when such materials appear, the Contractor shall notify the Owner, who shall direct additional work outside of this Contract to assist in cutting up and disposing of same. The Contractor shall assist the hazardous materials contractor(s) with excavating, heavy lifting, and the like at no additional cost to the Owner.

B. Pre-Bid Meeting:

1. A Pre-Bid Meeting and tour of the site will be conducted as scheduled in Division 00 Section 00 11 16 "Invitation to Bid". This scheduled meeting is the only official opportunity for the bidders to tour the site with the Owner, Architect, Engineer, Construction Administrator, and Agency.

C. Project Documents:

1. The Specifications and Drawings are intended to describe and illustrate the materials and labor necessary for the work of this Project.
2. Throughout the Technical Specifications, the Connecticut Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction Form 816, current edition including any interim and supplemental specifications are referenced. Where so referenced the requirements set forth therein are applicable and made a part hereof. Copies of Form 816 are available from the Connecticut Department of Transportation at a nominal charge.

D. Site Logistics Plan(s): Site Logistics Plan for this Project to be developed by the selected Contractor in conjunction with the Owner and the Agency. The Site Logistics Plan shall describe in detail the proposed use of the Site and Building, both inside and outside the Contract Limit Area.

1. **Related Section:** Section 01 31 00 "Project Management and Coordination", 1.5 Submittals, A, (4).
2. The **Site Logistics Plan(s)** include, but are not be limited to the following information:
 - a. phasing requirements including hazardous materials abatement and selective demolition;
 - b. proposed vehicle and equipment access routes;
 - c. locations of proposed staging/lay-down and storage areas, utility connections;
 - d. utilization of maintaining at least one elevator in use at all times;
 - e. occupant access to the elevator during construction;
 - f. delivery access of materials, handicap access;
 - g. building egress, proposed pedestrian traffic flows in the interior and exterior of the building;
 - h. temporary access-ways;
 - i. office trailer and dumpster locations;
 - j. location of perimeter construction fencing and gates;
 - k. other protection measures around and in the building(s);
 - l. temporary partitions, proposed pedestrian traffic flows around and in each building;
 - m. proposed building access points;
 - n. proposed protection measures for trees, shrubs and plantings, interior access-ways;
 - o. coordination of activities that relate to building occupants and other field applied measure to protect and coordinate the work including any relocation of utilities.

E. Scope Review:

1. Prior to signing a Contract with the State, DAS/CS will conduct a full scope review with the apparent Low Bidder to ensure that all of the requirements have been included within the bid. This scope review will highlight all of the specific requirements of the project, a review of the DAS/CS procedures and all of the Technical sections of the contract documents.
2. This process will ensure that all of the scope of work included in the contract documents has indeed been included.

F. Specifications, Drawings, and Electronic Data Storage Devices Furnished:

1. The Contractor shall receive **10** sets of the Contract Documents on or about the time of execution of the Contract, free of charge. If additional copies are wanted, they will be available at the direct additional cost of their reproduction, to the Contractor.
2. The Contractor shall receive **one (1)** set of AutoCAD compatible (latest version) Floor Plans on Electronic Data Storage Devices at no cost on or about the time of execution of the Contract from the Architect. Additional sets of AutoCAD compatible (latest version) Floor Plans on Electronic Data Storage Devices from the Architect shall be available at the cost of their reproduction, to the Contractor.

G. Construction Responsibility:

1. The Contractor shall be responsible for his construction means, methods, techniques, sequences, and procedures employed in the performance of his work and shall have full responsibility for his failure to carry out any part of his work in accordance with the Contract Documents.

H. The Contractor shall request approval from the Owner to work overtime. Said request shall be made **forty eight (48) hours** in advance. All costs for overtime are included in the Contract Sum as stated in Division 00 Section 00 41 00 "Bid Proposal Form."

I. PMWeb Project Management:

1. DAS/CS is using PMWeb as the project management collaborative software tool for this project.

2. The Contractor is required to utilize PMWeb for the duration of this project and shall provide all project information via this program management software. This includes, but is not limited to contracts, applications for payment, change orders, change order proposals, requests for information, etc.

3. The DAS/CS Project Manager **or the Construction Administrator (CA)** shall arrange for training. This training is for the Contractor's Staff, the DAS/CS Project Manager, the Construction Administrator, the A/E, and their representatives.

4. DAS/CS will be establishing a project specific email "file" address for this project. The Contractor shall send an electronic "file" copy of all project documents to this email address, to include but not limited to all project correspondence, project emails, forms, etc.

5. The Contractor is required to scan all documents that contain wet (ink) signatures and send a copy of those documents electronically to the DAS/CS Project Manager and the project specific email "file" address. The hard copy of the wet signature documents shall be transmitted as directed by the DAS/CS Project Manager. This includes, but is not limited to all contracts, change orders, applications for payment, closeout documentation, etc.

J. Pursuant to C.G.S. Sec. 4a-101, the Contractor shall compile evaluation information during the performance of the contract on each of its subcontractors who are performing work with a value in excess of five hundred thousand dollars (\$500,000.00). The Contractor shall complete and submit to DAS/CS evaluations of each such subcontractor upon fifty percent (50%) completion of the project and upon Substantial Completion of the project. The Contractor acknowledges that its failure to complete and submit these evaluations in a timely manner may, by statute, result in a delay in project funding and, consequently, payment to the Contractor. The Contractor agrees to indemnify and hold the State harmless from any loss, damage, or expense that results from or is caused by the Contractor's failure to complete and submit the evaluations to DAS/CS in accordance with this provision.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 11 00

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Contract Documents and general provisions of the Contract, including General and Supplementary Conditions, other Division 01 Specification Sections, and Section 00 41 00 "Bid Proposal Form" apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Unit Prices.
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
 - Section 01 23 13 Supplemental Bids
 - Section 01 26 00 Contract Modification Procedures
 - Section 01 29 76 Progress Payment Procedures
 - Section 01 35 16 Alteration Project Procedures
 - Section 01 77 00 Closeout Procedures
 - Section 02 82 13 Asbestos Abatement

1.4 DEFINED UNIT PRICES - GENERAL

- A. This Section includes administrative and procedural requirements for unit prices.
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section 01 26 00 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Division 01 Section 01 29 76 "Progress Payment Procedures" for procedures for submitting Application for Payments.
- C. **Definition - Unit Price:** Amount the Contractor acknowledges in the Bid Proposal Form as a price per unit of measurement for materials or services as described in the Contract Documents.
- D. **Procedures:**
 - 1. Unit Prices included in the Contract Documents are to be used for determining compensation to the Contractor or Owner for changes to the scope of the work indicated in the Contract Documents, and included in the Lump Sum Contract Price. Special Unit Prices are for items complete, in place, and shall be inclusive of furnishing and installing of all material, labor, trucking, overhead, profit, equipment, hoisting, excavation, stockpiling, loading, engineering, scaffolding, power hookups, protection, shop drawings, taxes, permits, appliances, delivery, disposal, insurance, supervision, cost of bond, etc. and shall remain in effect until completion of the Contract.
 - 2. **Unit Price:** Is identified by the Owner as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if the estimated quantities of Work required by the Contract Documents are increased or decreased.
 - 3. **Increases or Decreases:** Should the amount of the Work required be increased or decreased because of changes in the work ordered in writing by the DAS/CS Project Manager, the Contractor agrees that the following supplemental UNIT PRICES will be decreased 10% for a reduction of work. Each Unit Price shall include all equipment, tools, labor, permits, fees, etc., incidental to the completion of the work involved. All items marked with an asterisk (*) in the unit price schedules shall include the completion of the excavation, formation and compaction of sub-grade and the disposal of surplus or unsuitable materials in accordance with the Plans and Specifications or as directed by the Construction Administrator.
 - 4. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this work measured, at the Owner's expense, by an independent surveyor acceptable to the Contractor.
 - 5. **Defect Assessment:** Replace the Work, or portions of the Work, not conforming to the specified requirements. If, in the opinion of the Architect/Engineer, it is not practical to remove and replace the work the Architect/Engineer will direct an appropriate remedy or adjust the payment.

6. Unit Price Schedules: "Unit Price Schedules" are included in this Section. Specification Sections referenced in the Schedule sections contain requirements for materials described under each unit price.

1.5 UNIT PRICE SCHEDULES

A. Unit Price Schedule – Hazardous Building Materials Abatement:

A. Related Documents: Drawings and general provisions of the Contract, including General and Supplementary Conditions, other Division 01 Specification Sections, and Technical Specifications apply to this Section.

B. Unit Price Schedule – Hazardous Building Materials Abatement:

| 1. | ASBESTOS ABATEMENT | UNIT | \$ ADD/ DEDUCT |
|----|--|------|-------------------|
| | AR-001 CLEAN-UP OF ACM DEBRIS BY HEPA VACUUMING | SF | \$0.23 |
| | AR-002 REMOVAL OF PIPE INSULATION INCLUDING FITTINGS (FULL CONTAINMENT - < 6" DIA) | LF | \$1.63 |
| | AR-003 REMOVAL OF PIPE INSULATION INCLUDING FITTINGS(FULL CONTAINMENT - 6" - 12" DIA) | LF | \$2.68 |
| | AR-004 REMOVAL OF PIPE INSULATION INCLUDING FITTINGS(FULL CONTAINMENT - >12" DIA) | LF | \$3.65 |
| | AR-005 GLOVE BAG REMOVAL OF PIPE OR FITTING INSULATION (MINI-CONTAINMENT - FIRST 25) | EA | \$26.05 |
| | AR-006 GLOVE BAG REMOVAL OF PIPE OR FITTING INSULATION (MINI-CONTAINMENT - QUANTITY BETWEEN 25-50) | EA | \$20.56 |
| | AR-007 GLOVE BAG REMOVAL OF PIPE OR FITTING INSULATION (MINI-CONTAINMENT - QUANTITY IN EXCESS OF 50) | EA | \$18.30 |
| | AR-008 REMOVAL OF EQUIPMENT INSULATION | SF | \$3.81 |
| | AR-009 REMOVAL OF HVAC DUCT INSULATION | SF | \$3.81 |
| | AR-010 REMOVAL OF HVAC DUCT SYSTEM FLEXIBLE CONNECTOR | SF | \$2.77 |
| | AR-011 REMOVAL OF RESILIENT FLOORING INCLUDING MASTIC | SF | \$1.05 |
| | AR-012 REMOVAL OF RESILIENT FLOORING (NO MASTIC) | SF | \$0.67 |
| | AR-013 REMOVAL OF SPRAYED ON FIREPROOFING | SF | \$2.61 |
| | AR-014 REMOVAL OF PLASTER CEILING SYSTEM (INCLUDING BLACK IRON AND METAL LATH) | SF | \$2.68 |
| | AR-015 REMOVAL OF ACOUSTIC OR METAL PAN CEILING SYSTEM (INCLUDING GRID) | SF | \$1.74 |
| | AR-016 REMOVAL OF ACOUSTIC CEILING PANELS (CLEAN GRID FOR REUSE) | SF | \$1.45 |
| | AR-017 REMOVAL OF ACOUSTIC PLASTER FINISH MATERIAL (SCRAPE) | SF | \$2.45 |
| | AR-018 PATCH AND/OR SEAL DAMAGED INSULATION | SF | \$1.05 |
| | AR-019 REMOVAL OF CONTAMINATED SOIL (2" DEPTH) | SF | \$1.69 |
| | AR-020 REMOVAL OF TRANSITE MATERIAL | SF | \$0.92 |
| | AR-021 REMOVAL OF ROOFING OR ROOF FLASHING MATERIAL | SF | \$1.34 |
| | AR-022 REMOVAL OF UNDERGROUND PIPE OR PIPE INSULATION (INCLUDING HAND EXCAVATION) | LF | \$10.75 |
| | AR-023 REMOVAL OF CARPET OVER RESILIENT FLOORING | SF | \$0.83 |
| | AR-024 REMOVAL OF WALL BASE AND MASTIC | LF | \$0.95 |
| | AR-025 REMOVAL OF DRYWALL PARTITION (INCLUDING WALL FRAMING) | SF | \$0.90 |
| | AR-026 REMOVAL OF CMU WALL | SF | \$1.82 |
| | AR-027 PREP WORK AREA | SF | \$1.09 |
| | AR-028 SOLID BARRIERS OR ACCESS TUNNELS (2"x4"@16", 1/2" PLYWOOD) | SFSA | \$1.26 |
| | AR-029 SELECTIVE DEMOLITION TO ACCESS CONCEALED ACM | SF | \$1.11 |
| | AR-030 REMOVAL OF FLOOR LEVELING MATERIAL | SF | \$0.79 |

| 2. | LEAD-BASED PAINT ABATEMENT | UNIT | \$ ADD/ DEDUCT |
|----|---|------|-------------------|
| | SP-001 REMOVE LOOSE PAINT FROM WALLS OR CEILINGS (WET SCRAPING OR BRUSHING) | SF | \$0.89 |
| | SP-002 STRIP PAINT FROM FLAT SURFACES | SF | \$2.93 |

| | | | | |
|--|--------|---|----|--------|
| | SP-003 | STRIP PAINT FROM COLUMNS AND STRUCTURAL FRAMING MEMBERS | SF | \$3.68 |
| | SP-004 | STRIP PAINT FROM STAIR TREADS, RISERS AND STRINGERS | SF | \$5.08 |
| | SP-005 | STRIP PAINT FROM TRIM | LF | \$2.82 |
| | SP-006 | STRIP PAINT FROM DOORS (DOOR OPENING SIZE) | SF | \$4.54 |
| | SP-007 | STRIP PAINT FROM WINDOW (WINDOW SIZE) | SF | \$7.08 |
| | SP-008 | STRIP PAINT FROM RADIATOR | SF | \$8.75 |
| | SP-009 | STRIP PAINT FROM HANDRAIL | LF | \$7.35 |
| | SP-010 | STRIP PAINT FROM PIPING | SF | \$6.30 |
| | SP-011 | CLEAN-UP OF MATERIALS CONTAINING LEAD (DIRT, BUILDING DEBRIS, ETC.) | CF | \$3.43 |
| | SP-012 | HEPA VACUUMING AND WASHING SURFACE (SMOOTH SURFACE) | SF | \$0.63 |
| | SP-013 | HEPA VACUUMING AND WASHING SURFACE (POROUS SURFACE) | SF | \$1.05 |
| | SP-014 | REMOVE EXTERIOR SOIL (6" DEPTH) | SF | \$4.50 |

| 3. | PCBS IN BUILDING MATERIAL ABATEMENT | | UNIT | \$ ADD/ DEDUCT |
|----|-------------------------------------|--|------|-------------------|
| | HM-001 | REMOVE LOOSE PCB CONTAMINATED CAULK (WET SCRAPING OR BRUSHING) | LF | \$6.20 |
| | HM-002 | REMOVE PCB CONTAMINATED CAULK AND 6 INCHES OF BUILDING MATERIALS | LF | \$28.00 |
| | HM-003 | REMOVE PCB CONTAMINATED CAULK AND 12 INCHES OF BUILDING MATERIALS | LF | \$37.00 |
| | HM-004 | REMOVE INTACT PCB CONTAMINATED CAULK WITH NO REMOVAL OF BUILDING MATERIALS | LF | \$8.50 |
| | HM-005 | STRIP PAINT FROM FLAT SURFACES | SF | \$2.94 |
| | HM-006 | HEPA VACUUMING AND WASHING SURFACE (SMOOTH SURFACE) | SF | \$0.60 |
| | HM-007 | HEPA VACUUMING AND WASHING SURFACE (POROUS SURFACE) | SF | \$1.05 |
| | HM-008 | REMOVE EXTERIOR SOIL (6" DEPTH) | SF | \$4.88 |
| | HM-009 | EXCAVATE, TRANSPORT, AND DISPOSE OF PCB CONTAMINATED SOIL (1 TON) | TON | \$400 |

| 4. | MOLD ABATEMENT | | UNIT | \$ ADD/ DEDUCT |
|----|----------------|---|------|-------------------|
| | IAQ-001 | CLEANING AND HEPA VACUUMING OF CONTAMINATED COMPONENTS OR MATERIALS | SF | \$0.61 |
| | IAQ-002 | REMOVAL OF CONTAMINATED PIPE INSULATION | LF | \$0.61 |
| | IAQ-003 | REMOVAL OF CONTAMINATED BUILDING INSULATION | SF | \$0.61 |
| | IAQ-004 | REMOVAL OF CONTAMINATED HVAC DUCT OR EQUIPMENT INSULATION | SF | \$0.61 |
| | IAQ-005 | REMOVAL OF CONTAMINATED CARPET | SF | \$0.88 |
| | IAQ-006 | REMOVAL OF CONTAMINATED DRYWALL PARTITION (INCLUDING WALL FRAMING) | SF | \$1.05 |
| | IAQ-007 | REMOVAL OF CONTAMINATED PLASTER | SF | \$1.87 |
| | IAQ-008 | REMOVAL OF CONTAMINATED SUSPENDED CEILING PANELS | SF | \$0.59 |
| | IAQ-009 | PREP WORK AREA | SF | \$0.99 |
| | IAQ-010 | SOLID BARRIERS OR ACCESS TUNNELS (2"x4" @16", 1/2" PLYWOOD) | SFSA | \$2.09 |
| | IAQ-011 | SELECTIVE DEMOLITION TO ACCESS CONTAMINATED COMPONENTS OR MATERIALS | SF | \$1.15 |

| 5. | REWORK ITEMS DURING ABATEMENT ACTIVITIES | | UNIT | \$ ADD/ DEDUCT |
|----|--|--|------|-------------------|
| | RW-001 | REINSULATE PIPE 1" THICK FIBERGLAS ASJ | SF | \$2.83 |
| | RW-002 | REINSULATE PIPE 1 1/2" THICK FIBERGLAS ASJ | SF | \$3.62 |
| | RW-003 | REINSULATE PIPE 2" THICK FIBERGLAS ASJ | SF | \$4.30 |
| | RW-004 | REINSULATE PIPE FITTING 1" THICK FIBERGLAS ASJ | EA | \$4.37 |
| | RW-005 | REINSULATE PIPE FITTING 1 1/2" THICK FIBERGLAS ASJ | EA | \$5.34 |
| | RW-006 | REINSULATE PIPE FITTING 2" THICK FIBERGLAS ASJ | EA | \$6.50 |
| | RW-007 | REINSULATE MECHANICAL EQUIPMENT 3 PCF, 2" THICK | SF | \$3.50 |

| | | | | |
|--|--------|--|----|----------|
| | RW-008 | REINSULATE HVAC DUCT SYSTEM (FLEXIBLE DUCT WRAP) 0.75 PCF, 1 1/2" THICK | SF | \$2.25 |
| | RW-009 | REINSULATE HVAC DUCT SYSTEM (RIGID BOARD) 3 PCF, 1 1/2" THICK | SF | \$6.00 |
| | RW-010 | REPLACE HVAC DUCT SYSTEM FLEXIBLE CONNECTOR | SF | \$7.83 |
| | RW-011 | REPLACE TRIM COMPONENT (WOOD CASING, JAMB, APRON, ETC.) | LF | \$1.26 |
| | RW-012 | REPLACE INTERIOR DOOR (SOLID CORE FLUSH OR 6-PANEL PINE) | EA | \$207.50 |
| | RW-013 | REPLACE WINDOW (SASH ONLY) | EA | \$207.50 |
| | RW-014 | REPLACE WINDOW (COMPLETE UNIT INCLUDING FRAME) | EA | \$375.00 |
| | RW-015 | PAINT FLAT SURFACES (PRIMER + FINISH COAT) | SF | \$0.27 |
| | RW-016 | PAINT COLUMNS AND STRUCTURAL FRAMING MEMBERS (PRIMER + FINISH COAT) | SF | \$2.89 |
| | RW-017 | PAINT STAIR TREADS, RISERS AND STRINGERS (PRIMER + FINISH COAT) | SF | \$2.89 |
| | RW-018 | PAINT HANDRAIL (PRIMER + FINISH COAT) | LF | \$0.27 |
| | RW-019 | PAINT TRIM COMPONENT (CASING, JAMB, APRON, ETC., PRIMER + FINISH COAT) | LF | \$0.83 |
| | RW-020 | PAINT DOORS (DOOR OPENING SIZE - INCLUDES BOTH FACES PRIMER + FINISH COAT) | SF | \$1.67 |
| | RW-021 | PAINT WINDOW (INCLUDES INTERIOR & EXTERIOR PRIMER + FINISH COAT) | SF | \$1.97 |
| | RW-022 | PAINT RADIATOR (PRIMER + FINISH COAT) | SF | \$2.97 |
| | RW-023 | PAINT PIPING (PRIMER + FINISH COAT) | LF | \$0.29 |
| | RW-024 | REPLACE EXTERIOR SOIL (6" LOAM AND SEED) | SF | \$7.19 |
| | RW-025 | ASPHALT PAVING | SF | \$3.43 |

| 6. | MISCELLANEOUS ABATEMENT ITEMS | | UNIT | \$ ADD/ DEDUCT |
|----|-------------------------------|--|------|----------------|
| | MI-001 | MOBILIZATION (1 PER WORK AREA) | EA | \$262.50 |
| | MI-002 | WORKER DECON (1 PER WORK AREA) | EA | \$262.50 |
| | MI-003 | CONTAINMENT BARRIERS TO SEPARATE THE WORK AREA (SOFT BARRIER) | SF | \$1.02 |
| | MI-004 | CONTAINMENT BARRIERS TO SEPARATE THE WORK AREA (HARD BARRIER) | SF | \$2.55 |
| | MI-005 | TEMP ELECTRICAL CONNECTION (LICENSED ELECTRICIAN) | EA | \$450.00 |
| | MI-006 | TEMP ELECTRICAL GENERATOR | DY | \$375.00 |
| | MI-007 | DISPOSAL OF ACM WASTE (INCLUDES TRANSPORTATION) | CY | \$60.00 |
| | MI-008 | DISPOSAL OF HAZARDOUS WASTE MATERIAL (INCLUDES TRANSPORTATION) | TON | \$380.00 |
| | MI-009 | DISPOSAL OF CONSTRUCTION DEBRIS (INCLUDES TRANSPORTATION) | TON | \$30.00 |
| | MI-010 | ABATEMENT SUPERVISOR (LICENSED) | HR | \$81.00 |
| | MI-011 | STAND-BY ABATEMENT PERSONNEL (EACH LICENSED WORKER) | HR | \$74.00 |
| | MI-012 | ENCAPSULATION UTILIZING LIQUID COATING SYSTEM | SF | \$0.69 |
| | MI-013 | ENCAPSULATION UTILIZING HEAVY BODIED REINFORCED COATING SYSTEM | SF | \$1.03 |
| | MI-014 | FIXED SCAFFOLDING | SF | \$16.00 |
| | MI-015 | EXCAVATION TO EXPOSE UNDERGROUND PIPE | CY | \$25.00 |
| | MI-016 | PROJECT NOTIFICATION AND FEES | EA | \$0.00 |
| | MI-017 | PROJECT BOND (3% OF CONTRACT) | EA | \$0.00 |

| 7. | COMPONENT REPLACEMENT DURING ABATEMENT ACTIVITIES | | UNIT | \$ ADD/ DEDUCT |
|----|---|---|------|----------------|
| | CR-001 | REMOVE TRIM COMPONENT (CASING, BASE, APRON, ETC.) | LF | \$0.49 |
| | CR-002 | REMOVE DOOR (DOOR ONLY) | SF | \$0.27 |
| | CR-003 | REMOVE DOOR (INCLUDING JAMB, NO TRIM) | SF | \$0.61 |
| | CR-004 | REMOVE WINDOW (SASH ONLY) | SF | \$0.40 |
| | CR-005 | REMOVE WINDOW (COMPLETE UNIT INCLUDING FRAME) | SF | \$0.92 |
| | CR-006 | REMOVE RADIATOR | SF | \$0.77 |
| | CR-007 | REMOVE MISCELLANEOUS ITEM | CF | \$7.56 |

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 20 00

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing Supplemental Bids.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 1. Division 00 Section 00 41 00 Bid Proposal Form
 2. Division 01 Section 01 20 00 Contract Considerations
 3. Division 01 Section 01 33 00 Submittal Procedures
 4. Division 01 Section 01 60 00 Product Requirements

1.3 DEFINITIONS

- A. **Definition:** "The monetary value stated in the Bid to be added to the amount of the Base Bid if the corresponding Work, as described in the Bidding Documents, is accepted." A Supplemental Bid is an amount proposed by bidders and stated on the Bid Proposal Form for certain work defined in the Bidding Documents that may be added to the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 1. The cost for each supplemental bid is the net addition to the Contract Sum to incorporate the Supplemental Bid into the Work. Supplemental Bids are only accepted in the numerical order that they are listed on the Bid Proposal Form and never accepted out of numerical sequence. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. **Coordination:** Modify or adjust affected adjacent Work as necessary to completely and fully integrate that Work into the Project.
 1. Include as part of each Supplemental Bid, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the Supplemental Bid.
 2. Consider all work that must be accomplished for complete incorporation of the Supplemental Bids including modifications to Base Bid items.
 3. Include in lump sum prices for Supplemental Bids all costs of labor, materials, equipment, permits, fees, insurance, bonds, overhead, and profit.
 4. Immediately after award of Contract, advise all necessary subcontractors, vendors, and suppliers as to which Supplemental Bids have been selected by Owner. Use all means necessary to alert those subcontractors, vendors, and suppliers involved as to all changes in the work caused by Owner's selection or rejection of Supplemental Bids.
 5. Coordinate related work and modify surrounding work to integrate work of each Supplemental Bid.
- B. Execute accepted Supplemental Bids under the same conditions as other Work of this Contract.
- C. **Schedule:** A "Schedule of Supplemental Bids" is included at the end of this Section. It contains all of Specification Sections, and applicable portions of Drawings and Details that govern the scope, quality, and execution of work that is referenced in the Schedule and contain all of the requirements necessary to achieve the Work described under each Supplemental Bid.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF SUPPLEMENTAL BIDS

A. Supplemental Bid No. 1: Renovations to the Third Floor of Building 2 – Commissary.

Requires the additional costs for demolition, renovation, re-construction and installation of all new work pertaining to the Third Floor of Building 2 – Commissary. The work includes but is not limited to the renovation of the existing bathroom, associated shower room, door and hardware upgrades, stair handrail & guardrail upgrade, associated room signage, electrical upgrades and plumbing upgrades.

Refer to Electrical Drawing E1.3 for associated electrical work at Second Floor of Building 2 – Commissary.

B. Supplemental Bid No. 2: Electrical Panel: Removal, relocation and installation of new at Second Floor of Building 2 – Commissary.

Requires the additional costs for the removal of existing electrical panel, installation of new electrical panel in new location, new feeders to new panel, new outlet and associated electrical upgrades.

Refer to Electrical Drawing E1.3 Building 2 Commissary – Second & Third Floor Electrical Plan.

END OF SECTION 01 23 13

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for handling requests for equals and substitutions made after award of the Contract.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 01 Section 01 33 00 "Submittal Procedures" specifies requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule.
 2. Division 01 Section 01 42 20 "Reference Standards and Definitions" specifies the applicability of industry standards to products specified.
 3. Division 01 Section 01 60 00 "Product Requirements" specifies requirements governing the Contractor's selection of products and product options.

1.3 DEFINITIONS

- A. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.
- B. **Equals or Substitutions General:** Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract.

1.4 SUBMITTALS

- A. **Equals and Substitution Request Submittals:** The Owner will consider requests for equals or substitutions if made prior to the Receipt of the Competitive Bid. The information on all materials shall be consistent with the information herein. After the contract award, substitutions will be considered for materials or systems specified that are no longer available. It will not be considered if the product was not purchased in a reasonable time after award. The Contractor shall submit all equal and substitutions requests on the "**Equal or Substitute Product Request (Form 7001)**", an example of which is shown at the end of this Section. The Form is available from the Construction Administrator (CA). See Article 15 in the General Conditions for further refinement and information.
- B. The Contractor is required to prepare and submit three (3) copies of the required data for the first manufacturer listed or procedure listed in the specifications section with reference to all of the following areas: the substance and function considering quality, workmanship, economy of operation, durability and suitability for purposes intended including the size, rating performance, LEED® compliance, and cost. All submissions must include all the required data for the first listed manufacturer or procedure as specified, as well as the required data for the proposed Equal or Substitution. This will enable the Owner and Architect to determine that the proposed Equal or Substitution is or is not substantially equal to the first listed manufacturer or procedure.
1. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
 2. Provide complete documentation showing compliance with the requirements for equals or substitutions, and the following information, as appropriate:
 - a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors that will be necessary to accommodate the proposed Equal or Substitution.
 - b. A detailed comparison chart of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
 - c. Product Data, including Shop Drawings and descriptions of products and fabrication and installation procedures.
 - d. Samples, where applicable or requested.
 - e. A statement indicating the effect on the Contractor's Construction Schedule or CPM Schedule compared to the schedule without approval of the Equal or Substitution. Indicate the effect on overall Contract Time.

- f. Cost information, broken down, including a proposal of the net change, if any in the Contract Sum.
 - g. The Contractor's certification that the proposed Equal or Substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.
 - h. The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the Equal or Substitution to perform adequately.
3. **Architect's Action:** If necessary, the Architect will request additional information or documentation for evaluation within **seven (7) days** of receipt of the original request for equal or substitution request. The Architect will notify the Construction Administrator who will notify the Owner of recommended acceptance or rejection of the proposed equal or substitution, within **fourteen (14) days** of receipt of the request, or **seven (7) days** of receipt of additional information or documentation, whichever is later. The Construction Administrator will give final acceptance or rejection by the Owner not less than **seven (7) days** after notification.
- a. Any request deemed an "Equal" and accepted by the Construction Administrator, Architect, Owner, and Agency will result in written notification to the Contractor and will not be in the form of a change order for an "Equal".
 - b. Any request deemed a "Substitution" and rejected or approved by Construction Administrator, Architect, and Owner may result in written notification to the Contractor and may be in the form of a change order if the "Substitution" is approved.

PART 2 - PRODUCTS

2.1 EQUAL OR SUBSTITUTIONS

- A. **Conditions:** The Architect will consider the Contractor's request for Equal or Substitution of a product or method of construction when one or more of the following conditions are satisfied, as determined by the Architect. If the following conditions are not satisfied, the Architect will return the requests to the Construction Administrator without action except to record noncompliance with these requirements.
- 1. The proposed request does not require extensive revisions to the Contract Documents.
 - 2. The proposed request is in accordance with the general intent of the Contract Documents.
 - 3. The proposed request is timely, fully documented, and/or properly submitted.
 - 4. The proposed request can be provided within the Contract Time. However, the Architect will not consider the proposed request if it is a result of the Contractor's failure to pursue the Work promptly or coordinate activities properly.
 - 5. The proposed request will offer the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume. However, if the proposed request requires the Owner to incur additional responsibilities, including but not limited to, additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or similar considerations, then the Owner will have just cause to reject the request for Equal or Substitution.
 - 6. The proposed request can receive the necessary approvals, in a timely manner, required by governing authorities having jurisdiction.
 - 7. The proposed request can be provided in a manner that is compatible with the Work as certified by the Contractor.
 - 8. The proposed request can be coordinated with the Work as certified by the Contractor.
 - 9. The proposed request can uphold the warranties required by the Contract Documents as certified by the Contractor.
- B. The Contractor's submission and the Architect's review of Submittals, including but not limited to, Samples, Manufacturer's Data, Shop Drawings, or other such items, which are not clearly identified as a request for an Equal or Substitution, will not be considered or accepted as a valid request for an Equal or Substitution, nor does it constitute an approval.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 25 00



**7001
Equal or Substitute
Product Request**

Page 1 of 2

Request Phase: Pre-Bid Post Bid (See Article 15 Materials: Standards, General Conditions)

(If Pre-bid only) Current Bid Due Date: Request No.: Dated:

To: State of Connecticut
Department of Administrative Services,
Construction Services

DAS Project No.:

Project Name / Location:

References: Specification(s): Section(s): Paragraph(s):

Drawing(s): Drawing(s) No(s): Detail(s) No(s):

Contractually Specified Product:

Contractor Proposed Product:

Proposed Product is: Equal: Substitute: Model No.:

IMPORTANT:
**See Attached Data For Both Specified And Proposed Products
As Required By Article 15 General Conditions.**

Data attached: Drawings: Product Data: Reports: Samples:

Tests: Other:

Reason(s) for not providing the Specified Product:

Similar Installation:

Project Name: Architect's Name:

Project Location: Owner's Name:

Date Installed:



7001
Equal or Substitute
Product Request

Page 2 of 2

| | | | |
|--|----------------------------------|---|--|
| Will proposed substitution impact other parts of the Work? | No <input type="checkbox"/> | Yes <input type="checkbox"/> | <i>If Yes Attach An Explanation.</i> |
| Will proposed substitution increase Contract Time? | No <input type="checkbox"/> | Yes <input type="checkbox"/> | <i>By Number Of Calendar Days</i> <input type="text"/> |
| Actual Dollar Savings to the State of Connecticut if substitution is accepted: | | \$ | <input type="text"/> |
| The Undersigned Certifies: | | | |
| That The Proposed Request For An Equal Or Substitute Product Conforms To All Of The Requirements Of Division 01 General Requirements, Section 01 25 00 Substitution Procedures. | | | |
| Request Submitted By General Contractor / CMR: | | <input type="text"/> | |
| <i>(Firm's Typed Name)</i> | | | |
| By: | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| | <i>(Typed Name)</i> | <i>(Title)</i> | <i>(Signature)</i> |
| | | | <i>(Date)</i> |
| Contractor / CMR Send copies to : | DAS PM: <input type="checkbox"/> | CA: <input type="checkbox"/> | |
| Consultant's Request Received on (Date): <input type="text"/> | | | |
| Consultant's Review – This Substitution Request is: | | | |
| <input type="checkbox"/> | Approved: | <i>(Submittal(s) in accordance with Div. 01 General Requirements, Section 01 33 00 Submittal Procedures.)</i> | |
| <input type="checkbox"/> | Approved as Noted: | <i>(Submittals in accordance with Div. 01 General Requirements, Section 01 33 00 Submittal Procedures.)</i> | |
| <input type="checkbox"/> | Rejected: | Use Specified Materials. | |
| <input type="checkbox"/> | Rejected: | Request Not Received Within Specified Time Period - Use Specified Materials. | |
| Reviewed Issued By: | | | |
| Name: | <input type="text"/> | | |
| | <i>(Typed Name)</i> | | |
| Title: | <input type="text"/> | | |
| Signature: | <input type="text"/> | <input type="text"/> | |
| | <i>(Signature)</i> | <i>(Date)</i> | |
| CONSULTANT Send copies to: | DAS PM <input type="checkbox"/> | CA <input type="checkbox"/> | Chief Architect <input type="checkbox"/> |
| | | | Chief Engineer <input type="checkbox"/> |
| If Approved: As noted by Consultant, | | | |
| DAS Chief Architect: | <input type="text"/> | | <input type="text"/> |
| | <i>(Signature)</i> | | <i>(Date)</i> |
| Copies: | Project File | Red R2 | |

END

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing contract modifications.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section 01 20 00 "Contract Considerations" for administrative requirements governing use of Unit Prices.
 - 2. Division 01 Section 01 25 00 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after award of the Contract.
 - 3. Division 01 Section 01 29 76 "Progress Payment Procedures" for administrative procedures governing Applications for Payment.
 - 4. Division 01 Section 01 32 16 "Construction Progress Schedules" for requirements for construction scheduling and reporting progress of work.
 - 5. Division 01 Section 01 33 00 "Submittal Procedures" for requirements for submittal of the Construction Progress Schedule or CPM Schedule.
 - 6. General Conditions "Article 13 - Compensation for Changes in the Work".
- C. All Forms referenced in this Section are available for download from the DAS website (www.ct.gov/DAS)> Doing Business With The State > State Building Construction > Publications and Forms > DAS Construction Services Library > 7000 Series - Construction Phase Forms.

1.3 REQUESTS FOR INFORMATION

- A. In the event that the Contractor or subcontractor, at any tier, determines that some portion of the drawings, specifications, or other contract documents requires clarification or interpretation by the Architect, the Contractor shall submit a "Request for Information" in writing to the Architect via the Construction Administrator. "Requests for Information" may only be submitted by the Contractor and shall only be submitted on the "Request for Information" forms as required by the Owner.
 - 1. In the "Request for Information", the Contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed from the Architect.
 - 2. In the "Request for Information", the Contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.
 - 3. The Owner acknowledges that this is a complex project. Based upon the owner's past experience with projects of similar complexity, the Owner anticipates that there will probably be some "Requests for Information" on this project.
 - 4. The Architect will review all "Requests for Information" to determine whether they are valid "Requests for Information". If it is determined that the document is not a valid "Request for Information", it will be returned to the Contractor, unreviewed as to content, for resubmittal on the proper form and in the proper manner.
 - 5. A "Request for Information Response" shall be issued within seven (7) days of receipt of the request from the Contractor unless the Owner determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Owner, the Owner will, within seven (7) days of receipt of the request, notify the Contractor of the anticipated response time. If the Contractor submits a "Request for Information" on an activity with seven (7) days or less of float on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Architect to respond to the request provided that the Architect responds within the seven (7) days set forth above.
 - 6. A "Request for Information Response" from Architect will not change any requirement of the Contract Documents. In the event the Contractor believes that the "Request for Information Response" will cause a change to the requirements of the Contract Documents, the Contractor shall within five (5) days give written notice to the Construction Administrator stating that the Contractor believes the "Request for

Information Response" will result in a "Change Order" and the Contractor intends to submit a "Change Order Proposal" request. Failure to give such written notice within five (5) days shall waive the Contractor's right to seek additional time or cost under the requirements these Requirements.

1.4 MINOR CHANGES IN THE WORK

- A. The Architect, through the Construction Administrator, will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time, on the "Supplemental Instructions" form as required by the Owner.

1.5 PROPOSAL REQUEST

- A. Architect/Owner-Initiated Requests For Proposals: The Architect or Owner will issue a detailed description of proposed changes in the Work via the Construction Administrator that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications. Such requests shall be on a "Proposal Request" form as required by the Owner.
1. "Proposal Request" is issued for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.
 2. Within **(14) days** of receipt of a "Proposal Request", submit a "Change Order Proposal" with the required information necessary to execute the change to the Construction Administrator for the Architect's/Owner's review.
 - a. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
 - d. The Agency is tax exempt. All Contractor and Subcontractor services provided under your Contract with the State of Connecticut may not be exempt from taxes. The Department of Revenue Services can guide you as to which services are exempt and which are not. Please contact the State of Connecticut, Department of Revenue Services at 1-800-382-9463 or 860-541-3280.
 - e. Dollar values shown on the Schedule of Values shall not be the governing (or deciding) final amounts for change orders involving either additional charges or deletions.

1.6 CHANGE ORDER PROPOSAL

- A. When either a "Request for Information" from the Contractor or a "Proposal Request" from the Architect or Owner results in conditions that may require modifications to the Contract, the Contractor may propose changes by submitting a request for a "Change Order Proposal" to the Architect via the Construction Administrator on forms as required by the Owner. These forms shall also include "Change Order Proposal Workbook(s)" as required by the Owner.
1. Include statements outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
 2. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities as directed by Article 13 of the General Conditions of the Contract for Construction.
 3. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
 4. Comply with requirements in Division 01 Section 01 25 00 "Substitution Procedures" if the proposed change requires an equal or substitution of one product or system for a product or system specified.
 5. The State of Connecticut construction contract has the following tax exemptions:
 - a. Purchasing of materials which will be physically incorporated and become a permanent part of the project.
 - b. Tools, supplies and equipment used in fulfilling the construction contract are not exempt.
 - c. Services that are resold by the Contractor are exempt, i.e. if a Contractor hires a plumber, carpenter or electrician, a resale certificate may be issued to the subcontractor because these services are considered to be integral and inseparable component parts of the building contract

- C. "Change Order Request" Forms: Use "Change Order Proposal" and "Change Order Proposal Worksheets" forms as required by Owner.
- D. A "Change Order Proposal" cannot be submitted without either prior submission of a "Request for Information" from the Contractor or as a response to a "Proposal Request" submitted by the Architect or Owner.
- E. Any "Change Order Request" submitted without a prior submittal of a "Request for Information" or as a response to a "Proposal Request" will be immediately rejected and returned to the Contractor.

1.7 CONSTRUCTION CHANGE DIRECTIVE

A. "Construction Change Directive":

When the Owner and the Contractor disagree on the terms of a "Change Order Proposal" resulting from either a "Request for Information" or "Proposal Request", then the Architect through the Construction Administrator may issue a "Construction Change Directive" on a "Construction Change Directive" form as authorized by the Owner. The "Construction Change Directive" instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a "Change Order".

- 1. The "Construction Change Directive" contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or Contract Time.
 - 2. Contractor must proceed with the Work once a "Construction Change Directive" is issued.
 - 3. The change in the Contract Sum and Contract Time resulting from the issuance of a "Construction Change Directive" will be based on "Time & Material" or "Unit Prices".
 - 4. Issuance of "Construction Change Directive" does not guarantee payment for the Work described in the "Construction Change Directive".
- B. Documentation: The Contractor shall maintain detailed records on a time and material basis of work required by the "Construction Change Directive".
- 1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
 - 2. The final value shall be negotiated based on the supporting data to determine the value of the work.

1.8 CHANGE ORDER PROCEDURES

- A. Upon the Owner's approval of a Contractor's "Change Order Proposal", the Construction Administrator will issue a "Change Order" for signatures of the Architect, Owner and the Contractor on a "Change Order" form as required by the Owner.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 26 00

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies procedures for preparation and submittal of the Contractor's Applications for Payment.
- B. Related Sections: The following Sections contain requirements that relate to this Section.
 - 1. Notice to Bidders: Article 10
 - 2. General Conditions: Articles: 27 "Schedule of Values, Application for Payment"; 28 "Partial Payments"; 31 "Final Payment"; and 32 "Owner's Right to Withhold Payments".
 - 3. Division 01 Section 01 32 16 "Construction Progress Schedules" for requirements for construction scheduling and reporting progress of work.
 - 4. Division 01 Section 01 33 00 "Submittal Procedures".
 - 5. Division 01 Section 01 77 00 "Closeout Procedures" for requirements for Final Payment.

1.3 SCHEDULE OF VALUES

- A. **Coordination:** Coordinate preparation of the "Schedule of Values" with preparation of the CPM Schedule or Construction Schedule. Use "Schedule of Values" form as required by the Owner
 - 1. Submit the "Schedule of Values" to the Construction Administrator at the earliest possible date but no later than **twenty-one (21)** days after Contract Start Date.
 - 2. **Sub-schedules:** Where Work is separated into phases requiring separately phased payments, provide sub-schedules showing values correlated with each phase of payment.
- B. **Format and Content:** Use the Project Manual Table of Contents as a guide to establish the format for the "Schedule of Values". Provide at least one line item for each Specification Section on electronic media printout.
 - 1. **Identification:** Project identification on the Schedule of Values shall include, but not be limited to, the following:
 - a. **Owner**
 - b. **Project Number**
 - c. **Project Name**
 - d. **Project Location**
 - e. **Contractor's name and address.**
 - 2. Arrange the "Schedule of Values" in tabular format as required by the Owner, containing separate columns including, but not limited to, the following Items:
 - a. **Item Number.**
 - b. **Description of Work with Related Specification Section or Division Number.**
 - c. **Scheduled Values broken down by description number, type material, units of each material.**
 - 1) **Include break down of General Condition requirements, i.e. bonds, insurance premiums, taxes, job mobilization, temporary facilities, field supervision and layout, operation and maintenance manuals, punch list activities, project record documents, demonstration and training, overhead, and profit as separate line items.**
 - d. **Name of subcontractor.**
 - e. **Name of manufacturer or fabricator.**
 - f. **Name of supplier.**
 - g. **Retainage.**
 - h. **Contract sum in sufficient detail.**

3. Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
4. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual Table of Contents. Break principal subcontract amounts down into several line items. In addition, the following items listed below must be included.
 - a. **Site Logistics Plan (01 31 00):** a lump sum at 1/20 of one percent of the base bid total project cost at the time of submission of this plan.
 - b. **Coordination Drawings (01 31 00):** a lump sum of this cost for payment at the submittal of this product a minimum cost of 1/10th of one percent of the base bid total project cost or \$5,000 whichever is greater.
 - c. **Photographic Documentation (01 32 33):** a monthly cost of \$1,000 per month to be paid each month upon receipt of the photographs or forfeit of that month's payment.
 - d. **Submittal Schedule (01 33 00):** a lump sum payment calculated at 1/20th of 1% of the base bid total project cost upon receipt of the schedule
 - e. **Waste Collection & Cleaning (01 50 00):** a monthly cost. A minimum payment of \$1,000 to \$3,000 (based on size & complexity of the project) with forfeit of that monthly payment if not done.
 - f. **As-Built Updates (01 31 00):** a monthly cost, a minimum payment of \$1,000 with forfeit of that monthly payment if not done.
 - g. **Start-up and Adjusting (01 75 00):** a lump sum cost upon completion. (to be determined by the DAS/CS Project Manager (PM) with Architect/Engineer and Construction Administrator (CA) advice)
 - h. **Schedule (01 32 16):** For the Base Schedule a lump sum payment or 40% of the total schedule budget, with the remainder paid on an even payment over the duration of the project.

Any forfeited amounts being withheld by the CA for non-performance will be adjusted at the final payment by a credit change order to the owner.
5. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.
6. **Unit-Cost Allowances:** Show the line-item value of unit-cost allowances, as a product of the unit cost, multiplied by the measured quantity. Estimate quantities from the best indication in the Contract Documents.
7. **General Conditions:** Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at the Contractor's option.

1.4 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and Construction Administrator and paid for by the Owner.
 1. The initial "Application for Payment", the "Application for Payment" at time of "Substantial Completion", and the final "Application for Payment", involve additional requirements.
- B. **Payment-Application Terms:** The Owner will process monthly progress payments. The Contractor may submit applications for payment on a monthly basis.
- C. **Payment-Application Forms:** Use the "Application for Payment" form as required by the Owner. Present the required information on electronic media printout or Owner approved form; multiple pages should be used if required.
 1. For each item, provide a column including but not limited to the following items:
 - a. Item Number.
 - b. Description of Work and Related Specification Section or Division.
 - c. Scheduled Value, break down by units of material and units of labor.
 - d. Work Completed from previous application.
 - e. Work Completed this period.

- f. Materials presently stored.
 - g. Total Completed and stored to date of application.
 - h. Percentage of Completion.
 - i. Balance to Finish.
 - j. Retainage.
- D. Application Preparation:** Complete every entry on the Application form. At the time of Final Payment only, include an executed Application form by a person authorized to sign legal documents on behalf of the Contractor. The Construction Administrator will return incomplete Applications without action.
- 1. Entries shall match data on the "Schedule of Values".
 - 2. Include amounts of Change Orders issued prior to the last day of the construction period covered by the application.
- E. Transmittal:** Except for final payment, submit to the Construction Administrator by a method ensuring receipt within **forty-eight (48)** hours. **One (1)** complete, signed and notarized original of each Application for Payment, including lien waivers and similar attachments when required, along with **six (6)** copies. For Final Payment, **nine (9)** complete, signed and notarized copies shall be submitted.
- 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Architect.
- F. Applications for Payment:** Administrative actions and submittals, that must precede or coincide with submittal of the first Application for Payment and all subsequent Application for Payments including, but not limited to, the following items:
- 1. List of subcontractors and suppliers' name, FEIN/Social Security numbers, and Connecticut Tax Registration Numbers.
 - 2. List of principal suppliers and fabricators.
 - 3. Schedule of Values.
 - 4. Contractor's Construction Schedule (preliminary if not final).
 - 5. Schedule of principal products.
 - 6. Submittal Schedule (preliminary if not final).
 - 7. List of Contractor's staff assignments.
 - 8. List of Contractor's principal consultants.
 - 9. Copies of all applicable permits.
 - 10. Copies of authorizations and licenses from governing authorities for performance of the Work.
 - 11. Proof that subcontractors have been paid amounts included on the Contractor's Application for Payment within thirty (30) days after the Owner has paid the Contractor for the particular Application for Payment in accordance with Connecticut General Statute § 49-41a (a)(1).
 - 12. Releases of Lien from subcontractors with amounts included on the Contractor's Application for Payment when Contractor has been paid by the Owner for the particular Application for Payment but the subcontractors have not been paid.
 - 13. Proof that as-built documents are updated as required by Section 01 77 00 "Closeout Procedures.
 - 14. Initial as-built survey and damage report, if required.
 - 15. Update the "Contractor's Master Subcontract Agreement List" and submit copies all recently executed Subcontract Agreements in accordance with CGS § 4b-96.
 - 15.1. The "Contractor's Master Subcontract Agreement List" shall list all Subcontract Agreements in order of Contract Sum magnitude (from high to low) in the following format:

| Contractor's Master Subcontract Agreement List | | | | |
|---|---|--------------|----------------|---------------------|
| Subcontractor Name | Minority Or Small Business Designation | Trade | Address | Contract Sum |
| | | | | |
| | | | | |

16. In accordance with CGS § 42-158j (b):
Each payment requisition submitted shall include a statement showing the status of all pending construction change orders, other pending change directives and approved changes to the original contract or subcontract. Such statement shall identify the pending construction change orders and other pending change directives, and shall include the date such change orders and directives were initiated, the costs associated with their performance and a description of any work completed. As used in this section, "pending construction change order" or "other pending change directive" **means an authorized directive for extra work that has been issued to a contractor or a subcontractor and identified by an official Change Order Number or Construction Change Directive Number assigned by the State of Connecticut.**
- G. Application for Payment at Substantial Completion:** Following issuance of the Certificate of Substantial Completion submit an Application for Payment form; use the form as required by the Owner. Present the required information on electronic media printout as applicable that include, but are not limited, to the following:
1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
 2. Administrative actions and submittals that shall precede or coincide with this application include, but are not limited to, the following:
 - 2.1 Occupancy permits and similar approvals.
 - 2.2 Warranties (guarantees) and maintenance agreements.
 - 2.3 Test/adjust/balance records.
 - 2.4 Maintenance instructions.
 - 2.5 Meter readings.
 - 2.6 Startup performance reports.
 - 2.7 Changeover information related to Owner's occupancy, use, operation, and maintenance.
 - 2.8 Final cleaning.
 - 2.9 Application for reduction of retainage and consent of surety.
 - 2.10 Advice on shifting insurance coverage.
 - 2.11 Final progress photographs.
 - 2.12 List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.
- H. Final Payment Application:** Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include, but are not limited, to the following:
1. Completion of Project Closeout requirements.
 2. Completion of list of items remaining to be completed as indicated on the attachment to the Certificate of Substantial Completion.
 3. Ensure that unsettled claims will be settled.
 4. Ensure that incomplete Work is not accepted and will be completed in accordance with a schedule prepared by the Contractor which is acceptable to the Owner.
 5. Transmittal of required Project construction records to the Owner (including as-built documents specified in Section 01 77 00 "Closeout Procedures").
 6. Certified property survey.
 7. Proof that taxes, fees, and similar obligations were paid.
 8. Removal of temporary facilities and services.
 9. Removal of surplus materials, rubbish, and similar elements (Reference Section 01 74 19 "Construction Waste Management & Disposal").
 10. Change of door locks to Owner's access.
 11. The requirements of the General Conditions and Supplementary Conditions for Final Acceptance, Final Completion, Final Inspection, and Final Payment.
 12. Asbestos, lead or other hazardous material manifests.

13. Completion of "Building Contractor Reporting Form" as supplied by Department of Construction Services, for all Contractors, Subcontractors, Vendors, Suppliers, etc. who work on the Contract. The form includes the following information:
- a. Contractor/Subcontractor name.
 - b. FEIN/Social Security Numbers
 - c. Connecticut Tax Registration Numbers
 - d. Type of work
 - e. Name of business and address
 - f. Remittance address.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 29 76

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and supervisory requirements necessary for coordinating construction operations including, but not necessarily limited to, the following:
1. General project coordination procedures.
 2. Conservation.
 3. Coordination Drawings, including Site Logistics Plans.
 4. Administrative and supervisory personnel.
 5. Cleaning and protection.
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
1. Division 01 Section 01 29 76 "Progress Payment Procedures" for Schedule of Values items
 2. Division 01 Section 01 31 19 "Project Meetings" for progress meetings, coordination meetings, and pre-installation conferences.
 3. Division 01 Section 01 32 16 "Construction Progress Schedules" for requirements for construction scheduling and reporting progress of work.
 4. Division 01 Section 01 50 00 "Temporary Facilities and Controls".
 5. Division 01 Section 01 60 00 "Product Requirements" for coordinating general installation.
 6. Division 01 Section 01 71 23 "Field Engineering" specifies procedures for field engineering services, including establishment of benchmarks and control points.
 7. Division 01 Section 01 77 00 "Closeout Procedures" for coordinating contract closeout.
 8. Division 01 Section 01 91 00 "Commissioning" defines the commissioning process.

1.3 CONSTRUCTION ADMINISTRATOR

A. **Construction Administrator:**

1. The Construction Administrator is identified in Division 01 Section 01 11 00 "Summary of Work".
2. **Construction Mobilization:**
 - a. Cooperate with the Construction Administrator in the allocation of mobilization areas of the site, for field offices and sheds, for agency facility access, traffic, and parking facilities.
 - b. During Construction, coordinate use of site and facilities through the Construction Administrator.
 - c. Comply with Construction Administrator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
 - d. Comply with instructions of the Construction Administrator for use of temporary utilities and construction facilities.
 - e. Coordinate field engineering layout as specified in Division 01 Section 01 71 23 "Field Engineering" for work under the instructions of the Construction Administrator.

1.4 COORDINATION

- A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
3. Make provisions to accommodate items scheduled for later installation.
- B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 1. Prepare similar memoranda for the Construction Administrator, Owner and separate contractors where coordination of their work is required.
- C. **Administrative Procedures:** Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 1. Preparation of schedules.
 2. Installation and removal of temporary facilities.
 3. Delivery and processing of submittals.
 4. Progress meetings.
 5. Project closeout activities.
 6. As-Built - coordinate monthly meetings to assure up-dates being performed.

1.5 SUBMITTALS

- A. **Coordination Drawings:** Prepare coordination drawings to complete detailed coordination of systems and components and to integrate information about fabrication and installation.
 1. Thoroughly prepare coordination drawings, as further stipulated in Part 3 "Execution", reviewing all contract documents and consulting with all entities contributing to or involved with each portion of the work under consideration.
 - a. Show the relationship of all components shown on any separate Shop Drawings.
 - b. Indicate required desired installation sequences.
 - c. Comply with requirements contained in Division 01 Section 01 33 00 "Submittal Procedures".
 2. Prepare coordination drawings for installation of all products and materials fabricated by separate entities.
 3. Prepare coordination drawings where limited space availability necessitates maximum utilization of space for efficient installation of different components, including but not limited to: all site-utility entry points; all ceiling and roof cavities in all areas; all electrical, telecommunications and mechanical rooms; all stage-boundary interface areas; all laboratories, animal-handling rooms and data rooms; all classrooms and seminar rooms; all lecture halls and their support spaces; all video studios, broadcast classrooms and their support facilities; and all such other conditions required to coordinate the work.
 4. **Prepare a Site Logistics Plan(s) showing:** The entire project area and limits; all routes into and out of site; all staging and stockpiling and lay-down areas; all aspects of phasing/staging; all parking, paving and fencing; and all specific provisions to satisfy requirements of Division 01 Sections, including but not limited to Field Engineering and Temporary Facilities and Controls. The Site Logistics Plan shall coincide with and complement the general staging plans and site plans outlined in the contract bidding documents. It is intended that the Contractor shall present this refined plan for approval by the Construction Administrator. The fencing shown on this plan is required for all phases. Exact placement and timing of installations and removals will be reviewed and approved by the Construction Administrator prior to implementation. An additional allotment of various fencing is specified in Division 32, which the Contractor shall provide, install, and relocate at various intervals, for installation and removal by the Contractor per the direction of the project's Construction Administrator. This staging and logistics plan will require refinement and change for each phase/stage of the project. The Site Logistics Plan(s) shall be drawn at a scale no smaller than 1"=40' and shall be submitted as stipulated in Division 01 Section 01 29 76 "Progress Payment Procedures", but in no case later than (30) days after Notice to Proceed.
 5. Prepare coordination drawings showing locations of surface recesses and voids, as well as offsets and breaks, requiring filling and/or feathering, both those initially visible and those discovered during the course of work. Review with Owner and Architect to obtain direction for filling and feathering. Revise drawing(s) to record directions for same for field and record purposes.

- B. Staff Names:** Prior to the contract start date, submit a list of the Contractor's principal staff assignments, including the superintendent, project safety officer, and other personnel in attendance at the Project Site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers.
1. Post copies of the list in the Project meeting room, the temporary field office, and at each temporary telephone.
 2. Provide resumes of each staff member proposed for the Project. This shall include the Project Manager, Project Superintendent and Safety Officer.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL COORDINATION PROVISIONS

- A. Inspection of Conditions:** The Contractor shall require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed and coordinate such inspections with the Construction Administrator and authorities having jurisdictions. If unsatisfactory conditions exist notify the Construction Administrator immediately. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B.** The Contractor shall coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.
- C. Coordination Drawings:** Before construction work can begin, the Contractor shall submit to the Architect coordination drawings in the form of (a) reproducible (vellum) transparencies at not less than 1/4-inch scale and (b) CAD files of the coordination drawings on CDROM. Such drawings will be required throughout all areas for trades as described below. These drawings shall show resolutions of trade conflicts in congested areas. The Architect will supply base drawings (with the title blocks removed), including floor plans, reflected ceiling plans, and structural framing plans, in the form of electronic CAD files on CDROM, using the AutoCAD release edition specified with the files, to the Contractor for distribution to the trades for use in developing the coordination drawings. Each trade contractor shall create separate layers within the CAD files to show the work of their trade. Prepare coordination drawings as follows:
1. The HVAC subcontractor shall initiate 1/4-inch scale drawings done on AutoCAD (latest version) showing ducts and piping in plan and section. Sheet metal shop drawings must be approved prior to starting coordination drawings.
 2. The Sprinkler subcontractor shall then add layers to superimpose his piping layout on the coordination drawings.
 3. The Electrical subcontractor shall then add layers to superimpose all the electrical information on the coordination drawings. Said information is to include but not necessarily be limited to cable trays, equipment, lighting, conduits, bus duct, etc. Show space allowances reserved for work under other contracts, such as audio-visual wiring and equipment.
 4. The Plumbing subcontractor shall then add layers to complete the coordination drawing by drawing his piping (including pitch) on the coordination drawings.
 5. Subcontractors for specialties, furnishings, equipment and special construction shall add layers to show their work to assure full coordination of all systems.
 6. The Construction Administrator shall review the completed coordination drawings for general compliance and then submit them to the Architect for his review. All subcontractors shall rework the drawings until all systems are properly coordinated.
 7. The Ceiling subcontractor shall utilize the drawings to prepare acoustic panel ceiling drawings and any other suspended ceiling drawings, and shall indicate areas of conflict with the work of other trades by drafting the location of grids, panels and tiles.
 8. The Contractor shall indicate Architectural/Structural conflicts or obstacles and coordinate to suit the overall construction schedule. The Contractor shall locate all precut and prefabricated holes and openings in structural steel on the CAD coordination drawing files as required for HVAC, plumbing, fire protection and electrical work. The Contractor shall coordinate these holes and openings with the structural steel fabricator during the structural steel shop drawing development phase. Coordination to take place on schedule so as to permit shop fabrication of all structural steel holes and openings. The

Owner will not be held responsible for the costs associated with field fabrication of structural openings resulting from the lack of timely and thorough coordination.

9. The Contractor shall expedite all drawing work and coordinate to suit the construction schedule. The Contractor shall then review these drawings and compare them with the Architectural, Structural, Equipment, and other drawings and determine that all of the work can be installed without undue interference. Prior to the submittal to the Architect, areas of potential conflict shall be brought to the attention of the Contractor who shall convene a coordination meeting of all parties involved, for the purpose of resolving all utility conflicts. The Contractor shall supervise and direct corrective measures and have all trades sign acceptance of the drawings. Submit four (4) hard copies of each drawing to the Architect and two (2) copies to the Construction Administrator for the record, and only after all conflicts have been accommodated.
 10. If the coordination meeting fails to resolve coordination conflicts, the Contractor shall indicate the nature of such conflicts in a detailed RFI, proposing the most economical solution.
 11. The Contractor shall not permit work by trades to proceed in a given bay or area until all trade foremen agree on the exact arrangements for each room or area. If a given trade proceeds prior to trades approval, then if necessary, that trade shall revise their work, if necessary, at no extra cost, in order to permit other trades to proceed.
 12. Submit all coordination drawings on CD-ROM, in addition to hard copy.
- D. The Construction Administrator will meet with the Contractor on all major items of coordination.

3.2 CLEANING AND PROTECTION

- A. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering, where required, to assure protection from damage or deterioration.
- B. Clean and provide maintenance on completed construction as construction per manufacturers requirements through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.
- C. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
 1. Excessive static or dynamic loading.
 2. Excessive internal or external pressures.
 3. Excessively high or low temperatures.
 4. Thermal shock.
 5. Excessively high or low humidity.
 6. Air contamination or pollution.
 7. Water or ice.
 8. Solvents.
 9. Chemicals.
 10. Light.
 11. Radiation.
 12. Puncture.
 13. Abrasion.
 14. Heavy traffic.
 15. Soiling, staining, and corrosion.
 16. Bacteria.
 17. Rodent and insect infestation.
 18. Combustion.
 19. Electrical current.
 20. High-speed operation.
 21. Improper lubrication.

- 22. Unusual wear or other misuse.
- 23. Contact between incompatible materials.
- 24. Destructive testing.
- 25. Misalignment.
- 26. Excessive weathering.
- 27. Unprotected storage.
- 28. Improper shipping or handling.
- 29. Theft.
- 30. Vandalism.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 31 00

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:
 1. **Start Date meeting (establishes start date)**
 2. **Pre-construction conferences.**
 3. **Pre-installation conferences.**
 4. **Progress meetings.**
 5. **Safety**
 6. **Coordination**
 7. **As-built drawings review**
 8. **And as required**
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
 1. Division 01 Section 01 31 00 "Project Management and Coordination" for procedures for coordinating project meetings with other construction activities.
 2. Division 01 Section 01 32 16 "Construction Progress Schedules" for requirements for construction scheduling and reporting progress of work.
 3. Division 01 Section 01 33 00 "Submittal Procedures" for submitting the Construction Schedule or CPM Schedule.
 4. Division 01 Section 01 35 26 "Government Safety Requirements specifies the requirements for safety plans, reports, and investigation submittals.

1.3 PRE-CONSTRUCTION CONFERENCE

- A. The Contractor will attend a pre-construction conference before starting construction, as scheduled by the Construction Administrator convenient to the Owner, the Construction Administrator, Architect, and Contractor. This meeting will take place at least **fourteen (14)** days prior to official Start Date. Hold the conference at the Project Site or another convenient location as directed by the Construction Administrator. The Construction Administrator shall conduct the Pre-construction Conference to review the Contractor and Subcontractor responsibilities and personnel assignments.
- B. **Attendees:** Authorized representatives of the Construction Administrator, Owner, Architect, and their consultants; the Contractor and its superintendent; major subcontractors; agency; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.
- C. **Agenda:** Discuss items of significance that could affect progress, including the following:
 1. **Tentative construction schedule.**
 2. **Critical work sequencing.**
 3. **Progress meeting schedule.**
 4. **Designation of responsible personnel.**
 5. **Procedures for processing field decisions and Change Orders.**
 6. **Procedures for processing Applications for Payment.**
 7. **Distribution of Contract Documents.**
 8. **Submittal of Shop Drawings, Product Data, and Samples.**
 9. **Preparation of record documents.**

10. Use of the premises.
11. Parking availability.
12. Office, work, and storage areas.
13. Equipment deliveries and priorities.
14. Safety procedures.
15. First aid.
16. Security.
17. Housekeeping.
18. Working hours.
19. Coordination with Audio Visual and Telecommunications.

1.4 PRE-INSTALLATION/CONSTRUCTION CONFERENCES

- A. The Contractor will schedule a pre-installation conference(s) at the Project Site before each construction activity that requires coordination with other construction. The Contractor shall be responsible to notify in writing the Construction Administrator and the appropriate Subcontractor(s), etc., of the date and time of all Pre-installation/Construction Conferences. Notification shall be at least seven (7) days, prior to the Conference. The Contractor shall be responsible for coordination and attendance of all Subcontractors, etc., involved in or affected by the installation for all Pre-installation/Construction Conferences.
- B. **Attendees:** The Construction Administrator, Contractor, Subcontractors, Owner and Architect, the installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. The Contractor shall advise all attendees of the scheduled Pre-installation/Construction Conferences dates.
- C. **Agenda:** Review the progress of other construction activities and preparations for the particular activity under consideration at each Pre-installation/Construction Conference, including but not limited to the following requirements:
 1. Contract Documents.
 2. Options.
 3. Related Change Orders.
 4. Purchases.
 5. Deliveries.
 6. Shop Drawings, Product Data, and quality-control samples.
 7. Review of mockups.
 8. Possible conflicts.
 9. Compatibility problems.
 10. Time schedules.
 11. Weather limitations.
 12. Manufacturer's recommendations.
 13. Warranty requirements.
 14. Compatibility of materials.
 15. Acceptability of substrates.
 16. Temporary facilities.
 17. Space and access limitations.
 18. Governing regulations.
 19. Safety.
 20. Inspecting and testing requirements.

21. Required performance results.

22. Recording requirements.

23. Protection.

- D. The Construction Administrator will record significant discussions and agreements and disagreements of each Pre-installation/Construction Conference, and the approved schedule. The Construction Administrator will promptly distribute the record of the Pre-installation/Construction Conference to all attendees.
- E. The Contractor shall not proceed with the installation/construction if the conference cannot be successfully concluded. The Contractor shall be responsible to initiate whatever actions are necessary to resolve impediments to performance of Work and schedule and reconvene another Pre-installation/Construction Conference at the earliest feasible date. Failure of the contractor to resolve impediments to the performance of the work will not result in an extension of days.

1.5 PROGRESS MEETINGS

- A. The Construction Administrator will conduct progress meetings, bi-weekly, at the Project Site or at regular intervals as agreed upon at the Pre-construction Conference. The Construction Administrator will notify the Owner, the Architect, and the Contractor of the scheduled Progress Meeting dates. Coordinate dates of Progress Meetings with preparation of Application for Payment requests.
- B. **Attendees:** In addition to representatives of the Contractor, Construction Administrator, Owner and the Architect, subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities may be requested to attend these meetings on an as needed basis. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work. The Contractor shall include the site superintendent as a minimum.
- C. **Agenda:** Progress Meetings shall review and correct or approve minutes of the previous Progress Meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.
 - 1. **Construction Schedule:** Review progress since the last Progress Meeting. Determine where each activity is in relation to the required Contractor's "Construction Schedule" or "CPM Schedule" and whether each activity is on time or ahead or behind Schedule. Determine how Work that is behind Schedule will be expedited; secure commitments from parties involved to do so. Discuss whether Schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.
 - 2. Review the present and future needs of each entity present, including the following:
 - a. **Interface requirements.**
 - b. **Time.**
 - c. **Sequences.**
 - d. **Status of submittals.**
 - e. **Deliveries.**
 - f. **Off-site fabrication problems.**
 - g. **Access.**
 - h. **Site utilization.**
 - i. **Temporary facilities and services.**
 - j. **Hours of work.**
 - k. **Hazards and risks.**
 - l. **Housekeeping.**
 - m. **Quality and work standards.**
 - n. **Change Orders.**
 - o. **Documentation of information for payment requests.**
- D. **Reporting:** The Construction Administrator will distribute minutes of the meeting to each party present, promptly and before the next scheduled meeting, and to parties who should have been present.

1.6 SUBCONTRACTOR/COORDINATION/SAFETY MEETINGS

- A. The Contractor shall conduct Subcontractor/coordination meetings.
- B. The Contractor shall conduct a separate safety meeting after the safety plan is submitted. The Contractor shall take meeting minutes. These minutes shall be made available upon request. The Contractor shall notify the Construction Administrator of the times and dates of these meetings, who may elect to attend these meetings as an observer when necessary. A minimum of one safety meeting will be held per month.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 31 19

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for the preparation, submittal, and updating of the Contractor's construction schedules and reporting progress of the Work.
 - 1. Refer to the General Conditions and the Agreement for definitions and specific dates of Contract Time.
- B. This Section includes the following:
 - 1. Format.
 - 2. Content.
 - 3. Revisions to schedules.
 - 4. Submittals.
 - 5. Distribution.
- C. **Related Sections:** The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section 01 29 76 "Progress Payment Procedures" specifies requirements for submitting Schedule of Values and Application for Payments.
 - 2. Division 01 Section 01 31 19 "Project Meetings" specifies requirements for submitting and distributing meeting and conference minutes.
 - 3. Division 01 Section 01 33 00 "Submittal Procedures" specifies requirements for submitting the Submittal Schedule.
 - 4. Division 01 Section 01 45 00 "Quality Control" specifies requirements for submitting inspection and test reports.
 - 5. Division 01 Section 01 60 00 "Product Requirements" specifies requirements for submitting the list of products.

1.3 DEFINITIONS

- A. **Construction Schedule:** A method of planning and scheduling a construction project utilizing a horizontal bar chart with a separate bar for each major portion of the Work or operation to make the schedule an effective tool for planning and monitoring the progress of the work.

1.4 QUALITY ASSURANCE

- A. **The Contractor's Consultant:** Retain a consultant to provide planning, evaluating, and reporting by CPM scheduling.
 - 1. **In-House Option:** The Owner may waive the requirement to retain a consultant if the Contractor can demonstrate that:
 - a. The Contractor has the computer equipment required to produce construction schedules.
 - b. The Contractor employs skilled personnel with experience in construction scheduling and reporting techniques.
 - 2. **Program:** Use **Microsoft Project** latest version.
 - 3. **Standards:** Comply with procedures contained in AGC's "Construction Planning & Scheduling."

1.5 PRELIMINARY SCHEDULE

- A. Preliminary Gantt schedule is to be prepared by the Contractor and submitted to the Construction Administrator within **seven (7)** days of award of contract. This schedule is to cover all items of Work from the start of the project up to the completion of the project. This schedule must be revised when the actual schedule of significant items varies more than one week from the proposed schedule.

1.6 CONSTRUCTION SCHEDULE FORMAT

1. **Format:** Utilize a horizontal bar chart (Gantt) with a separate bar for each major portion of the Work or operation, identifying first work day of each week.
2. **Program:** Use **Microsoft Project**, latest version.
3. **Sequence of Listings:** Utilize the Table of Contents of this Project Manual and the chronological order **of the start of each item of work.**
4. **Scale and Spacing:** Provide space for notations and revisions.
5. **Sheet Size:** To be coordinated with Construction Administrator.
6. **Weather Days Allowance:** The Contractor shall include as a separate identifiable activity on the Critical Path of the Construction Schedule, and activity labeled "Weather Days Allowance." Insert this activity immediately prior to the substantial completion milestone.

6.1 The Contractor shall be fully responsible for determining the number of weather delay days to be included in the Construction Schedule. This determination shall be based on the normal anticipated weather for the project location and the nature of the project work. The Construction Schedule shall be based on the contractor's determined weather delay allowance. The weather delay activity shall be included in the construction schedule immediately prior to the Substantial Completion milestone.

6.2 The minimal allowed duration of the Weather Days Allowance shall be calculated as follows (decimals rounded to nearest whole number):

$$\frac{\text{Contract Time (Calendar Days)}}{365} \text{ multiplied by } 7 \text{ equals Weather Days Allowance (Calendar Days)}$$

6.3 The Contractor shall insert an activity in the Critical Path of the Construction Schedule to reflect weather day occurrences when weather days are experienced and accepted by the Owner. Identify this activity as a weather delay.

6.4 The Contractor shall reduce duration of Weather Days Allowance activity as weather delays are experienced and inserted into the schedule. Remaining weather days in Weather Day Allowance at completion of project is considered float. Weather delay, when justified, are considered allowable, non compensable.

1.7 CONTENT

- A. Show complete sequence of construction by activity, with dates beginning and completion of each element of construction.
- B. Identify each item by specification section numbers.
- C. Identify work of separate phases and other logically grouped activities.
- D. Show accumulated percentages of completion of each item, and total percentage of Work completed, as of the **first** day of each month.
- E. Provide separate schedule of submittal dates for shop drawings, product data, and samples, Owner/Agency furnished products and any products identified as under Allowances, and dates reviewed submittals will be required from Architect/Engineer. Indicate decision dates for selection of finishes.
- F. Indicate delivery dates for Owner/Agency furnished products and any products identified as under Allowances.
- G. Indicate critical path with original baseline indicated.
- H. Coordinate content with Schedule of Values specified in Section 01 29 76 "Progress Payment Procedures."

1.8 SUBMITTALS AND REVISIONS TO SCHEDULES

- A. An initial bar graph schedule is to be prepared by the Contractor and submitted to the Construction Administrator. Refer to Article 1.5.
- B. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
- C. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
- D. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.

- E. Schedules must be revised monthly and when the actual schedule of significant items varies more than **seven (7) days** from the proposed schedule.
- F. Submit revised Construction Schedules for each Application for Payment.
- G. Submit **four (4)** copies of the Construction Schedule to the Construction Administrator.

1.9 DISTRIBUTION

- A. Distribute copies of the Construction Schedules to Construction Administrator, Architect, Owner, Subcontractors, suppliers, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problem anticipated by projections indicated in schedules.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 32 16

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for construction photographs.
- B. **Related Sections:** The following Section contains requirements that relate to construction photographs:
 - 1. Division 01 Section 01 33 00 "Submittal Procedures" specifies general requirements for submitting digital construction photographs.

1.3 SUBMITTALS

- A. **Photographs:** Provide a digital camera to take **twenty-four (24)** or more photos each time. Deliver **two (2)** sets of photo files on **one (1)** CD-ROM and **one (1)** set of prints (8x10) to the Construction Administrator for the Department.
- B. **Extra Sets:** When requested by the Owner, the photographer shall prepare extra sets of prints or CD-ROM. The photographer shall distribute these directly to the designated parties who will pay the costs for the extra sets directly to the photographer.

1.4 QUALITY ASSURANCE

- A. Engage a qualified commercial photographer to take photographs during construction.
- B. **Photographer's Qualifications:** Photographer shall be an individual of established reputation who has been regularly engaged as a professional photographer for not less than **three (3) years**.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC COPIES

- A. On the date the work is begun and every **thirty (30) days** thereafter (until the work is at least 95 percent complete), the Contractor shall have digital photographs of the construction taken by a professional photographer.
- B. **Identification:** Label each CD-ROM with project name and date the photographs were taken. With each submittal provide an applied label, rubber-stamped or index sheet with the following information:
 - 1. **Name of the Project.**
 - 2. **Name and address of the photographer.**
 - 3. **Name of the Architect.**
 - 4. **Name of the Contractor.**
 - 5. **Date the photographs were taken.**
 - 6. **Vantage Point: Description of vantage point, in terms of location, direction (by compass point), and elevation or story of construction.**

PART 3 – EXECUTION

3.1 PRECONSTRUCTION PHOTOGRAPHS

- A. Before starting construction, take digital photos of the site and surrounding properties from different points of view, as selected by the Construction Administrator.
 - 1. Take digital photos in sufficient number to show existing site conditions before starting Work.
 - 2. Take digital photos of adjacent existing buildings either on or adjoining the property in sufficient detail to record accurately the physical conditions at the start of construction.

3.2 PHOTOGRAPHIC REQUIREMENTS

- A. Take **twenty-four (24)** or more digital photographs monthly, coinciding with the cutoff date associated with each Application for Payment. The Construction Administrator shall select the vantage points for each shot to best show the status of construction and progress since the last photos were taken.
- B. As the digital photographs are a record of the work progress, they shall be taken each month, whether or not they show work done during the preceding month. Deliver the CD-ROMs and prints within **ten (10) days** of their taking.
- C. Provide and coordinate the use of photographic software to assure that the photos are viewable by all interested parties.

D. PART 2 - PRODUCTS (Not Applicable)

E. PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 32 33

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including but not limited to the following:
 - 1. **Submittal schedule.**
 - 2. **Shop Drawings.**
 - 3. **Product Data.**
 - 4. **Samples.**
 - 5. **Quality assurance submittals.**
 - 6. **Proposed "Substitutions/Equals".**
 - 7. **Warrantee samples.**
 - 8. **Coordination Drawings.**
 - 9. **O & M Manuals**
- B. Administrative Submittals: Refer to other Division 01 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:
 - 1. **Permits.**
 - 2. **Applications for Payment.**
 - 3. **Performance and payment bonds.**
 - 4. **Contractor's construction schedule.**
 - 5. **Daily construction reports.**
 - 6. **Construction Photographs.**
 - 7. **Insurance certificates.**
 - 8. **List of subcontractors.**
 - 9. **Subcontractors/Suppliers FEIN number's and Connecticut tax registration number.**
- C. **Related Sections:** The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section 01 25 00 "Substitution Procedures" specifies requirements for submittal of requests for equals and substitutions.
 - 2. Division 01 Section 01 29 76 "Progress Payment Procedures" specifies requirements for submittal of the Schedule of Values.
 - 3. Division 01 Section 01 31 00 "Project Management and Coordination" specifies requirements governing preparation and submittal of required Coordination Drawings.
 - 4. Division 01 Section 01 31 19 "Project Meetings" specifies requirements for submittal and distribution of meeting and conference minutes.
 - 5. Division 01 Section 01 32 16 "Construction Progress Schedules" for requirements for construction scheduling and reporting progress of work.
 - 6. Division 01 Section 01 32 33 "Photographic Documentation" specifies requirements for submittal of periodic construction photographs.
 - 7. Division 01 Section 01 35 26 "Government Safety Requirements" specifies the requirements for safety plans, reports, and investigation submittals.
 - 8. Division 01 Section 01 45 00 "Quality Control" specifies requirements for submittal of inspection and test reports and mockups.

9. Division 01 Section 01 77 00 "Closeout Procedures" specifies requirements for submittal of Project Record Documents and warranties at project closeout.
10. Division 01 Section 01 78 30 "Warranties and Bonds".

1.3 DEFINITIONS

- A. Coordination Drawings show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or to function as intended and as identified in the Specification Divisions 02 through 49.
 1. Preparation of Coordination Drawings is specified in Division 01 Section 01 31 00 "Project Management and Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.
- B. Field samples are full-size physical examples erected on-site to illustrate finishes, coatings, or finish materials. Field samples are used to establish the standard by which the Work will be judged.
- C. Mockups are full-size assemblies for review of construction, coordination, testing, or operation; they are not Samples.

1.4 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
 - b. The Architect reserves the right to reject incomplete submitted packages.
 3. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for re-submittals.
 - a. Allow **fourteen (14) days** for initial review. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow **fourteen (14) days** for reprocessing each submittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- B. **Submittal Preparation:** Place a permanent label, title block or **8-1/2 inches x 11 inches** cover page approved by the Architect, on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
 1. The minimum number of copies required for each submittal shall be **seven (7)** or as determined otherwise at the pre-construction conference or by the Construction Administrator.
 2. Provide a space approximately **4 inches by 5 inches** on the label, beside the title block or on the cover page on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 3. Include the following information on the label for processing and recording action taken.
 - a. **Project Name and State of Connecticut Project Number.**
 - b. **Date.**
 - c. **Name and address of the Architect, Construction Administrator, and Owner Representative.**
 - d. **Name and address of the Contractor.**
 - e. **Name and address of the subcontractor.**
 - f. **Name and address of the supplier.**
 - g. **Name of the manufacturer.**
 - h. **Number and title of appropriate Specification Section.**

- i. **Drawing number and detail references, as appropriate.**
 - j. **Indicate either initial or resubmittal.**
 - k. **Indicate deviations from Contract Documents.**
 - l. **Indicate if "equal" or "substitution".**
- C. Submittal Transmittal:** Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using a transmittal form. Copy the Construction Administrator on the transmittal. The Architect will return all submittals to the Contractor after action is taken with a complete copy of the submittal package and one complete copy of the submittal package. The Architect will not accept submittals received from sources other than the Contractor.
- 1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.6 SUBMITTAL SCHEDULE

- A.** After development and review by the Owner and Architect acceptance of the Contractor's Construction or CPM schedule prepare a complete schedule of submittals. Submit the schedule to the Construction Administrator within **thirty (30)** days of Contract Award.
- 1. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction or CPM Schedule.
 - 2. Prepare the schedule in chronological order. Provide the following information:
 - a. Schedule date for the initial submittal.
 - b. Related section number.
 - c. Submittal category (Shop Drawings, Product Data, or Samples).
 - d. Name of Subcontractor.
 - e. Description of the part of Work covered.
 - f. Scheduled date for resubmittal.
 - g. Scheduled date for the Architect's final release of approval.
- B. Submittal Schedule:** Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Architect and additional time for handling and reviewing submittals required by those corrections.
- 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's Construction or CPM Schedule.
 - 2. **Initial Submittal:** Submit concurrently with start-up construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 3. **Final Submittal:** Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
- C. Coordination:** Coordinate preparation and processing of submittals with performance of construction activities.
- 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Submit all submittal items required for each specification section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 - 3. Submit action submittals and informational submittals required by the same specification section as separate packages under separate transmittals.
 - 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. **Architect reserves** the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

- D. Processing Time:** Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on **Architect's** receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
- 1. Initial Review:** Allow **fifteen [15]** days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. **Architect** will advise Contractor when a submittal being processed must be delayed for coordination with related submittals not yet received. Additional time will be required if processing must be delayed to permit review of related subsequent submittals.
 - 2. Intermediate Review:** If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review:** Allow **fifteen [15]** days for review of each resubmittal.
 - 4. Mass Submittals:** **Six (6)** or more submittals in **one (1) day** or **twenty (20)** or more submittals in **one (1) week**. If "Mass Submittals" are received, Architect's review time stated above may be extended as necessary to perform proper review. Architect will review "Mass Submittals based upon priority determined by Architect after consultation with Owner and Contractor.
- E. Distribution:** Following response to the initial submittal, print and distribute copies to the Construction Administrator, Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.
- When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- A. Schedule Updating:** Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.7 DAILY CONSTRUCTION REPORTS

- A.** Prepare a daily construction report recording the following information concerning events at the site, and submit duplicate copies to the Construction Administrator at weekly intervals:
- 1. List of subcontractors at the site.**
 - 2. Approximate count of personnel at the site.**
 - 3. High and low temperatures, general weather conditions.**
 - 4. Accidents and unusual events.**
 - 5. Meetings and significant decisions.**
 - 6. Stoppages, delays, shortages, and losses.**
 - 7. Meter readings and similar recordings.**
 - 8. List of equipment on site and identify if idle or in use.**
 - 9. Orders and requests of governing authorities.**
 - 10. Change Orders received, start and end dates.**
 - 11. Services connected, disconnected.**
 - 12. Equipment or system tests and startups.**
 - 13. Partial Completion's, occupancies.**
 - 14. Substantial Completion's authorized.**
 - 15. Equals or Substitutions approved or rejected.**

1.8 SHOP DRAWINGS

- A.** Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.
- B.** Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:

1. Dimensions.
 2. Identification of products and materials included by sheet and detail number.
 3. Compliance with specified standards.
 4. Notation of coordination requirements.
 5. Notation of dimensions established by field measurement.
 6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least **8-1/2 by 11 inches** but no larger than **36 by 48 inches**.
 7. Submit **one (1)** reproducible media and **seven (7)** prints as directed by the Construction Administrator. The Contractor's submittal shall identify the specification section and/or drawing number applicable to the submittal.
 8. Details shall be large scale and/or full size.
- C. The Contractor shall review the Shop Drawings, stamp with this approval, and submit them with reasonable promptness and in orderly sequence so as to cause no delay in his Work or in the Work of any subcontractor. Shop Drawings shall be properly identified as specified for item, material, workmanship, and project number. At the submission, the Contractor shall inform the Architect, in writing of any deviation in the shop drawings from the requirements of the Contract Documents.
- D. The Architect will review and comment on shop drawings with reasonable promptness so as to cause no delay, but only for conformance with the design concept of the project and with the information given in the Contract Documents. Refer to Article 5 of the General Conditions. Shop Drawings received by the Architect that indicate insufficient study of drawings and specifications, illegible portions or gross errors, will be rejected outright. Such rejections shall not constitute an acceptable reason for granting the Contractor additional time to perform the work.
- E. The Contractor shall make any corrections required by the Architect and shall resubmit the required number of corrected copies of Shop Drawings until fully reviewed.
- F. Upon final review submit **four (4)** additional prints, same as submitted, for use by the Construction Administrator.
- G. The Architect's review and comments on Shop Drawings shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents.
- H. Only final reviewed Shop Drawings are to be used on the Project site.
- I. The Work installed shall be reviewed in accordance with the Shop Drawings and the drawings and specifications. Final Review of the Shop Drawings by the Architect shall constitute acceptance by the State and the Architect of a variation or departure that is **clearly identified**. If the contractor believes notations made by the A/E increases the value or scope of the CD's, the contractor must provide written notice to the CA within **seven (7)** days of this issue. Final reviewed Shop Drawings shall not replace or be used as a vehicle to issue or incorporate change orders or substitutions. Substitutions shall be submitted in accordance with Division 01 Section 01 25 00 "Substitution Procedures".

1.9 SHOP DRAWINGS FOR FIRE PROTECTION SYSTEMS:

- A. Shop drawings for fire protection systems shall comply with all of the requirements in the section above "Shop Drawings". In addition Sprinkler system shop drawings and hydraulic calculations must be stamped by a professional engineer licensed in the state of Connecticut and must include the DAS/CS project number. **Two (2)** sets of information [as noted in this Section 01 33 00 "Submittal Procedures"] shall be submitted to the State's Insurance Carrier (SIC), and **one (1)** set shall be submitted to the Office of the State Fire Marshal (OSFM):
1. **Office of State Fire Marshal:**
CT Department of Administrative Services
Construction Services
Office of State Fire Marshal
450 Columbus Boulevard, Suite 1304
Hartford, Connecticut 06103
Phone: (860) 713-5750
 2. **State Insurance Carrier (SIC):**
FM Global Boston Operations
Plan Review

1175 Boston-Providence Turnpike
PO Box 9102
Norwood, MA 02062
Tel: (781) 440-8241 or FAX (781) 440-8742
bostonleadengineer@fmglobal.com

- B. Before the shop drawings are submitted to SIC or OSFM, the A/E's fire protection consultant must review the sprinkler design for compliance with the code, OSFM, and FM Global requirements.
- C. The State Insurance Carrier requires **two (2)** weeks prior notice of a sprinkler system acceptance test.

1.11 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, schedules, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.
 - 1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
 - a. **Manufacturer's printed recommendations.**
 - b. **Compliance with trade association standards.**
 - c. **Compliance with recognized testing agency standards.**
 - d. **Application of testing agency labels and seals.**
 - e. **Notation of dimensions verified by field measurement.**
 - f. **Notation of coordination requirements.**
 - 2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 - 3. **Preliminary Submittal:** Submit a preliminary single copy of Product Data where selection of options is required.
 - 4. **Submittals:** Submit **seven (7)** copies of each required submittal; submit **five (5)** copies where required for maintenance manuals. The Architect will retain **one (1)** and will return the other marked with action taken and corrections or modifications required.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 - 5. **Distribution:** Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - a. Do not proceed with installation until a copy of Product Data is in the Installer's possession.
 - b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.12 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
 - 1. Store, mount or display Samples on site in the manner to facilitate review of qualities indicated. Prepare Samples to match the Architect's sample. Include the following:
 - a. **Specification Section number and reference.**
 - b. **Generic description of the Sample.**
 - c. **Sample source.**
 - d. **Product name or name of the manufacturer.**
 - e. **Compliance with recognized standards.**
 - f. **Availability and delivery time.**

2. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a. Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least **three (3)** multiple units that show approximate limits of the variations.
 - b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
 - c. Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.
 - d. Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.
 3. **Preliminary Submittals:** Submit a full set of choices where Samples are submitted for selection of color, pattern, texture, or similar characteristics from a range of standard choices, unless otherwise noted in specification section.
 - a. The Architect will review and return preliminary submittals with the Architects notation, indicating selection and other action.
 4. **Submittals:** Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit **three (3)** sets. The Architect will return **one (1)** set marked with the action taken.
 5. Maintain sets of Samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 - b. Sample sets may be used to obtain final acceptance of the construction associated with each set.
- B. Distribution of Samples:** Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.
1. Field samples are full-size examples erected on-site to illustrate finishes, coatings, or finish materials and to establish the Project standard.
 - a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.13 QUALITY ASSURANCE SUBMITTALS

- A.** Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.
- B. Certifications:** Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.
 1. **Signature:** Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.
- C. Inspection and Test Reports:** Requirements for submittal of inspection and test reports from independent testing agencies are specified in Division 01 Section 01 45 00 "Quality Control."

1.14 ARCHITECT'S ACTION

- A.** Except for submittals for the record or information, where action and return is required, the Architect will review each submittal, mark to indicate action taken, and return promptly.
 1. Compliance with specified characteristics is the Contractor's responsibility.
- B. Action Stamp:** The Architect will stamp each submittal with a uniform, action stamp. The Architect will mark the stamp appropriately to indicate the action taken, as follows:

1. **Final Unrestricted Release:** When the Architect marks a submittal "Approved for fabrication," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
 2. **Final-But-Restricted Release:** When the Architect marks a submittal "Incorporate Notations," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Submit corrected copies for record. Final payment depends on that compliance.
 3. **Returned for Resubmittal:** When the Architect marks a submittal "Rejected, or Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
 - a. Do not use, or allow others to use, submittals marked "Rejected, or Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.
 4. **Other Action:** Where a submittal is for information or record purposes or special processing or other activity, the Architect will return the submittal marked "Action Not Required."
- C. **Unsolicited Submittals:** The Architect will discard unsolicited submittals without action.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 33 00

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 00 General Conditions of the Contract for Construction for Design-Bid-Build and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for performing alteration and renovation Work.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 00 Section 00 30 00 "General Statements for Available Information" for information that is available in addition to the Bidding Documents for review by bidders. Such information may include an existing conditions survey, contaminated soil reports, contaminated groundwater reports, hazardous building material reports, geotechnical data, etc.
 - 2. Division 01 Section 01 31 00 "Project Management and Coordination" for procedures for coordinating cutting and patching with other construction activities.
 - 3. Division 01 Section 01 73 29 "Cutting and Patching" for procedures for cutting and patching.
 - 4. Division 01 Section 01 74 19 "Construction Waste Management & Disposal" for the requirements for waste management goals, waste management plan and waste management plan implementation.
 - 5. Division 02 Section 02 41 19 "Selective Demolition" for demolition of selected portions of the building for alterations.
 - 6. Division 50 00 00 "Project-Specific Available Information" for information that is referenced in Section 00 30 00 "General Statements for Available Information".
 - 7. Refer to other Sections for specific requirements and limitations applicable to performing alteration Work with individual parts of the Work.
 - 8. Requirements of this Section apply to mechanical and electrical installations. Refer to Division 22 and 26 Sections for other requirements and limitations applicable to renovation Work by plumbing and electrical installations.
- C. **Definitions:**
 - 1. Clean Fill: Either (1) natural soil or (2) rock, brick, ceramics, concrete, and asphalt paving fragments which are virtually inert and pose neither a pollution threat to ground or surface waters nor a fire hazard.
 - 2. Contaminated Soil: Treated or untreated soil and/or sediment affected by a known or suspected release and determined, or reasonably expected to contain substances exceeding Residential Direct Exposure Criteria or GA Pollutant Mobility Criteria, as these terms are defined in the Remediation Standard Regulations (RCSA Section 22a-133k-1).
 - 3. Hazardous Soil: Soil that is classified as a hazardous waste. Soil is classified as hazardous waste if it exhibits a hazardous waste characteristic or if it contains RCRA-listed hazardous constituents above Connecticut's RCRA "Contained-In" Policy dated May 2002.
 - 4. Natural Soil: Soil in which all substances naturally occurring therein are present in concentrations not exceeding the concentrations of such substance occurring naturally in the environment and in which soil no other substance is analytically detectable.
 - 5. Polluted Soil: Soil affected by a release of a substance at a concentration above the analytical detection limit for such substance in accordance with RCSA 22a-133k-1(a)(45) or for naturally occurring substance at a concentration that exceeds concentrations that naturally occur in the environment.
 - 6. Regulated Soil: Includes Polluted Soil, Contaminated Soil, and Hazardous Soil.

7. Groundwater Remediation Wastewater: Wastewater generated in connection with investigating pollution or remediating polluted groundwater or soil. Groundwater remediation wastewater includes without limitation groundwater withdrawn from a groundwater recovery well; groundwater which collects in an excavation or foundation drain or other subsurface facility or structure; groundwater contaminated runoff and stormwater impacted by on-site pollutants from any construction activity; condensate resulting from construction or maintenance of a soil vapor extraction system; and wastewater generated by developing, testing, sampling, or purging a well.

PART 2 - PRODUCTS

2.1 PRODUCTS FOR PATCHING AND EXTENDING WORK

- A. New materials: As specified in product sections; match existing Products and Work for patching and extending Work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing Products where necessary, referring to existing Work as a standard.

2.2 SALVAGEABLE MATERIALS

- A. The [Contractor] [Owner] shall be responsible for removing the following salvageable items from premises and transporting said items to [Insert] on [Insert], CT [Insert].
 1. Equipment:
 2. Windows:
 3. Doors:
 4. Door Hardware:
 5. Fixtures:
 6. Art:
- B. The [Contractor] [Owner] shall notify the Construction Administrator in writing **seven (7)** days prior to removing all salvageable items from the existing alteration project location and unloading all salvageable items at [Insert], [Insert], Connecticut [Insert] and store items in the appropriate location as directed by [Insert] personnel.

PART 3 - EXECUTION

3.1 INSPECTION

- A. **General:**
 1. Observe all existing conditions prior to submitting a bid. Include in the bid, existing conditions and their impact, particularly to cost and health and safety of workers and occupants, and proper function and operation of the facility. Be aware of other work being performed. Failure to visit the site shall in no way provide relief from the necessity of furnishing materials or performing any work that may be required to complete the work in accordance with the Contract Documents without additional cost to the Owner. All site visits shall be scheduled with the Owner.
 2. The quantities, locations and the extent of work indicated are best estimates, which are limited by the physical constraints imposed by occupancy of the facility. Consider all aspects of the substrates within the identified plan area. Material information and quantities were obtained from site surveys. Accordingly, variations (plus or minus 10 percent) in quantities within the limits of the work area are considered as having no impact on contract sum and contract performance period. Where additional abatement work is required beyond the above variations, the contract sum and contract performance period shall be adjusted under provisions of Division 01 of the Specifications.
 3. Verify that demolition is complete and areas are ready for installation of new Work.
 4. Beginning of restoration Work means acceptance of existing conditions.
- B. **Project Procedures for Work Involving Asbestos Containing Material (ACM):**

1. The **Contractor** is responsible for abating all **Asbestos Containing Material (ACM)** that is visible and accessible.
 2. In **demolition projects, every attempt** should be made by the **Contractor** to **remove all ACM**.
 3. If testing for asbestos has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair, then the results of the asbestos testing are summarized in **Division 50 00 00 Project-Specific Available Information, Section 50 30 00 Hazardous Building Materials Inspection and Inventory** at the end of the Technical Specification Sections. Under no circumstance shall this information be the sole means used by the Contractor for determining the extent of asbestos. The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.
 4. If the Contractor should encounter any material suspected or known to contain asbestos **not previously identified and assigned as the Contractor's responsibility**, then the Contractor should immediately notify the Construction Administrator **in writing** of same. It is the Owner's responsibility to have the material tested and abated (if necessary). The Owner will respond within **twenty four (24) hours** after receiving the Contractor's written request to the Construction Administrator for testing the suspect material. **If necessary, the Contractor will abate ACM within a reasonable time period after the Owner's issuance of a Change Order for the additional abatement work.**
 - 4.1 When the **Owner** requests the **Contractor** undertake the responsibilities for the **abatement and disposal of the ACM**, then the compensation to the Contractor by Owner for the Work shall be determined by the "**Unit Prices**" stated in **Section 01 20 00 Contract Considerations**.
 5. No attempt has been made to locate hazardous material associated with existing site utilities, though it is presumed that at least some asbestos may be discovered associated with underground piping during the course of site and site utilities work. If and when such materials appear, the Contractor shall notify the Owner, who shall direct additional work outside of this Agreement to assist in cutting up and disposing of same. The Contractor shall assist the hazardous materials contractor(s) with excavating, heavy lifting, and the like at no additional cost to the Owner.
- C. Project Procedures for Work Involving Lead-Based Paint (LBP):**
1. The **Contractor** is responsible for abating all **Lead-Based Paint (LBP)** prior to the start of any Work involving renovation, demolition, reconstruction, alteration, remodeling, or repair (if necessary), unless noted differently below or specified differently elsewhere.
 2. The **Contractor** shall conduct all demolition and removal Work, specified in the Technical Specifications Sections of this Project Manual, in conformance with the regulations as specified in this **Section 01 35 16 Alteration Project Procedures** and as specified in **Section 02 83 19 Lead Paint Awareness**.
 3. If testing for LBP has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair, then the results of the LBP testing are summarized in **Division 50 00 00 Project-Specific Available Information, Section 50 30 00 Hazardous Building Materials Inspection and Inventory** at the end of the Technical Specification Sections. Under no circumstance shall this information be the sole means used by the Contractor for determining the extent of LBP. The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.
 4. If the Contractor should encounter any material suspected or known to contain **LBP that was not previously identified and assigned as the Contractor's responsibility**, then the Contractor should immediately notify the Construction Administrator **in writing** of same. It is the State's responsibility to have the material tested and abated (if necessary). The Owner will respond within **four (4) Calendar Days** after receiving the Contractor's written request to the Construction Administrator for testing the suspect material. **If necessary, the Contractor will abate LBP within a reasonable time period after the Owner's issuance of a Change Order for the additional abatement work.**
 - 4.1 When the **Owner** requests the **Contractor** undertake the responsibilities for the **abatement and disposal of the LBP**, then the compensation to the Contractor by Owner for the Work shall be determined by the "**Unit Prices**" stated in **Section 01 20 00 Contract Considerations**.
 5. Exposure levels for lead in the construction industry are regulated by 29 CFR 1926.62. Construction activities disturbing surfaces containing lead-based paint (LBP) which are likely to be employed, such as sanding, grinding, welding, cutting and burning, have been known to expose workers to levels of lead in excess of the Permissible Exposure Limit (PEL). Conduct demolition and removal Work specified in the technical sections of this specification in conformance with these regulations. In addition, construction

debris/waste may be classified as hazardous waste. Disposal of hazardous waste material shall be in accordance with 40 CFR Parts 260 through 271 and Connecticut Hazardous Waste Management Regulations Section 22a-209-1; 22a-209-8(c); 22a-449(c)-11; and 22a-449(c)-100 through 110.

6. The Contractor's Work shall be based on a child under the age of six (6) years in residence; the Work shall also be in accordance with Connecticut Regulations Section 19a-111-1 through 11.
7. If this facility was constructed **prior to 1978** it is likely to have painted surfaces containing lead-based paint.
8. In accordance with the United States Environmental Protection Agency's (EPA) Lead-Based Paint Renovation, Repair, and Painting Program (RRP) issued by the EPA on April 22, 2008, as amended, and regulated by 40 CFR 745, contractors performing renovation, repair and painting projects that disturb lead-based paint in homes, child care facilities, and schools built before 1978 must be certified and must follow specific work practices to prevent lead contamination. EPA requires that firms performing renovation, repair, and painting projects that disturb lead-based paint in pre-1978 homes, child care facilities and schools be certified by EPA and that they use certified renovators who are trained by EPA-approved training providers to follow lead-safe work practices. The Contractor must be a Renovation Firm that has completed an EPA Lead-Safe Certification Program and be certified to conduct lead-based paint activities and renovations under the RRP rule. The Contractor shall have at least one "Certified Renovator" assigned to jobs where LBP is disturbed.

D. Project Procedures for Work Involving Polychlorinated Biphenyls (PCBs) in Building Materials:

1. If this facility was constructed **between 1950 and 1978**, it is likely to have caulk and/or glazing containing PCBs.
2. The **Contractor** is responsible for abating all **Polychlorinated Biphenyls (PCBs) in Building Materials** prior to the start of any Work involving construction, renovation or demolition (if necessary), unless noted differently below or specified differently elsewhere.
3. The **Contractor** shall conduct all demolition and removal Work, specified in the Technical Specifications Sections of this Project Manual, in conformance with the regulations as specified in **Section 01 35 16 Alteration Project Procedures** and as specified in **Section 02 84 16 Handling of PCBs / DEHP and Mercury**.
4. If the Owner has tested the facility scheduled for renovation, demolition, reconstruction alteration, remodeling or repair for PCBs in Building Materials such as caulk and glazing or other types of material, then the results are located in **Division 50 00 00 Project-Specific Available Information, Section 50 30 00 Hazardous Building Materials Inspection and Inventory** at the end of the Technical Specification Sections; otherwise the Owner assumes such materials do not warrant testing. It is the Owner's responsibility to have the material tested, not the Contractor, subcontractors or anyone working on behalf of the Contractor.
5. In the case where the Owner has a survey of locations with results and if the Contractor should encounter new areas of the subject material already identified by the survey, then he should immediately notify the Construction Administrator **in writing** of same. It is the State's responsibility to have the material tested and abated (if necessary). The Owner will respond within **four (4) Calendar Days** after receiving the Contractor's written request to the Construction Administrator for testing the suspect material. **If necessary, the Contractor will abate PCBs in Building Materials within a reasonable time period after the Owner's issuance of a Change Order for the additional abatement work.**
 - 5.1 When the **Owner** requests the **Contractor** undertake the responsibilities **for the abatement and disposal of the PCBs in Building Materials**, then the compensation to the Contractor by Owner for the Work shall be determined by the "**Unit Prices**" stated in **Section 01 20 00 Contract Considerations**.
6. The work shall be performed by persons who are knowledgeable, qualified, and trained in the removal, treatment, handling, and disposal of PCB contaminated wastes and the subsequent cleaning of the affected environment. These Specifications govern all work activities that disturb PCB-containing caulk and glazing and associated building material. All activities shall be performed in accordance with, but not limited to, OSHA Regulation 29 CFR 1926, the United States Environmental Protection Agency's PCB Regulation 40 CFR Part 761, Connecticut General Statutes 22a-463 through -469 inclusive, and the **PCB Site Remedial Plan** where applicable.

- I. See also **General Conditions Article 23 "Cutting, Fitting, Patching and Digging"**.

3.2 PREPARATION

- A. Cut, move, or remove items as are necessary for access to alteration and renovation Work. Replace and restore at completion.
- B. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- C. Remove debris and abandoned items from area and from concealed spaces.
- D. Prepare surface and remove surface finishes to provide for proper installation of new Work and finishes.
- E. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent condensation in exposed areas.

3.3 INSTALLATION

- A. Coordinate alteration and renovation Work to expedite completion, and if required sequence Work to accommodate Owner occupancy.
- B. Remove, cut and patch Work in a manner to minimize damage and to provide restoring products and finishes to original and or specified condition in accordance with **Section 01 73 29 "Cutting and Patching"**.
- C. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with neat transition to adjacent finishes in accordance with **Section 01 73 29 "Cutting and Patching"**.
- D. In addition to specified replacement of **equipment and fixtures, restore existing plumbing, heating, ventilation, air conditioning, and electrical systems** to full operational condition.
- E. Recover and refinish Work that exposes mechanical and electrical Work exposed accidentally during the Work.
- F. Install products as specified in individual specification sections.

3.4 TRANSITIONS

- A. Where new Work abuts or aligns with existing, perform a smooth and even transition. Patch work to match existing adjacent Work in texture and appearance.
- B. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect/Engineer.

3.5 ADJUSTMENTS

- A. Where removal of partitions or walls result in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
- B. Where a change of plane of **1/4-inch in (12) inches** or more occurs, request recommendation from Architect/Engineer for providing a smooth transition.
- C. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.
- D. Fit Work at penetrations of surfaces as specified in **Section 01 73 29 "Cutting and Patching"**.

3.6 REPAIR OF DAMAGED SURFACES

- A. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing imperfections.
- B. Repair substrate prior to patching finishes.

3.7 FINISHES

- A. Finish surfaces as specified in individual product specification sections.
- B. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

3.8 CLEANING

- A. In addition to cleaning specified in **Section 01 50 00 "Temporary Facilities and Controls"**, clean Agency occupied areas of Work.

END OF SECTION 01 35 16

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A.** Construction Documents and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section

1.2 SUMMARY

- A.** This guide specification covers construction safety requirements and requirements for the protection of people, property, and resources. It is intended for use in construction, renovation, and demolition projects for the State of Connecticut Department of Administrative Services (DAS) / Construction Services (CS).

- B. Related Sections:** The following Sections contain requirements that relate to this Section:

1. Division 01 Section 01 33 00 Submittal Procedures specifies the requirements for submittal requirements;
2. Division 01 Section 01 31 19 "Project Meetings" specifies requirements for submittal and distribution of meeting and conference minutes.

1.2 REFERENCES

- A.** The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

| | |
|--|--|
| AMERICAN SOCIETY OF SAFETY ENGINEERS (ASSE/SAFE) www.asse.org/publications/ | |
| ASSE/SAFE A10.32 | (2004) Fall Protection |
| ASSE/SAFE A10.34 | (2001; R 2005) Protection of the Public on or Adjacent to Construction Sites |
| ASSE/SAFE Z359.1 | (2007) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components |
| AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) www.asme.org/Codes/ | |
| ASME B30.22 | (2005) Articulating Boom Cranes |
| ASME B30.3 | (2004) Construction Tower Cranes |
| ASME B30.5 | (2004) Mobile and Locomotive Cranes |
| ASME B30.8 | (2004) Floating Cranes and Floating Derricks |
| NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) www.nfpa.org/ | |
| NFPA 10 | (2007) Portable Fire Extinguishers |
| NFPA 51B | (2009) Standard for Fire Prevention During Welding, Cutting, and Other Hot Work |
| NFPA 241 | (2004) Safeguarding Construction, Alteration, and Demolition Operations |
| NFPA 70 | (2008) National Electrical Code |
| NFPA 70E | Standard for Electrical Safety in the Workplace |
| CODE OF FEDERAL REGULATIONS (CFR) www.archives.gov/federal-register/cfr/ | |
| 10 CFR | Standards for Protection Against Radiation |
| 29 CFR 1910 | Occupational Safety and Health Standards |
| 29 CFR 1910.28 | Safety Requirements For Scaffolding. |
| 29 CFR 1910.146 | Permit-required Confined Spaces |
| 29 CFR 1910.147 | Control Of Hazardous Energy (Lockout/Tagout) |
| 29 CFR 1910.178 | Powered industrial trucks. |
| 29 CFR 1915 | Confined and Enclosed Spaces and Other |
| 29 CFR 1926 | Safety and Health Regulations for Construction |
| 29 CFR 1926.500 | Fall Protection |
| 29 CFR 1926.550 | Cranes and Derricks |

| | |
|---|--|
| US Army Core of Engineers (USACE) | |
| www.iwr.usace.army.mil | |
| EM 385-1-1 | Safety, and Health Requirements Manual (2008), |

1.3 SUBMITTALS

- A. An "O" followed by "A" indicates that the Owner acceptance; submittals not having an "O" designation are for Contractor Quality Control approval.
- B. **Submittal Procedures:**
 - 1. **Preconstruction Submittals:**
 - a. Accident Prevention Plan (APP); "O, A";
 - b. Activity Hazard Analysis (AHA); "O, A";
 - c. Crane Critical Lift Plan; "O, A";
 - d. Proof of qualification for Crane Operators; O, A.
 - 2. **Test Reports:** Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."
 - a. Accident Reports;
 - b. Monthly Exposure Reports;
 - c. Crane Reports;
 - d. Regulatory Citations and Violations;
 - e. Gas Protection.
 - 3. **Certificates:**
 - a. Confined Space Entry Permit;
 - b. Hot work permit;
 - c. License Certificates.
 - d. Certificate of Compliance – Crane

1.4 DEFINITIONS

- A. **Competent Person.** A competent person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- B. **Competent Person for Fall Protection.** A person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as their application and use with related equipment, and has the authority to take prompt corrective measures to eliminate the hazards of falling.
- C. **Confined Space:** A space which by design has limited openings for entry and exit, unfavorable natural ventilation which could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy. Confined spaces include, but are not limited to storage tanks, process vessels, pits, silos, vats, degreasers, reaction vessels, boilers, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, and pipelines.
- D. **High Visibility Accident:** Any mishap which may generate publicity and/or high visibility.
- E. **Medical Treatment;** Medical treatment includes treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.
- F. **Operating Envelope:** The area surrounding any crane. Inside this "envelope" is the crane, the operator, riggers and crane walkers, rigging gear between the hook and the load, the load and the crane's supporting structure (ground, rail, etc.).
- G. **Qualified Person for Fall Protection:** A person with a recognized degree or professional certificate and with extensive knowledge, training and experience in the field of fall protection; who is capable of performing design, analysis, and evaluation of fall protection systems and equipment.
- H. **Recordable Injuries or Illnesses:** Any work-related injury or illness that results in:
 - 1. Death, regardless of the time between the injury and death, or the length of the illness;

2. Days away from work (any time lost after day of injury/illness onset);
3. Restricted work;
4. Transfer to another job;
5. Medical treatment beyond first aid;
6. Loss of consciousness; or
7. A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (6) above.

I. **Weight Handling Equipment (WHE) Accident:** A WHE accident occurs when any one or more of the six elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; and/or collision, including unplanned contact between the load, crane, and/or other objects. A dropped load, derailment, two-blocking, overload and collision are considered an accident even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, roll over, etc.)]

1.5 REGULATORY REQUIREMENTS

A. In addition to the detailed requirements included in the provisions of this Section see, **Division 01, Section 01 42 20 "Reference Standards and Definitions"** for other state laws, criteria, rules and regulations. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, regulations, and referenced documents vary, the most stringent requirements govern.

1.6 SITE QUALIFICATIONS, DUTIES, AND MEETINGS

A. Personnel Qualifications:

B. Site Safety and Health Officer (SSHO):

1. Provide a Site Safety and Health Officer (SSHO) at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The Contractor Quality Control (QC) person **can be the SSHO on this project**. Meet the following requirements within the SSHO:

Level 2: A minimum of **three (3) years** safety work on similar project. 30-hour OSHA construction safety class or equivalent within last **3** years. Competent person training as needed.]

C. Personnel Duties:

1. Site Safety and Health Officer (SSHO):

- a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Attach safety inspection logs to the Contractors' daily **production** report.
- b. Conduct mishap investigations and complete required reports. Maintain the **OSHA Form 300 and Daily Production** reports for prime and sub-contractors. For more information visit the OSHA website at www.osha.gov > Employers > Recordkeeping Requirements and Forms.
- c. Maintain applicable safety reference material on the job site.
- d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.
- e. Implement and enforce accepted APPS and AHAs.
- f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. Post a list of unresolved safety and health deficiencies on the safety bulletin board.
- g. Ensure sub-contractor compliance with safety and health requirements.

Failure to perform the above duties will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

D. Meetings:

1. Preconstruction Conference:

- a. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the **Accident Prevention Plan (APP)**; (including the **Activity Hazard Analyses (AHAs)**, and special plans, program and procedures associated with it).
- b. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Owner's Representative(s) as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, review, and acceptance of AHAs to preclude project delays.
- c. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Do not begin work until there is an accepted APP.

2. Safety Meetings:

- Safety meetings shall be conducted to review past activities, plan for new or changed operations, review pertinent aspects of appropriate AHA (by trade), establish safe working procedures for anticipated hazards, and provide pertinent safety and health training and motivation.
- a. Meetings shall be conducted at least once a month for all supervisors on the project location and at least once a week for all workers by supervisors or foremen.
 - b. Meetings shall be documented, including the date, persons in attendance, subjects discussed, and names of individual(s) who conducted the meeting. Documentation shall be maintained and copies furnished to the Construction Administrator (CA) on request.
 - c. The Construction Administrator (CA) shall be informed of all scheduled meetings in advance and be invited to attend.

1.7 ACCIDENT PREVENTION PLAN (APP):

- A. Use a qualified person to prepare the written site-specific APP.
 1. Prepare the APP in accordance with the format and requirements of US Army Core of Engineers (USACE), Safety, and Health Requirements Manual, EM 385-1-1, or as approved by the CA and as supplemented herein. Cover all paragraphs and subparagraph elements in **USACE EM 385-1-1, Appendix A, "Minimum Basic Outline for Accident Prevention Plan"** or as approved by the CA. The USACE Safety, and Health Requirements Manual, EM 385-1-1 is available at the USACE Website www.iwr.usace.army.mil.
 2. Specific requirements for some of the APP elements are described in "B" below. The APP shall be job-specific and address any unusual or unique aspects of the project or activity for which it is written.
- B. The APP shall interface with the Contractor's overall safety and health program. Include any portions of the Contractor's overall safety and health program referenced in the APP in the applicable APP element and made site-specific. The Owner considers the Prime General Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, the designated site safety and health officer and any designated Certified Safety Professional (CSP) and/or Certified Industrial Hygienist (CIH).
- C. Submit the APP to the DAS/CS Project Manager and Construction Administrator **Fourteen (14) Calendar Days** prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP. Once accepted by the DAS/CS Project Manager and Construction Administrator, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the DAS/CS Project Manager and Construction Administrator, until the matter has been rectified. Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the DAS/CS Project Manager and Construction Administrator, project superintendent, Site Safety and Health Officer (SSHO) and quality

control manager. Should any hazard become evident, stop work in the area, secure the area, and develop a plan to remove the hazard. Notify the DAS/CS Project Manager and Construction Administrator within **Twenty (24)** hours of discovery. Eliminate/remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by **American Society of Safety Engineers, ASSE/SAFE A10.34 - Protection of the Public on or Adjacent to Construction Sites**, see www.asse.org) and the environment.

Copies of the accepted plan will be maintained at the Construction Administrator's office at the job site. Continuously reviewed and amended the APP, as necessary, throughout the life of the contract. Incorporate unusual or high-hazard activities not identified in the original APP as they are discovered.

D. APP Contents:

The contents of the Accident Prevention Plan (APP) shall be in accordance with **Appendix A** of the US Army Corps of Engineers, **EM 385-1-1 Safety and Health Requirements Manual**, Appendix A, Minimum Basic Outline for Accident Prevention Plans or as approved by the CA. For more information visit the USACE Website at www.usace.army.mil/Library.

1.8 ACTIVITY HAZARD ANALYSIS (AHA): Activity Hazard Analyses (AHAs) define the activities being performed and identify the sequences of work, the specific hazards anticipated, site conditions, equipment, materials, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level of risk. The Activity Hazard Analysis (AHA) format shall be in accordance with US Army Corps of Engineers, **EM 385-1-1 Safety and Health Requirements Manual** or as approved by the CA.

A. Submittals:

1. Submit initial AHA to CA for review at least **15 Calendar Days** prior to the start of each phase. Format subsequent AHAs as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.
2. The AHA list will be reviewed monthly at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change. Develop the activity hazard analyses using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier or subcontractor and provided to the prime contractor for submittal to the CA.

1.9 DISPLAY OF SAFETY INFORMATION

Within **1 Calendar Day** after commencement of work, erect a safety bulletin board at the job site. Include and maintain information on safety bulletin board as required by US Army Corps of Engineers, **EM 385-1-1 Safety and Health Requirements Manual**, Section 01.A.06 or as approved by the CA. Additional items required to be posted include:

A. Confined space entry permit.

B. Hot work permit.

1.10 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturer's manuals.

1.11 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. The Owner has no responsibility to provide emergency medical treatment.

1.12 REPORTS

A. Accident Reports

1. Conduct an accident investigation for recordable injuries and illnesses, and property damage accidents resulting in at least **Two Thousand Dollars (\$2,000)** in damages, to establish the root cause(s) of the accident, complete "Accident Report Form" approved by the CA. Provide the report to the CA within **5 Calendar Days** of the accident.

B. Accident Notification

Notify the CA as soon as practical, but not later than **four hours**, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than \$2,000, or any weight handling equipment accident.

1. Within notification include the following:
 - a. contractor name;
 - b. contract title;
 - c. type of contract;
 - d. name of activity,
 - e. installation or location where accident occurred;
 - f. date and time of accident;
 - g. names of personnel injured;
 - h. extent of property damage, if any; extent of injury, if known, and brief description of accident to **include type of construction equipment used, Personal Protective Equipment (PPE) used, etc.** Preserve the conditions and evidence on the accident site until the U.S. Department of Labor, Occupational Safety and Health Administration (USDOL-OSHA) investigation team arrives on-site and USDOL-OSHA investigation is conducted.

C. Monthly Exposure Reports

Monthly exposure reporting to the CA is required to be attached to the monthly Application for Payment request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. Provide on a form approved by the CA.

D. HOT WORK

Hot Work shall only be performed in accordance with the requirements of **NFPA 51B "Fire Prevention During Welding, Cutting and Other Hot Work Standard.**

1. Definitions:

- a. **Hot Work:** Work involving burning, welding, or a similar operation that is capable of initiating fires or explosions. Examples listed by NFPA include arc welding, oxygen- fuel gas welding, open-flame soldering, brazing, thermal spraying, oxygen cutting, and arc cutting.
 - b. **Permit Authorizing Individual (PAI).** Means the individual designated by the General Contractor to authorize hot work. The PAI is permitted to be, among others, the General Contractor's project executive, supervisor, foreperson, or designated safety administrator. The PAI CANNOT be the hot work operator, except as permitted in **NFPA 51B**. The PAI is aware of the fire hazards involved and is familiar with the provisions of this standard.
2. **Permit:** Submit and obtain a written permit from the PAI prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, from the PAI. **CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED.** The General Contractor will provide at least **two (2)** twenty (20) pound 4A:20 BC rated extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal.
 3. **Fire Watch:** It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in accordance with **NFPA 51B Standard for Fire Prevention During Welding, Cutting, and Other Hot Work** and remain on-site for a minimum of 30 minutes after completion of the task or as specified on the hot work permit. When starting work in the facility, require personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the local fire department emergency phone number(s). **ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE LOCAL FIRE DEPARTMENT, GENERAL CONTRACTOR'S AUTHORIZED REPRESENTATIVE, AND OWNER'S CA IMMEDIATELY.**

1.13 FACILITY OCCUPANCY CLOSURE

Streets, walks, and other facilities occupied and used by the state User Agency shall not be closed or obstructed without written permission from the CA.

1.18 SEVERE STORM PLAN

In the event of a severe storm warning, the Contractor must:

- A. Secure outside equipment and materials and place materials that could be damaged in protected areas.

- B. Check surrounding area, including roof, for loose material, equipment, debris, and other objects that could be blown away or against existing facilities.
- C. Ensure that temporary erosion controls are adequate.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

3.1 CONSTRUCTION AND/OR OTHER WORK

Comply with the Connecticut State Building and Fire Safety Codes, OSHA regulations, and other references regulations. The most stringent standard prevails.

3.1.2 HAZARDOUS MATERIAL EXCLUSIONS

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with **USACE EM 385-1-1** such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint are prohibited. The CA, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

3.1.3 UNFORESEEN HAZARDOUS MATERIAL

- A. Related Section: Division 01, Section 01 35 16, Alteration Project Procedures.

3.2 PRE-OUTAGE COORDINATION MEETING

Contractors are required to apply for utility outages at least **15 Calendar Days** in advance. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, attend a pre-outage coordination meeting with the CA, User Agency Representative, and Public Utilities representative to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.

3.3 SAFETY LOCKOUT/TAGOUT PROCEDURES

- A. The General Contractor shall ensure that each employee is familiar with and complies with these procedures and **OSHA 29 CFR 1910.147 Control Of Hazardous Energy (Lockout/Tagout)**.
 1. The General Contractor's "Authorized Employee" shall apply lockout/tagout tags and take other actions that, because of experience and knowledge, are known to be necessary to make the particular equipment safe to work on.
 2. No person, regardless of position or authority, shall operate any switch, valve, or equipment that has an official lockout/tagout tag attached to it, nor shall such tag be removed except as provided in this section.
 3. No person shall work on any equipment that requires a lockout/tagout tag unless he, his immediate supervisor, project leader, or a subordinate has in his possession the stubs of the required lockout/tagout tags. Only qualified personnel shall perform work on electrical circuits.
 4. A supervisor who is required to enter an area protected by a lockout/tagout tag will be considered a member of the protected group provided he notifies the holder of the tag stub each time he enters and departs from the protected area.
 5. Identification markings on building light and power distribution circuits shall not be relied on for established safe work conditions.
 6. Before clearance will be given on any equipment other than electrical (generally referred to as mechanical apparatus), the apparatus, valves, or systems shall be secured in a passive condition with the appropriate vents, pins, and locks. Pressurized or vacuum systems shall be vented to relieve differential pressure completely. Vent valves shall be tagged open during the course of the work. Where dangerous gas or fluid systems are involved, or in areas where the environment may be oxygen deficient, system or areas shall be purged, ventilated, or otherwise made safe prior to entry.

B. Tag Placement

Lockout/tagout tags shall be completed in accordance with the regulations printed on the back thereof and attached to any device which, if operated, could cause an unsafe condition to exist. If more than one group is to work on any circuit or equipment, the employee in charge of each group shall have a separate set of lockout/tagout tags completed and properly attached. When it is required that certain equipment be tagged, the State of Connecticut Authority Having Jurisdiction will review the characteristics of the various systems involved that affect the safety of the operations and the work to be done; take the necessary actions, including voltage and pressure checks, grounding, and venting, to make the system and equipment safe to work on; and apply such lockout/tagout tags to those switches, valves, vents, or other mechanical devices needed to preserve the safety provided. This operation is referred to as "Providing Safety Clearance."

C. Tag Removal

When any individual or group has completed its part of the work and is clear of the circuits or equipment, the supervisor, project leader, or individual for whom the equipment was tagged shall turn in his signed lockout/tagout tag stub to the Contractor. That group's or individual's lockout/tagout tags on equipment may then be removed on authorization by the Contractor.

3.4 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

Establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. Within the program include company policy, identify responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

A. Training

Institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, provide training for each employee who might be exposed to fall hazards. Provide training by a competent person for fall protection in accordance with **USACE EM 385-1-1**, Section 21.A.16.

B. Fall Protection Equipment and Systems

Enforce use of the fall protection equipment and systems designated for each specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is exposed to a fall hazard. Protect employees from fall hazards as specified in **USACE EM 385-1-1, section 21**. In addition to the required fall protection systems, safety skiff, personal floatation devices, life rings etc., are required when working above or next to water in accordance with **USACE EM 385-1-1, paragraphs 05.H. and 05.I**. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall arrest systems are required when operating other equipment such as scissor lifts if the work platform is capable of being positioned outside the wheelbase. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, or travel. Fall protection must comply with **OSHA 29 CFR 1926.500, Fall Protection, Subpart M, and ASSE/SAFE A10.32, Fall Protection**.

1. Personal Fall Arrest Equipment

Personal fall arrest equipment, systems, subsystems, and components shall meet **ASSE/SAFE Z359.1, Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components**. Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. Body belts may only be used as a positioning device system (for uses such as steel reinforcing assembly and in addition to an approved fall arrest system). Harnesses shall have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabiners shall be used. Webbing, straps, and ropes shall be made of synthetic fiber. The maximum free fall distance when using fall arrest equipment shall not exceed 1.8 m 6 feet. The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall shall always be taken

2. Fall Protection for Roofing Work

Implement fall protection controls based on the type of roof being constructed and work being performed. Evaluate the roof area to be accessed for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

(i) For work within 6 feet (6 feet (1.8 m) of an edge, on low-slope roofs, Protect personnel from falling by use of personal fall arrest systems, guardrails, or safety nets.

- (ii) For work greater than (6 feet (1.8 m) from an edge, erect and install warning lines in accordance with **OSHA 29 CFR 1926.500, Fall Protection**.
- b. Steep-Sloped Roofs: Work on steep-sloped roofs requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction.

3. Existing Anchorage

Certified (or re-certified) by a qualified person for fall protection existing anchorages, to be used for attachment of personal fall arrest equipment in accordance with **ASSE/SAFE Z359.1, Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components**. Existing horizontal lifeline anchorages must be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

4. Horizontal Lifelines

Design, install, certify and use under the supervision of a qualified person horizontal lifelines for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 (**OSHA 29 CFR 1926.500 Fall Protection**).

5. Guardrails and Safety Nets

Design, install and use guardrails and safety nets in accordance with **29 CFR 1926, Safety and Health Regulations for Construction Subpart M**.

6. Rescue and Evacuation Procedures

When personal fall arrest systems are used, the contractor must ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. Prepare a Rescue and Evacuation Plan and include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. Include the Rescue and Evacuation Plan within the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP).

3.5 SCAFFOLDING

- A. The Contractor shall provide all employees with a safe means of access to the work area on the scaffold in accordance with **OSHA 29 CFR 1910.28 Safety Requirements For Scaffolding** and as contained in this section.
 - 1. Climbing of any scaffold braces or supports not specifically designed for access is prohibited.
 - 2. Access scaffold platforms greater than 20 feet (6 m) maximum in height by use of a scaffold stair system.
 - 3. Do not use vertical ladders commonly provided by scaffold system manufacturers for accessing scaffold platforms greater than 20 feet (6 m) maximum in height.
 - 4. The use of an adequate gate is required.
 - 5. Ensure that employees are qualified to perform scaffold erection and dismantling.
 - 6. Do not use scaffold without the capability of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan.
 - 7. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward.
 - 8. Give special care to ensure scaffold systems are not overloaded. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material are prohibited.
 - 9. The first tie-in shall be at the height equal to 4 times the width of the smallest dimension of the scaffold base. Place work platforms on mud sills. Scaffold or work platform erectors shall have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six

feet. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

B. Stilts

The use of stilts for gaining additional height in construction, renovation, repair or maintenance work is **PROHIBITED**.

3.6 EQUIPMENT

A. Material Handling Equipment

Material Handling Equipment shall be in accordance with **OSHA 29 CFR 1910.178 Powered Industrial Trucks** and as contained in this section.

1. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.
2. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.
3. Operators of forklifts or power industrial trucks shall be licensed in accordance with OSHA.

B. Weight Handling Equipment

1. Equip cranes and derricks as specified in **ASME B30.5** or **ASME B30.22** or **ASME B30.8** as applicable.
2. Comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Perform erection under the supervision of a designated person (as defined in **ASME B30.5**). Perform all testing in accordance with the manufacturer's recommended procedures.
3. Comply with **ASME B30.5** for mobile and locomotive cranes, **ASME B30.22** for articulating boom cranes, **ASME B30.3** for construction tower cranes, and **ASME B30.8** for floating cranes and floating derricks.
4. Under no circumstance shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.
5. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and follow the requirements of **ASME B30.5** or **ASME B30.22** as applicable.
6. Do not crane suspended personnel work platforms (baskets) unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Do not lift personnel with a line hoist or friction crane.
7. Inspect, maintain, and recharge portable fire extinguishers as specified in **NFPA 10, Standard for Portable Fire Extinguishers**.
8. All employees must keep clear of loads about to be lifted and of suspended loads.
9. Use cribbing when performing lifts on outriggers.
10. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
11. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.
12. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by CA.

13. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by CA.
14. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

C. USE OF EXPLOSIVES

Explosives shall not be used or brought to the project site without prior written approval from the CA. Such approval shall not relieve the Contractor of responsibility for injury to persons or for damage to property due to blasting operations. Storage of explosives, when permitted on State property, shall be only where directed and in approved storage facilities. These facilities shall be kept locked at all times except for inspection, delivery, and withdrawal of explosives. Explosive work shall be performed in accordance with the requirements of C.G.S. § 29-343 through 29-355 and as required by the Office of State Fire Marshal, CT Department of Construction Services.

3.7 EXCAVATIONS

A. Perform soil classification by a competent person in accordance with 29 CFR 1926 Safety and Health Regulations for Construction.

1. Utility Locations

All underground utilities in the work area must be positively identified by and coordinated in accordance with **Division 00, General Conditions, Article 18 Surveys, Permits, And Regulations**. All underground utilities in the work area must be positively identified by a private utility locating service and coordinated with the public utility company. Any markings made during the utility investigation must be maintained by the General Contractor throughout the contract.

2. Utility Location Verification

The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system. Digging within **Two (2) feet (610 mm)** of a known utility must not be performed by means of mechanical equipment; hand digging shall be used. If construction is parallel to an existing utility expose the utility by hand digging every **100 feet (30.5 m)** if parallel within **Five (5) feet (1.5 m)** of the excavation.

3. Shoring Systems

Trench and shoring systems must be identified in the accepted safety plan and AHA. Manufacture tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on-site for review. Job-made shoring or shielding must have the registered professional engineer stamp, specifications, and tabulated data. Extreme care must be used when excavating near direct burial electric underground cables.

4. Trenching Machinery

Operate trenching machines with digging chain drives only when the spotters/laborers are in plain view of the operator. Provide operator and spotters/laborers training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating. Keep documentation of the training on file at the project site.

3.8 UTILITIES WITHIN CONCRETE SLABS

A. Utilities located within concrete slabs or pier structures, bridges, and the like, are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever contract work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with utility company in addition to a private locating service. Outages to isolate utility systems must be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the contractor from meeting this requirement.

3.9 ELECTRICAL

A. Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the CA and utility company for identification. The CA will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of

circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers will be permitted to enter. When work requires Contractor to work near energized circuits as defined by the **NFPA 70**, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by **NFPA 70E**. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

B. Portable Extension Cords

Size portable extension cords in accordance with manufacturer ratings for the tool to be powered and protected from damage. Immediately remove from service all damaged extension cords. Portable extension cords shall meet the requirements of **NFPA 70**.

3.10 WORK IN CONFINED SPACES

- A.** Comply with the requirements in **OSHA 29 CFR 1910.146** and **OSHA 29 CFR 1926.21(b) (6)**. Any potential for a hazard in the confined space requires a permit system to be used.
1. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.
 2. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.
 3. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

END OF SECTION 01 35 26

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. **General:** Basic contract definitions are included in the General Conditions of the Contract for Construction.
- B. **"Indicated":** The term "indicated" refers to graphic representations, notes, or schedules on the Drawings, or other paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the reader locate the reference. Location is not limited to this term.
- C. **"Directed":** Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.
- D. **"Approved":** The term "approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.
- E. **"Regulations":** The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. **"Furnish":** The term "furnish" means supply and deliver to the Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. **"Install":** The term "install" describes operations at the Project Site including the actual unloading, unpacking, assembly, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. **"Provide":** The term "provide" means to furnish and install, complete and ready for the intended use.
- I. **"Installer":** An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
 - 1. The term **"experienced,"** when used with the term **"installer,"** means having a minimum of **five (5)** previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of authorities having jurisdiction.
 - 2. **Trades:** Using terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
 - 3. **Assigning Specialists:** Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.
 - a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.
- J. **"Project Site"** is the space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing other Work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
- K. **"Testing Agencies":** A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. **Specification Format:** These Specifications are organized into Divisions and Sections based on CSI's "MasterFormat" 49-Division format and numbering system.
- B. **Specification Content:** This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 - 1. **Abbreviated Language:** Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated, as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. **Streamlined Language:** The Specifications generally use the imperative mood and streamlined language. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
 - a. The words "**shall be**" are implied where a colon (:) is used within a sentence or phrase.

1.4 INDUSTRY STANDARDS

- A. **Applicability of Standards:** Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. **Publication Dates:** Comply with the standards in effect as of the date of the Contract Documents unless a specific date is indicated in the Contract Documents or the governing regulations cited herein.
- C. **Conflicting Requirements:** Where compliance with **two (2)** or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent and highest quality requirement. Request a decision from the Architect before proceeding on requirements that are different but apparently equal, and where it is uncertain which requirement is the most stringent.
 - 1. **Minimum Quantity or Quality Levels:** The quantity or quality level shown or specified shall be the minimum acceptable. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Request a clarification from the Architect regarding uncertainties before proceeding.
- D. **Copies of Standards:** Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.
- E. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Thompson Gale's "Encyclopedia of Associations," available in most libraries.

1.5 GOVERNING REGULATIONS AND AUTHORITIES

- A. **Copies of Regulations:** Obtain copies of the "**latest applicable State Codes**" and the following regulations and retain at the Project Site to be available for reference by parties who have a reasonable need during submittals, planning, and progress of the Work, until Substantial Completion.
 - 1. Connecticut State Building Code - 2016.
 - 1.1 CT Supplement - [2016].
 - 1.2 CT Amendments - [2016].
 - 1.3 International Building Code - [2012].
 - 1.4 International Existing Building Code - [2012].
 - 1.5 International Mechanical Code - [2012].
 - 1.6 International Plumbing Code - [2012].

- 1.7 International Energy Conservation Code - [2012].
- 1.8 National Electric Code (NFPA 70) - [2014].
- 1.9 ICC/ANSI A117.1-Accessible and Usable Buildings and Facilities - [2009].
- 2. Connecticut Fire Safety Code - [2016].
 - 2.1 CT Supplement - [2016].
 - 2.2 CT Amendments - [2016].
 - 2.3 International Fire Safety Code - [2012].
 - 2.4 NFPA 101 - [2012].
- 3. Connecticut Fire Prevention Code - [2012].
 - 3.1 NFPA 1 - [2012].
- 4. Occupational Safety and Health Administration (OSHA)
 - 4.1 OSHA 29 CFR Part 1910 Occupational Safety and Health Regulations - [current].
 - 4.2 OSHA 29 CFR Part 1926 Occupational Safety and Health Regulations for Construction - [current].
- B. The “**latest applicable State Codes**” are available for download from the DAS website (www.ct.gov/das) > Doing Business With The State > State Building Construction > Publications and Forms > Office of State Building Inspector *and* Office of State Fire Marshal. Also visit the www.ctdol.state.ct.us Connecticut Department of Labor website.

1.6 SUBMITTALS

- A. **Permits, Licenses, and Certificates:** For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 01 42 20

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality-control services.
- B. Quality-Control services include fire alarm acceptance testing, inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by the Owner.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 2. Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.
 3. Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- E. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 01 Section 01 33 00 "Submittal Procedures" specifies requirements for development of a schedule of required tests and inspections.
 2. Division 01 Section 01 73 29 "Cutting and Patching" specifies requirements for repair and restoration of construction disturbed by inspection and testing activities.
 3. Division 01 Section 01 77 00 "Closeout Procedures", specific requirements for contract closeout procedures.
 4. Division 28 Section 28 31 00 "Fire Detection and Alarm" specifies field quality control for the Alarm System.

1.3 RESPONSIBILITIES

- A. Contractor Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, the Owner, through the Construction Administrator, shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. All tests required by the individual specification sections are required to be scheduled and notification given to the Construction Administrator **24/48** hours in advance of the test/inspection as applicable. Costs for these services are not included in the Contract Sum.
1. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Contractor's responsibility, the Contractor shall employ and pay a qualified independent testing agency to perform quality-control services. Costs for these services are included in the Contract Sum.
 2. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Owner's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services.
 - a) Such services include Special Inspections as required by the latest edition of the "Connecticut State Building Code".
 - b) Where the Owner has engaged a testing agency for testing and inspecting part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner. The Owner will engage the services of a qualified Special Inspector for this project. The Special Inspector, as a representative of the Owner, shall

- document and confirm compliance with the provisions of the Connecticut State Building Code for Special Inspections.
- c) Materials and assemblies for this project will be tested and construction operations inspected as the work progresses. Failure to detect any defective work or material shall not in any way prevent later rejection when such defect is discovered nor shall it obligate the State for final acceptance.
 - d) The Owner's use of testing and inspection services shall in no way relieve the Contractor of the responsibility to furnish materials and finished construction in full compliance with the Contract Documents and the Connecticut State Building Code.
- B. Retesting: The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.
- 1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated non-compliance with Contract Document requirements.
 - 2. The Owner will issue a credit change order to cover all costs incurred related to all re-tests/re-inspections due to non-compliance to the Contract Documents, including but not limited to the Owner's costs and the Consultant's costs.
- C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the Agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:
- 1. *Provide access to the Work.*
 - 2. *Furnish incidental labor and facilities necessary to facilitate inspections and tests.*
 - 3. *Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.*
 - 4. *Provide facilities for storage and curing of test samples.*
 - 5. *Deliver samples to testing laboratories.*
 - 6. *Provide an approved design mix proposed for use for material mixes that require control by the testing agency.*
 - 7. *Provide security and protection of samples and test equipment at the Project Site.*
- D. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Construction Administrator, Architect and the Contractor in performance of the testing agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.
- 1. The testing agency shall notify the Construction Administrator and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. The testing agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
 - 3. The testing agency shall not perform any duties of the Contractor.
- E. Owner will pay for the services of an independent testing agency laboratory to perform inspections, tests and other services required by the Specifications except as noted below, listed for which the Owner will issue a deduct change order to cover the cost associated with these tests:
- 1. When the Contractor notifies the Construction Administrator and/or Testing Agency less than 24 hours before the expected time of testing.
 - 2. When the Contractor requires testing for his own convenience.
 - 3. When the Contractor schedules a test and is not ready for the required test.
- F. Submit reports of tests that are part of the submittal requirements which indicate compliance or non-compliance with the specified standard.
- G. See also General Conditions Article 16 "Inspections & Tests".

H. Fire Alarm/Acceptance Testing Procedures:

1. For **all** buildings (exceeding the threshold limit and not exceeding the threshold limit), the fire alarm testing shall be as the authority having jurisdiction shall dictate. This will be as determined by the Office of the State Fire Marshal (OSFM), and shall include, but not be limited to, the requirements as set below:
 - a. Protective Signaling Systems: All protective signaling systems shall meet with acceptance testing requirements of the applicable standards listed in NFPA 101 and NFPA 13.
 - b. Prior Test Notification: At least **five (5)** working days prior to testing, the Electrical Contractor shall notify (in writing) the following people of the proposed date the acceptance tests are to be performed (Also, see Part 2 of Certificate of Compliance).
 - Department of Administrative Services – OSFM Representative
 - General Contractor
 - Engineer of Record
 - Equipment Supplier Representative
 - Sprinkler Contractor
 - c. **Certificates of Compliance:**
 - 1) A Fire Alarm System Inspection and Testing Certification and Description form shall be prepared for each system per the requirements listed in NFPA 72, Chapter 7.
 - 2) Parts 1 and 3 through 9, shall be completed after the system is installed and the installation of the wiring has been checked. Every alarm device must also be pre-tested to ensure proper operation and correct annunciation at each remote annunciator and control panel. Part 1 of the form (Certification of System Installation) shall be signed by the fire alarm contractor. The signed and completed preliminary copies of the Certification form shall be forwarded to all parties along with the Prior Test Notification.
 - 3) Part 2, of each applicable form, shall be completed after the operational tests have been completed.
 - 4) After the completion of the operational acceptance tests and sign-off of test witness (with stipulations noted), final copies of the Certificates shall be forwarded to the Department of Construction Services Representatives.
 - d. **Tests:**
 - 1) All tests shall be conducted in accordance with the Manufacturer's Testing Recommendations.
 - 2) All testing equipment, apparatus (i.e. sound level decibel meter, 2-way radio communication, test devices, ladders, tools, lighting, etc.) and personnel shall be supplied by the Electrical Contractor.
 - f. **As-Built Drawings:**
 - 1) The Contractor will include within the electrical as-built drawings all fire alarm devices and appliances, the wiring sequences, wiring methods, connection of the components, and sequence of operation of the protective signaling system as installed. This shall be in Accordance with NFPA 72. Refer also to Section 01 77 00 "Closeout Procedures".

1.4 SUBMITTALS

- A. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Construction Administrator. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.
 1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
 2. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address, and telephone number of testing agency.

- d. Dates and locations of samples and tests or inspections.
- e. Names of individuals making the inspection or test.
- f. Designation of the Work and test method.
- g. Identification of product and Specification Section.
- h. Complete inspection or test data.
- i. Test results and an interpretation of test results.
- j. Ambient conditions at the time of sample taking and testing.
- k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
- l. Name and signature of laboratory inspector.
- m. Recommendations on re-testing.

1.5 QUALITY ASSURANCE

- A. Qualifications for Service Agencies:** Engage inspection and testing service agencies, including independent testing laboratories, that are pre-qualified as complying with the National Voluntary Laboratory Accreditation Program and that specialize in the types of inspections and tests to be performed.
 - 1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.
- B. Mockups:** Provide full-size, physical assemblies that are constructed on-site. Mockups will be used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not samples. Approved mockups establish the standard by which the Work will be judged.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 MOCKUPS

- A.** Build site-assembled mockups using installers who will perform same tasks for project.
- B.** Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 - 2. Notify Architect seven (7) days in advance of dates and times when mockups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mockups when directed, unless otherwise indicated.

3.2 REPAIR AND PROTECTION

- A. General:** Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Division 01 Section 01 73 29 "Cutting and Patching."
- B.** Protect constructions exposed by or for quality-control service activities, and protect repaired construction.
- C.** Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION 01 45 00

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 00 General Conditions of the Contract for Construction for Design-Bid-Build and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes requirements for identification badges, parking stickers, construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.
- B. Temporary utilities include, but are not limited to, the following:
 - 1. **Temporary sanitary facilities, including drinking water.**
- C. Support facilities include, but are not limited to, the following:
 - 1. **Field offices – Contractor, Subcontractor, Owner, and Construction Administrator.**
 - 2. **Storage and fabrication sheds.**
 - 3. **Temporary enclosures.**
 - 4. **Temporary project identification signs.**
 - 5. **Collection and disposal of waste and cleaning.**
 - 6. **Temporary Environmental Controls.**
- D. Security and protection facilities include, but are not limited to, the following:
 - 1. **Temporary fire protection.**
 - 2. **Security for site and Agency.**
 - 3. **Barricades, warning signs, and lights.**
 - 4. **Enclosure fence.**
 - 5. **Security enclosure and lockup.**
 - 6. **Protection.**
 - 7. **Environmental protection.**
 - 8. **Identification badges for Contractor's personnel & parking stickers.**

1.3 RELATED SECTIONS

- A. Division 01 Section 01 57 30 "Indoor Environmental Control" for additional provisions governing temporary heating, ventilating and air conditioning.

1.4 SUBMITTALS

- A. **Temporary Utilities:** Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

1.5 QUALITY ASSURANCE

- A. **Regulations:** Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
 - 1. **Building and fire code requirements.**
 - 2. **Health and safety regulations.**
 - 3. **Utility company regulations.**
 - 4. **Police, fire department, and rescue squad rules.**
 - 5. **Environmental protection regulations.**
 - 6. **Americans with Disabilities Act.**

- B. **Standards:** OSHA. Comply with NFPA 241 "Standard for Safeguarding Construction, Alteration, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA 200 "Recommended Practice for Installing and Maintaining Temporary Electric Power at Construction Sites."
 - 1. **Electrical Service:** Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."
- C. **Inspections:** Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

- A. **Temporary Utilities:** Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, the Construction Administrator will direct the change over from use of temporary service to use of permanent service.
- B. **Conditions of Use:** Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. **General:** Provide new materials. If acceptable to the Architect, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.
- B. **Lumber and Plywood:** Comply with requirements in Division 06 Section 06 10 00 "Rough Carpentry."
 - 1. For signs and directory boards, provide 3/4-inch exterior grade, Grade A-B Fir plywood. Mount sign on preservative treated Fir posts.
 - a. Project sign shall be 4' x 8' painted and supported on 4-inch x 4-inch posts, of a design to be provided by the Owner via the Construction Administrator.
 - 2. **Vision Barriers:** Provide minimum 1/2-inch thick exterior plywood.
 - 3. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch thick exterior plywood.
- C. **Paint:** Comply with requirements of Division 09 Section 09 91 00 "Painting."
 - 1. For sign and directory boards applying graphics, provide exterior-grade alkyd gloss enamel over exterior primer unless otherwise indicated.
- D. **Tarpaulins:** Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
- E. **Water:** Provide potable water approved by local health authorities.
- F. **Enclosure Fencing:** Provide 0.120-inch thick, galvanized 2-inch chain link fabric fencing six (6) feet high galvanized steel pipe posts, 1-1/2 inches knuckle both bottom and top I.D. for line posts and 2-1/2 inches I.D. for corner posts.

2.2 EQUIPMENT

- A. **General:** Provide new equipment. If acceptable to the Architect, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.
 - 1. The Contractor shall furnish tools, apparatus and appliances, hoists and/or cranes and power for same, scaffolding, runways, ladders, temporary supports and bracing and similar work or material necessary to insure convenience and safety in the execution of the Contract except where this is otherwise specified in any Specification Section. All such items shall meet the approval of the Owner but responsibility for design, strength and safety shall remain with the Contractor. All such items shall comply with Federal OSHA regulations and applicable codes,

statutes, rules and regulations, including compliance with the requirements of the current edition of the "Manual of Accident Prevention in Construction" published by the Associated Contractors (AGC) and the standards of the State Labor Department.

2. Staging, exterior and interior, required for the execution of this Contract, shall be furnished, erected, relocated if necessary and removed by the Contractor. Staging shall be maintained in a safe condition without charge to and for the use of all trades as needed.
- B. **Water Hoses:** Provide 3/4-inch, heavy-duty, abrasion-resistant, flexible rubber hoses with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge and backflow preventers.
 - C. **Electrical Outlets:** Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
 - D. **Electrical Power Cords:** Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
 - E. **Lamps and Light Fixtures:** Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.
 - F. **Heating Units:** Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.
 - G. **Temporary Field Offices:** Provide prefabricated or mobile units with lockable entrances, operable windows, and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.
 - H. **Temporary Toilet Units:** Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
 - I. **Fire Extinguishers:** Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.
 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. **General:** Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.
 1. Arrange with company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.
 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.

3. Obtain easements to bring temporary utilities to the site where the Owner's easements cannot be used for that purpose.
 4. **Use Charges:** If cost or use charges for temporary facilities are specified by this section to be borne by the Owner the cost or use charges for temporary facilities will be borne not longer than **thirty (30)** days after final acceptance of the project.
- B. Temporary Water Service and Distribution:**
1. Connect to existing facilities, through an approved backflow prevention device; extend branch piping with outlets so that water is available by use of hoses. Owner will pay for water used. The Contractor shall not waste water or use faulty equipment. The Contractor shall provide, at his own expense, all connections, extensions and other apparatus required for use of such services. Upon completion of the Contract, the Contractor shall disconnect temporary extensions and return utility to its original condition.
- C. Temporary Electric Power and Lighting Services:**
1. **Temporary Lighting:** When overhead floor or roof deck has been installed, provide temporary lighting with local switching. Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.
- C. Temporary Heating, Cooling and Ventilating:**
1. Provide temporary heat required by construction activities for curing or drying of completed installations or for protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.
 - a. **Heating Facilities:** Except where the Owner authorizes use of the permanent system, provide vented, self-contained, LP-gas or fuel oil heaters with individual space thermostatic control.
 - b. Use of gasoline-burning space heaters, open flame, or salamander heating units is prohibited.
 2. Provide temporary heat during construction for interior areas included in the Contract to counteract low temperatures or excessive dampness. Maintain during said period or periods until final completion of the Contract, unless otherwise approved by the Owner in writing. Windows, doors, ventilators and similar openings shall be temporarily closed. Provide heat and ventilation to maintain specified conditions for construction operations and to protect materials and finishes from damage by temperature or humidity. The permanent heating system is not to be used for temporary heating unless approved, in writing, by the Owner. If approved, use of the permanent heating system by the Contractor does not constitute beneficial use by the Owner. The warrantee for said system will not commence until Substantial Completion is granted. Costs shall be paid by the Contractor. See individual Sections for temperature/humidity limits. Temporary heating methods shall comply with OSHA regulations and other applicable codes, statutes, rules and regulations and shall be approved by the Architect/Engineer and Owner.
 3. Permanent air handling equipment, when used for temporary heating, shall be equipped with disposable "construction" filters. The construction filters shall have an average efficiency at least equal to the filters specified under Division 23, but not less than 30 percent when tested in accordance with ASHRAE 52.2 "Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size." The filters shall have an average arrestance of not less than 90 percent efficiency on one (1) micron size particles. Before turning over the system for final acceptance, the contractor shall remove and dispose of the construction filters; clean the ductwork; spray clean the heating and cooling coils, and drain pans to "like new" condition; and install the filters specified in Division 23 Section 23 40 00 "HVAC Air Cleaning Devices."
 4. Steam from the Agency's lines shall be metered and paid for by the Contractor at a price approved by the Agency and Owner. The Contractor shall arrange with his Heating Subcontractor to install and maintain temporary piping, radiators or unit heaters, reducing valves, steam traps and other necessary fittings and accessories. Traps shall be provided to prevent steam from entering main returns. The temporary layout shall meet the approval of the Architect/Engineer. Condensate meter (or meters) shall be installed to record usage of steam.

Steam from the Agency's lines MAY be furnished to the Contractor without cost, but may be discontinued if use is unreasonable or wasteful. At the termination of construction, return the facilities to their original condition.

5. Refer to Section 01 57 30 "Indoor Environmental Control" for additional requirements regarding means and methods of providing temporary heating, cooling and ventilating. Meet manufacturer's standards for minimum and maximum temperatures and humidity governing installation of materials and systems.
- D. Temporary Telephone Service and Data:** Provide temporary telephone service throughout the construction period for all personnel engaged in construction activities. Install telephone on a separate line for each temporary office and first aid station. Contractor shall provide telephone service in his office and separate telephone service in the DAS/CS Office and Construction Administrator's Office, if provided. It is preferred that the Contractor use a cellular phone. Basic service and local calls will be paid for by the Contractor. Toll calls will be paid for by the respective users.
1. **Separate Telephone Lines:** Provide additional telephone lines for the following:
 - a. Where an office has more than **two (2)** occupants, install a telephone for each additional occupant or pair of occupants.
 - b. Provide dedicated telephone lines for a separate fax machine in both the Contractor's office and the DAS/CS / CA office.
 2. At each telephone, post a list of important telephone numbers.
- E. Temporary Sanitary Facilities, Including Drinking Water:** Temporary sanitary facilities include temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
1. Provide toilet tissue, wash basins with water, soap and paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material. The Contractor shall maintain the facilities in a sanitary condition.
 2. **Toilets:** The Contractor shall install self-contained chemical toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted. Provide separate facilities for male and female personnel.
 3. **Water Coolers:** Where power is accessible, provide electric hot/cold water coolers to maintain dispensed cold water temperature at 45 to 55 degrees F. Provide bottled water service and cup supplies and maintain in a clean sanitary condition.
- F. Storm Water Pollution Control:** Provide earthen embankments and similar barriers in and around excavations and sub-grade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General:** Locate field offices, storage sheds, and other temporary construction and support facilities in designated area. This will be determined at the Pre-Construction Meeting. Final placement of the trailers is to be approved by the Construction Administrator.
1. Maintain support facilities until Final Completion. Remove prior to Final Completion with permission from the Owner.
 6. **Field Office Internet Service:**
The Contractor shall provide broadband internet service for the field office. Broadband internet service shall be capable of a minimum average upload speed of **2.0 Mbs** unless otherwise approved by the Owner.
 7. When the Contractor supplies the trailer(s) they shall equip each trailer with a water cooler for hot and cold water.
- B. Storage and Fabrication Sheds:** Install storage and fabrication sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on-site.
1. Storage sheds for tools, materials and equipment shall be weathertight with heat, lighting and ventilation for products requiring controlled conditions.

2. Remove temporary materials, equipment services and construction before Substantial Completion.
 3. Clean and repair damage caused by installation or use of temporary facilities. Restore existing facilities used during construction to specified or original condition.
- C. Dewatering Facilities and Drains:** For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division 31 Sections. Where feasible, utilize the same facilities. Maintain the site, excavations, and construction free of water.
- D. Temporary Enclosures:** Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.
1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25-sq ft or less with plywood or similar materials.
 3. Close openings through floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
- E. Temporary Project Identification Signs:** Prepare project identification and other signs of size indicated. Install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative-treated wood or steel. Do not permit installation of unauthorized signs.
1. **Project Sign:** Engage an experienced sign painter to apply graphics. Comply with details to be furnished by the Construction Administrator.
 - a. **Project Sign:** The Contractor shall contact the Construction Administrator for the proper wording for the project sign. Fabricate sign of **3/4"** Exterior Grade A-B Fir plywood. Mount sign on preservative treated Fir posts. The Owner shall provide design, color selection and illustration of the Project Sign. Paint both sides and all edges of sign and the posts with two (2) coats of exterior, white, alkyd primer. Paint the border and letters with "bulletin" (sign) paint. Letter sizes, colors and related information are given on the illustration below. A self-adhesive decal of the State seal will be furnished at the Contract signing. Erect the sign within two (2) weeks after execution of the Contract and remove the sign within one (1) week after completion of the project.
 - b. **Project Sign Detail:** Sign letter sizes, fonts, colors and related information are shown in the illustration available for download from the DAS website (www.ct.gov/das) > Doing Business With The State > State Building Construction > Publications and Forms > DAS Construction Services Library > 3000 Series - Design Phase Forms.
- F. Temporary Exterior Lighting:** Install exterior yard and sign lights so signs are visible when Work is being performed.
- G. Collection and Disposal of Waste and Cleaning:**
1. Collect waste within the contract limit line from construction areas daily. Provide separate containers for proper waste recycling. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than seven (7) days during normal weather or three (3) days when the temperature is expected to rise above 80 degrees F. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.
 2. Maintain areas under Contractor's control free of waste materials, debris and rubbish. Maintain in a clean and orderly condition.
 3. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces and other closed or remote spaces before closing the space.
 4. Periodically clean interior areas before start of surface finishing and continue cleaning on an as-needed basis.
 5. Control cleaning operations so that dust and other particulates will not adhere to wet or newly coated surfaces.

- H. Temporary Environmental Controls:** Contractor is to provide the following controls.
1. Rodent and Pest Control: Before deep foundation work has been completed, retain a local exterminator or pest control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Employ this service to perform extermination and control procedures at regular intervals so the Project will be free of pests and their residues at materials.
 2. Dust Control (construction and demolition).
 3. Noise Control.
 4. Erosion and Sediment Control.
 5. Pollution Control.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION (listed in Paragraph 1.2 D)

- A.** Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Owner.
- B. Temporary Fire Protection:** Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."
1. Provide and locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
 2. Store combustible materials in containers in fire-safe locations.
 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
 4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
 5. The Contractor, during construction, shall be responsible for loss or damage by fire to the work of the Contract until completion. Any fire used within the structure for working purposes shall be extinguished when not in use. Bitumen or tar shall be melted on the ground only. No flammable material shall be stored in the structure in excess of amounts allowed by the authorities. No gasoline shall be stored in or close to the building at any time. The Contractor shall assign a responsible employee to be in charge of fire protection measures.
- C. Permanent Fire Protection:** At the earliest feasible date in each area of the Project, complete installation of the permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
- D. Security for Site and Agency:**
1. Provide security program and facilities to protect work, existing facilities and the Owner and Agency's operations from unauthorized entry, vandalism and theft. Coordinate with the Owner's and Agency's security program.
 2. The Contractor shall be solely responsible for damage, loss or liability due to theft or vandalism.
- E. Barricades, Warning Signs, and Lights:** Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.
1. Provide covered walkways as required by governing authorities for public rights-of-way and for public access to existing buildings.
 2. Provide temporary, insulated, weathertight closures at openings to the exterior to provide acceptable working conditions and protection for materials, to allow for temporary heating and to prevent entry of unauthorized persons. Provide doors with self-closing hardware and locks.
 3. Barriers and enclosures shall be in conformance with code requirements. Do not block egress from occupied buildings unless necessary to further the work of the Contract. In this case, secure the Owners approval of an alternate egress plan.

4. See also General Conditions Article 19, "Protection of the Work, Persons and Property".
- F. Enclosure Fences:** Before excavation begins, install an enclosure fence with lockable entrance gates. Locate where indicated on the Construction Documents, or enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering the site, except by the entrance gates.
1. Provide chain link construction fencing with posts set in a compacted mixture of gravel and earth. Use existing fence to the extent possible.
- G. Security Enclosure and Lockup:** Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Provide keys to the Construction Administrator.
1. **Storage:** Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- H. Protection:**
1. Protect buildings, equipment, furnishings, grounds and plantings from damage. Any damage shall be repaired or otherwise made good at no expense to the Owner.
 2. Provide protective coverings and barricades to prevent damage. The Contractor shall be held responsible for, and must make good at his own expense, any water or other type of damage due to improper coverings. Protect the public and building personnel from injury.
 3. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.
 4. Provide protective coverings for walls, projections, jambs, sills and soffits of openings. Protect finished floors and stairs from traffic, movement of heavy objects and storage. Prohibit traffic and storage on waterproofed and roofed surfaces and on lawn and landscaped areas.
 5. Provide temporary partitions and ceilings to separate work areas from Agency-occupied areas to prevent penetration of dust and moisture into Agency-occupied areas and equipment. Erect framing and sheet materials with closed joints and sealed edges at intersections with existing surfaces.
 6. See also General Conditions Article 19, "Protection of the Work, Persons and Property".
- I. Environmental Protection:** Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result.
- J. Traffic Ways:**
1. The Contractor may use on-site paved roads and parking areas but shall not encumber same or their access. Public highways shall not be blocked by standing trucks, parked cars, material storage, construction operations or in any other manner.
 2. Public roads and existing paved roads, drives and parking areas on Owner's property shall be kept free from scrap or debris due to construction operations and any damage to their surface caused by the Contractor shall be repaired by him at his own expense.
 3. If the work of the Contract affects public use of any street, road, highway or thoroughfare, the Contractor shall confer with the police authority having jurisdiction to determine if and how many police are needed for public safety in addition to any barriers and signals that may be needed. The Contractor will be responsible for payment of any needed police services.
- K. Identification Badges for Contractor's Personnel, Visitors & Parking Stickers:**
1. The Contractor will provide each person working or visiting at the site with an identification badge, bearing the name of the Contractor and a number. As badges are assigned, a record shall be kept by the Contractor and given to the Construction Administrator and Agency Administrator. Update and correct the records of all badges issued on a semi-monthly basis.
 2. Badges are to be worn on outer garment where visible at all times while at the construction site, return them to the Contractor's field office at the end of each day and pick them up there each morning.

3. All vehicles parking in the Contractor's parking lot and those used around the site require an ID sticker. They will be issued by the Agency. Each contractor shall apply for parking stickers through the Construction Administrator no more than semi-monthly and shall keep record of all stickers issued.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. **Supervision:** Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. **Maintenance:** Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
 2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. **Termination and Removal:** Unless the Architect/CA requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 1. Materials and facilities that constitute temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.
 2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at the temporary entrances, as required by the governing authority.
 3. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:
 - a. Replace air filters and clean inside of ductwork and housings.
 - b. Replace significantly worn parts and parts subject to unusual operating conditions.
 - c. Replace lamps burned out or noticeably dimmed by hours of use.

END OF SECTION 01 50 00

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Construction Documents and general provisions of the Contract, including General Conditions of the Contract for Construction and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Microbial and fungal contamination control.
 - 2. Indoor air quality and pollution control.
 - 3. Heating, ventilating, and air conditioning.
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section 01 45 23.13 "Testing for Indoor Air Quality (IAQ), Baseline IAQ, & Materials" for building flush out requirements.
 - 2. Division 01 Section 01 57 40 "Construction IAQ Management Plan" for a description of the IAQ management plan.

1.3 REFERENCES

- 1. **ASTM International (ASTM):**
 - a. ASTM D5116-2006, Standard Guide for Small-Scale Environmental Chamber Determination of Organic Emissions From Indoor Materials/Products.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 MICROBIAL AND FUNGAL CONTAMINATION CONTROL

- A. Perform, schedule, and sequence Work as required to limit conditions supporting formations of microbes, molds, and fungi.
 - 1. Control water penetration, dampness, and humidity to prevent products not treated for exterior use from becoming soaked or damp.
 - 2. Enclose building prior to installing interior materials and finishes.
 - 3. Do not install interior products subject to moisture absorption until building is enclosed and wet work generating moisture and humidity is complete.
- B. When visible formations are observed and when formations cannot be completely removed by non-abrasive surface cleaning:
 - 1. Remove and replace materials identified as food sources for microbes, molds, and fungi.
 - 2. Correct conditions supporting microbial, mold, and fungal growth.
- C. Remove interior products and finishes, identified as food sources that have absorbed sufficient moisture to become damp whether or not microbial, mold, or fungal growth is observed. Include:
 - 1. Gypsum board cores.
 - 2. Organic materials composed of cellulose fiber or paper.
 - 3. Materials containing sucrose or other binders identified as supporting microbial growth.
- D. Remove fibrous insulation materials subject to retaining moisture such as duct liner, insulation, and other materials that are made wet or damp and cannot immediately be made dry.
- E. Repair or replace ductwork, pans, and other conditions subject to moisture condensation, water penetration, or other water source not drained and made dry.
 - 1. Remove conditions that have become an environment for microbes, molds, or fungi.

2. Do not permit conditions leading to standing water.
- F. Install wet work and allow time needed to dry and cure prior to installing materials such as carpet, acoustical material, textiles, and other material of type that may attract and retain moisture.

3.2 INDOOR AIR QUALITY AND POLLUTION CONTROL

- A. **Product Emission Rate Standards:** Test to ASTM D5116 for maximum indoor air concentration levels.
 1. **Formaldehyde:**
 - a. 0.03 parts per million where no other requirements are specified.
 - b. 0.005 parts per million where products are specified as formaldehyde free.
 2. **Total VOC Emissions for Carpet Tile, Adhesives, and Sealers:** 0.05 mg/m² per hour.
 3. **4 Phenyl Cyclohexene (4-PC) Particulate Emissions for Carpet:** One (1) part per billion.
 4. **Total Particulate Emission Rate Levels:** 50 ug/m³.
 5. **Primary and Secondary Regulated Pollutants:** Conform to USEPA, Code of Federal Regulations, Title 40, Part 50 National Air Ambient Air Quality Standard. Refer to EPA Web Site <http://www.epa.gov/epahome/rules.html#codified>.
 6. **Other Pollutants Not Listed:** Not greater than 1/10 of Threshold Limit Value - Time Weighted Average (TLV-TWA) industrial workplace standard.
- B. **Architectural Coatings - Volatile Organic Compound (VOC) Content Limits:** Conform to US Environmental Protection Agency (EPA) Federal Register 48886/Vol. 63, No.176 Friday, September 11, 1998/ Rules and Regulations. Refer to EPA Web Site: <http://www.epa.gov/ttn/atw/eparules.html>.
- C. Do not use products in combination with or in contact with other products that can be identified as combining to form toxic fumes or sustained odors.
- D. Do not use solvents within interior areas that may penetrate and be retained in absorptive materials such as concrete, gypsum board, wood, cellulose products, fibrous material, and textiles.
- E. Protect construction materials from contamination and pollution from contact with construction dust, debris, fumes, solvents, and other environmentally polluting materials.
- F. Allow furnishings and materials such as carpet, floor tile, acoustical tile, textiles, office furniture, and casework, to air out in clean environment prior to installation.

3.3 HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

- A. Do not run permanent HVAC system during course of construction. Seal ductwork intake and exhaust vents.
- B. Heat, dehumidify, and ventilate building during course of Work as necessary to maintain environmental conditions suitable for drying and curing materials and for prevention of conditions suitable for mold and mildew growth.
 1. Ventilate building to remove moisture, dust, fumes, and odors.
 2. Temper and dehumidify air as needed to remove excess moisture.
 3. Do not use propane heaters and other moisture generating heating systems.
- C. **Flush out building prior to commissioning.** Refer to Section 01 45 23.13 "Testing for IAQ, Baseline IAQ, & Materials" for procedure.
- D. Inspect ductwork for refuse, contaminants, moisture and other foreign contamination prior to commissioning. Notify Commissioning Agent (CxA) of satisfactory inspection prior to beginning of Commissioning.
- E. Clean underfloor plenum at access flooring acting as supply air duct, prior to occupancy.

3.4 REMEDIAL ACTION

- A. Promptly take action as necessary to inspect and remediate conditions suspected of supporting microbial, fungal or mold conditions and where contaminated by indoor air pollution.
- B. Notify and consult with Architect prior to beginning remedial action where contamination by hazardous chemicals, microbes, and fungi is suspected.

END OF SECTION 01 57 30

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 specification sections, apply to this section.

1.2 SUMMARY

- A. This Section includes:
 - 1. Description of a Construction Indoor Air Quality (IAQ) Management Plan.
 - 2. IAQ construction requirements.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Divisions 01 through 49 sections for green building rating system requirements specific to the Work of each of those sections. These requirements may or may not include reference to LEED or Green Globes.
 - 3. Division 01 Section 01 57 30 "Indoor Environmental Control."

1.3 REFERENCES

- A. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE):
 - 1. ASHRAE Standard 52.1-1992, Gravimetric and Dust Spot Procedures for Testing Air Cleaning Devices in General Ventilation for Removing Particulate Matter.
- B. ASTM International, Inc. (ASTM):
 - 1. ASTM D5116-2006, Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.
- C. Sheet Metal and Air Conditioning National Contractors' National Association (SMACNA):
 - 1. IAQ Guidelines for Occupied Buildings under Construction, 1995.

1.4 INDOOR AIR QUALITY

- A. Goals: The Owner has set the following indoor air quality goals for jobsite operations on the project, within the limits of the construction schedule, Contract Sum, and available materials, equipment, products and services. Goals include:
 - 1. Protect workers on the site from undue health risks during construction.
 - 2. Prevent residual problems with indoor air quality in the completed building.

1.5 SUBMITTALS

- A. Indoor Air Quality Plan: Within **fourteen (14)** days after receipt of **Notice of Award** and prior to any waste removal from the project, develop and submit for review a healthy indoor air quality plan. The plan shall include:
 - 1. List of IAQ protective measures to be instituted on the site.
 - 2. Schedule for inspection and maintenance of IAQ measures.

1.6 QUALITY ASSURANCE

- A. Perform material tests and report results in accordance with ASTM D5116.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Should the Contractor desire to use procedures, materials, equipment, or products that are not specified but meet the intent of the specifications to protect indoor air quality on the site, the Contractor shall propose these substitutions in accordance with Section 01 60 00 "Product Requirements."

2.2 MATERIALS

- A. Low emitting products have been specified in appropriate sections.

PART 3 - EXECUTION

3.1 CONSTRUCTION IAQ MANAGEMENT PLAN

- A. Meet or exceed the minimum requirements of the SMACNA "IAQ Guidelines for Occupied Buildings Under Construction."
 - 1. Protect the ventilation system components from contamination, OR provide cleaning of the ventilation components exposed to contamination during construction prior to occupancy.
 - 2. After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total air volume of 14000 cu ft of outdoor air per sq ft of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60 percent.
 - 3. If building occupancy is to occur before completion of the flush-out, deliver a minimum of 3500 cu ft of outdoor air per sq ft of floor area to the space. Once the space is occupied, ventilate it at a minimum rate of 0.30 cfm/sq ft of outside air or the design minimum outside air rate determined in accordance with Sections 4 through 7 of ASHRAE 62.1 or applicable local code, whichever is more stringent. During each day of the flush-out period, begin ventilation a minimum of three (3) hours prior to occupancy and continue during occupancy. Maintain these conditions until a total of 14000 cu ft/sq ft of outside air has been delivered to the space.
- B. During installation of carpet, paints, furnishings, and other VOC-emitting products, provide supplemental (spot) ventilation for at least 72 hours after work is completed. Preferred HVAC system operation uses supply air fans and ducts only; exhaust provided through windows. Use exhaust fans to pull exhaust air from deep interior locations. Stair towers and other paths to exterior can be useful during this process.
- C. Conduct regular inspection and maintenance of indoor air quality measures including ventilation system protection, and ventilation rate.
- D. Require VOC-safe masks for workers installing VOC-emitting products (interior and exterior) defined as products that emit 150 gpl or more UNLESS local jurisdiction's requirements are stricter, in which case the strictest requirements shall be followed for use of VOC-safe masks.
- E. Use low-toxic cleaning supplies for surfaces, equipment, and worker's personal use. Options include several soybean-based solvents and cleaning options (SoySolv) and citrus-based cleaners.
- F. Use wet sanding for gypsum board assemblies. Exception: Dry sanding allowed subject to Architect's approval of the following measures:
 - 1. Full isolation of space undergoing finishing.
 - 2. Plastic protection sheeting is installed to provide air sealing during sanding.
 - 3. Closure of all air system devices and ductwork.
 - 4. Sequencing of construction precludes the possibility of contamination of other spaces with gypsum dust.
 - 5. Worker protection is provided.
- G. Use safety meetings, signage, and Contractor agreements to communicate the goals of the construction indoor air quality plan.

END OF SECTION 01 57 40

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
1. Division 01 Section 01 25 00 "Substitution Procedures" specifies administrative procedures for handling requests for substitutions made after award of the Contract.
 2. Division 01 Section 01 33 00 "Submittal Procedures" specifies requirements for submittal of the Contractor's Construction Schedule and the Submittal Schedule.
 3. Division 01 Section 01 42 20 "Reference Standards and Definitions" specifies the applicability of industry standards to products specified.

1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.
1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, which is current as of the date of the Contract Documents.
 2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
 3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.4 QUALITY ASSURANCE

- A. **Source Limitations:** To the fullest extent possible, provide products of the same kind from a single source.
- B. **Compatibility of Options:** When the Contractor is given the option of selecting between two (2) or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
- C. **Nameplates:** Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.
1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. Store products in accordance with manufacturers' instructions and maintain within temperature and humidity range required by manufacturer.
 4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
 6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
 7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation.
 8. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
 9. Store loose granular material on solid surfaces in a well-drained area; prevent mixing with foreign matter.
 10. Arrange storage to provide access for inspection. Periodically inspect to insure products are undamaged and are maintained under required conditions. Keep log showing date, time and problems, if any.
 11. Stone, masonry units and similar materials shall be stored on platforms or dry skids and shall be adequately covered and protected against damage.
 12. Materials and equipment shall be delivered, stored and handled to prevent intrusion of foreign matter and damage by weather or breakage. Packaged materials shall be delivered and stored in original, unbroken packages.
 13. Promptly inspect shipments to assure that products comply with requirements, that quantities are correct and products are undamaged.
 14. Packages, materials and equipment showing evidence of damage will be rejected and replaced at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

- A. **General Product Requirements:** Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. **Product Selection Procedures:** The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:
1. Semi-proprietary Specification Requirements: Where Specifications name two (2) or more products or manufacturers, provide one (1) of the products indicated. Comply with the requirements of Division 01 Section 01 25 00 "Substitution Procedures."
 2. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

3. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.
4. Visual Selection: Where specified product requirements include the phrase "*...as selected from manufacturer's standard colors, patterns, textures...*" or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern, and texture from the product line selected.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
 1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01 60 00

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. **General:** This Section specifies administrative and procedural requirements for field engineering services including, but not limited to, the following:
 - 1. Land survey work.
 - 2. Civil Engineering services.
 - 3. Damage surveys.
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section 01 31 00 "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
 - 2. Division 01 Section 01 33 00 "Submittal Procedures" for submitting Project record surveys.
 - 3. Division 01 Section 01 77 00 "Closeout Procedures" for submitting final property survey with Project Record Documents and recording of Owner-accepted deviations from indicated lines and levels.

1.3 SUBMITTALS

- A. **Certificates:** Submit a certificate from the Land Surveyor stating that the control information furnished by the Owner is accurate or identify inaccuracies, if they exist. The Contractor shall not take advantage of errors, which may be included in the control information. Stakes and markings shall be preserved.
- B. **Final Property Survey:** Prepare and submit 10 copies of the final property survey.
- C. **Project Record Documents:** Submit a record of Work performed and record survey data as required under provisions of "Submittals" and "Project Closeout" Sections.

1.4 QUALITY ASSURANCE

- A. Provide field engineering services to establish and record grades, lines and elevations.
- B. The Contractor shall retain a Land Surveyor registered by the State of Connecticut to confirm State furnished base lines and benchmarks, lay out the building, underground utility lines and other site work from the information furnished by the Owner and to establish and record the necessary elevations, at no additional cost to the State.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. **Identification:** The Owner will identify two (2) base lines on the Contract Drawings.
- B. Verify layout information shown on the Drawings, in relation to the property survey and existing benchmarks. Notify the Construction Administrator of any discrepancies immediately in writing before proceeding to lay out the Work. Locate and protect existing benchmarks and base line. Preserve permanent reference points during construction.
 - 1. Do not change or relocate benchmarks or base line without prior written approval. Promptly report lost or destroyed reference points or requirements to relocate reference points because of necessary changes in grades or locations.
 - 2. Promptly replace lost or destroyed Project baseline benchmarks. Base replacements on the original survey control points.

- C. Establish and maintain a sufficient quantity of (minimum of 2) permanent benchmarks on the site, referenced to data established by Owner supplied information.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
- D. **Existing Utilities and Equipment:** The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction.
 - 1. Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping. Notify the Construction Administrator of any discrepancies prior to proceeding.

3.2 PERFORMANCE

- A. Work from lines and levels established by the property survey. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of the Project. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions.
 - 1. Advise entities engaged in construction activities of benchmarks and control points for their use.
 - 2. As construction proceeds, check every major element for line, level, and plumb.
- B. **Surveyor's Log:** Maintain a surveyor's log of control and other survey work. Make this log available for reference.
 - 1. Record deviations from required lines and levels, and advise the Construction Administrator when deviations that exceed indicated or recognized tolerances are detected. On Project Record Drawings, record deviations that are accepted and not corrected.
 - 2. On completion of foundation walls, major site improvements, underground utilities, and other Work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, elevations of construction, as-built locations and site work.
- C. **Site Improvements:** Locate and lay out site improvements, including pavements, stakes for grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. **Building Lines and Levels:** Locate and lay out batter boards for structures, building foundations, column grids and locations, floor levels, and control lines and levels required for mechanical and electrical work.
- E. **Existing Utilities:** Furnish information necessary to adjust, move, or relocate existing structures, utility poles, lines, services, or other appurtenances located in or affected by construction. Coordinate with local authorities having jurisdiction.
- F. **Final Property Survey:** Prepare a final property survey showing significant features (real property) for the Project. Include on the survey a certification, signed by the surveyor, that principal metes, bounds, lines, and levels of the Project are accurately positioned as shown on the survey.

END OF SECTION 01 71 23

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for cutting and patching.
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section 01 31 00 "Project Management and Coordination" for procedures for coordinating cutting and patching with other construction activities.
 - 2. Division 01 Section 01 35 16 "Alteration Project Procedures" for procedures for coordinating cutting and patching with other construction activities.
 - 3. Division 02 Section **02 41 19 "Selective Demolition"** for demolition of selected portions of the building for alterations.
 - 4. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - a. Requirements of this Section apply to mechanical and electrical installations. Refer to Division 22, 23, and 26 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.3 SUBMITTALS

- A. **Cutting and Patching Proposal:** Submit a proposal to the Construction Administrator describing procedures well in advance of the time cutting and patching will be performed and if the Owner's Representative and/or Architect/Engineer requires approval of these procedures before proceeding. Request approval to proceed. Include the following information, as applicable, in the proposal:
 - 1. Describe the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.
 - 2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 3. Describe affects to integrity of weather exposed or moisture resistant element.
 - 4. Describe affects to efficiency, maintenance, or safety of any operational element.
 - 5. Describe affects to Work of Owner or separate contractor.
 - 6. List products to be used and firms or entities that will perform Work.
 - 7. Indicate dates when cutting and patching will be performed.
 - 8. **Utilities:** List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
 - 9. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations sealed by an Engineer registered in the State of Connecticut showing integration of reinforcement with the original structure.
 - 10. Approval by the Construction Administrator to proceed with cutting and patching does not waive the Architect/Engineer of Record's rights to later require complete removal and replacement of unsatisfactory Work.

1.4 QUALITY ASSURANCE

- A. **Requirements for Structural Work:** Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
 - 1. Obtain approval from the Architect/Engineer of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. **Foundation construction.**

- b. **Bearing and retaining walls.**
 - c. **Structural concrete.**
 - d. **Structural steel.**
 - e. **Lintels.**
 - f. **Structural decking.**
 - g. **Miscellaneous structural metals.**
 - h. **Exterior curtain-wall construction.**
 - i. **Equipment supports.**
 - j. **Piping, ductwork, vessels, and equipment.**
- B. Operational Limitations:** Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.
- 1. Obtain Architect/Engineer's approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
 - a. **Primary operational systems and equipment.**
 - b. **Air or smoke barriers.**
 - c. **Water, moisture, or vapor barriers.**
 - d. **Membranes and flashings.**
 - e. **Fire protection systems.**
 - f. **Noise and vibration control elements and systems.**
 - g. **Control systems.**
 - h. **Communication systems.**
 - i. **Conveying systems.**
 - j. **Electrical wiring systems.**
- C. Visual Requirements:** Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction cut and patched in a visually unsatisfactory manner.

1.5 WARRANTY

- A. Existing Warranties:** Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A.** Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.
- B.** The Contractor shall install sleeves, inserts and hangers furnished by the trades needing same.

PART 3 - EXECUTION

3.1 INSPECTION

- A.** Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, notify the Construction Administrator and Architect, before proceeding with corrective action.

- B. Openings and chases may not be shown on the Drawings. It is the responsibility of the Contractor to examine the Architectural, Electrical, Heating, Cooling, Ventilating and Plumbing Drawings and to provide chases, channels or openings where needed.
 - 1. After installing Work into openings, channels and/or chases, the Contractor shall close same. If finishes are to be restored, the new Work shall match the original and shall be done by the trade customarily responsible for the particular kind of Work.
- C. The Contractor shall verify dimensions for built-in Work and/or Work adjoining that of other trades before ordering any material or doing any Work. Discrepancies shall be submitted to the Construction Administrator before proceeding with the Work.
- D. See also General Conditions Article 23 "Cutting, Fitting, Patching & Digging".

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Work that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Avoid cutting existing pipe, conduit, or ductwork serving the building but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

- A. **General:** Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
 - 2. DO perform cutting and patching to integrate elements of Work. Provide penetrations of existing surfaces. Provide samples for testing. Seal penetrations through floors, walls, ceilings and roofs, as applicable; restore or preserve fire-rated and smoke-barrier construction. Construction and finishes shall match original Work.
- B. **Cutting:** Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
 - 1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
 - 4. Comply with requirements of applicable Division 32 Sections where cutting and patching requires excavating and backfilling.
 - 5. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C. **Patching:** Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
 - 1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 - 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - 3. Where removing walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

- a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.
4. Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.4 CLEANING

- A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION 01 73 29

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes requirements for waste management goals, waste management plan and waste management plan implementation.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section 01 11 00 "Summary of Work".
 - 2. Division 01 Section 01 20 00 "Price and Payment Procedures".
 - 3. Division 01 Section 01 25 00 "Substitution Procedures".
 - 4. Division 01 Section 01 31 19 "Project Meetings".
 - 5. Division 01 Section 01 33 00 "Submittal Procedures".
 - 6. Division 01 Section 01 45 00 "Quality Control".
 - 7. Division 01 Section 01 50 00 "Temporary Facilities and Controls".
 - 8. Division 01 Section 01 60 00 "Product Requirements".
 - 9. Division 01 Section 01 77 00 "Closeout Procedures".

1.3 DEFINITIONS

- A. **Construction Waste:** Solid wastes such as building materials, packaging and rubble resulting from construction, paving and infrastructure.
- B. **Demolition Waste:** Solid wastes such as concrete, wood, brick, plaster, roofing materials, wallboard, metals, carpeting, insulation, and clean fill resulting from demolition or selective demolition of structures.
- C. **Recyclable Materials:** Products and materials that can be recovered and remanufactured into a new product. Recyclable materials include, but are not limited to, the following:
 - 1. Metals (ferrous and non-ferrous), including banding, metal studs, ductwork, and piping.
 - 2. Asphaltic concrete paving.
 - 3. Portland cement concrete.
 - 4. Gypsum products.
 - 5. Paper and cardboard.
 - 6. Wood products, including structural, finish, crates, and pallets.
 - 7. Brick and masonry.
 - 8. Carpet and padding.
 - 9. Plastics.
 - 10. Copper wiring.
- D. **Recycling Facility:** A business that specializes in collecting, handling, processing, distributing, or remanufacturing waste materials generated by new construction projects, into products or materials that can be used for this project or by others.
- E. **Salvage and Reuse:** Existing usable product or material that can be saved and reused in some manner on the project site. Materials for reuse must be approved by the Architect. Materials that can be salvaged and reused must comply with applicable technical specifications and include, but are not limited to, the following:
 - 1. Dimensional lumber and other wood products.
 - 2. Structural steel.
 - 3. Soil.
 - 4. Masonry products.
 - 5. Plants.

- F. **Salvage for Resale:** Existing usable product that can be saved and removed intact (as is) from the project site to another site for resale to others without remanufacturing.

1.4 WASTE MANAGEMENT GOALS

- A. The Owner has established that this Project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors shall be employed.
- B. The Contractor shall use all means available to divert the greatest extent practical and economically feasible, construction waste from landfills and incinerators.
- C. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.
- D. Recycle and/or salvage a minimum of **75** percent of non-hazardous construction **and demolition** waste by weight of the total solid waste generated by the Project.
- E. With regard to these goals the Contractor shall develop, for the Architect's review, a Waste Management Plan for this Project.
- F. Take a pro-active, responsible role in management of construction waste and require all subcontractors, vendors, and suppliers to participate in the effort. Establish a construction waste management program that includes the following categories:
 - 1. Minimizing packaging waste.
 - 2. Salvage and reuse.
 - 3. Salvage for resale or donation.
 - 4. Recycling.
 - 5. Disposal.

1.5 SUBMITTALS

- A. **Draft Waste Management Plan:** Within 30 days after receipt of Notice of Award of Bid, or prior to any waste removal, whichever occurs sooner, the Contractor shall submit **three (3)** copies of a Draft Waste Management Plan to the Construction Administrator.
- B. **Final Waste Management Plan:** Once the Owner has determined which of the recycling options addressed in the Draft Waste Management Plan are acceptable, the Contractor shall submit within 10 days **three (3)** copies of a Final Waste Management Plan.
- C. **Progress Reports:** Submit **three (3)** copies of monthly progress reports, at the same time as the Application for Payment, documenting the following:
 - 1. Material category.
 - 2. Point of waste generation.
 - 3. Total quantity of waste in tons.
 - 4. Quantity of waste salvaged, in tons.
 - 5. Quantity of waste recycled, in tons.
 - 6. Total quantity of waste recovered (salvaged plus recycled) in tons.
 - 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- D. **Calculations:** Submit **three (3)** copies of calculations indicating the end-of-project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Project prior to Substantial Completion.
- E. **Record Submittals:**
 - 1. **Donations:** Indicate which salvageable materials were donated, who they were donated to, and whether the recipient is tax exempt. Submit documentation indicating receipt of donations.
 - 2. **Sales:** Indicate which salvageable materials were sold, who they were sold to, and whether the recipient is tax exempt. Submit documentation indicating receipt of materials.
 - 3. **Recycling:** Indicate which materials were recycled and the name of the facility licensed to accept them. Submit documentation such as manifests, weight tickets, receipts, and invoices.

4. **Waste Disposal:** Indicate which materials were accepted as waste by landfills and incinerator facilities licensed to accept them. Submit documentation indicating receipt of materials.

1.6 QUALITY ASSURANCE

- A. **Regulatory Requirements:** Comply with regulations of State of Connecticut Department of Environment Protection, Waste Management Bureau Recycling Program.
- B. **Waste Management Conference:** Review and discuss the waste management plan, requirements for documenting quantities of each type of waste and its disposition, procedures for materials separation, procedures for periodic collection and transportation to recycling and disposal facilities. Review waste management requirements for each trade. Verify availability of containers and bins needed to avoid delays.

1.7 WASTE MANAGEMENT PLAN

- A. **Draft Waste Management Plan:** Include the following in the Draft Plan:
 1. Analysis of the proposed jobsite waste to be generated, including types and quantities.
 2. **Landfill Options:** The name of the landfill(s) where trash will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all Project waste in the landfill(s).
 3. **Alternatives to Landfilling:** A list of each material proposed to be salvaged, reused, or recycled during the course of the Project, the proposed local market for each material, and the estimated net cost savings or additional costs resulting from separating and recycling (versus landfilling) each material. "Net" means that the following have been subtracted from the cost of separating and recycling:
 - a. Revenue from the sale of recycled or salvaged materials and
 - b. Landfill tipping fees saved due to diversion of materials from the landfill. The list of these materials is to include, at a minimum, the following materials:
 - i) Cardboard.
 - ii) Clean dimensional wood.
 - iii) Beverage containers.
 - iv) Land clearing debris.
 - v) Concrete.
 - vi) Bricks.
 - vii) Concrete Masonry Units (CMU).
 - viii) Asphalt.
 - ix) Metals from banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
- B. **Resources for Development of Waste Management Plan:** The following sources may be useful in developing the Draft Waste Management Plan:
 1. **Recycling Haulers and Markets:** Local haulers and markets for recyclable materials. For more information, contact the State of Connecticut Department of Environmental Protection, Waste Management Bureau Recycling Program, (860) 424-3365, www.dep.state.ct.us/wst/recycle/ctrecycle.htm.
- C. **Final Waste Management Plan:** The Final Waste Management Plan shall contain the following:
 1. Analysis of the proposed jobsite waste to be generated, including types and quantities.
 2. **Landfill Options:** The name of the landfill(s) where trash will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all Project waste in the landfill(s).
 3. **Alternatives to Landfilling:** A list of the waste materials from the Project that will be separated for reuse, salvage, or recycling.
 4. **Meetings:** A description of the regular meetings to be held to address waste management. Refer to Section 01 31 19 "Project Meetings".
 5. **Materials Handling Procedures:** A description of the means by which any waste materials identified in item (3) above will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.

6. **Transportation:** A description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site) and destination of materials.

1.8 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager:** The Contractor shall designate an on-site party (or parties) responsible for instructing workers and overseeing and documenting results of the Waste Management Plan for the Project.
- B. Distribution:** The Contractor shall distribute copies of the Waste Management Plan to the Job Site Foreman, each Subcontractor, the Owner, and the Architect.
- C. Instruction:** The Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the Project.
- D. Separation Facilities:** The Contractor shall lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.
- E. Hazardous Wastes:** Hazardous wastes shall be separated, stored, and disposed of according to local regulations.
- F. Application for Progress Payments:** The Contractor shall submit with each Application for Progress Payment a Summary of Waste Generated by the Project. Failure to submit this information shall render the Application for Payment incomplete and shall delay Progress Payment. The Summary shall be submitted on a form acceptable to the Owner and shall contain the following information:
1. The amount (in tons or cubic yards) of material landfilled from the Project, the identity of the landfill, the total amount of tipping fees paid at the landfill, and the total disposal cost. Include manifests, weight tickets, receipt, and invoices.
 2. For each material recycled, reused, or salvaged from the Project: the amount (in tons or cubic yards), the date removed from the jobsite, the receiving party, the transportation cost, the amount of any money paid or received for the recycled or salvaged material, and the net total cost or savings of salvage or recycling of each material shall be indicated. Attach manifests, weight tickets, receipts, and invoices.

PART 2 – PRODUCTS

(Not Applicable)

PART 3 – EXECUTION

3.1 PLAN IMPLEMENTATION

- A.** Implement the waste management plan as approved by **Architect and Owner**.
- B.** Provide training of workers, contractors, subcontractors, and suppliers on proper waste management procedures.
1. Distribute waste management plan to all parties involved in the Project within **three (3)** days of submittal return.
 2. Distribute plan to parties when they first begin working on the Project site. Review plan procedures and locations established for salvage, recycling, and disposal.

3.2 SEPARATION OF RECYCLABLE WASTE MATERIALS

- A.** Provide the necessary containers and bins, to facilitate the waste management program, that are clearly and appropriately marked. Prevent contamination of recyclable materials from incompatible products and materials. Separate construction waste at the project site by one of the following methods:
1. **Source Separated Method:** Waste products and materials, that are recyclable, are separated from trash and sorted into appropriately marked separate containers and then transported to the respective recycling facility for further processing. Trash is transported to a landfill or incinerator.

2. **Co-Mingled Method:** All construction waste is placed into a single container and then transported to a recycling facility where the recyclable materials are sorted and processed and the remaining trash is transported to a landfill or incinerator.
3. Other methods proposed by the Contractor and approved by the **Architect and Owner**.

END OF SECTION 01 74 19

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Project record document submittal.
 - 3. Operation and maintenance manual submittal.
 - 4. Submittal of warranties.
 - 5. Final cleaning.
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section 01 11 00 "Summary of Work".
 - 2. Division 01 Section 01 29 76 "Progress Payment Procedures".
- C. Closeout requirements for specific construction activities may be included in the appropriate Sections in Divisions 02 through 49.

1.3 SUBSTANTIAL COMPLETION

- A. **General:** Basic contract definitions are included in Article 1 of the General Conditions of the Contract for Construction.
- B. **Preliminary Procedures:** Before requesting inspection for Certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
 - a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - 2. Advise the Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, certificates of compliance, operating certificates, and similar releases.
 - 5. Submit record drawings, maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 6. Deliver tools, spare parts, extra stock, and similar items.
 - 7. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
 - 8. Demonstrate, thru operation and testing, the functions of all systems and/or equipment to the satisfaction of the Owner for compliance to the Contract. Complete testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
 - 9. Complete final cleanup requirements.
 - 10. Certify that required training of personnel is complete.

- C. **Inspection Procedures:** The Contractor shall be ready and prepared when they request a Substantial Completion inspection. If the inspection reveals that the work is not complete, that there are extensive punchlist items that will take more than **ninety (90)** days to complete and as the items listed in Article 1.3 above are not complete, the Construction Administrator, Architect, and Owner will determine the inspection has failed.
- D. The Contractor is responsible for all costs to re-inspect due to a failed inspection. The Owner will issue a deduct change order to cover all costs for re-inspection.
 - 1. The Architect will repeat inspection when requested and assured that the Work is substantially complete.
 - 2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 ACCEPTANCE

- A. **Preliminary Procedures:** Before requesting final inspection for "Certificate of Acceptance" and final payment, complete the following. List exceptions in the request.
 - 1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
 - 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 - 3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, endorsed and dated by the Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Architect.
 - 4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the Owner took possession of and assumed responsibility for corresponding elements of the Work.
 - 5. Submit consent of surety to Final Payment.
 - 6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 7. Touch up and otherwise repair and restore marred, exposed finishes, including touchup painting.
- B. **Re-inspection Procedure:** The Inspection Group will re-inspect the Work upon receipt of notice from the Construction Administrator that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Owner.
 - 1. Upon completion of re-inspection, the Construction Administrator will prepare a Certificate of Acceptance. If the Work is incomplete, the Construction Administrator will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

1.5 AS-BUILT DOCUMENT SUBMITTALS

- A. **General:** The Contractor shall not use As-built Drawings for construction purposes. Protect contractor As-built Drawings from deterioration and loss in a secure, fire-resistant location. Provide access to As-built Drawings for the Architect's reference during normal working hours. Keep documents current; do not permanently conceal any work until required information has been recorded. **IMPORTANT NOTE: Failure to keep As-built Documents current is sufficient cause to withhold progress payments.**
 - 1. The Contractor shall also hire the services of a Surveyor registered in the State of Connecticut to conduct a final survey to determine the location of exterior underground utility lines and to record the results, and update existing electronic media.
 - 2. The record of exterior underground utilities shall be made at the time of installation on Mylar film drawing and AutoCAD (latest version) compatible disks. The drawing shall bear the seal of the Land Surveyor and a statement of accuracy.
- B. **As-built Drawings:** The Contractor shall maintain **one (1)** clean, complete undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date. Update As-built Drawings on a monthly basis coincident with the submittal of the Application for Payment.
 - 1. Mark record sets with erasable pencil to distinguish between variations in separate categories of the Work.
 - 2. Mark all new information that is not shown on Contract Drawings.

3. Note related change-order numbers where applicable.
 4. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.
 5. Upon completion of the work, the Contractor shall submit Record Drawings to the Construction Administrator for the Owner's Records who will pass them on to the Architect or Engineer for transferring the changes to the Record Drawing Mylar Tracings.
 6. Submit electronic format data of all Coordination Drawings as required by the Owner, at no additional cost.
 7. Refer to Section 01 45 00 "Quality Control" Article 1.3 for required as-built drawings and specifications for fire alarm systems.
- C. Record Specifications:** The Contractor shall maintain one (1) complete copy of the Project Manual, including Addenda. Include with the Project Manual one (1) copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.
1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
 2. Give particular attention to equals and substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
 3. Note related record drawing information and Product Data.
 4. Upon completion of the Work, submit Record Specifications to the Construction Administrator for the Owner's records.
- D. Record Product Data:** The Contractor shall maintain one (1) copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.
1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.
 2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
 3. Upon completion of markup, submit complete set of Record Product Data to the Construction Administrator for the Owner's records.
- E. Record Sample Submitted:** Immediately prior to Substantial Completion, the Contractor shall meet with the Construction Administrator, Architect and the Owner's personnel at the Project Site to determine which Samples are to be transmitted to the Owner for record purposes. Comply with the Owner's instructions regarding delivery to the Owner's Sample storage area.
- F. Miscellaneous Record Submittals:** Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to the Construction Administrator for the Owner's records.
- G. Maintenance Manuals:** Organize operation and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual, heavy-duty, **2-inch**, 3-ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder according to Division 01 Section 01 78 23 "Operation & Maintenance Data". Included but not limited to the following types of information:
1. Emergency instructions.
 2. Spare parts list.
 3. Copies of warranties.
 4. Wiring diagrams.
 5. Recommended "turn-around" cycles.
 6. Inspection procedures.
 7. Shop Drawings and Product Data.
 8. Fixture lamping schedule.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:

1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Fuels.
7. Identification systems.
8. Control sequences.
9. Hazards.
10. Cleaning.
11. Warranties and bonds.
12. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:

1. Startup.
2. Shutdown.
3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.

3.2 FINAL CLEANING

A. General: The General Conditions require general cleaning during construction. Regular site cleaning is included in Division 01 Section 01 50 00 "Temporary Facilities and Controls."

B. Cleaning: Employ professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

1. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion and Certification of Occupancy.
2. Interior:
 - a. Remove labels that are not permanent labels.
 - b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Remove paint spots; wash and polish glass.
 - c. Clean exposed interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

- d. Wash washable surfaces of mechanical, electrical equipment and fixtures and replace filters, clean strainers on mechanical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
 - e. Clean and polish finish hardware.
 - f. Clean and polish tile and other glazed surfaces.
 - g. Clean floors; wax and buff resilient tile. Clean vinyl or rubber base.
 - h. Vacuum and/or dust walls, ceilings, lighting fixtures, ceiling diffusers and other wall and ceiling items.
 - i. Remove defacements, streaks, fingerprints and erection marks.
3. Exterior:
- a. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth, even-textured surface.
 - b. Clean exposed exterior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances.
 - c. Clean roofs, gutters and downspouts.
 - d. Remove waste and surplus materials, rubbish and construction equipment and facilities from the site, and deposit it legally elsewhere.
 - e. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Remove paint spots; wash and polish glass.
- C. Pest Control:** Engage an experienced, licensed exterminator to make a final inspection and rid the work of rodents, insects, and other pests. Provide results of final inspection in writing.
- D. Removal of Protection:** Remove temporary protection and facilities installed for protection of the Work during construction.
- E. Compliance:** Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.
1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Construction Administrator.
 2. Leave building clean and ready for occupancy. If the Contractor fails to clean up, the Owner may do so, with the cost charged to the Contractor. The Owner will issue a credit change order to cover the costs.

END OF SECTION 01 77 00

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 00 General Conditions and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for operation and maintenance manuals, including the following:
1. Preparing and submitting operation and maintenance manuals for building operating systems and equipment.
 2. Preparing and submitting instruction manuals covering the care, preservation, and maintenance of architectural products and finishes.
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
1. Division 01 Section 01 33 00 "Submittal Procedures" specifies preparation of Shop Drawings and Product Data.
 2. Division 01 Section 01 75 00 "Starting and Adjusting" specifies instruction of the Owner and Agency operating personnel in the operation and maintenance of building systems and equipment and the general requirements for starting-up equipment and systems.
 3. Division 01 Section 01 77 00 "Closeout Procedures" specifies general closeout requirements.
 4. Division 01 Section 01 78 30 "Warranties and Bonds" specifies requirements for submittal of warranties and bonds.
 5. Division 01 Section 01 81 13 "Sustainable Design Requirements" specifies requirements for submittals related to green building certification.
 6. Division 01 Section 01 91 00 "Commissioning" specifies requirements for submittals related Commissioning.
 7. Appropriate Sections of Divisions 02 through 49 specify special operation and maintenance data requirements for specific pieces of equipment or building operating systems.

1.3 QUALITY ASSURANCE

- A. **Maintenance Manual Preparation:** In preparation of maintenance manuals, use personnel thoroughly trained and experienced in operation and maintenance of equipment or system involved.
1. Where maintenance manuals require written instructions, use personnel skilled in technical writing where necessary for communication of essential data.
 2. Where maintenance manuals require drawings or diagrams, use draftsmen capable of preparing drawings clearly in an understandable format.
- B. **Instructions for the Owner and Agency Personnel:** The Construction Manager must use experienced instructors thoroughly trained and experienced in operation and maintenance of equipment or system involved, to instruct the Owner's operation and maintenance personnel.

1.4 SUBMITTALS

- A. **Submittal Schedule:** Comply with the following schedule for submitting operation and maintenance manuals:
1. Before Substantial Completion, when each installation that requires operation and maintenance manuals is nominally complete, submit **four (4)** draft copies of each manual to the Owner's Representative, Commissioning Agent (CxA), Agency Representative, and Architect for review. Include a complete index or table of contents of each manual.
 - a. The Owner's Representative will return **one (1)** copy of the draft with comments within **twenty - one (21)** calendar days of receipt.
 - b. Submit **four (4)** copies of data in final form at least **twenty-one (21)** calendar days before final inspection. The Owner's Representative will return **one (1)** copy within **twenty-one (21)** calendar after final inspection, with comments.

2. After final inspection, make corrections or modifications to comply with the Commissioning Agent's (CxA), Architect's, and Agency Representative's comments. Submit final copies to the Owner's Representative within **twenty-one (21)** calendar days of receipt of the Commissioning Agent's (CxA), Architect's, and Agency Representative's comments.
- B. Form of Submittal:** Prepare operation and maintenance manuals in the form of an instructional manual for use by the Owner's operating personnel. Organize into suitable sets of manageable size. Where possible, assemble instructions for similar equipment into a single binder.
1. **Binders:** For each manual, provide heavy-duty, commercial-quality, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to receive **8-1/2-by-11- inch** paper. Provide a clear plastic sleeve on the spine to hold labels describing contents. Provide pockets in the covers to receive folded sheets.
 - a. Where **two (2)** or more binders are necessary to accommodate data, correlate data in each binder into related groupings according to the Project Manual table of contents. Cross-reference other binders where necessary to provide essential information for proper operation or maintenance of the piece of equipment or system.
 - b. Identify each binder on front and spine, with the printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter covered. Indicate volume number for multiple volume sets of manuals.
 2. **Dividers:** Provide heavy paper dividers with celluloid-covered tabs for each separate section. Mark each tab to indicate contents. Provide a typed description of the product and major parts of equipment included in the section on each divider.
 3. **Protective Plastic Jackets:** Provide protective, transparent, plastic jackets designed to enclose diagnostic software for computerized electronic equipment.
 4. **Text Material:** Where maintenance manuals require written material, use the manufacturer's standard printed material. If manufacturer's standard printed material is not available, provide specially prepared data, neatly typewritten, on **8-1/2-by-11-inch, 20-lb/sq ft** white bond paper.
 5. **Drawings:** Where maintenance manuals require drawings or diagrams, provide reinforced, punched binder tabs on drawings and bind in with text.
 - a. Where oversize drawings are necessary, fold drawings to the same size as text pages and use as a foldout.
 - b. If drawings are too large to be used practically as a foldout, place the drawing, neatly folded, in front or rear pocket of binder. Insert a typewritten page indicating drawing title, description of contents, and drawing location at the appropriate location in the manual.

1.5 MANUAL CONTENT

- A.** In each manual include information specified in the individual Specification Section and the following information for each major component of building equipment and its controls:
1. **General system or equipment description.**
 2. **Design factors and assumptions.**
 3. **Copies of applicable shop drawings and product data.**
 4. **System or equipment identification, including:**
 - a. **Name of manufacturer.**
 - b. **Model number.**
 - c. **Serial number of each component.**
 5. **Operating instructions.**
 6. **Emergency instructions.**
 7. **Wiring diagrams.**
 8. **Inspection and test procedures.**
 9. **Maintenance procedures and schedules.**
 10. **Precautions against improper use and maintenance.**
 11. **Copies of warranties.**
 12. **Repair instructions including spare parts listing.**

13. Sources of required maintenance materials and related services.

14. Manual index.

- B.** Organize each manual into separate sections for each piece of related equipment. As a minimum, each manual shall contain a title page; a table of contents; copies of product data, supplemented by drawings and written text; and copies of each warranty, bond, and service contract issued.
- 1. Title Page:** Provide a title page in a transparent, plastic envelope as the first sheet of each manual. Provide the following information:
 - a. Subject matter covered by the manual.**
 - b. Name and address of the Project.**
 - c. Date of submittal.**
 - d. Name, address, and telephone number of the Construction Manager.**
 - e. Name and address of the Architect and Owner's Representative.**
 - f. Cross-reference to related systems in other operation and maintenance manuals.**
 - 2. Table of Contents:** After title page, include a typewritten table of contents for each volume, arranged systematically according to the Project Manual format. Include a list of each product included, identified by product name or other appropriate identifying symbol and indexed to the content of the volume.
 - a.** Where a system requires more than one volume to accommodate data, provide a comprehensive table of contents for all volumes in each volume of the set.
 - 3.** Provide a general information section immediately following table of contents, listing each product included in the manual, identified by product name. Under each product, list the name, address, and telephone number of the subcontractor or Installer and the maintenance subcontractor. Clearly delineate the extent of responsibility of each of these entities. Include a local source for replacement parts and equipment.
 - 4. Product Data:** Where the manuals include manufacturer's standard printed data, include only sheets that are pertinent to the part or product installed. Mark each sheet to identify each part or product included in the installation. Where the Project includes more than one (1) item in a tabular format, identify each item, using appropriate references from the Contract Documents. Identify data that is applicable to the installation, and delete references to information that is not applicable.
 - 5. Written Text:** Prepare written text to provide necessary information where manufacturer's standard printed data is not available, and the information is necessary for proper operation and maintenance of equipment or systems. Prepare written text where it is necessary to provide additional information or to supplement data included in the manual. Organize text in a consistent format under separate headings for different procedures. Where necessary, provide a logical sequence of instruction for each operation or maintenance procedure.
 - 6. Drawings:** Provide specially prepared drawings where necessary to supplement manufacturer's printed data to illustrate the relationship of component parts of equipment or systems or to provide control or flow diagrams. Coordinate these drawings with information contained in project record drawings to assure correct illustration of the completed installation.
 - a.** Do not use original Record Documents as part of operation and maintenance manuals.
 - 7. Warranties and/or Bonds:** Provide a copy of each warranty and/or bond in the appropriate manual for the information of the Owner's operating personnel. Provide written data outlining procedures to follow in the event of product failure. List circumstances and conditions that would affect validity of warranty or bond.

1.6 MATERIAL AND FINISHES MAINTENANCE MANUAL

- A.** Submit **four (4)** copies of each manual, in final form, on material and finishes to the Owner's Representative for distribution. Provide **one (1)** section for architectural products, including applied materials and finishes. Provide a second section for products designed for moisture protection and products exposed to the weather.
- 1.** Refer to individual Specification Sections for additional requirements on care and maintenance of materials and finishes.
- B. Architectural Products:** Provide manufacturer's data and instructions on care and maintenance of architectural products, including applied materials and finishes.
- 1. Manufacturer's Data:** Provide complete information on architectural products, including the following, as applicable:

- a. Manufacturer's catalog number.
 - b. Size.
 - c. Material composition.
 - d. Color.
 - e. Texture.
 - f. Reordering information for specially manufactured products.
2. **Care and Maintenance Instructions:** Provide information on care and maintenance, including manufacturer's recommendations for types of cleaning agents to be used and methods of cleaning. Provide information on cleaning agents and methods that could prove detrimental to the product. Include manufacturer's recommended schedule for cleaning and maintenance.
- C. **Moisture Protection and Products Exposed to the Weather:** Provide complete manufacturer's data with instructions on inspection, maintenance, and repair of products exposed to the weather or designed for moisture-protection purposes.
1. **Manufacturer's Data:** Provide manufacturer's data giving detailed information, including the following, as applicable:
 - a. **Applicable standards.**
 - b. **Chemical composition.**
 - c. **Installation details.**
 - d. **Inspection procedures.**
 - e. **Maintenance information.**
 - f. **Repair procedures.**

1.7 EQUIPMENT AND SYSTEMS MAINTENANCE MANUAL

- A. Submit **four (4)** copies of each manual, in final form, on equipment and systems to the Owner's Representative for distribution. Provide separate manuals for each unit of equipment, each operating system, and each electric and electronic system.
1. Refer to individual Specification Sections for additional requirements on operation and maintenance of the various pieces of equipment and operating systems.
- B. **Equipment and Systems:** Provide the following information for each piece of equipment, each building operating system, and each electric or electronic system.
1. **Description:** Provide a complete description of each unit and related component parts, including the following:
 - a. **Equipment or system function.**
 - b. **Operating characteristics.**
 - c. **Limiting conditions.**
 - d. **Performance curves.**
 - e. **Engineering data and tests.**
 - f. **Complete nomenclature and number of replacement parts.**
 2. **Manufacturer's Information:** For each manufacturer of a component part or piece of equipment, provide the following:
 - a. **Printed operation and maintenance instructions.**
 - b. **Assembly drawings and diagrams required for maintenance.**
 - c. **List of items recommended to be stocked as spare parts.**
 3. **Maintenance Procedures:** Provide information detailing essential maintenance procedures, including the following:
 4. **Operating Procedures:** Provide information on equipment and system operating procedures, including the following:
 - a. **Startup procedures.**
 - b. **Equipment or system break-in.**

- c. **Routine and normal operating instructions.**
 - d. **Regulation and control procedures.**
 - e. **Instructions on stopping.**
 - f. **Shutdown and emergency instructions.**
 - g. **Summer and winter operating instructions.**
 - h. **Required sequences for electric or electronic systems.**
 - i. **Special operating instructions.**
- 5. **Servicing Schedule:** Provide a schedule of routine servicing and lubrication requirements, including a list of required lubricants for equipment with moving parts.
 - 6. **Controls:** Provide a description of the sequence of operation and as-installed control diagrams by the control manufacturer for systems requiring controls.
 - 7. **Identification Drawings:** Provide each Subcontractor's Identification Drawings.
 - a. Provide as-installed, color-coded, piping diagrams, where required for identification.
 - 8. **Valve Tags:** Provide charts of valve-tag numbers, with the location and function of each valve.
 - 9. **Circuit Directories:** For electric and electronic systems, provide complete circuit directories of panel boards, including the following:
 - a. Controls.
 - b. Communication.
- C. Electronic Media:**
- 1. For equipment which requires maintenance by operational personnel, provide a professionally developed **DVD** for the use of maintenance training for the facility. Each **DVD** will be accompanied by a written index which can be utilized to find any specific item of information by time or place on the **DVD**.
 - 2. The Contractor is responsible for this production. This **DVD** will be provided to the Owner's Representative at the same time as the delivery of the other maintenance material.
 - 3. The **DVD** must be able to be edited for future changes to the equipment and modifications as they occur.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 78 23

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.
 - 1. Refer to the General Conditions for terms of the Contractor's period for correction of the Work.
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section 01 33 00 "Submittal Procedures" specifies procedures for submitting warranties.
 - 2. Division 01 Section 01 77 00 "Closeout Procedures" specifies contract closeout procedures.
 - 3. Division 01 Section 01 78 23 "Operation and Maintenance Data" specifies required operation and maintenance data.
 - 4. Divisions 02 through 49 Sections for specific requirements for warranties on products and installations specified to be warranted.
 - 5. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
- C. **Disclaimers and Limitations:** Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 WARRANTY REQUIREMENTS

- A. **Related Damages and Losses:** When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.
- B. **Reinstatement of Warranty:** When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. **Replacement Cost:** Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- D. **Owner's Recourse:** Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1. **Rejection of Warranties:** The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
- E. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.
- F. The Contractor shall guarantee all materials and workmanship for a period of **eighteen (18)** months from the date of Substantial Completion of the Work. In addition, the Contractor shall furnish the warranties listed below. Submit four (4) copies of each to the Construction Administrator in the supplier's standard form or in the form given below if there is no standard form available.

- G. Specification/Warranty Table:** The General Contractor shall provide for all warranties as shown in the Specification/Warranty table:

| Specification / Warranty Table | | |
|---------------------------------------|-------------|---|
| Item No. | Section No. | Specification Product/Warranty |
| 1. | 08 | <u>14 16</u> |
| | | Solid Wood Core and Mineral Core doors: Lifetime for interior doors. 5 year for exterior doors. |
| 2. | 08 | <u>71 00</u> |
| | | Closers, Locksets, Exit Bolts: Longest term offered by manufacturer for grade/class of particular item, material and workmanship. |
| 3. | 10 | <u>28 00</u> |
| | | Mirrors: 15 years against silver spoilage. |
| 4. | 14 | <u>42 00</u> |
| | | Wheelchair Lifts: 18 months for material, workmanship, and installation. |
| 5. | 26 | <u>00 00</u> |
| | | Lighting Fixtures and Drivers: 5 years, material and installation, |
| 6. | 26 | <u>00 00</u> |
| | | Lighting Control Devices: 5 years, material and installation, |

- H.** Submit certification that finish materials are fire rated as specified.

J. Form of Warranty: Warranties shall be submitted in following format:

| | | | |
|---|--|--|--|
| Warranty | | | |
| Commissioner: (Insert Commissioner's Name) Department of Administrative Services DAS Commissioner's Office 450 Columbus Boulevard, Suite 1501 Hartford, CT 06103 | | | |
| Project Number: (Insert DAS/CS Project Number) Project Title: (Insert DAS/CS Project Title) | | | |
| I (We) hereby warranty | | | |
| the _____ work on the referenced project for a period of _____ years | | | |
| from _____, 20 _____ against failures of workmanship and materials in accordance | | | |
| with the requirements of Section _____, Page _____, Paragraph _____, of the Specifications. | | | |
| Installer <input type="checkbox"/> | | Subcontractor <input type="checkbox"/> | |
| Vendor/Suppliers <input type="checkbox"/> | | Manufacturer <input type="checkbox"/> | |
| Installer or Subcontractor or Vendor/Suppliers or Manufacturer Name: _____ | | | |
| Installer or Subcontractor or Vendor/Suppliers or Manufacturer Signature: _____ | | | |
| General Contractor's Name _____ | | | |
| General Contractor's Signature: _____ | | | |
| or | | | |
| General Contractor's Authorized Agent Signature: _____ | | | |

- K. Bonds shall be by approved Surety Companies, made out to the Commissioner, Department of Administrative Services on companies' standard form.
- L. Warranties, Guarantees, or bonds supplied by the General Contractor's Subcontractors or Vendors/Suppliers or Manufacturers shall reference the project name, number, and location and be certified by the General Contractor to be for the product and installation on the project and must be countersigned by the General Contractor.
- M. Bonds shall be by approved Surety Companies, made out to the Commissioner, Department of Administrative Services, on company's standard form.
- N. Guarantees, warranties or bonds supplied by Subcontractors, Suppliers or Manufacturers shall reference the project name, number, and location and be certified by the Contractor to be for the product and installation on the project and must be countersigned by the Contractor.

1.4 SUBMITTALS

- A. Submit written warranties prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
- B. Forms for special warranties are included in this Section. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Submit a draft to the Owner, through the Construction Administrator, for approval prior to final execution.

1. Refer to Divisions 02 through 49 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. **Form of Submittal:** At Final Completion compile **two (2)** copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- D. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive **8-1/2-by-11-inch** paper.
 1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.
 2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
 3. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not applicable)

END OF SECTION 01 78 30

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of building or structure, including concrete slabs, as indicated.
 - 2. Demolition and removal of interior partitions, and/or portions of interior partitions, as indicated.
 - 3. Demolition and removal of railing systems, as indicated.
 - 4. Demolition and removal of finish systems, including ceilings and floor finishes as indicated.
 - 5. Demolition and removal of toilet partitions and accessories as indicated.
 - 6. Demolition and removal of doors and frames, as indicated.
 - 7. Demolition and removal of built-in casework (cabinets and countertops) as indicated.
 - 8. Removal and salvage of the following:
 - a. Door hardware.
- B. Related Sections include the following:
 - 1. Division 01 Section "Summary" for use of premises and Owner-occupancy requirements.
 - 2. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
 - 3. Division 01 Section "Cutting and Patching" for cutting and patching procedures.
 - 4. Division 02 Abatement sections.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property.
 - 1. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1.5 PREINSTALLATION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Locations of proposed dust- and noise-control temporary partitions and means of egress.
 - 6. Coordination of Owner's continuing occupancy of portions of existing building.
 - 7. Means of protection for items to remain and items in path of waste removal from building.
- C. Predemolition Photographs or Video: Submit before Work begins.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
 - 1. Comply with requirements specified in Division 01 Section "Summary."
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: Hazardous materials are present in construction to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
 - 1. Hazardous material remediation is specified in other Division 02 Sections.
 - 2. If unidentified hazardous materials are encountered during the work, do not disturb hazardous materials or items suspected of containing hazardous materials. Stop all work on the project and immediately notify Architect.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.
- F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
 - 1. Comply with requirements specified in Division 01 Section "Photographic Documentation."
 - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.
 - 3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
 - 1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."

- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."
 - 6. Comply with indoor air quality requirements specified in Division 01 Section "Indoor Air Quality Construction Plan."

- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 5. Maintain adequate ventilation when using cutting torches.

6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly. Comply with requirements in Division 01 Section "Construction Waste Management and Disposal."

B. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.
1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property.
 - 1. Include cost of all transportation and disposal.
 - 2. Provide verification of all disposal trips.
 - 3. Hazardous materials are to be handled and disposed of in accordance with all State, Local, and Federal regulations.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02 41 19

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 02 82 13 – ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. General Provisions of Contract, including General Supplementary Conditions shall apply to this Section.

1.2 RELATED SECTIONS

- A. Section 02 83 19 - Lead-Based Paint Awareness
- B. Drawing HM-001

1.3 CONSULTANT

- A. The Friar Architects, Inc. (the “Client”) has retained Fuss & O’Neill (the “Consultant”) for the purposes of project management and monitoring during Asbestos Abatement activities. At the discretion of the Client, the Consultant will represent the Client during the abatement project. The Asbestos Abatement Contractor (the “Contractor”) will regard the Consultant’s direction as authoritative and binding as provided herein, in matters particularly, but not limited to the following:
 - 1. Approval of work areas
 - 2. Review of monitoring results
 - 3. Completion of the various segments of work
 - 4. Final completion of the abatement
 - 5. Submission of data
 - 6. Daily field punch list items
- B. The State of Connecticut-licensed Asbestos Consultant – Project Designer for this project is Eric W. Cooley (License No. 000305).

1.4 SCOPE OF WORK

- A. Work outlined in this Section includes all work necessary for the removal, segregation, staging, packaging, transporting, and disposing of assumed and verified asbestos-containing materials (ACM) that will be impacted during renovation activities (the “Work”) at the Connecticut Department of Veteran’s Affairs (DVA) Veteran’s Home and Hospital Building 2 – Commissary, Building 3 – Domicile, Building 4 – Domicile (the “Site”).
- B. The bid includes the removal and disposal of all ACM identified in the scope of work for the Site as identified herein by workers meeting requirements of Occupational Safety and Health Administration (OSHA) 1926.1101 for Class 1 and Class 2 work. Additional materials as discovered outside of the quantities listed will be covered by unit prices. In addition, materials that are below the quantities listed will be covered by unit prices for credit to the Client. This bid includes the following ACM to be removed:

BASE BID

| LOCATION | MATERIAL TYPE | QUANTITY | SPEC NOTES |
|--|--|--|------------|
| Building 2 – Lower Level Men’s & Women’s Bathroom Pipe Chases Behind Walls Adjacent Plumbing Fixtures | Pipe Insulation & Associated Pipe Fitting Insulation | 75 Linear Feet (Inaccessible area - quantity estimated) | 1 |
| Building 2 – First Floor Men’s & Women’s Bathroom Pipe Chases Behind Walls Adjacent Plumbing Fixtures | Pipe Insulation and Associated Pipe Fitting Insulation | 50 Linear Feet (Inaccessible area - quantity estimated) | 1 |
| Building 2 – 2nd Floor Men’s and Woman’s Bathrooms Pipe Chases Behind Walls Adjacent Plumbing Fixtures | Pipe Insulation & Associated Pipe Fitting Insulation | 25 Linear Feet (Inaccessible area - quantity estimated) | 1 |
| Building 2 – 2 nd Floor Men’s and Woman’s Bathrooms above Suspended Ceiling | 6” Pipe Insulation & Associated Mudded Pipe Fitting Insulation | 30 Linear Feet & 2 fittings | 2 |
| Building 2 – 2nd Floor Men’s and Woman’s Bathroom on Concrete Floor | 12” x 12” Tan Floor Tile Below Wood Grain Laminate Flooring | 350 Square Feet | 3 |
| Building 2 – 3 rd Floor Toilet /Custodial Room Chases Behind Walls Adjacent Plumbing Fixtures and Wall Demolition Locations | 3” Pipe Insulation and Associated Pipe Fitting Insulation | 25 Linear Feet | 1 |

Notes:

1. Pipe and pipe fitting insulations was verified in several bathroom areas behind masonry wet walls. The Contractor shall conduct exploratory demolition within work areas per the Owner and Consultant’s direction as necessary to identify assumed asbestos pipe insulation within inaccessible areas, such as but not limited to, pipe chases, within bathroom wet walls, wall penetrations /demolition openings. The Contractor is responsible for all demolition to expose piping in concealed areas necessary to accommodate plumbing fixture upgrades and abatement of any suspect ACM or contamination necessary within such areas. The pipe insulation abatement locations shall be reviewed with the Consultant and Construction Manager to verify necessary removal locations prior to set-up of the contained work area. Work involves the removal of masonry walls behind plumbing fixtures, as necessary to access piping within the adjacent chases. Masonry wall removal to access pipe insulation shall be conducted within a contained work area by abatement personnel. Clean masonry wall material that has not been contaminated by damaged pipe insulation, as determined by the Consultant, may be disposed of as construction debris waste. If asbestos insulation is damaged and plaster is determined to be contaminated, all waste will be abated and disposed of as ACM. All pipe insulation materials, ACM, suspect ACM, dust, dirt and debris shall be cleaned from all floor and wall surfaces and remaining equipment. All metal components shall be cleaned of all materials as verified by the Consultant and remain in place.
2. Pipe and pipe fitting insulations exist on piping runs above suspended ceilings. The abatement locations shall be reviewed with the Consultant and Construction Manager to verify necessary removal locations prior to set-up of the contained work area. All pipe insulation materials, ACM, suspect ACM, dust, dirt and debris shall be cleaned from all floor and wall surfaces, remaining equipment and piping as verified by the Consultant. All metal components shall be cleaned and remain in place. All materials removed shall be, packaged, labeled and disposed of as ACM.

3. The Contractor shall remove asbestos floor tile, laminate flooring, floor leveler materials, coatings, adhesives, tars and any other materials associated with the flooring system to assure complete removal of all materials down to a clean concrete substrate. All materials removed shall be, packaged, labeled and disposed of as ACM.

1.5 USE OF THE CONTRACT DOCUMENTS

- A. It shall be incumbent upon the Contractor to visit the Site and determine what exists, its condition, and what will be required to accomplish the Work intended by the Contract Documents. No increase in the Contract Sum will be permitted as a result of the Contractor's failure to visit the Site and understand the existing conditions.
- B. All work shall comply with the Contract Documents and with applicable codes, laws, regulations, and ordinances wherever applicable. The most stringent of all the foregoing shall govern the Work.
- C. It is not intended that the Specifications show every detail of the Work, but the Contractor shall be required to furnish within the Contract Sum all material and labor necessary for the completion of the Work in accordance with the intent of these Specifications.
- D. In case of ambiguity among the Contract documents, the more stringent requirement as determined by the Consultant shall prevail.
- E. The Work of this Contract includes making modifications as necessary, subject to approval by Client in consultation with the Consultant to correct any conflicts.
- F. All items not specifically mentioned in the Specifications, but implied by trade practices to complete the Work, shall be included.

1.6 SITE EXAMINATION

- A. It is understood that the Contractor has examined the Site and made their own estimates of the facilities and difficulties attending the execution of the Work, and has based their price thereon.
- B. Except for unforeseeable concealed conditions as determined by the Consultant, the Contractor shall make no claim for additional cost due to the existing conditions at the Site.

1.7 CONTRACTOR QUALIFICATIONS

- A. All bidders shall submit a record of prior experience in asbestos abatement projects, listing no less than three completed projects in the past year, with all projects of similar size and scope. The Contractor shall list the experience and training of the project foremen and all on-site personnel. The information that should be included is as follows:
 1. Project Name and Address
 2. Client's Name and Address
 3. Architect/Consultant
 4. Contract Amount
 5. Date of Completion
 6. Extras and Changes

- B. The Contractor selected must appear on the approved list of Asbestos Abatement Contractors on file at the State of Connecticut Department of Public Health (CTDPH) and hold a valid license for asbestos abatement within the CTDPH.
- C. Submit a written statement regarding whether the Contractor has ever been cited for non-compliance with federal, state, or local asbestos and/or lead regulations or other environmental regulations/work pertaining to worker protection, removal, transport, or disposal.

1.8 TESTING LABORATORY SERVICES

- A. The Contractor shall submit to the Consultant the name, address and qualifications of proposed laboratories intended to be utilized for sample analysis as required by this Section.

1.9 ADDITIONAL GENERAL REQUIREMENTS

- A. The Contractor shall employ a competent CTDPH-licensed Asbestos Abatement Supervisor with at least three years of experience on projects of similar scope and magnitude who shall be responsible for all work involving asbestos abatement as described in the specifications and defined in applicable regulations, and have full-time daily supervision of the same. The Supervisor shall be the competent person as defined by the OSHA regulations.
- B. If required by federal, state, local, and any other authorities having jurisdiction over such work, the Contractor shall allow the work of this contract to be inspected. The Contractor shall immediately notify the Client and Consultant and shall maintain written evidence of such inspection for review by the Client, and Consultant.
- C. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.
- D. The Contractor shall immediately notify the Client and Consultant of the delivery of all permits, licenses, certificates of inspection, of approval, or occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of who issued, and shall cause them to be displayed to the Client and Consultant for verification and recording.

1.10 PROJECT DESCRIPTION

- A. The bid includes the removal, packaging, transporting, and disposing of all ACM as identified herein conducted by workers meeting the requirements of OSHA Title 29 CFR, Part 1926.1101 for Class 1 and 2 work. This shall include all necessary demolition to access the ACM for abatement.
- B. Materials as discovered outside of those listed (either above or below) will be measured and paid or credited by unit prices. The quantities are estimates only and should be verified by the Contractor.
- C. The bid includes the work described in the technical specifications and associated documents.

- D. It is assumed the Work will be performed during the initial mobilization in conjunction with other trades and that the work will be completed. If the Contractor mobilizes multiple times for his/her own operational purposes, the Client will not pay for such mobilizations.
- E. Safety Data Sheets (SDS) for chemicals to be used during the project must be submitted to the Consultant prior to site delivery.
- F. The Contractor shall be responsible for providing temporary water and power as needed at the Site to perform the work required.

1.11 DEFINITIONS

- A. The following definitions relative to asbestos abatement apply:
 - 1. Abatement: Procedures to control fiber release from ACM; includes removal, encapsulation, and enclosure.
 - 2. Air Monitoring: The process of measuring the total airborne fiber concentration of an area, or a person.
 - 3. Amended Water: Water to which a surfactant (wetting agent) has been added.
 - 4. Asbestos: The name given to a number of naturally occurring fibrous silicates. This includes the serpentine forms and the amphiboles, and includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite, or any of these forms, which have been chemically-altered.
 - 5. Asbestos-Containing Materials: For the purpose of this project design, this means any building material categorized by EPA as surfacing material, thermal system insulation, or miscellaneous, as well as any other medium including soil or unidentified debris, that contains greater than 1% asbestos (as defined above) based on the analytical methodology adopted by the Project Designer for application to the subject building materials at this Site.
 - 6. Asbestos Felt: A product made by saturating felted asbestos with asphalt, or other suitable bindery, such as a synthetic elastomer.
 - 7. Asbestos Fibers: Those particles with a length greater than five (5) microns and a length to diameter ratio of 3:1 or greater.
 - 8. Asbestos Work Area: A regulated area as defined by OSHA Title 29 CFR, Part 1926.1101 where asbestos abatement operations are performed, which is isolated by physical barriers to prevent the spread of asbestos dust, fibers, or debris. The regulated area shall comply with requirements of regulated area for demarcation, access, respirators, prohibited activities, competent persons and exposure assessments and monitoring.
 - 9. Clean Room: An uncontaminated area or room, which is a part of the worker decontamination enclosure with provisions for storage of worker street clothes and protective equipment.
 - 10. Competent Person: As defined by OSHA Title 29 CFR, Part 1926.1101, a representative of the Abatement Contractor who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure. The Competent Person has authority to take prompt corrective measures, and to eliminate such hazards during asbestos removal. The Competent Person shall be properly trained in accordance with EPA's Model Accreditation Plan (MAP).
 - 11. Decontamination Enclosure System: A series of connected areas, with curtained doorways between any two adjacent areas, for the decontamination of workers and equipment. A decontamination enclosure system always contains at least one airlock and is adjacent and connected to the regulated area, where possible.
 - 12. Encapsulant: A liquid material which can be applied to ACM, which controls the possible release of asbestos fibers from the materials either by creating a membrane over the

- surface (bridging encapsulant), or penetrating the material and binding its components together (penetrating encapsulant).
13. Equipment Room: Any contaminated area or a room that is part of the worker decontamination enclosure with provisions for storage of contaminated clothing and equipment.
 14. Fixed Object: Unit of equipment or furniture in the work areas that cannot be removed from the work area.
 15. Friable Asbestos Materials: Any material that contains more than 1% asbestos by weight, that can be crumbled, pulverized or reduced to powder by hand pressure.
 16. HEPA Filter: High Efficiency Particulate Air (HEPA) filter in compliance with ANSI Z9.2 1979.
 17. HEPA Vacuum Equipment: Vacuum equipment fitted with a HEPA filter system for filtering the effluent air from the unit.
 18. Movable Object: Unit of equipment or furniture in the work area that can be removed from the work area.
 19. Negative Air Pressure Equipment: A portable local exhaust system equipped with HEPA filtration used to create negative pressure in a regulated area (negative with respect to adjacent unregulated areas), and capable of maintaining a constant, low velocity air flow into regulated areas from adjacent unregulated areas.
 20. NESHAP: National Emission Standards for Hazardous Air Pollutants regulations enforced by the EPA.
 21. Permissible Exposure Limit (PEL): The maximum total airborne fiber concentration to which an employee is allowed to be exposed. The new limit established by OSHA Title 29 CFR, Part 1926.1101 is 0.1 fibers per cubic centimeter (fibers/cc) as an eight (8)-hour time-weighted average (TWA), and 1.0 fibers/cc averaged over a sampling period of 30 minutes as an Excursion Limit. The Contractor shall be responsible for maintaining work areas in a manner that this standard is not exceeded.
 22. Project Monitor: A professional capable of conducting air monitoring and analysis of schemes. This individual should be an industrial hygienist, an environmental scientist, or a Consultant with experience in asbestos air monitoring and worker protection equipment and procedures. This individual should have demonstrated proficiency in conducting air sample collection in accordance with OSHA Title 29 CFR, Parts 1910.1001 and 1926.1101.
 23. RCRA: The Resource Conservation and Recovery Act (EPA Title 40 CFR, Parts 260 - 265).
 24. Regulated Area: An area established by the employer to demarcate where Class I, II, and III asbestos work is conducted and any adjoining area where debris and waste from such asbestos work accumulate, and a work area within which total airborne fiber concentrations exceed, or there is a reasonable possibility that they may exceed the PEL.
 25. Shower Room: A room between the clean room and the equipment room in the work decontamination enclosure with hot and cold running water and suitably arranged for employee showering during decontamination. The shower room is located in an airlock between the contaminated area and the clean area.
 26. Totally Enclosed Manner: A manner that will ensure no exposure of human beings or the environment to a concentration of asbestos.
 27. Transport Vehicle: A motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (e.g., trailer, railroad freight car) is a separate transport vehicle.
 28. Waterproofing: Material, usually a membrane or applied compound (tar/mastic), used to make a surface impervious to water, includes concealed conditions (applications around doors, windows, and in wall cavities). Sometimes combined with felts.

1.12 SUBMITTALS

- A. The Contractor shall submit the following to the Consultant in one complete package prior to the pre-construction meeting, and no later than 10 business days prior to the anticipated start of the Work:
1. Submit copies of all notifications, permits, applications, licenses, and like documents required by federal, state, or local regulations obtained or submitted in proper fashion.
 2. Submit a schedule to the Client and the Consultant that defines a timetable for executing and completing the project, including work area preparations, removal, cleanup, decontamination, and final clearance air monitoring.
 3. Submit the current valid CTDPH Asbestos Abatement Contractor license and certificate of insurance.
 4. Submit the name and address of the hauling contractor and landfill to be used. Also submit current valid operating permits and certificates of insurance for the transporter and landfill.
 5. Submit photographic or video documentation showing the building conditions prior to the start of work to the Owner and Consultant. The Contractor shall be held responsible for all conditions not shown on the pre-construction documentation.
 6. Submit the plans and construction details for the Work sequence, regulated area locations, waste container staging area, worker decontamination enclosure system, equipment decontamination, and management area and any other pertinent information for compliance with this specification, the AWP (Boiler Room – Bid Alternate 1), and applicable regulations.
 7. Submit the CTDPH license, training, medical, and respirator fit test records of each employee who may be on the Site.
 8. If the Contractor's CTDPH-licensed Asbestos Abatement Supervisor is not conducting OSHA-required employee exposure monitoring, submit the qualifications of the air sampling professional that the Contractor proposes to use for this project for this task.
 9. Submit detailed product information on all materials and equipment proposed for asbestos abatement work on this project. This includes SDS on all products and chemicals that may be used on the project.
 10. Submit pertinent information regarding the qualifications of the Project Supervisor (competent person) for this project, as well as a list of past projects completed.
 11. Submit a chain-of-command for the project.
 12. Submit a site-specific Emergency Action Plan for the project. The Plan may include emergency procedures to be followed by Contractor personnel to evacuate the building, hospital name, phone number, and most direct transportation route from the Site, emergency telephone numbers, etc.
 13. Submit a written site-specific Respiratory Protection Program for employees for the Work, including make, model and National Institute of Occupational Safety and Health (NIOSH) approval numbers of respirators to be used at the Site (if applicable).
 14. Proposed electrical safeguards to be implemented by a qualified Electrical Contractor, including but not limited to: location of transformers, overhead electrical lines and any other electrical equipment necessary to safely perform the project, including a description of electrical hazards and a safety plan for common practices for Site demolition safety. This may also include safety plan for the staging, operation and maintenance of generators or other equipment to be used an alternative to electricity to operate equipment.
 15. Submit the proposed worker orientation plan that at a minimum includes a description of asbestos hazards and abatement methodologies, a review of worker protection requirements, and the outline of safety procedures.
 16. No work on the Site will be allowed to begin until the Client and the Consultant as listed herein approve the Pre-Construction Submittals. Any delay caused by the Contractor's refusal or inability to submit this documentation in a timely manner does not constitute a cause for change order or a time extension.

- B. The Contractor shall submit the following to the Consultant during the Work:
1. Copies of personal air sampling results (Consultant will not review or provide any direction or advice regarding results). The Contractor shall be responsible for proper sample analytical review and personal protective equipment (PPE) selection and use. Records are retained solely for project record.
 2. Copies of training, CTDPH licenses, fit test records, and medical records for new employees to start work (24-hours in advance) and prior to the new employee arriving at the Site.
 3. Carbon copies from waste shipment record, waste manifest records, bill of lading, or other waste tracking record for all specified materials.
 4. Copies of daily log sheets, daily sign-in sheets, and containment sign-in sheets.
- C. The Contractor shall submit the following to the Consultant at the completion of the Work. The Client reserves right to retain payment(s) until all items are received in completion:
1. Original final completed copies of the waste shipment records, signed by all transporters and the designated disposal site Client/operator.
 2. Original final completed copies of bill of lading, weight tickets, recycling tickets, and manifests for all specified materials. Location material removed, material description and quantities shall be included on the paperwork for the project record.
 3. Contractor's logs (daily activity logs, daily sign in sheets, containment sign-in sheets), and all worker training, CTDPH licenses, medical records and respirator fit test records.
 4. Copies of all OSHA personal monitoring results.

1.13 REGULATIONS AND STANDARDS

- A. The Contractor shall be solely responsible for conducting this project and supervising all work in a manner that will be in conformance with all federal, state, and local regulations and guidelines pertaining to asbestos abatement. Specifically, the Contractor shall comply with the requirements of the following:
1. EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) Regulations (Title 40 CFR, Part 61, Subpart M);
 2. EPA Asbestos Hazards Emergency Response Act (AHERA) Regulations (Title 40 CFR, Part 763, Subpart E);
 3. OSHA Asbestos Regulations (Title 29 CFR, Parts 1910.1001 and 1926.1101); and
 4. Department of Transportation (DOT) Hazardous Waste Transportation Regulations (Title 49 CFR, Parts 170 – 180);
 5. Connecticut Department of Energy and Environmental Protection (CTDEEP) Regulations (Section 22a-209-8(i) and Section 22a-220 of the Connecticut General Statutes);
 6. CTDPH Standards for Asbestos Abatement (Sections 19a-332a-1 to 19a-332a-16);
 7. CTDPH Licensing and Training Requirements for Persons Engaged in Asbestos Abatement and Asbestos Consultant Services (Sections 20-440-1 to 20-440-9 and Section 20-441);
 8. 2003 International Building Code as adopted by the 2005 State of Connecticut Building Code including the 2009, 2011, 2013, and 2016 amendments;
 9. Life Safety Code, National Fire Protection Association (NFPA);
 10. Local health and safety codes, ordinances, or regulations pertaining to asbestos remediation and all national codes and standards including American Society of Testing and Materials (ASTM), American National Standards Institute (ANSI), and Underwriter's Laboratories (UL).

1.14 EXEMPTIONS

- A. Any deviations from these specifications require the written approval and authorization from the Client and Consultant. Any deviations that may impact the bid cost shall be delineated with the bid for the Client to review.
- B. Modifications from the standard work practices identified in the CTDPH Standards for Asbestos Abatement, Sections 19a-332a-1 to 19a-332a-16 have not been identified; therefore an AWP has not been submitted for the work. An AWP is not anticipated for this project. Work shall be conducted using the standard work practices identified by the CTDPH.

1.15 FINAL RE-OCCUPANCY AIR CLEARANCE

- A. Following the completion of the encapsulation phase of the work, the Consultant shall collect final air clearance samples inside the work area per CTDPH asbestos regulations. The Client of the facility shall be responsible for payment of the sampling and analysis of the initial final air clearance samples only. Re-occupancy final air clearance sampling will be conducted for all the work areas. The Contractor shall be responsible for payment of all costs associated with the collection and analysis of additional final air clearance samples if the first set of samples fail to satisfy the clearance criteria. Contractor shall not conduct demolition or other removal activities during the air clearance. The Contractor shall assume air clearance results will be within 48 hours from the time the Transmission Electron Microscopy (TEM) air clearance is collected for analysis. The Contractor shall assume air clearance results by Phase Contrast Microscopy (PCM) will be within 24 hours from the time the sample is collected.

1.16 NOTIFICATIONS, POSTINGS, SUBMITTALS, AND PERMITS

- A. The Contractor shall submit the CTDPH Asbestos Abatement Notification and the EPA Asbestos Notification for Renovation and Demolition. The EPA notification is required ten (10) business days prior to the start of the abatement project and the CTDPH notification 10 calendar days prior to the start of work.
 - 1. Connecticut Department of Public Health
410 Capitol Avenue
MS #51 AIR
P.O. Box 340308
Hartford, CT 06134-0308
 - 2. United States Environmental Protection Agency (USEPA)
Jordan Alves (alves.jordan@epa.gov)
Region 1- New England (OEP05-2)
5 Post Office Square, Suite 100
Boston, MA 02109-3912
- B. The minimum information included in the notification to these agencies includes:
 - 1. Name and address of building Client/Operator
 - 2. Building location
 - 3. Building size, age, and use
 - 4. Amount of asbestos to be removed
 - 5. Work schedule, including proposed start and completion date
 - 6. Asbestos removal procedures to be used
 - 7. Name and location of disposal site for generated asbestos waste, residue, and debris

1.17 WORK SITE SAFETY PLAN

- A. The Contractor shall establish a set of emergency procedures and shall post them in a conspicuous place at the Site. The safety plan should include provisions for the following:
 - 1. Evacuation of injured workers.
 - 2. Emergency and fire exit routes from all work areas.
 - 3. Emergency first aid treatment.
 - 4. Local telephone numbers for emergency services including ambulance, fire, and police.
 - 5. A method to notify occupants of the building in the event of a fire or other emergency requiring evacuation of the building.
- B. The Contractor shall be responsible for training all workers in these procedures.

1.18 INDEPENDENT AIR SAMPLING AND ASBESTOS ABATEMENT MONITORING

- A. This Section describes independent air sampling work being performed on behalf of the Client. This work is not in the Contract Sum. This Section describes air monitoring conducted by the Consultant to verify that the building beyond the regulated work area and the outside environment remains uncontaminated. (Personal air monitoring required by OSHA is work to be performed by the Contractor and is within the Contract Sum). Negative exposure assessments will not be reviewed and/or approved by the Consultant. It shall be the Contractor's responsibility to determine its validity.
- B. The Consultant will be retained to conduct air monitoring to detect faults in the work area isolation such as:
 - 1. Contamination of the building outside of the work area by airborne asbestos fibers.
 - 2. Failure of filtration or rupture in the differential pressure system.
 - 3. Contamination of air outside the building envelope by airborne asbestos fibers
 - 4. Contamination of air outside a regulated work area by airborne asbestos fibers.

Should any of the above occur the Contractor shall immediately cease asbestos abatement activities until the fault is corrected. Do not recommence work until authorized by the Consultant.

- C. The purpose of the Consultant's air monitoring is to verify proper engineering controls at the regulated work area:
 - 1. Daily air samples will be collected by Phase Contrast Microscopy (PCM) cassette and analyzed by PCM and if the fiber concentrations exceed 0.010 fibers per cubic centimeter (f/cc), the asbestos removal shall stop and the CTDPH shall be notified.
 - 2. If removal stops, the Consultant shall investigate the cause of the elevated fiber concentration and work shall not resume until written permission is received from the CTDPH and the Consultant authorizes the work to resume.
 - 3. If the samples exceed 0.010 f/cc an AWP will be required to clean adjacent space(s) deemed contaminated by the Contractor. The AWP will be submitted by the Consultant. All costs associated with decontamination of impacted areas and Consultant fees will be paid for by the Contractor, not the Owner.
- D. The Consultant may perform on-site monitoring throughout the project, as follows:
 - 1. All work procedures shall be continuously monitored by the Consultant to assure that areas outside of the regulated work area are not impacted and to verify the effectiveness of engineering controls. The Consultant shall oversee the work in the regulated work area.

The Contractor cannot perform work unless a CTDPH licensed Asbestos Project Monitor with the Consultant on behalf of the Client is present on Site.

2. Prior to work on any given day, the Contractor's designated "competent person" shall discuss the day's work schedule with the Consultant to evaluate job tasks with respect to safety procedures and requirements specified to prevent contamination of the environmental and the employees. This includes a visual regulated work area inspection, the employee decontamination, equipment decontamination, evaluation of engineer control methods etc.

1.19 CONTRACTOR'S AIR SAMPLING RESPONSIBILITY

- A. The Contractor shall independently retain an air sampling professional or the CTDPH-licensed Asbestos Abatement Supervisor shall monitor total airborne fiber concentrations in the worker breathing zones, and to establish conditions and work procedures for maintaining compliance with OSHA Title 29 CFR, Parts 1910.1001 and 1926.1101. Personal air samples shall be conducted every day for personnel during the Work.
- B. The Contractor's air sampling professional shall document all air sampling results and provide a report to the Consultant within 48-hours after sample collection.
- C. All air sampling shall be conducted in accordance with methods described in OSHA Title 29 CFR, Parts 1910.1001 and 1926.1101.

1.20 PROPER WORKER PROTECTION

- A. This Section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.
- B. All workers are to be accredited as Abatement Workers as required by the EPA AHERA Title 40 CFR, Parts 763 Appendix C to Subpart E, February 3, 1994.
- C. The Contractor is required to be certified and accredited as required by CTDPH.
- D. In accordance with OSHA Title 29 CFR, Part 1926, all workers shall receive a training course covering the dangers inherent in handling asbestos, the dangers of breathing asbestos dust, proper work procedures, and proper worker protective measures. This course must include, but is not limited to the following:
 1. Methods of recognizing asbestos
 2. Health effects associated with asbestos
 3. Relationship between smoking and asbestos in producing lung cancer
 4. Nature of operations that could result in exposure to asbestos
 5. Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:
 - a. Engineering controls
 - b. Work Practices
 - c. Respirators
 - d. Housekeeping procedures
 - e. Hygiene facilities
 - f. Protective clothing
 - g. Decontamination procedures
 - h. Emergency procedures
 - i. Waste disposal procedures

6. Purpose, proper use, fitting, instructions, and limitations of respirators as required by OSHA Title 29 CFR, Part 1910.134
 7. Appropriate work practices for the work
 8. Requirements of medical surveillance program
 9. Review of OSHA Title 29 CFR, Part 1926
 10. Pressure Differential Systems
 11. Work practices including hands on or on job training
 12. Personal Decontamination procedures
 13. Air monitoring, personal and area
- E. The Contractor shall provide medical examinations for all workers who may encounter a total airborne fiber concentration of 0.1 fibers/cc or greater for an 8-hour TWA. In the absence of specific airborne fiber data provide medical examinations for all workers who will enter the work area for any reason. Examination shall, at a minimum, meet OSHA requirements as set forth in Title 29 CFR, Part 1926. In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.
- F. Submit the following to the Consultant for review. The Contractor shall not start work until these submittals are returned with Consultant action stamp indicating that they are approved.
1. Submit copies of certificates from an EPA approved AHERA Abatement Workers course for each worker as evidence that each asbestos Abatement Worker is accredited as required by the AHERA Regulation Title 40 CFR, Part 763 Appendix C to Subpart E, February 3, 1994.
 2. Submit evidence that the Contractor is certified to perform asbestos abatement work by the CTDPH.
 3. Submit documents verifying that each worker has had a medical examination within the last 12 months as part of compliance with OSHA medical surveillance requirements. Submit, at a minimum, for each worker the following:
 - a. Name and Social Security Number (minimum last 4 digits).
 - b. Physician's written opinion from examining physician including at a minimum the following:
 - 1) Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
 - 2) Any recommended limitations on the worker or on the use of PPE such as respirators.
 - 3) Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
 4. Copy of information that was provided to physician in compliance with OSHA Title 29 CFR, Part 1926.
 5. Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.
 6. Effective June 4, 2000, submit copies of certificates for the site supervisor and the workers issued by CTDPH.
- G. Submit certification signed by an officer of the abatement-contracting firm and notarized that exposure measurement, medical surveillance, and worker training records are being kept in conformance with OSHA Title 29 CFR, Part 1926.
- H. The Contractor shall maintain control of and be responsible for access to all work areas to ensure the following requirements:

1. Non-essential personnel are prohibited from entering the area.
2. All authorized personnel entering the work area shall read the "Worker Protection Procedures" that are posted at the entry points to the enclosure system, and shall be equipped with properly fitted respirators and protective clothing.
3. All personnel who are exiting from the decontamination enclosure system shall be properly decontaminated.
4. Asbestos waste that is removed from the work area must be properly bagged and labeled in accordance with these Specifications. The surface of the bags shall be decontaminated. Asbestos waste removed from the NPE must be immediately transported off-site or immediately placed in locked, posted temporary storage on-site, and removed within 24-hours of the project conclusion.
5. Any material, equipment, or supplies that are removed from the decontamination enclosure system shall be thoroughly cleaned and decontaminated by wet cleaning and/or HEPA vacuuming of all surfaces.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.
- B. Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes contaminated with asbestos shall be decontaminated or disposed as asbestos waste.
- C. Polyethylene (poly) sheeting in a roll size to minimize the frequency of joints shall be delivered to the Site with factory label indicating 6-mil.
- D. Poly disposable bags shall be 6-mil with OSHA-required pre-printed label (29 CFR, Part 1926.1101(k) (8) (iii)). Tie wraps for bags shall be plastic, five-inches long (minimum), pointed and looped to secure filled plastic bags. Waste containers shall consist of 6-mil leak proof linings.
- E. Tape or adhesive spray will be capable of sealing joints in adjacent poly sheets and for attachment of poly sheet to waste containers, decontamination enclosure systems for employees, equipment etc. and capable of adhering under both dry and wet conditions, including use of amended water.
- F. Surfactant (wetting agent), shall consist of 50 percent polyoxyethylene ether and 50 percent polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of one ounce surfactant to five gallons of water or as directed by manufacturer.
- G. Removal encapsulant shall be non-flammable factory prepared penetrating chemical encapsulant deemed acceptable to Consultant. Usage shall be in accordance with manufacturer's printed technical data.
- H. The Contractor shall have available spray equipment capable of mixing wetting agent with water and capable of generating sufficient pressure and volume and having sufficient hose length to reach all areas with asbestos.
- I. Impermeable containers are to be used to receive and retain any asbestos-containing or impacted/contaminated materials until disposal at an acceptable disposal site. The containers shall be labeled in accordance with OSHA Title 29 CFR, Part 1926.1101(k) (8) (iii) [June 1, 2015 requirements]. Containers must be both air and watertight.

- J. Labels and signs, as required by OSHA Title 29 CFR, Part 1926.1101, will be used.

2.2 TOOLS AND EQUIPMENT

- A. The Contractor shall provide all clean tools and equipment necessary for asbestos removal, encapsulation, and enclosure.
- B. The Contractor's air monitoring professional or Abatement Supervisor shall have air-monitoring equipment of type and quantity to monitor operations and conduct personnel exposure surveillance per OSHA requirements. The equipment shall function properly, and air samples shall be calibrated with a recently calibrated (within 6 calendar months) rotometer.
- C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the job including protective clothing, respirators, filter cartridges, poly sheeting of proper size and thickness, tape and air filters.
- D. The Contractor shall provide (as needed) temporary electrical power panels, electrical power cables, and electrical power sources (such as generators). Any electrical connection work affecting the building electrical power system shall be performed by a State of Connecticut-licensed electrician.
- E. The Contractor shall be responsible for coordinating electrical and water services and shall pay for these services for the duration of the project, if applicable.
- F. The Contractor shall assist the Consultant by providing necessary tools and equipment (e.g., coveralls, ladders, extension cords, lighting, etc.) for the Consultant to conduct inspections, final visual inspections, and final air clearance monitoring. The Consultant reserves the right to reject such items that are deemed unsafe and/or do not function properly and request items be replaced with adequate replacements. The work areas shall be safe to enter/occupy by the Consultant.
- G. The Contractor shall have available shower stalls and plumbing to support same to include sufficient hose length and drain system or an acceptable alternate.
- H. Vacuum units, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter or larger.

PART 3 - EXECUTION

3.1 PRE-CONSTRUCTION MEETING

- A. At least one week prior to the start of work, a Pre-Construction meeting will be scheduled and must be attended by the Contractor and any Sub-Contractors. The assigned Contractor Site Supervisor must also attend this meeting.
- B. The Contractor shall present a detailed project schedule and project submittals at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Client and the Consultant will inform the Contractor of any scheduling adjustments for this project.

- C. Following the Pre-Construction meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting.

3.2 WORK AREA PREPARATION

- A. Where necessary shut down electrical power including receptacles and light fixtures. Under no circumstances during the decontamination procedures will lighting fixtures be permitted to be operating when the spraying of amended water may contact the fixture. Provide ground fault circuit interrupter (GFCI) devices, temporary power, and temporary lighting installed in compliance with the applicable electrical codes. All installations are to be made by a State of Connecticut licensed electrician.
- B. Shut down and/or isolate heating, cooling, and ventilation air systems or zones to prevent contamination and fiber dispersal to other areas of the structure. During the work, critical barriers with duct tape and polyethylene sheeting shall be installed on vents within the work area.
- C. The Contractor shall be responsible for removing garbage, furniture, equipment any other materials not to be salvaged. The Contractor shall pre-clean moveable objects within the proposed work areas using HEPA vacuum equipment and/or wet cleaning methods as appropriate and remove such objects from work areas to a temporary location if necessary. Any demolition of materials to gain access to ACM or to accommodate work shall be performed when the work containment has been approved by the Consultant to prevent disturbance of asbestos (e.g. cove base moldings, cabinets, wall systems, counters, ceilings, equipment etc.).
- D. Seal off all openings, including, but not limited to, windows, corridors, doorways, ducts, grills, diffusers, and any other penetration of the work areas, with polyethylene sheeting layer(s) a minimum of six (6) mils thick, sealed with duct tape. This includes doorways and corridors that will not be used for passage during work areas and occupied areas.
- E. Pre-clean fixed objects within the work areas, using HEPA vacuum equipment and/or wet cleaning methods as appropriate, and enclose with a minimum six (6) mil plastic sheeting(s) sealed with duct tape.
- F. Clean the proposed work areas using HEPA vacuum equipment or wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.
- G. After HEPA vacuum cleaning, cover fixed walls with two (2) layers of four (4) mil polyethylene sheeting to the floor level. Where fixed walls are not used, three layers of six (6) mil polyethylene sheeting will be applied to a rigid framework of wood, metal, or PVC. Where flooring materials are not being abated, cover the floor with two (2) layers of six-mil polyethylene sheeting. Ceilings shall be installed in all containments and all polyethylene overlaps shall be sealed with tape and spray adhesive.
- H. Maintain emergency and fire exits from the work areas, or establish alternate exits satisfactory to fire officials.
- I. Clean and remove ceiling mounted objects, such as lights and other items not sealed off that interfere with asbestos abatement. Use hand-held amended water spraying or HEPA vacuuming equipment during fixture removal to reduce settled fiber dispersal.
- J. Create pressure differential between work areas and uncontaminated areas by the use of acceptable negative air pressure equipment sufficient to provide four (4) air changes per hour and pressure of at least -0.02 inches of water column as determined by appropriate gauge.

3.3 DECONTAMINATION SYSTEM

- A. The Contractor shall establish contiguous to the work area a decontamination enclosure consisting of equipment room, shower room, and clean room in series. The only access between contaminated and uncontaminated areas shall be through this decontamination enclosure. If it is not feasible to set-up a contiguous decontamination unit the Contractor shall establish a remote decontamination unit. "Feasible" means not possible in this respect.
- B. Access between rooms in the decontamination system shall be through double-flap curtain openings. The clean room, shower and equipment room within the decontamination enclosure, shall be completely sealed ensuring that the sole source of airflow through this area originates from uncontaminated areas outside the work area.
- C. The Contractor shall establish contiguous with the work area an equipment decontamination enclosure consisting of two totally enclosed chambers divided by double flap curtained opening. This enclosure must be constructed so as to ensure no personnel enter or exit through this unit.
- D. Building spaces not within the work areas shall be separated from asbestos abatement work areas by means of airtight barriers.
- E. The Contractor shall visually inspect barrier several times daily to assure effective seal and the Contractor shall repair defects immediately.

3.4 ASBESTOS REMOVAL PROCEDURE - GENERAL

- A. The Contractor shall have a designated "competent person" on the Site at all times to ensure establishment of a proper regulated work area and proper work practices throughout project.
- B. Abatement work will not commence until authorized by the Consultant.
- C. During all work a regulated area shall be established. All personnel conducting work at the Site shall be properly licensed for asbestos abatement have current training, medical evaluation and respirator fit test paperwork. This includes the operator whether or not he/she is within or outside of the regulated work area. All personnel shall don PPE (Tyvek, appropriate respirator – at least half face air purifying respirator, gloves, safety glass, hard hat, etc.). Employer shall conduct OSHA personal air sampling for all staff and provide air sampling results to the Consultant for record.
- D. The Contractor shall properly coordinate abatement work with the Owner and Consultant. The Contractor shall be responsible for addressing any concerns by the Owner and/or Consultant.
- E. With a fine mist, spray assumed ACM with amended water using a mister or other water generated equipment or apply approved removal wetting agent to reduce the release of fibers during removal operation. The equipment utilized shall be an appropriate size to supply the appropriate amount of water to control visible dust emissions but to not create excessive run-off and/or puddling of water on Site.
- F. Remove ACM as appropriate by standard methods. Fill disposal containers as removal proceeds; seal filled containers and clean containers before removal to equipment decontamination and staging area. Wet clean each container thoroughly, double bag/line and apply caution label. Ensure that workers do not exit the work area through the equipment decontamination area.
- G. Remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris.

- H. Sealed disposal containers, and all equipment used in the work area, shall be included in the cleanup and shall be removed from work areas via the equipment decontamination area at an appropriate time in the removal sequence. All asbestos waste in 6-mil poly disposal bags shall be double-bagged and secured in double lined, leak proof, sealed container before removal from the Site.
- I. At any time during asbestos removal, should the Consultant suspect contamination of areas outside the work area(s), they shall cause all abatement work to stop until the Contractor takes the necessary steps to decontaminate these areas, and eliminate the causes of such contamination. Unprotected individuals shall be prohibited from entering suspected contaminated areas until air sampling and visual inspections certify decontamination.
- J. After completion of the demolition and removal of all debris and materials from the Site the Consultant shall verify that all suspect debris has been removed from the Site.

3.5 ASBESTOS REMOVAL PROCEDURES

- A. Prior to asbestos removal the Contractor shall ensure that work area preparation has been conducted in accordance with Section 3.2 and 3.3 of this Specification.
- B. The Contractor shall demolish/remove components that are necessary to access the asbestos containing/contaminated materials and/or facilitate establishing the work area for example but not limited to cabinets, bottom of wall systems, doors, radiators, wood, metal, masonry, stone, lights, ductwork, counters, flooring materials, wall materials, ceiling materials, etc. If any of the materials to be removed to access asbestos and/or to facilitate establishing the work area are contaminated with asbestos debris the materials shall be cleaned appropriately or disposed of as asbestos waste. Upon removal other contaminants could be encountered and the Contractor shall assure proper safety measures are utilized (e.g. mold, animal carcasses, fecal matter, etc.). The Contractor shall assure all ACM that can be removed from the structure prior to work conducted by other trades has been removed.
- C. If large equipment is utilized for abatement, the Contractor shall assure the building can structurally withstand the weight of the equipment. The Contractor is responsible for floor loading.
- D. The Contractor shall wet surfaces with amended water or detergent solution so that entire surface is wet. Do not allow puddling or run-off to other areas or create a slip hazard. If a detergent is used, use in strict accordance with manufacturer's instructions.
- E. The Contractor shall keep asbestos continuously wet throughout removal operation and do so in a manner that does not create a safety hazard and does not cross-contaminate other areas with waste water. In addition, water will be managed to prevent release to drainage systems, soils, groundwater, surface water etc. All water shall be properly filtered.
- F. Pick up removed asbestos in a timely manner and place in labeled disposal bags and/or other equivalent disposal container. Waste shall be secured at the end of each work shift in a locked waste container outside of the building. No waste shall be left in the building.

3.6 CONSULTANT'S RESPONSIBILITIES

- A. Air sampling may be conducted by the Consultant to ascertain the integrity of the controls that protect the environment from asbestos contamination. Independently, the Contractor shall monitor air quality within the work area to ascertain the protection of employees, and to comply with OSHA regulations.

- B. The Consultant's project monitor will collect and analyze air samples during the following period:
1. Post-Abatement Period. The Consultant's project monitor shall conduct air sampling following the final cleanup phase of the project, once the "no visible residue" criterion, as established by the Consultant, has been met. Five (5) samples shall be collected inside the work area utilizing aggressive methods to comply with the CTDPH Standards for Asbestos Abatement, Sections 19a-332a-12, and 19a-332a-13. Analysis of the samples to determine airborne concentrations of asbestos shall be conducted by Transmission Electron Microscopy (TEM) method with an average limit of less than 70.0 structures per square millimeter of filter surface or by Phase Contrast Microscopy (PCM) with a limit of 0.010 fibers per cubic centimeters of air in accordance with the above Connecticut regulation sections.

3.7 CONSULTANT'S INSPECTION RESPONSIBILITIES

- A. The Consultant shall conduct inspections throughout the progress of the abatement project. Inspections shall be conducted to document the abatement work progress, as well as the procedures and practices employed by the abatement Contractor.
- B. The Consultant may perform the following inspections during the abatement activities:
1. Pre-Abatement Inspection. The inspections shall be performed at the time requested by the Contractor to assure the regulated work area and decontamination areas are properly established. The Consultant shall be informed 12-hours prior to the time the inspection is needed. If deficiencies are noted by the Consultant, the Contractor shall perform the necessary adjustments to obtain compliance.
 2. Work Area Inspections. Work area inspections shall be conducted on a daily basis at the discretion of the Consultant. During the work inspections, the Consultant shall observe the Contractor's removal procedures, verify regulated area integrity, inspect for contamination of demolition debris generated to access ACM, monitor engineer controls, assess project progress, and if deficiencies are noted, inform the abatement Contractor of specific remedial activities.
 3. Pre-sealant Inspection. The Consultant, upon the request of the Contractor, shall conduct a pre-sealant inspection. The Consultant shall be informed 24 hours prior the time that the inspection is needed. The pre-sealant inspection shall be conducted after completion of the initial cleaning procedures, but prior to encapsulation. The pre-sealant inspection shall verify that all ACM and residual debris have been removed from the work area. If, during the course of the pre-sealant inspection, the Consultant identifies residual dust or debris, the Contractor shall comply with the request of the Consultant in order to render the area "dust free".
 4. Final Visual Inspection. The Consultant, upon request of the Contractor and the Contractor signing the Consultant's final visual inspection form, shall conduct a final visual inspection. If residual dust or debris is identified during the course of the final inspection, the Contractor shall comply with the request of the Consultant in order to render the area "dust free".
- C. The Consultant shall perform the following inspections during the abatement activities:
1. Final Visual Inspection. Upon request of the abatement Contractor, the Consultant shall conduct a visual inspection with the Contractor's Asbestos Abatement Supervisor of all surfaces within the work area. The work area shall be visually clean of all debris and dust.

3.8 CLEARANCE AIR TESTING

- A. After the visual inspection is completed and all surfaces in the abatement area have dried final air clearance sampling shall be performed by the Consultant. Aggressive air monitoring will be used. Selection of location and of samples shall be at the discretion of the Consultant. Air monitoring volumes shall be sufficient to provide a detection limit of 0.010 fibers per cubic meter of air (f/cc) using NIOSH-approved method for PCM analysis. For air clearance by TEM, air-monitoring volumes shall be sufficient to provide a detection limit of 0.005 f/cm³ using the analysis method set forth in the AHERA regulation 40 CFR Part 763 Appendix A.
- B. Areas which do not comply with the Standard for Cleaning for Initial Clearance shall continue to be cleaned by and at the Contractor's expense until the specified Standard of Cleaning is achieved as evidenced by results of air testing as previously specified. Contractor shall notify Consultant when re-cleaning will commence.
- C. The Contractor shall properly schedule abatement work and other site activities at appropriate times and locations to prevent cross-contamination and/or dust in areas the Consultant is air testing. Adjacent disturbance activities can cause work area samples to be overloaded or above detection limit. In addition, work areas would require re-cleaning by the Contractor at no expense to the Client.

3.9 ASBESTOS DISPOSAL

- A. Asbestos-containing and/or asbestos-contaminated material disposal must be in compliance with requirements of, and authorized by the EPA, CTDEEP, and the CTDPH.
- B. Disposal approvals shall be obtained before commencing asbestos removal.
- C. A copy of approved disposal authorization shall be provided to the Client and the Consultant, and any required federal, state, or local agencies.
- D. Copies of all fully-executed Waste Shipment Records (WSR) will be retained by the Consultant as part of the project file. The Contractor shall document the specific amount of waste on each WSR, portion/location of the Site building it was generated from, and the type of waste. Upon receipt of the ACM waste, the landfill operator will sign the WSR, and the quantity of asbestos debris leaving the Site, and arriving at the landfill is documented for the Client.
- E. All asbestos debris shall be transported in covered, sealed vans, boxes, or dumpsters, which are physically isolated from the driver by an airtight barrier. All vehicles must be properly-licensed to meet DOT requirements.
- F. Any vehicles used to store or transport ACM will either be removed from the Site at night, or securely locked and posted to prevent disturbance.
- G. Any incident and/or accident that may result in spilling or exposure of asbestos waste outside the containment, on and off the property, and all related issues shall be the sole responsibility of the Contractor.

END OF SECTION 02 82 13

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 02 83 19 – LEAD PAINT AWARENESS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. General Provisions of Contract, including General Supplementary Conditions shall apply to this Section.

1.2 RELATED SECTIONS

- A. Section 02 82 13 - Asbestos Abatement
- B. Drawing HM-001

1.3 SUMMARY OF WORK

- A. Work of this Section includes requirements for worker protection during the renovation of buildings, structures, and features associated with the Connecticut Department of Veteran's Affairs (DVA) – ADA Improvements project within Buildings 2, 3, and 4 at the Connecticut Department of Veteran's Affairs Veteran's Home and Hospital campus located at 287 West Street in Rocky Hill, Connecticut (the "Site") in defined areas that are part of this project.
- B. Lead testing by X-Ray Fluorescence (XRF) was conducted in August 2018 to identified building materials that contain lead or consist of lead or LBP in areas of proposed renovations throughout the site.
- C. The demolition work impacting lead-containing materials, lead paint, and LBP may result in dust and debris exposing workers to levels of lead above the Occupational Safety and Health Administration's (OSHA) Action Level. Worker protection, training, and engineering controls referenced herein shall be strictly followed, until completion of exposure assessment with results indicating exposures below the "Action Level". **This Section does not involve lead abatement, but identified worker protection requirements for all trades involved in the demolition and disposal procedures if lead is involved in the renovation/demolition waste stream.**
- D. Construction activities disturbing surfaces with lead-containing paint that are likely to be employed, such as demolition which have been known to expose workers to levels of lead in excess of the OSHA Permissible Exposure Limit (PEL). It is our understanding that the Site is not subject to the CTDPH Lead Poisoning Prevention and Control Program and is not target housing subject to Housing and Urban Development (HUD) Title X regarding lead hazards or Environmental Protection Agency (EPA) Renovation, Repair and Painting (RRP) Program.
- E. The black painted metal stair components (hand rail, rail post etc.) is lead based. Stair rails are scheduled to be cut, welded, modified, or removed. The Contractor shall remove lead based paint from the components in the appropriate areas to facilitate other trades work. The Contractor shall assume lead based paint removal in 35 locations at 6" wide in each location. Tan speckled ceramic wall tiles also contain lead greater than 1.0 mg/cm² by XRF. 4" tan speckled glazed wall tile locations include Building 2 Lower Level Men's and Women's

Bathroom lower walls, the First Floor Women's (kitchen staff) Bathroom lower walls, the 3rd Floor Toilet Room lower walls and Building 3 1st Floor East and West Wing Men's and Women's Bathroom walls.

1.4 DEFINITIONS

A. The following definitions relative to LBP shall apply:

1. Action Level (AL) - The allowable employee exposure, without regard to use of respiratory protection, to an airborne concentration of lead over an eight-hour time-weighted average (TWA) as defined by OSHA. The current action level is thirty micrograms per cubic meter of air (30 µg/m³).
2. Area Monitoring - The sampling of lead concentrations, which is representative of the airborne lead concentrations that may reach the breathing zone of personnel potentially exposed to lead.
3. Biological Monitoring - The analysis of a person's blood and/or urine, to determine the level of lead concentration in the body.
4. CDC - The Center for Disease Control
5. Change Room - An area provided with separate facilities for clean protective work clothing and equipment and for street clothes, which prevents cross-contamination.
6. Component Person - A person employed by the Contractor who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions, and who has authorization to take prompt corrective measures to eliminate them as defined by OSHA.
7. Consultant - Fuss & O'Neill EnviroScience, LLC
8. EPA - United States Environmental Protection Agency
9. Exposure Assessment - An assessment conducted by an employer to determine if any employee may be exposed to lead at or above the action level.
10. High Efficiency Particulate Air (HEPA) - A type of filtering system capable of filtering out particles of 0.3 microns diameter from a body of air at 99.97% efficiency or greater.
11. HUD - United States Housing and Urban Development
12. Lead - Refers to metallic lead, inorganic lead compounds, and organic lead soaps. Excluded from this definition are other organic lead compounds.
13. Lead Work Area - An area enclosed in a manner to prevent the spread of lead dust, paint chips, or debris resulting from lead containing paint disturbance.
14. Lead Paint - Refers to paints, glazes, and other surface coverings containing a toxic level of lead.
15. MSHA - Mine Safety and Health Administration
16. NARI - National Association of The Remodeling Industry
17. NIOSH - National Institute of Occupational Safety and Health
18. OSHA - Occupational Safety and Health Administration
19. Owner - An employee or executive who has the principle responsibility for a process, program, or project.
20. Permissible Exposure Limit (PEL) - The maximum allowable limit of exposure to an airborne concentration of lead over an eight (8)-hour TWA, as defined by OSHA. The current PEL is fifty micrograms per cubic meter of air (50 µg/m³). Extended workdays lower the PEL by the formula: PEL equals 400 divided by the number of hours of work.
21. Personal Monitoring - Sampling of lead concentrations within the breathing zone of an employee to determine the 8 hour time weighted average concentration in accordance with OSHA Title 29 CFR, Parts 1910.1025 and 1926.62. Samples shall be representative of the employee's work tasks. Breathing zone shall be considered an area within a sphere with a radius of 18-inches and centered at the nose or mouth of an employee.
22. Resource Conservation and Recovery Act (RCRA) - RCRA establishes regulatory levels of hazardous chemicals. There are eight (8) heavy metals of concern for disposal:

arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Six (6) of the metals are typically in paints, excluding selenium and silver.

23. SDS - Safety Data Sheets
24. TWA - Time Weighted Average
25. Toxic Level of Lead - A level of lead, when present in dried paint or plaster, contains more than 0.50% lead by dry weight as measured by atomic absorption spectrophotometry (AAS) or 1.0 milligram per square centimeter (mg/cm²) as measured by on site testing utilizing an x ray fluorescence analyzer. (Term is specific to State of CT regulations and HUD guidelines only)
26. Toxicity Characteristic Leaching Procedure (TCLP) - The United States Environmental Protection Agency (EPA) required sample preparation and analysis for determining the hazard characteristics of a waste material.

1.5 REGULATIONS AND STANDARDS

- A. The following regulations, standards, and ordinances of federal, state, and local agencies are applicable and made a part of this specification by reference:

1. American National Standards Institute (ANSI)
 - a. ANSI 288.2 - 1980 Respiratory Protection
2. Code of Federal Regulation (CFR)
 - a. Title 29 CFR, Part 1910.134 - Respiratory Protection
 - b. Title 29 CFR, Part 1910.1025 - Lead
 - c. Title 29 CFR, Part 1910.1200 - Hazard Communication
 - d. Title 29 CFR, Part 1926.55 - Gases, Vapors, Fumes, Dusts, and Mists
 - e. Title 29 CFR, Part 1926.57 - Ventilation
 - f. Title 29 CFR, Part 1926.59 - Hazard Communication in Construction
 - g. Title 29 CFR, Part 1926.62 - Lead in Construction Interim Final Rule
 - h. Title 40 CFR, Parts 124 and 270 - Hazardous Waste Permits
 - i. Title 40 CFR, Part 172 - Hazardous Materials Tables and Communication Regulations
 - j. Title 40 CFR, Part 178 - Shipping Container Specifications
 - k. Title 40 CFR, Part 260 - Hazardous Waste Management Systems: General
 - l. Title 40 CFR, Part 261 - Identification and Listing of Hazardous Waste
 - m. Title 40 CFR, Part 262 - Generators of Hazardous Waste
 - n. Title 40 CFR, Part 263 - Transporters of Hazardous Waste
 - o. Title 40 CFR, Part 264 - Owner and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
 - p. Title 40 CFR, Part 265 - Interim Statutes for Owner and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
 - q. Title 40 CFR, Part 268 - Lead Disposal Restrictions
 - r. Title 49 CFR, Parts 170 - 180
3. Underwriters Laboratories, Inc. (UL)
 - a. UL586 - 1990 High Efficiency Particulate Air Filter Units

1.6 QUALITY ASSURANCE

- A. Hazard Communication Program
1. The Contractor shall establish and implement a Hazard Communication Program as required by OSHA Title 29 CFR, Part 1926.59.

B. Compliance Plan (Site-Specific)

1. The Contractor shall establish a written compliance plan, which is specific to the project site, to include the following:
 - a. A description of work activity involving lead including equipment used, material included, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices.
 - b. Methods of engineering controls to be used to control lead exposure.
 - c. The proposed technology the Contractor will implement in meeting the PEL.
 - d. Air monitoring data documenting the source of lead emissions.
 - e. A detailed schedule for implementing the program, including documentation of appropriate supply of equipment, etc.
 - f. Proposed work practice which establishes proper protective work clothing, housekeeping methods, hygiene facilities, and practices.
 - g. Worker rotation schedule, if proposed, to reduce TWA.
 - h. A description of methods for informing workers of potential lead exposure.

C. Hazardous Waste Management

1. The Contractor shall establish a Hazardous Waste Management Plan, which shall comply with applicable regulations and address the following:
 - a. Identification of hazardous wastes
 - b. Estimated quantity of waste to be disposed
 - c. Names and qualifications of each subcontractor who will be transporting, storing, treating, and disposing of wastes
 - d. Disposal facility location and 24-hour point of contact
 - e. Establish EPA state hazardous waste and identification numbers if applicable
 - f. Names and qualifications (experience and training) of personnel who will be working on site with hazardous wastes.
 - g. List of waste handling equipment to be used in performing the work to include cleaning, volume reduction, if applicable, and transport equipment
 - h. Qualifications of laboratory to be utilized for TCLP sampling and analysis
 - i. Spill prevention, containment, and countermeasure plan (SPCC)
 - j. Work plan and schedule for waste containment, removal, treatment, and disposal

D. Medical Examinations

1. Before exposure to lead-contaminated dust, provide workers with a comprehensive medical examination as required by OSHA Title 29 CFR, Parts 1910.1025 and 1926.62.
2. The examination shall not be required if adequate records show that employees have been examined as required by OSHA Title 29 CFR, Part 1926.62 within the last year.
3. Medical examination shall include, at a minimum, approval to wear respiratory protection and biological monitoring.

E. Training

1. The Contractor shall ensure that workers are trained to perform lead paint disturbing activities and disposal operations prior to the start of work, in accordance with OSHA Title 29 CFR, Part 1926.62.

F. Respiratory Protection Program

1. The Contractor shall furnish each employee required to wear a negative pressure respirator with a respirator fit test at the time of initial fitting and at least once every six months thereafter, as required by OSHA Title 29 CFR, Part 1926.62.

2. The Contractor shall establish a Respiratory Protection Program in accordance with ANSI Z88.2, OSHA Title 29 CFR, Parts 1910.134 and 1926.62.

1.7 SUBMITTALS

- A. The Contractor shall submit the following to the Consultant in one complete package prior to the pre-construction meeting and at least 10 business days before the start of the Work:
 1. Submit a schedule to the Owner and the Consultant, which defines a timetable for executing and completing the project, including work area preparations, removal, cleanup, and decontamination.
 2. Submit a current valid certificate of insurance.
 3. Submit the name and address of the hauling contractor and location of the landfill to be used. Also submit current valid operating permits and certificates of insurance for the transporter and landfill.
 4. Submit video documentation showing the existing building conditions prior to the start of work. The Contractor shall be responsible for all costs associated with damage to the building and its contents that are not shown on the video documentation.
 5. Submit the plans and construction details for the construction of the decontamination systems and the isolation of the work areas as may be necessary for compliance with this specification and applicable regulations.
 6. Submit copies of medical records for each employee to be used on the project, including results of biological monitoring and a notarized statement by the examining physician that such an examination occurred.
 7. Submit workers' valid training certificates.
 8. Submit record of successful respirator fit testing performed by a qualified individual within the previous six months, for each employee to be used on this project with the employee's name and social security number with each record.
 9. Submit the name and address of Contractor's blood lead testing lab, OSHA CDC listing, and certification in the State of Connecticut.
 10. Submit detailed product information on all materials and equipment proposed for demolition work on this project.
 11. Submit pertinent information regarding the qualifications of the Project Supervisor (competent person) for this project, as well as a list of past projects completed.
 12. Submit a chain-of-command for the project.
 13. Submit a site-specific Emergency Action Plan for the project.
 14. Submit a written site-specific written Respiratory Protection Program for employees for the Work, including make, model and NIOSH approval numbers of respirators to be used at the Site (if applicable).
 15. No work on the Site will be allowed to begin until the Owner and the Consultant as listed herein accept the Pre-Construction Submittals. Any delay caused by the Contractor's refusal or inability to submit this documentation accurately, completely, and in a timely manner does not constitute a cause for change order or a time extension.
- B. The following shall be submitted to the Consultant during the Work:
 1. Results of personal air sampling
 2. Training and medical records for new employees to start Site work (24-hours in advance)
- C. The following shall be submitted to the Consultant at the completion of the Work:
 1. Copies of all air sampling results.
 2. Contractor logs.

3. Copies of manifests and receipts acknowledging disposal of all waste material from the project showing delivery date, quantity, and appropriate signature of landfill's authorized representative.

1.8 PERSONAL PROTECTION

A. Exposure Assessment

1. The Contractor shall determine if any worker will be exposed to lead at or above the action level.
2. The exposure assessment shall identify the level of exposure a worker would be subjected to without respiratory protection.
3. The exposure assessment shall be achieved by obtaining personal air monitoring samples representative of a full shift at least (8-hour TWA).
4. During the period of the exposure assessment, the Contractor shall institute the following procedures for protection of workers:
 - a. Protective clothing shall be utilized
 - b. Respiratory protection
 - c. Change areas shall be provided
 - d. Hand washing facilities and shower
 - e. Biological monitoring
 - f. Training of workers

B. Respiratory Protection

1. The Contractor shall furnish appropriate respirators approved by NIOSH/MSHA for use in atmospheres containing lead dust.
2. Respirators shall comply with the requirements of OSHA Title 29 CFR, Part 1926.62.
3. Workers shall be instructed in all aspects of respiratory protection.
4. The Contractor shall have an adequate supply of HEPA filter elements and spare parts on-site for all types of respirators in use.
5. The following minimum respirator protection for use during paint removal or demolition of components and surfaces with lead paint shall be the half-face air purifying respirator with a minimum of dual P100 filter cartridges for exposures (not in excess of 500 $\mu\text{g}/\text{m}^3$ or 10 x PEL).

C. Protective Clothing

1. Personal protective clothing shall be provided for all workers, supervisors, and authorized visitors entering the work area.
2. Each worker shall be provided daily with a minimum of two complete disposable coverall suits.
3. Removal workers shall not be limited to two (2) coveralls, and the Contractor shall supply additional coveralls as necessary.
4. Under no circumstances shall anyone entering the abatement area be allowed to re-use a contaminated disposable suit.
5. Disposable suits (TYVEK™ or equivalent), and other personal protective equipment (PPE) shall be donned prior to entering a lead control area. A change room shall be provided for workers to don suits and other PPE with separate areas to store street clothes and personal belongings.
6. Eye protection for personnel engaged in lead operations shall be furnished when the use of a full-face respirator is not required.

7. Goggles with side shields shall be worn when working with power tools or a material that may splash or fragment, or if protective eye wear is specified on the SDS for a particular product to be used on the project.

1.9 PERSONAL MONITORING

A. General.

1. The Contractor shall be required to perform the personal air sampling activities during lead paint disturbing work. The results of such air sampling shall be posted, provided to individual workers, and submitted to the Client as described herein.

B. Air Sampling.

1. Air samples shall be collected for the duration of the work shift or for 8-hours, whichever is less. Personal air samples need not be collected every day after the first day, if working conditions remain unchanged, but must be collected each time there is a change in removal operations, either in terms of the location or in the type of work. Sampling will be used to determine 8-hour TWA. The Contractor shall be responsible for personal air sampling as outlined in OSHA Title 29 CFR, Parts 1910.1025 & 1926.62.
2. Air sampling results shall be reported to individual workers in written form no more than 48-hours after the completion of a sampling cycle. The reporting document shall list each sample's result, sampling time and date, personnel monitored and their social security numbers, flow rate, sample duration, sample yield, cassette size, and analysts' name and company, and shall include an interpretation of the results. Air sample analysis results will be reported in $\mu\text{g}/\text{m}^3$.

C. Testing Laboratory.

1. The Contractor's testing lab shall be currently participating in AIHA's Environmental Lead Laboratory Accreditation Program (ELLAP). The Contractor shall submit to the Engineer for review and acceptance, the name and address of the laboratory, certification(s) of AIHA participation, a listing of relevant experience in air lead analysis, and presentation of a documented Quality Assurance and Quality Control Program.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Any substitution in materials, equipment, or methods to those specified shall be approved by the Owner, Owner, and Consultant prior to use. Any requests for substitution shall be provided in writing to the Owner, Owner, and Consultant. The request shall clearly state the rationale for the substitution.
- B. Submit to the Owner and Consultant product data of all materials and equipment and samples of all materials to be considered as an alternate.
- C. Product data shall consist of manufacturer; catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, SDS, and other standard descriptive data. Submittal data shall be clearly marked to identify pertinent materials, products or equipment and show performance characteristics and capacities.

- D. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product or material with integrally related parts and attachment devices.

2.2 MATERIALS AND PRODUCTS

- A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.
- B. Damaged or deteriorating materials shall not be used and shall be removed from the premises.
- C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the project including protective clothing, respirators, filter cartridges, polyethylene (poly) sheeting of proper size and thickness, tape, and air filters.
- D. Materials
 1. Poly sheeting in a roll size to minimize the frequency of joints shall be delivered to the Site with factory label indicating 6-mil.
 2. Poly disposable bags shall be 6-mil. Tie wraps for bags shall be plastic, five-inches long (minimum), pointed and looped to secure filled plastic bags.
 3. Tape or spray adhesive will be capable of sealing joints in adjacent poly sheets and for attachment of poly sheeting to finished or unfinished surfaces of dissimilar materials and capable of adhering onto both dry and wet conditions, including use of amended water.
 4. Impermeable containers are to be used to receive and retain any lead-containing or contaminated materials until disposal at an acceptable disposal site. The containers shall be labeled in accordance with EPA and DOT standards.
 5. HEPA-filtered exhaust systems shall be used during powered dust-generating abatement operations. The use of powered equipment without HEPA exhausts on this Site shall be prohibited.

2.3 TOOLS AND EQUIPMENT

- A. Provide suitable tools for all lead disturbing operations.
- B. The Contractor shall have available power cables or sources such as generators (where required).
- C. Vacuum units, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trap-ping and retaining 99.97% of all mono-dispersed particles of 0.3 micrometers in diameter.

PART 3 - EXECUTION

3.1 PRE-CONSTRUCTION MEETING

- A. At least one week prior to the start of work, a Pre-Construction Meeting will be scheduled and must be attended by the Contractor and any Subcontractors. The assigned Contractor Site Supervisor must attend this meeting.

- B. The Contractor shall present a detailed project schedule and project submittal package at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner and Consultant will inform the Contractor of any scheduling adjustments for this project.
- C. Following the Pre-Construction Meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting.

3.2 WORKER PROTECTION/TRAINING

- A. The Contractor shall provide appropriate training, respiratory and other PPE, and biological monitoring for each worker and ensure proper usage during potential lead exposure and the initial exposure assessment.
- B. Workers who will perform procedures must have completed at least a lead awareness training or can have one of the following training courses:
 - 1. EPA Lead Abatement Supervisor (40-hours)
 - 2. EPA Lead Abatement Worker (32-hours)
 - 3. HUD/EPA course "Work Smart, Work Wet, and Work Clean to Work Lead Safe" (8-hours)
 - 4. HUD/NARI course "The Remodeler's and Renovator's Lead Based Paint Training Program" (8-hours)
 - 5. HUD "Lead Safe Work Practices" (8-hours)

3.3 CONTRACTOR'S RESPONSIBILITIES

- A. The Contractor shall be responsible for establishing and maintaining controls referenced herein to prevent dispersal of lead contamination from the lead work area.
- B. The Contractor shall also be responsible for conducting work with applicable federal, state, and local regulations as referenced herein.

3.4 WORKER HYGIENE PRACTICES (Required during initial exposure assessment and if results of air sampling are above OSHA Action Level)

- A. Work Area Entry.
 - 1. Workers shall don PPE prior to entering work area, including respiratory protection, disposable coveralls, gloves, headgear, and footwear.
- B. Work Area Departure.
 - 1. While leaving respirators on, workers shall remove all gross contamination, debris, and dust from disposable coveralls and proceed to change room, and remove coveralls and footwear and place in hazardous waste disposal container.
- C. Hand washing Facilities.
 - 1. All workers must wash their hands and faces upon leaving the work area.

- D. Equipment.
 - 1. All equipment used by workers inside the work area shall be wet-wiped or bagged for later decontamination before removal from the work area.
- E. Prohibited Activities.
 - 1. Under no circumstances shall workers eat, drink, smoke, chew gum or tobacco, apply cosmetics, or remove their respirators in the work area.
- F. Shock Hazards.
 - 1. The Contractor shall be responsible for using safe procedures to avoid electrical hazards. All temporary electrical wiring will be protected by ground fault circuit interrupters (GFCI).

3.5 LEAD WORK AREA (Required during initial exposure assessment and if results of air sampling are above OSHA Action Level)

- A. The Contractor shall place lead warning signs at all entrances and exits from the work area. Signage shall be a minimum of 20" x 14" and shall state the following:

**DANGER
LEAD WORK AREA
MAY DAMAGE FERTILITY OR THE UNBORN CHILD
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM
DO NOT EAT, DRINK OR SMOKE IN THIS AREA**

- B. The Contractor shall designate a change room as specified in this Section. The change room shall consist of two layers of 6-mil thickness poly sheeting on the floor surface adjacent to the lead work area. The change room shall have separate storage facilities for street clothes to avoid cross-contamination.
- C. The Contractor shall provide potable water for hand and face washing and provide a portable shower unit.
- D. The Contractor shall place 6- mil poly drop cloths on floor/ground surfaces prior to beginning removal work to facilitate clean-up.

3.6 WORK AREA CLEAN-UP

- A. The Contractor shall remove all loose chips and debris from floor surfaces and place in hazardous waste disposal bags.
- B. The Contractor shall clean using a HEPA-filter equipped vacuum the adjacent surfaces to remove dust and debris.
- C. Poly drop cloths shall be cleaned and properly disposed of general construction and demolition waste.

3.7 WASTE DISPOSAL

- A. The Contractor's contractual liability shall be the proper disposal of all non-hazardous wastes generated at the Site in accordance with all applicable federal, state, and local regulations as referenced herein.
 - 1. Metal components shall be segregated and recycled.
 - 2. Representative aliquots should be collected of materials anticipated to be generated as waste for TCLP analysis. This will be performed by the Consultant. If laboratory analytical results indicate the waste leaches lead at less than 5.0 mg/L the material would not be classified as a hazardous waste. For the purpose of this bid, the 4" tan speckled ceramic floor tiles shall be assumed Resource Conservation and Recovery Act (RCRA) lead waste.

3.8 CONSULTANT

- A. The Owner may retain a Consultant for the purpose of construction administration and project monitoring during demolition work at the Site.
- B. The Consultant will represent the Owner in all tasks of the project at the Owner's discretion.

3.9 CONSULTANT'S RESPONSIBILITIES

- A. The Consultant may conduct air sampling to ascertain the integrity of controls that protect the environment from possible lead contamination. Independently, the Contractor shall monitor air quality within the work area to ascertain the protection of employees and OSHA compliance.
- B. The Consultant's project monitor may collect and analyze air samples during the following period:
 - 1. Demolition Period. If required, the Consultant's project monitor shall collect air samples on a daily basis during the work period. A sufficient number of area air samples shall be collected outside of the work area, to evaluate the degree of cleanliness or contamination of the environment during removal. Additional air samples may be collected inside the work area and decontamination system, at the discretion of the project monitor.
- C. If the project monitor determines that the building air quality has become contaminated from the project, they shall immediately inform the Contractor to cease all demolition operations and implement a work stoppage clean-up procedure. The Contractor shall conduct a thorough clean-up of the areas designated by the Consultant. No further removal work may occur until the Consultant has assessed that the air has been decontaminated.
- D. Pre-abatement and abatement air samples shall be collected as required to obtain a volume of 600 liters of air. Air samples shall be analyzed by NIOSH Method 7300 sampling protocol.

3.10 CONSULTANT'S INSPECTION RESPONSIBILITIES

- A. Consultant may conduct inspections throughout the progress of the demolition project. Inspections shall be conducted to document the progress of the work, as well as the procedures and practices employed by the Contractor.

- B. The Consultant shall perform the following inspections during abatement activities:
1. Pre-commencement Inspection. Pre-commencement inspections shall be performed at the time requested by the Contractor. The Consultant shall be informed a minimum of 12-hours prior to the time the inspection is required. If deficiencies are identified during the pre-commencement inspection, the Contractor shall perform the necessary adjustments to obtain compliance.
 2. Work Area Inspections. Work area inspections shall be conducted on a daily basis at the discretion of the Consultant. During the work inspections, the Consultant will observe the Contractor's removal methods and procedures, assess project progress, and inform the Contractor of specific remedial activities if deficiencies are noted.

END OF SECTION 02 83 19

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section includes cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
 - 1. Concrete retaining wall, foundation wall and footings.
 - 2. Exterior concrete stairs and ramps.
 - 3. Interior concrete stairs and ramps.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - 1. Location of construction joints is subject to approval of the Architect.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Steel reinforcement and accessories.
 - 4. Joint-filler strips.

- C. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
 - 1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- D. Field quality-control reports.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
 - 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5."
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- F. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, steel reinforcement installation, concrete repair procedures, and concrete protection.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1.7 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

- B. Hot-Weather Placement: Comply with ACI 301 and as follows:
 - 1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.

2.2 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C 150, Type II.

- B. Normal-Weight Aggregates: ASTM C 33, coarse aggregate or better, graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

- C. Lightweight Aggregate: ASTM C 330, 3/4-inch nominal maximum aggregate size.
- D. Water: ASTM C 94/C 94M and potable.

2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.

2.5 CURING MATERIALS

- A. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- B. Water: Potable.

2.6 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

2.7 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing admixture in concrete, as required, for placement and workability.

2.8 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings: Normal-weight concrete.
 - 1. Minimum Compressive Strength: 4000 psi at 28 days.
 - 2. Slump Limit: 4 inches, plus or minus 1 inch.
 - 3. Air Content: 5.5 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.
- B. Foundation Walls: Normal-weight concrete.
 - 1. Minimum Compressive Strength: 4000 psi at 28 days.
 - 2. Slump Limit: 4 inches, plus or minus 1 inch.

3. Air Content: 5.5 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.

C. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Slump Limit: 3 inches maximum.
3. Air Content: 5 percent, plus or minus 1 percent at point of delivery for 3/4-inch nominal maximum aggregate size.

2.9 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.2 JOINTS

- A. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.
 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

3.3 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 2. Maintain reinforcement in position on chairs during concrete placement.
 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.4 FINISHING FORMED SURFACES

- A. Rubbed Finish: Apply the following to as cast surface finishes where indicated on Drawings:
1. Smooth-Rubbed Finish:
 - a. Perform no later than one day after form removal.
 - b. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture.
 - c. If sufficient cement paste cannot be drawn from the concrete by the rubbing process, use a grout made from the same cementitious materials used in the in-place concrete.

3.5 FINISHING FLOORS AND SLABS

- A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

- B. Trowel Finish, Interior:
 - 1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
 - 2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
 - 3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 4. Do not add water to concrete surface.
 - 5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
 - 6. Apply a trowel finish to surfaces to be covered with resilient flooring, carpet, ceramic tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
 - 7. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a randomly trafficked floor surface:
 - a. Slabs on Ground:
 - 1) Specified overall values of flatness, F_F 35; and of levelness, F_L 25; with minimum local values of flatness, F_F 24; and of levelness, F_L 17.
 - b. Suspended Slabs:
 - 1) Specified overall values of flatness, F_F 35; and of levelness, F_L 20; with minimum local values of flatness, F_F 24; and of levelness, F_L 15.

- C. Broom Finish, Exterior: Apply a broom finish to exterior concrete platforms, steps, ramps, and locations indicated on Drawings.
 - 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.
 - 2. Coordinate required final finish with Architect before application.

3.6 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

- B. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs.

- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.

- b. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

3.7 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 - 1. Defer joint filling until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

3.8 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 - 1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 - 2. After concrete has cured at least 14 days, correct high areas by grinding.
 - 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 - 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
 - 5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 - 6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 - 7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place

patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

- D. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.9 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

- B. Inspections:

1. Steel reinforcement placement.
2. Verification of use of required design mixture.
3. Concrete placement, including conveying and depositing.
4. Curing procedures and maintenance of curing temperature.
5. Verification of concrete strength before removal of shores and forms from beams and slabs.

- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 - b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.

- b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
9. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
13. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION

SECTION 04 20 00 – UNIT MASONRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.02 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
 - 1. Concrete masonry units (CMUs).
 - 2. Mortar and grout.
 - 3. Steel reinforcing bars.
 - 4. Masonry joint reinforcement.
 - 5. Miscellaneous masonry accessories.
 - 6. Patching and repair of existing masonry for new and/or modified openings, including tothing-in of new CMU.
 - 7. All hoisting and scaffolding for completion of masonry work.
 - 8. Masonry waste disposal.
- B. Related Sections include the following:
 - 1. Division 07 Section "Joint Sealants" for sealing control and expansion joints in unit masonry.
 - 2. Division 08 Section "Access Doors and Frames."
 - 3. Division 08 Section "Door Hardware."
- C. Products installed, but not furnished, under this Section include the following:
 - 1. Steel lintels for unit masonry, furnished under Division 05 Section "Metal Fabrications."
 - 2. Access doors and frames, furnished by Fire Protection, Plumbing, Mechanical, and Electrical Subcontractors in accordance with Division 08 Section "Access Doors and Frames."

1.03 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.04 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops indicated net-area compressive strengths (f'_m) at 28 days.

- B. Determine net-area compressive strength (f'_m) of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

1.05 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
 - 1. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.
 - 2. Control/Expansion Joints: Prior to installation, provide layout indicating recommended locations of all control/expansion joints in CMU walls and exterior masonry veneer. Provide details for all conditions.
 - a. Architect will make final determination for locations of all control/expansion joints.
- C. Samples for Verification: For each type and color of the following:
 - 1. Accessories embedded in masonry.

1.06 INFORMATIONAL SUBMITTALS

- A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
 - 1. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.
- B. Qualification Data: For testing agency.
- C. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
 - 1. Masonry units.
 - a. Include material test reports substantiating compliance with requirements.
 - b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
 - 2. Cementitious materials. Include brand, type, and name of manufacturer.
 - 3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 - 4. Grout mixes. Include description of type and proportions of ingredients.
 - 5. Reinforcing bars.
 - 6. Joint reinforcement.

- D. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 - 1. Include test reports, per ASTM C 780, for mortar mixes required to comply with property specification.
 - 2. Include test reports, per ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
- E. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.
- F. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements in ACI 530.1.
- G. Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with hot-weather requirements in ACI 530.1.

1.07 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.
- B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.
- D. Preconstruction Testing Service: Owner will engage a qualified independent testing agency to perform preconstruction testing indicated below. Payment for these services will be made by Owner. Retesting of materials that fail to meet specified requirements shall be done at Contractor's expense.
 - 1. Mortar Test (Property Specification): For each mix required, per ASTM C 780.
 - 2. Grout Test (Compressive Strength): For each mix required, per ASTM C 1019.
- E. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.
- F. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockup of typical wall area as directed by Architect.
 - 2. Clean one-half of exposed faces of mockups with masonry cleaner as indicated.
 - 3. Protect accepted mockups from the elements with weather-resistant membrane.
 - 4. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.

- a. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.
 - b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Architect in writing.
5. Demolish and remove mockups when directed by the Architect.
- G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
- 1.08 DELIVERY, STORAGE, AND HANDLING
- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
 - B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
 - C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
 - D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.
 - E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.
- 1.09 PROJECT CONDITIONS
- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
 - 2. Where 1 wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.
 - B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
 - C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.

3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602/1.8C whenever the following conditions exist:
1. The ambient temperature falls below 40 deg F.
 2. The temperature of masonry units is below 40 deg F.
 3. Implement the following minimum procedures:
 - a. The temperature of masonry units shall not be less than 20 deg F when laid in the masonry. Remove visible ice on masonry units prior to installation.
 - b. Heat the mortar sand or mixing water to produce mortar temperatures between 40 deg F and 120 deg F at the time of mixing. Maintain mortar above 32 deg F until used in masonry.
 - c. Use heat sources where ambient temperatures are between 20 deg F and 25 deg F on both sides of the masonry under construction. Install wind breaks when wind velocity is in excess of 15 mph.
 - d. Where ambient temperature is below 20 deg F, provide an enclosure for the masonry under construction and use heat sources to maintain temperature above 32 deg F within the enclosure.
 - e. Where mean daily temperatures are between 32 deg F and 40 deg F, protect completed masonry from rain and snow by covering with a weather resistive membrane for 24 hours after construction.
 - f. Where mean daily temperatures are between 25 deg F and 32 deg F, completely cover completed masonry with a weather resistive membrane for 24 hours after construction.
 - g. Where mean daily temperatures are between 20 deg F and 25 deg F, completely cover completed masonry with insulating blankets, or equal protection, for 24 hours after construction.
 - h. Where mean daily temperatures are below 20 deg F, maintain masonry temperature above 32 deg F for 24 hours after construction by enclosure with supplementary heat, by electric blankets, by infrared heat lamps, or other acceptable methods.
 4. Do not lay masonry units that are wet or frozen.
 5. Remove masonry damaged by freezing conditions.
 6. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602/1.8D, whenever the ambient air temperature exceeds the following:
1. 100 deg F, or 90 deg F with a wind velocity greater than 8 mph.
 2. Implement hot weather protection in accordance with Article 2.1.2.1(d).
 3. Do not spread mortar beds more than 4 feet ahead of masonry. Set masonry units within one minute of spreading mortar.

PART 2 - PRODUCTS**2.01 MASONRY UNITS, GENERAL**

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.02 CONCRETE MASONRY UNITS (CMUs)

- A. Shapes: Provide shapes indicated and as follows:
1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions where indicated.
 2. Provide factory fabricated bullnose units for outside corners, except for the following locations:
 - a. Exterior window openings, gypsum board, wood or other wall mounted finishes.
 - b. Walls to receive ceramic tile.
 - c. Door or passage openings in masonry walls.
- B. Concrete Masonry Units: ASTM C 90.
1. Products: Subject to compliance with requirements, provide products by one of the following:
 - a. A. Jandris & Sons.
 - b. Nitterhouse Masonry Products, LLC.
 - c. Westbrook Block, Inc.
 2. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
 3. Weight Classification: Lightweight.
 4. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
 5. Exposed Faces: Manufacturer's standard color and texture.
 6. Fire Rated Concrete Masonry: In accordance with test procedures set forth in ASTM E 199 or alternative methods as follows:
 - a. U.L. Design Assemblies: Provide a U.L. Certificate for design of composite wall assembly for each hourly rating required.
 - b. In accordance with the Connecticut State Building Code:
 - 1) Fire-resistance designs documented in approved sources.
 - 2) Prescriptive designs of fire-resistant rated building elements as prescribed in Section 72 0. 0.
 - 3) Calculations in accordance with Section 72 1. 0.
 - 4) Engineering analysis based on a comparison of building element designs having fire resistance ratings as determined by test procedures set forth in ASTM E 119.

- c. Fire rated wall construction includes reinforcement, facing or finish materials, load bearing and non-load bearing walls; and requirements for members framed into walls.

2.03 MASONRY LINTELS

- A. General: Provide masonry lintels as indicated, complying with requirements below.
- B. Masonry Lintels: Built-in-place masonry lintels made from lintel and/or bond beam concrete masonry units with reinforcing bars placed as indicated and filled with coarse grout. Temporarily support built-in-place lintels until cured.
 1. Grouted cells shall not be visible on the underside of masonry lintels.

2.04 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207, Type S.
- D. Masonry Cement: The use of masonry cement is not permitted.
- E. Aggregate for Grout: ASTM C 404.
- F. Water: Potable.

2.05 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 1. Do not use calcium chloride in mortar or grout.
 2. Limit cementitious materials in mortar to portland cement and lime.
 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Mortar Mixes: At Contractor's option, provide job-mixed mortar or preblended dry mortar mix. Provide colors required for each application indicated.
- C. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
 1. Product: Subject to compliance with requirements, provide the following:
 - a. Spec Mix; Portland Lime & Sand.

- D. Mortar Types for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated:
1. For reinforced masonry, use Type M.
- E. Grout for Unit Masonry: Comply with ASTM C 476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
 - a. Use fine grout for 6 inch thick concrete masonry wythes.
 - b. Use course grout for 8-inch thick or greater concrete masonry wythes.
 2. Proportion grout in accordance with ASTM C 476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
 3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143.

2.06 REINFORCING STEEL

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.

2.07 MASONRY JOINT REINFORCEMENT

- A. Masonry Joint Reinforcement, General: ASTM A 951.
1. Interior Walls: Hot-dip galvanized, carbon steel.
 2. Exterior Walls: Hot-dip galvanized, carbon steel.
 3. Wire Size for Side Rods: W1.7 or 0.148-inch diameter (9 gauge).
 4. Wire Size for Cross Rods: W1.7 or 0.148-inch diameter (9 gauge).
 5. Wire Size for Veneer Ties: W2.8 or 0.188-inch diameter (3/16-inch).
 6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
 7. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.
- B. Masonry Joint Reinforcement for Single-Wythe Masonry: Ladder type with single pair of side rods.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Hohmann & Barnard, Inc.; #220 Ladder Mesh.
 - b. Wire-Bond; Series 200 Core Clear Ladder Type.

2.08 MISCELLANEOUS ANCHORS

- A. Unit Type Inserts in Concrete: Cast-iron or malleable-iron wedge-type inserts.
- B. Anchor Bolts: Headed steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.

2.09 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.
1. Control Joints: Provide compressible filler, 3/8-inch thick and 3 inches wide.
 - a. Products: Subject to compliance with requirements, provide one of the following, or equal:
 - 1) Hohmann & Barnard, Inc.; NS Closed Cell Neoprene Sponge.
 - 2) Wire-Bond; #3300 Expansion Joint.
 2. Premolded Joint Filler at Steel Columns: Provide compressible filler as indicated for Control Joints.
- B. Preformed Control-Joint Gaskets: Made from PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Hohmann & Barnard, Inc.; #VS Series – PVC Control Joint.
 - b. Wire-Bond; PVC Control Joint.
- C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- D. Grout Screen: Fabricated from monofilament polypropylene mesh to prevent grout falling through; without interfering with mortar bond.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Heckman Building Products, Inc.; Grout Stop.
 - b. Hohmann & Barnard, Inc.; MGS.
 - c. Wire-Bond; Grout Stop 3612.
- E. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.148-inch (9 gauge) steel wire, hot-dip galvanized after fabrication. Provide units with either two loops or four loops as needed for number of bars indicated.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Heckmann Building Products Inc.; No. 376 Rebar Positioner.
 - b. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
 - c. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.

2.10 MASONRY CLEANERS

- A. Cleaners, General: Provide cleaners that are compatible with Zone 2 environmental area.

- B. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.
- C. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Diedrich Technologies, Inc.
 - b. ProSoCo, Inc.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
 - 2. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

- A. Thickness: Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
 - 1. Mix units from several pallets or cubes as they are placed.

3.03 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:

1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.
7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.04 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

1. Lay out masonry walls first with snap lines on the concrete slab . Once line layout is complete, lay out concrete masonry units dry (without mortar) in a single course on the concrete slab to verify coursing, reinforcement, and necessary masonry cuts.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in the following bond pattern(s); do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

1. Running bond.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2-inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

- D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- H. Fill all cores in hollow concrete masonry units with grout.
- I. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof deck above, unless otherwise indicated.
 - 1. Install compressible filler in joint between top of partition and underside of structure above.
 - 2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c., unless otherwise indicated.

3.05 MORTAR BEDDING AND JOINTING

- A. Lay concrete masonry units as follows:
 - 1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 - 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
 - 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
 - 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.
 - 1. Strike mortar joints flush where providing substrate for fluid applied air and vapor barrier at interior cavity wall masonry wythes.

3.06 MASONRY JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
 - 1. Space reinforcement not more than 16 inches o.c.
 - 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.

3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings.
 - a. Reinforcement above is in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Corners: Provide interlocking masonry unit bond in each wythe and course at corners unless otherwise indicated.
 1. Provide continuity with masonry-joint reinforcement at corners by using prefabricated L-shaped units as well as masonry bonding.
- D. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:
 1. Provide continuity with masonry-joint reinforcement by using prefabricated T-shaped units.

3.07 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry as follows:
 1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
 2. Install control joints in interior concrete masonry partitions where indicated, and as follows. During wall layout, verify locations of all control joints with Architect.
 - a. Spacing of control joints in straight walls not to exceed 20 feet horizontally.
 - b. Install control joints at intersections of walls and column enclosures.

3.08 LINTELS

- A. Install steel lintels at openings in exterior veneer and where indicated.
- B. Provide masonry lintels at openings in interior or exterior CMU partitions (not masonry veneer) without structural steel or other supporting lintels.
- C. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

3.09 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace,

- tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
1. Do not exceed the following pour heights for fine grout.
 - a. For minimum widths of grout spaces of 3/4 inch or for minimum grout space of hollow unit cells of 1-1/2 by 2", pour height of 12".
 - b. For minimum widths of grout spaces of 2" or for minimum grout space of hollow unit cells of 2 by 3", pour height of 60".
 - c. For minimum widths of grout spaces of 2-1/2" or for minimum grout space of hollow unit cells of 2-1/2 by 3", pour height of 12 feet.
 - d. For minimum widths of grout spaces of 3" or for minimum grout space of hollow unit cells of 3 by 3" pour height of 24 feet.
 2. Do not exceed the following pour heights for coarse grout:
 - a. For minimum widths of grout spaces of 1-1/2" or for minimum grout space of hollow unit cells of 1-1/2 by 3", pour height of 12 inches.
 - b. For minimum widths of grout spaces of 2 inches or for minimum grout space of hollow unit cells of 2-1/2 by 3", pour height of 60 inches.
 - c. For minimum widths of grout spaces of 2-1/2" or for minimum grout space of hollow unit cells of 3 by 3", pour height of 12 feet.
 - d. For minimum widths of grout spaces of 3" or for minimum grout space of hollow unit cells of 3 by 4 inches, pour height of 24 feet.
 3. Provide cleanout holes at least 3" in least dimension for grout pours over 60 inches in height.
 - a. Provide cleanout holes at each vertical reinforcing bar.
 - b. At solid grouted masonry, provide cleanout holes at not more than 32 inches o.c.
- D. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

3.10 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Special inspections according to the Connecticut State Building Code.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
- C. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections indicated below and prepare test reports:
1. Payment for these services will be made by Owner.
 2. Retesting of materials failing to comply with specified requirements shall be done at Contractor's expense.
- D. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- E. Mortar Test (Property Specification): For each mix provided, per ASTM C 780. Test mortar for compressive strength.
- F. Grout Test (Compressive Strength): For each mix provided, per ASTM C 1019.

3.11 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 - a. Protect and provide water wash on all cast stone surfaces below masonry being cleaned.
 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 5. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
 6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.12 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

END OF SECTION 04 20 00

SECTION 05 50 00 – METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Products furnished, but not installed, under this Section include the following:
 - 1. Loose steel lintels.
 - 2. Abrasive metal nosings, for interior and exterior concrete steps.
- B. Related Sections include the following:
 - 1. Division 03 Section "Cast-in-Place Concrete" for installing anchor bolts, steel pipe sleeves, wedge-type inserts and other items indicated to be cast into concrete.
 - 2. Division 04 Section "Unit Masonry" for installing loose lintels in unit masonry.
 - 3. Division 05 Section "Pipe and Tube Railings."

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include finishing materials.
 - 1. Metal nosings.
- B. Shop Drawings: Show fabrication and installation details for metal fabrications.

1.4 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.
 - 1. Provide allowance for trimming and fitting at site.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.2 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.3 NONFERROUS METALS

- A. Aluminum Plate and Sheet: ASTM B 209, Alloy 6061-T6.
- B. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.

2.4 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.
- B. Cast-in-Place Anchors in Concrete: Anchors capable of sustaining, without failure, a load equal to four times the load imposed, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.
- C. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Material for Anchors in Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.
 - 2. Material for Anchors in Exterior Locations: Alloy Group 1 stainless-steel bolts complying with ASTM F 593 and nuts complying with ASTM F 594.

2.5 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

2.6 LOOSE STEEL LINTELS

- A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Weld adjoining members together to form a single unit where indicated.
- B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span but not less than 8 inches, unless otherwise indicated.
- C. Galvanize loose steel lintels.

2.7 ABRASIVE METAL NOSINGS

- A. Extruded Units: Aluminum, with abrasive filler consisting of aluminum oxide, silicon carbide, or a combination of both, in an epoxy-resin binder. Fabricate units in lengths necessary to accurately fit openings or tread conditions.
 - 1. Basis of Design Product: Subject to compliance with requirements, provide **American Safety Tread Co., Inc.; Type BF211D** or comparable product by the following:
 - a. Balco Inc.
 - 2. Provide ribbed units, with abrasive filler strips projecting 1/16 inch above aluminum extrusion.
 - 3. Nosings: Square-back units, 2 inches wide, for casting into concrete steps.
 - a. Filler Color: As selected by Architect from manufacturer's full range.
- B. Provide anchors for embedding units in concrete, integral to units, as standard with manufacturer.
- C. Drill for mechanical anchors and countersink. Locate not more than 4 inches from ends and not more than 12 inches o.c., evenly spaced between ends, unless otherwise indicated. Provide closer spacing if recommended by manufacturer.
 - 1. Provide 2 rows of holes for units more than 5 inches wide, with 2 holes aligned at ends and intermediate holes staggered.
- D. Apply clear lacquer to concealed surfaces of extruded units.

2.8 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.

2.9 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
 - 1. ASTM A 123/A 123M, for galvanizing steel and iron products.
 - 2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.

2.10 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. As-Fabricated Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Placement: Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLING NOSINGS

- A. Center nosings on tread widths.
- B. For nosings embedded in concrete steps or curbs, align nosings flush with riser faces and level with tread finished flooring surfaces.

3.3 ADJUSTING AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 05 50 00

SECTION 05 52 13 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section Includes:
 - 1. Steel pipe railings, exterior stair and ramp locations.
 - 2. Stainless-steel railings, interior stair and ramp locations.

1.3 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for Initial Selection: For products involving selection of color, texture, or design.
- D. Samples for Verification: For each type of exposed finish required.
 - 1. Submit two 3 inch by 6 inch samples of factory-applied coatings and colors proposed for use for approval prior to coating application
- E. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified professional engineer, licensed in the State of Connecticut.
- B. Welding certificates.
- C. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

- E. Certificate of Compliance for Items Coated by Galvanizer: Submit notarized Certificate of Compliance signed by the galvanizer, indicating compliance with requirements of specifications. Include scope of services provided, and quantity and itemized description of items processed.
- F. Certificate of Compliance for Shop Drawing Review by Galvanizer: Submit galvanizer's certification that shop drawings for metal fabrications to receive metal coatings have been reviewed and that fabrications are acceptable to galvanizer for proper application of galvanizing and metal coatings. All drawings should be signed by the galvanizer to indicate acceptance of design for galvanizing.
- G. Certificate of Compliance of Item Identification by Galvanizer: The galvanizer shall mark all lots of material with a clearly visible tag indicating the name of the galvanizer, the type and weight of the coating, and the applicable ASTM Specification Numbers.
 - 1. Submit certification of compliance that items have been tagged.
 - 2. Galvanizer/applicator shall supply a certificate of compliance that all coatings have been performed in accordance with SSPC Qualification Procedure Standard QP 3.
- H. Warranty: Special warranty included in this Section.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.
- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - 2. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."
- B. Galvanizer: Engage the services of a qualified galvanizer who has demonstrated a minimum of ten years' experience in the successful application of galvanized coatings specified in this specification in the facility where the work is to be performed and who will apply the coatings within the same facility.
 - 1. Galvanizing shall be performed by a company with a minimum of ten years' experience in the successful application of hot-dip galvanizing utilizing the dry kettle process.
- C. Pre-Construction Conference for Metal Fabrications to Receive Factory-Applied Metal Coatings: Schedule a meeting to be attended by Contractor, Architect, fabricator, and galvanizer. Agenda to include the following:
 - 1. Project schedule, scope of services, coordination between fabricator and galvanizer, finish of surfaces, application of coatings, submittals, and approvals.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

1.8 COORDINATION AND SCHEDULING

- A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.
- C. Coordination between Fabricator and Galvanizer: Prior to fabrication and final submittal of shop drawings, direct fabricators to submit shop drawings to the galvanizer for all metal fabrications to receive factory-applied metal coatings. Direct galvanizer to review fabricator's shop drawings for suitability of materials for galvanizing and coatings and coordinate any required modifications to fabrications required to be performed by the fabricator.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form for galvanizing and factory finishing of exterior railings, in which manufacturer warrants the galvanizing and color coat processes to be free from 10% or more visible rust within the specified warranty period.
 - 1. Warranty Period: Twenty (20) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Infill of Guards:
 - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
 - b. Infill load and other loads need not be assumed to act concurrently.

- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

2.3 STEEL AND IRON

- A. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
- B. Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.4 STAINLESS STEEL

- A. Pipe: ASTM A 312/A 312M, Grade TP 316L.
- B. Plate and Sheet: ASTM A 240/A 240M or ASTM A 666, Type 316L.
- C. Wire Mesh In-fill: Type 304, stainless steel mesh with 1"x1" U-channel Box framed, mitered, fully welded and finished.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide the following, or equal:
 - a. **McNichols; Designer Mesh TECHNA 3150.**
 - 2. Open Area: 74 percent.
 - 3. Weave Type: Double wire inter-crimp weave.

2.5 FASTENERS

- A. General: Provide the following:
 - 1. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.
 - 2. Stainless-Steel Railings: Type 316 stainless-steel fasteners.
 - 3. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Post-Installed Anchors: Torque-controlled expansion anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
 - 2. Material for Exterior Locations: Alloy Group 1 (A1) stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.6 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
 - 1. For stainless-steel railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
- B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.7 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded connections unless otherwise indicated.

- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove flux immediately.
 - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Form changes in direction as follows:
 - 1. By bending.
- J. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- K. Close exposed ends of railing members with prefabricated end fittings.
- L. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
- N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
- O. For railing posts set in concrete, provide steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.

2.8 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

2.9 STEEL AND IRON FINISHES

A. Galvanized Railings for Exterior Applications:

1. Hot-dip galvanize exterior steel railings, including hardware, after fabrication. Where size of assembly is too large for complete unit galvanizing, galvanize prior to fabrication in as large sections as possible with Architect's written approval.
 - a. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
 - b. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
 - c. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
 - d. Fill vent and drain holes that will be exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
2. Prior to galvanizing, immerse steel in a pre flux solution of zinc ammonium chloride containing high grade zinc and earthy materials. Galvanize all ferrous fasteners, clips, sleeves, anchors and accessories in contact with galvanized railings.
 - a. Product: Subject to compliance with requirements, provide the following, or equal:
 - 1) **Duncan Galvanizing; Duragalv.**
3. Inspect all galvanized materials for compliance with requirements and mark with stamp indicating the name of the galvanizer, ASTM specification, and weight of the zinc coating in oz./sq.ft.
 - a. Rugosity: Not greater than 4 rug (16-20 microns of variation) when measured by a profilometer over a 1-inch straight line.
 - b. Create a 1-3 mil profile on the surface to provide adhesion of thermoset coating.
4. Where galvanizing cannot be completed prior to fabrication, weld joints after fabrication, grind smooth and finish with applied galvanizing recommended by manufacturer.
5. Shop Coating of Galvanized Steel: Factory-applied metal coatings on galvanized materials.
 - a. Product: Subject to compliance with requirements, provide the following, or equal:
 - 1) **Duncan Galvanizing; Colorgalv Thermoset.**
 - b. Primer shall meet or exceed the following performance criteria:
 - 1) Abrasion Resistance per ASTM D 4060 (CS17 Wheel, 1,000 grams load), 1kg Load: 200 mg loss.
 - 2) Adhesion per ASTM D4541: 1050 psi.
 - 3) Corrosion Weathering per ASTM D5894, 13 Cycles, 4,368 Hours: Rating 10 per ASTM D714 for blistering; Rating 7 per ASTM D610 for rusting.
 - 4) Direct Impact Resistance per ASTM D2794: 160 in. lbs.
 - 5) Flexibility per ASTM D522, 180° Bend, 1 in. Mandrel: Passes.
 - 6) Pencil Hardness per ASTM D3363: 3B.
 - 7) Moisture Condensation Resistance per ASTM D4585, 100° F, 2000 Hours: Passes, no cracking or delamination.
 - 8) Dry Heat Resistance per ASTM D2485: 250° F.

- c. Topcoat shall meet or exceed the following performance criteria:
 - 1) Abrasion Resistance per ASTM D 4060, CS17 Wheel, 1,000 Cycles 1kg Load: 87.1 mg loss.
 - 2) Adhesion per ASTM D 4541: 1050 psi.
 - 3) Direct Impact Resistance per ASTM D2794: >28 in. pounds.
 - 4) Indirect Impact Resistance per ASTM D2794: 12-14 in. pounds.
 - 5) Dry Heat Resistance per ASTM D2485: 200° F.
 - 6) Salt Fog Resistance per ASTM B 117 9,000 Hours: Rating 10 per ASTM D714 for blistering.
 - 7) Flexibility per ASTM D522, 180° Bend, 1/8 in. Mandrel: Passes.
 - 8) Pencil Hardness per ASTM D3363: 2H.
 - 9) Moisture Condensation Resistance per ASTM D4585, 100° F, 1000 Hours: No blistering or delamination Xenon Arc Test per ASTM D 4798: Pass 300 hours

- d. Color: As selected by Architect from manufacturer's full range of colors.

2.10 STAINLESS-STEEL FINISHES

- A. Remove tool and die marks and stretch lines, or blend into finish.
- B. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.
- C. Stainless Steel Tubing Finishes:
 - 1. 180-Grit Polished Finish: Uniform, directionally textured finish.
- D. Stainless Steel Sheet and Plate Finishes:
 - 1. Directional Satin Finish: ASTM A 489/A 480, No. 4.
- E. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - 1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
 - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

- C. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

- A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.
- B. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

3.3 ANCHORING POSTS

- A. Use metal sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.
- C. Leave anchorage joint exposed with 1/8-inch buildup, sloped away from post.

3.4 ATTACHING RAILINGS

- A. Anchor railing ends at walls with round flanges anchored to wall construction and welded to railing ends.
- B. Attach railings to wall with wall brackets. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- C. Secure wall brackets and railing end flanges to building construction as follows:
 - 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
 - 2. For hollow masonry anchorage, use toggle bolts.
 - 3. For steel-framed gypsum board assemblies, fasten brackets directly to steel framing or concealed steel reinforcements using self-tapping screws of size and type required to support structural loads.

3.5 APPLICATION OF FACTORY-APPLIED METAL COATINGS

- A. Galvanizing Application: Galvanize materials in accordance with specified standards and this specification. Galvanizing shall provide an acceptable substrate for applied coatings. The dry kettle process shall be used to eliminate any flux inclusions on the surface of the galvanized material.
- B. Prior to galvanizing, the steel shall be immersed in a pre-flux solution (zinc ammonium chloride). The pre flux tank must be 12 to 14 Baumé and contain less than 0.4 percent iron. The wet kettle process shall be prohibited.
- C. To provide the galvanized surface required, the following procedures shall be implemented:
 - 1. A monitoring recorder shall be utilized and inspected regularly to observe any variances in the galvanizing bath temperature.
 - 2. The pickling tanks shall contain hydrochloric acid with an iron content less than 8 percent and zinc content less than 3 percent. Titrations shall be taken weekly at a minimum.
 - 3. All chemicals and zinc shall be tested at least once a week to determine compliance with ASTM standards. All testing shall be done using atomic absorption spectrometry or x-ray fluorescence (XRF) equipment at a lab in the galvanizing plant.
- D. Finish coatings shall be applied under the following conditions.
 - 1. Minimum air temperature shall be 65 degrees F. Surface temperature of steel shall be 60 degrees to 95 degrees F and, in any event, be 5 degrees F higher than the dew point. Humidity shall be 85 percent maximum.
 - 2. The use of iron or steel shot and sand and aluminum oxide grit as a blast medium, and power wire brushes are not permitted.
 - 3. Surface of substrate shall be dry and free from dust, dirt, oil, grease or other contaminants. Coating and cure facility shall be maintained free of airborne dust and dirt until coatings are completely cured.

3.6 ADJUSTING AND CLEANING

- A. Clean stainless steel by washing thoroughly with clean water and soap and rinsing with clean water.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.
- C. Touch-Up and Repair: For damaged and field-welded metal coated surfaces, clean welds, bolted connections and abraded areas.
 - 1. For galvanized surfaces, apply organic zinc repair paint complying with requirements of ASTM A 780, modified to 95 percent zinc in dry film. Galvanizing repair paint shall have 95 percent zinc by weight. Thickness of applied galvanizing repair paint shall be not less than coating thickness required by ASTM A 123 or A 153 as applicable. Touch-up of galvanized surfaces with silver paint, brite paint, or aluminum paints is not acceptable.
 - 2. For factory-applied finish coatings, field-touch-up to be performed by factory approved personnel for warranties to apply. Touch-up shall be such that repair is not visible from a distance of 6 feet. If non factory-approved technicians are used for field touch-up, no warranties shall exist.
 - 3. A touch-up repair kit or touchup instructions shall be provided to the Owner for each type of factory-applied finish.

3.7 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 05 52 13

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 06 10 53 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Wood blocking in partition framing.
 - 2. Door hardware installation.
- B. Related Sections include the following:
 - 1. Division 08 Section "Door Hardware" for door hardware and additional installation requirements.

1.3 DEFINITIONS

- A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
 - 2. NLGA: National Lumber Grades Authority.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 - 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 - 3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.5 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:
 - 1. Fire-retardant-treated wood.
 - 2. Power-driven fasteners.
 - 3. Powder-actuated fasteners.
 - 4. Expansion anchors.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.
- B. Deliver interior wood materials that are to be exposed to view only after building is enclosed and weatherproof, wet work other than painting is dry, and HVAC system is operating and maintaining temperature and humidity at occupancy levels.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 - 3. Provide dressed lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent.
- C. Plywood: DOC PS 1.
 - 1. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
 - 2. Factory mark panels to indicate compliance with applicable standard.

2.2 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
 - 1. Use treatment that does not promote corrosion of metal fasteners.
 - 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
- C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
- E. Application: Treat the following:
 - 1. Concealed blocking in wall framing and window opening framing.
- F. Products: Subject to compliance with requirements, provide products by one of the following:
 - 1. Dricon.
 - 2. Hoover Treated Wood Products.
 - 3. Koppers Performance Chemicals.

2.3 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Furring.
- B. For items of dimension lumber size, provide Construction or No. 2 lumber with 15 percent maximum moisture content and the following species:
 - 1. Hem-fir (north); NLGA.
- C. For blocking not used for attachment of other construction Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.4 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where carpentry is exposed to weather, in ground contact, fire retardant treated, or in area of high relative humidity, provide G185 galvanized steel fasteners, or fasteners with hot-dipped galvanized after fabrication, in compliance with Section 2304.9.5 of the Connecticut State Building Code.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1.
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- C. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
 - 1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.

- D. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- E. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
- F. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

3.2 WOOD BLOCKING AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.3 FIRE-RETARDANT-TREATED (FRT) MATERIALS INSTALLATION

- A. Cutting to length, drilling holes, joining cuts and light sanding are permissible. It is not necessary to field treat cut ends to maintain flame spread rating.
 - 1. Ripping, milling, and surfacing of FRT lumber is not permitted.
 - 2. FRT plywood can be cut in either direction without loss of fire protection.

3.4 FINISH HARDWARE INSTALLATION

- A. General: Comply with requirements indicated below and in Division 08 Section "Door Hardware."
- B. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- C. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

3.5 PROTECTION

- A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 53

SECTION 07 21 00 – THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Sound attenuation insulation.
 - 2. Fire safing insulation.
- B. Related Sections include the following:
 - 1. Division 09 Section "Gypsum Board Assemblies" for installation in metal-framed assemblies of insulation specified by referencing this Section.

1.3 DEFINITIONS

- A. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers; produced in boards and blanket with latter formed into batts (flat-cut lengths) or rolls.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: Full-size units for each type of exposed insulation indicated.
- C. Low-emitting product certification.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

- B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
1. Surface-Burning Characteristics: ASTM E 84.
 2. Fire-Resistance Ratings: ASTM E 119.
 3. Combustion Characteristics: ASTM E 136.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Indoor Air Quality Requirements: The following practices shall be implemented in accordance with Division 01 Section "Indoor Air Quality Requirements."
1. Insulations are to be stored per manufacturer's recommendations for allowable temperature and humidity range. Insulations shall not be allowed to become damp.
 2. Where feasible, fiberglass, mineral wool, and other fibrous insulations shall be stored separately from materials which have high short-term emissions. Materials with high short-term emissions include, but are not limited to: adhesives, sealants and glazing compounds (specifically those with petrochemical vehicles or carriers); paint, wood preservatives, and finishes; control and/or expansion joint fillers; hard finishes requiring adhesive installation; gypsum board (with associated finish processes and products); and composite or engineered wood products with formaldehyde binders.
 3. Where feasible, exposed fiberglass or mineral wool insulations shall not be stored in occupied spaces, near HVAC diffusers (supply or return), or near fresh air intakes.

PART 2 - PRODUCTS

2.1 MINERAL-WOOL BLANKET INSULATION (SOUND ATTENUATION)

- A. Manufacturers: Subject to compliance with requirements, provide one of the following:
1. Johns Manville; MinWool Sound Attenuation Fire Batts (SAFB).
 2. Rockwool; AFB.
 3. Thermafiber; SAFB.
- B. Unfaced, Mineral-Wool Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 0, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
1. R-Value: Minimum 3.7 per inch.
 2. NRC: 1.05 for 3 inch thickness.
 3. Nominal density of 2.5 lb/cu. ft minimum.
 4. Thickness: As indicated, not less than 3- inches.

2.2 MINERAL-WOOL-BOARD INSULATION (FIRE SAFING)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Johns Manville; MinWool Safing.
 - 2. Rockwool; SAFE.
 - 3. Thermafiber; Safing Insulation.

- B. Unfaced, Mineral-Wool Board Insulation: ASTM C 612; water repellent rigid insulation board with a rigid upper surface, with maximum flame-spread and smoke-developed indexes of zero, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
 - 1. Nominal density of 4.5 lb/cu. ft. minimum.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work indicates acceptance of substrates.

3.2 PREPARATION

- A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.

- C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

- D. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

- B. Install mineral-fiber insulation in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

- C. Install unfaced, slag-wool-fiber/rock-wool-fiber blanket insulation in penetrations in all non-fire rated horizontal floor/ceiling assemblies, including edge of slab conditions indicated. Fill annular space of penetration to resist the free passage of flame and the products of combustion.

3.5 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07 21 00

SECTION 07 84 13 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section Includes:
 - 1. Penetrations in fire-resistance-rated walls, including open penetrations.
 - 2. Penetrations in horizontal assemblies.
- B. Related Sections include the following:
 - 1. Division 07 Section "Thermal Insulation" for fire safing insulation in non-fire rated horizontal floor/ceiling assemblies.
 - 2. Division 07 Section "Fire-Resistive Joint Systems" for joints in or between fire-resistance-rated construction.
 - 3. Division 21 Sections specifying fire-suppression piping penetrations.
 - 4. Division 22 Sections specifying plumbing piping penetrations.
 - 5. Division 23 Sections specifying duct and piping penetrations.
 - 6. Division 26 Sections specifying cable and conduit penetrations.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each through-penetration firestop system, show each type of construction condition penetrated, relationships to adjoining construction, and type of penetrating item. Include firestop design designation of qualified testing and inspecting agency that evidences compliance with requirements for each condition indicated.
 - 1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.
 - 2. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular through-penetration firestop condition, submit illustration, with modifications marked, approved by through-penetration firestop system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

3. For those firestop applications that exist for which no qualified tested system is available through a manufacturer, an engineering judgment derived from similar qualified tested system designs or other tests is to be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineering judgment documents must follow requirements set forth by the International Firestop Council.

- C. Through-Penetration Firestop System Schedule: Indicate locations of each through-penetration firestop system, along with the following information:

1. Types of penetrating items.
2. Types of constructions penetrated, including fire-resistance ratings and, where applicable, thicknesses of construction penetrated.
3. Through-penetration firestop systems for each location identified by firestop design designation of qualified testing and inspecting agency.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For through-penetration firestop system products, signed by product manufacturer.
- C. Product Test Reports: From a qualified testing agency indicating through-penetration firestop system complies with requirements, based on comprehensive testing of current products.
- D. Material Safety Data Sheets.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, through one source from a single manufacturer.
- B. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in Part 1 "Performance Requirements" Article:
 1. Penetration firestopping tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
 2. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping products bear classification marking of qualified testing and inspecting agency.
 - b. Classification markings on penetration firestopping correspond to designations listed by the following:
 - 1) UL in its "Fire Resistance Directory."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, lot number, shelf life if applicable, qualified testing and inspecting agency's classification marking applicable to Project, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by through-penetration firestop system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Ventilate through-penetration firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.
- C. Do not use products and materials that contain flammable solvents.

1.9 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.
- C. Notify Owner's inspecting agency at least seven days in advance of through-penetration firestop system installations; confirm dates and times on days preceding each series of installations.
- D. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until each installation has been examined by Owner's inspecting agency and building inspector, if required by authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the through-penetration firestop systems indicated for each application in the Through-Penetration Firestop System Schedule at the end of Part 3 that are produced by one of the following manufacturers:
 - 1. Hilti, Inc.
 - 2. 3M; Fire Protection Products Division.
 - 3. Tremco; Tremstop Fire Protection Systems Group.

2.2 PERFORMANCE REQUIREMENTS

- A. General: For penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
- B. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
 - 1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 - 2. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.
 - 3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

2.3 PENETRATION FIRESTOPPING

- A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
 - 1. Fire-resistance-rated walls include fire walls, fire-barrier walls, smoke-barrier walls, and fire partitions.
 - 2. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
 - 1. Horizontal assemblies include floors, floor/ceiling assemblies and ceiling membranes of roof/ceiling assemblies.
 - 2. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
 - 3. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
- D. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- E. VOC Content: Provide penetration firestopping that complies with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Architectural Sealants: 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: 250 g/L.

3. Sealant Primers for Porous Substrates: 775 g/L.

F. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for firestop systems indicated. Accessories include, but are not limited to, the following items:

1. Permanent forming/damming/backing materials, including the following:

- a. Slag-/rock-wool-fiber insulation.
- b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
- c. Fire-rated form board.
- d. Fillers for sealants.

2. Temporary forming materials.
3. Substrate primers.
4. Collars.
5. Steel sleeves.

2.4 FILL MATERIALS

- A. General: Provide through-penetration firestop systems containing the types of fill materials required in the Through-Penetration Firestop System Schedule at the end of Part 3 by referencing the types of materials described in this Article. Fill materials are those referred to in directories of referenced testing and inspecting agencies as "fill," "void," or "cavity" materials.
- B. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer metallic or plastic sleeve lined with an intumescent strip, a radial extended flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.
- C. Latex Sealants: Single-component latex formulations that after cure do not re-emulsify during exposure to moisture.
- D. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- E. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized steel sheet.
- F. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.
- G. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- H. Pillows/Bags/Blocks: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives.
- I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

- J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping, gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.
 2. Grade for Horizontal Surfaces: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces.
 3. Grade for Vertical Surfaces: Nonsag formulation for openings in vertical and other surfaces.

2.5 MIXING

- A. For those products requiring mixing before application, comply with through-penetration firestop system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of work.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Clean out openings immediately before installing through-penetration firestop systems to comply with firestop system manufacturer's written instructions and with the following requirements:
1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of through-penetration firestop systems.
 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration firestop systems. Remove loose particles remaining from cleaning operation.
 3. Remove laitance and form-release agents from concrete.
- B. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop system's seal with substrates.

3.3 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

- A. General: Install through-penetration firestop systems to comply with Part 1 "Performance Requirements" Article and with firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.
- C. Install fill materials for firestop systems by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Identify through-penetration firestop systems with preprinted plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of edge of the firestop systems, and on both sides of partition, so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use self-adhering type with adhesives capable of permanently bonding labels to surfaces on which labels are placed and, in combination with label material, will result in partial destruction of label if removal is attempted. Include the following information on labels:
 - 1. The words "WARNING - PENETRATION FIRESTOPPING SYSTEM - DO NOT DISTURB. NOTIFY BUILDING MANAGEMENT OF ANY DAMAGE."
 - 2. Contractor's name, address, and phone number.
 - 3. Through-penetration firestop system designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Through-penetration firestop system manufacturer's name.
 - 6. Installer's name.

3.5 FIELD QUALITY CONTROL

- A. Inspecting Agency: Owner will engage a qualified, independent inspecting agency to inspect through-penetration firestops. Independent inspecting agency shall comply with ASTM E 2174 requirements including those related to qualifications, conducting inspections, and preparing test reports.
 - 1. Inspection of through-penetration firestopping shall be performed in accordance with ASTM E 2174, "Standard Practice for On-Site Inspection of Installed Fire Stops" or other recognized standard.

- B. Where deficiencies are found, repair or replace through-penetration firestop systems so they comply with requirements.
- C. Proceed with enclosing through-penetration firestop systems with other construction only after inspection reports are issued and firestop installations comply with requirements.

3.6 CLEANING AND PROTECTING

- A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce systems complying with specified requirements.

3.7 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to alpha-alpha-numeric designations listed in UL's "Fire Resistance Directory" under product Category XHEZ.
- B. Firestop Systems with No Penetrating Items.
 - 1. Available UL-Classified Systems: C-AJ-001-0999.
- C. Firestop Systems for Metallic Pipes, Conduit or Tubing:
 - 1. Available UL-Classified Systems: C-AJ-1001-1999 and W-L-1001-1999.
- D. Firestop Systems for Nonmetallic Pipe, Conduit or Tubing:
 - 1. Available UL-Classified Systems: C-AJ-2001-2999 and W-L-2001-2999.
- E. Firestop Systems for Electrical Cables:
 - 1. Available UL-Classified Systems: C-AJ-3001-3999 and W-L-3001-3999.
- F. Firestop Systems for Cable Trays:
 - 1. Available UL-Classified Systems: C-AJ-4001-4999 and W-L-3001-3999.
- G. Firestop Systems for Insulated Pipes:
 - 1. Available UL-Classified Systems: C-AJ-5001-5999 and W-L-5001-5999.
- H. Firestop Systems for Miscellaneous Electrical Penetrants (Busducts):
 - 1. Available UL-Classified Systems: C-AJ-6001-6999 and W-L-6001-6999.
- I. Firestop Systems for Miscellaneous Mechanical Penetrants (Ductwork):

1. Available UL-Classified Systems: C-AJ-7001-7999 and W-L-7001-7999.

J. Firestop Systems for Groupings of Penetrants:

1. Available UL-Classified Systems: C-AJ-8001-8999 and W-L-8001-8999.

END OF SECTION 07 84 13

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 07 84 46 - FIRE-RESISTIVE JOINT SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes fire-resistive joint systems for the following:
 - 1. Wall-to-wall joints.
 - 2. Head-of-wall joints.
 - 3. Exposed sealant joints in fire rated partitions.
- B. Related Sections include the following:
 - 1. Division 07 Section "Penetration Firestopping" for systems installed in openings in walls and floors with and without penetrating items.
 - 2. Division 07 Section "Joint Sealants" for non-fire-resistive joint sealants.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each fire-resistive joint system, show each kind of construction condition in which joints are installed; also show relationships to adjoining construction. Include fire-resistive joint system design designation of testing and inspecting agency acceptable to authorities having jurisdiction that demonstrates compliance with requirements for each condition indicated.
 - 1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each fire-resistive joint system configuration for construction and penetrating items.
 - 2. For those firestop applications that exist for which no qualified tested system is available through a manufacturer, an engineering judgment derived from similar qualified tested system designs or other tests is to be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineering judgment documents must follow requirements set forth by the International Firestop Council.
- C. Product Certificates: For each type of fire-resistive joint system, signed by product manufacturer.
- D. Qualification Data: For Installer.
- E. Field quality-control test reports.

- F. Evaluation Reports: Evidence of fire-resistive joint systems' compliance with ICC ES AC308, from the ICC Evaluation Service.
- G. Research/Evaluation Reports: For each type of fire-resistive joint system.
- H. Material Safety Data Sheets.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain fire-resistive joint systems, for each kind of joint and construction condition indicated, through one source from a single manufacturer.
- B. Fire-Test-Response Characteristics: Provide fire-resistive joint systems that comply with the following requirements:
 - 1. Fire-resistance tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL or another agency performing testing and follow-up inspection services for fire-resistive joint systems acceptable to authorities having jurisdiction.
 - 2. Fire-resistive joint systems are identical to those tested per methods indicated in Part 1 "Performance Requirements" Article and comply with the following:
 - a. Fire-resistive joint system products bear classification marking of qualified testing and inspecting agency.
 - b. Fire-resistive joint systems correspond to those indicated by referencing system designations of the qualified testing and inspecting agency.
- C. Preinstallation Conference: Conduct conference at Project site.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fire-resistive joint system products to Project site in original, unopened containers or packages with qualified testing and inspecting agency's classification marking applicable to Project and with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, lot number, shelf life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials for fire-resistive joint systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install fire-resistive joint systems when ambient or substrate temperatures are outside limits permitted by fire-resistive joint system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Ventilate fire-resistive joint systems per manufacturer's written instructions by natural means or, if this is inadequate, forced-air circulation.

1.7 COORDINATION

- A. Coordinate construction of joints to ensure that fire-resistive joint systems are installed according to specified requirements.
- B. Coordinate sizing of joints to accommodate fire-resistive joint systems.
- C. Notify Owner's inspecting agency at least seven days in advance of fire-resistive joint system installations; confirm dates and times on days preceding each series of installations.
- D. Do not cover up fire-resistive joint system installations that will become concealed behind other construction until Owner's inspecting agency and building inspector of authorities having jurisdiction have examined each installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the following fire-resistive joint systems indicated for each application in the Fire-Resistive Joint System Schedule at the end of Part 3:
 - 1. Hilti, Inc.; CFS-SP WB Firestop Joint Spray.
 - 2. 3M; Fire Protection Products Division; FireDam™ Spray 200.
 - 3. Tremco; Fire Protection Systems Group; Tremstop Acrylic.

2.2 FIRE-RESISTIVE JOINT SYSTEMS

- A. Where required, provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which fire-resistive joint systems are installed. Fire-resistive joint systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
- B. Compatibility: Provide fire-resistive joint systems that are compatible with joint substrates, under conditions of service and application, as demonstrated by fire-resistive joint system manufacturer based on testing and field experience.
- C. Joint Systems in and between Fire-Resistance-Rated Constructions: Provide systems with assembly ratings equaling or exceeding the fire-resistance ratings of construction that they join, and with movement capabilities indicated as determined by ASTM E 1966 or UL 2079.
 - 1. Load-bearing capabilities as determined by evaluation during the time of test.
- D. For fire-resistive systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- E. VOC Content: Provide fire-resistive joint systems that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Architectural Sealants: 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: 250 g/L.

3. Sealant Primers for Porous Substrates: 775 g/L.
- F. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by fire-resistive joint system manufacturer and approved by the qualified testing and inspecting agency for systems indicated.
- G. Labels: Self-adhering labels for identification of fire-resistive joint systems and fire resistant rated partitions identified in Part 3.
 1. Product: Subject to compliance with requirements, provide labels by the following, or equal:
 - a. Emedco (www.emedco.com).
 - b. Fire Wall Signs, Inc. (www.firewallsigns.com).
 - c. Seton (www.seton.com).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of work.
 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Clean joints immediately before installing fire-resistive joint systems to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
 1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of fill materials.
 2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with fill materials. Remove loose particles remaining from cleaning operation.
 3. Remove laitance and form-release agents from concrete.
- B. Priming: Prime substrates where recommended in writing by fire-resistive joint system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent fill materials of fire-resistive joint system from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from fire-resistive joint system materials. Remove tape as soon as possible without disturbing fire-resistive joint system's seal with substrates or damaging adjoining surfaces.

3.3 INSTALLATION

- A. General: Install fire-resistive joint systems to comply with Part 1 "Performance Requirements" Article and fire-resistive joint system manufacturer's written installation instructions for products and applications indicated.
- B. Install forming/packing/backing materials and other accessories of types required to support fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
- C. Install fill materials for fire-resistive joint systems by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings and forming/packing/backing materials as required to achieve fire-resistance ratings indicated.
 - 2. Apply fill materials so they contact and adhere to substrates formed by joints.
 - 3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Identify fire-resistive joint systems with preprinted plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of joint edge so labels will be visible to anyone seeking to remove or penetrate joint system. Use self-adhering type with adhesives capable of permanently bonding labels to surfaces on which labels are placed and, in combination with label material, will result in partial destruction of label if removal is attempted. Include the following information on labels:
 - 1. The words "WARNING - FIRE-RESISTIVE JOINT SYSTEM - DO NOT DISTURB. NOTIFY BUILDING MANAGEMENT OF ANY DAMAGE."
 - 2. Contractor's name, address, and phone number.
 - 3. Designation of applicable testing agency.
 - 4. Date of installation.
 - 5. Manufacturer's name.
 - 6. Installer's name.
- B. Identify fire resistance rated walls including fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions required to have protected openings or through penetration firestopping. Attach labels permanently to surfaces so that labels will be visible to anyone seeking to install penetrating items or firestop systems. Use self-adhering type with adhesives capable of permanently bonding labels to surfaces on which labels are placed and, in combination with label material, will result in partial destruction of label if removal is attempted.
 - 1. Locate labels above accessible ceilings and in attic spaces, spaced at intervals not exceeding 30 feet measured horizontally, along both sides of the wall or partition, and not less than 15 feet from ends.
 - 2. For occupied spaces without a finished ceiling, coordinate location of labeling with Architect.
 - 3. Include lettering not less than 3 inches in height incorporating the words "1 HOUR RATED FIRE BARRIER – PROTECT ALL OPENINGS AND PENETRATIONS." Specifically identify the hourly rating of the wall and the type of partition (i.e. fire wall, fire barrier, fire partition) for each condition.

3.5 FIELD QUALITY CONTROL

- A. Inspecting Agency: Owner will engage a qualified independent inspecting agency to inspect fire-resistive joint systems and prepare inspection reports.
 - 1. Inspection of fire resistive joints and perimeter fire barriers shall be performed in accordance with ASTM E 2393, "Standard Practice for On-Site Inspection of Installed Fire Resistive Joints and Perimeter Fire Barriers"
- B. Testing Services: Inspecting of completed installations of fire-resistive joint systems shall take place in successive stages as installation of fire-resistive joint systems proceeds. Do not proceed with installation of joint systems for the next area until inspecting agency determines completed work shows compliance with requirements.
 - 1. Inspecting agency shall state in each report whether inspected fire-resistive joint systems comply with or deviate from requirements.
- C. Remove and replace fire-resistive joint systems where inspections indicate that they do not comply with specified requirements.
- D. Additional inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- E. Proceed with enclosing fire-resistive joint systems with other construction only after inspection reports are issued and fire-resistive joint systems comply with requirements.

3.6 CLEANING AND PROTECTING

- A. Clean off excess fill materials adjacent to joints as Work progresses by methods and with cleaning materials that are approved in writing by fire-resistive joint system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure fire-resistive joint systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

3.7 FIRE-RESISTIVE JOINT SYSTEM SCHEDULE

- A. Designation System for Joints in or between Fire-Resistance-Rated Constructions: Alphanumeric systems listed in UL's "Fire Resistance Directory" under Product Category XHBN.
- B. Head-of-Wall Fire-Resistive Joint Systems:
 - 1. Available UL-Classified Systems: HW-D-0000-0999.
 - 2. Assembly Rating: As indicated.
 - 3. Movement Capabilities: Class II – 25 percent compression or extension.

C. Wall-to-Wall, Fire-Resistive Joint Systems:

1. UL-Classified Systems: WW-D-0000-0999.
2. Assembly Rating: As indicated.
3. Nominal Joint Width: As indicated.
4. Movement Capabilities: Class II – 25 percent compression or extension.

END OF SECTION 07 84 46

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Latex joint sealants.
4. Acoustical joint sealants.

B. Related Sections include the following:

1. Division 04 Section "Unit Masonry" for masonry control and expansion joint fillers and gaskets.
2. Division 07 Section "Fire-Resistive Joint Systems" for sealing joints in fire-resistance-rated construction.
3. Division 08 Section "Glazing" for glazing sealants.
4. Division 09 Section "Gypsum Board Assemblies" for sealing perimeter joints of gypsum board partitions to reduce sound transmission.
5. Division 09 Section "Tiling" for sealing tile joints.
6. Division 09 Section "Acoustical Panel Ceilings" for sealing edge moldings at perimeters of acoustical ceilings.

1.3 PRECONSTRUCTION TESTING

- A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Submit not fewer than eight pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

1.4 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.5 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.6 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
- B. Qualification Data: For Installer.
- C. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- D. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.
- E. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- F. Warranties: Special warranties specified in this Section.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
 - 2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.
- D. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:
 - 1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.
 - 2. Each type of sealant and joint substrate indicated.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.8 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.9 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period for Urethane: Five years from date of Substantial Completion.

2. Warranty Period for Silicone: 20 years from date of Substantial Completion.
- C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):
1. Architectural Sealants: 250 g/L.
 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 3. Sealant Primers for Porous Substrates: 775 g/L.
- C. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- D. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- E. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
- F. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

- A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 790.
 - b. Pecora Corporation; 890 NST.
 - c. Tremco Incorporated; Spectrem 1.

- B. Mildew Resistant, Single-Component, Nonsag, Acid-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 786 Mildew Resistant.
 - b. GE Silicones; Sanitary SCS1700.
 - c. Tremco; Tremsil 200 Sanitary.

2.3 URETHANE JOINT SEALANTS

- A. Multicomponent, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C 920. Type M, Grade P, Class 25, for Use T and I.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Corporation-Construction Systems; MasterSeal SL 2.
 - b. Pecora Corporation; Dynatrol II-SG.
 - c. Sherwin Williams; Loxon 2K SL.
 - d. Tremco; THC-900.

2.4 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. American Sealants, Inc.; ASI 174.
 - b. Pecora Corporation; AC-20+.
 - c. Sherwin Williams; 950A.
 - d. Tremco; Tremflex 834.

2.5 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following:

1. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Green Glue; Green Glue Noiseproofing Sealant.
 - b. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - c. Sherwin Williams; 950A.
 - d. United States Gypsum Co.; SHEETROCK Acoustical Sealant.

2.6 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.7 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate

capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

- a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
3. Remove laitance and form-release agents from concrete.
 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- G. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations.

3.4 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
 - a. Perimeter joints at frames of doors.
 - b. Other joints as indicated.
 2. Silicone Joint Sealant: Single component, nonsag, neutral curing, Class 100/50.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors, for each material.
- B. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
1. Joint Locations:
 - a. Isolation joints in cast-in-place concrete slabs.

- b. Control and expansion joints in tile flooring.
 - c. Other joints as indicated.
 2. Urethane Joint Sealant: Multicomponent, pourable, traffic grade, Class 25.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors, for each material.
- C. Joint-Sealant Application: Interior joints in all other vertical surfaces and horizontal nontraffic surfaces.
 1. Joint Locations:
 - a. Tile control and expansion joints.
 - b. Vertical joints on exposed surfaces of interior unit masonry walls and partitions.
 - c. Perimeter joints between interior wall surfaces and frames of interior doors.
 - d. Other joints as indicated.
 2. Joint Sealant: Latex.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
 1. Joint Sealant Location:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Other joints as indicated.
 2. Joint Sealant: Single component, nonsag, mildew resistant, acid curing silicone.
 3. Joint-Sealant Color: White.
- E. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces.
 1. Joint Location:
 - a. Acoustical joints where indicated.
 - b. Other joints as indicated.
 2. Joint Sealant: Acoustical.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range.

END OF SECTION 07 92 00

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 08 06 00 – OPENINGS SCHEDULE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section “Summary”, Paragraph 1.1A, entitled “Related Documents.”

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Openings Schedule.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 08 06 00

THIS PAGE INTENTIONALLY LEFT BLANK

OPENINGS SCHEDULE

Table with columns: OPENING NUMBER, SHEET NUMBER, SINGLE DOOR LEAF, DOUBLE DOOR LEAF, ACTIVE LEAF, ACTIVE LEAF (PRH & PP Hardware), IN - ACTIVE LEAF, HEIGHT, THICKNESS, HANDING, DEGREE OF SWING REQUIRED, DOOR MATERIAL, FRAME MATERIAL, HEAD DETAIL, JAMB DETAIL, SILL / THRESHOLD DETAIL, SOUND DOOR AND GASKETING, FIRE RATING, U. L. RATING (IN MINUTES), GASKETS AND SMOKE SEALS, PANIC RELEASE HARDWARE, POSITIVE LATCHING, AUTOMATIC CLOSING, ELECT. MAG. DOOR RELEASE, FIRE CODE, ACCESSIBILITY REQUIREMENTS, HARDWARE SET NO., BULLETIN - REVISION NUMBER. Includes sub-sections for FIRE RATING and ACCESSIBILITY REQUIREMENTS.

DRAWING NO: A0.1A

BUILDING 2 - COMMISSARY LOWER LEVEL KEY PLAN

OPENING NOTES

Table with 13 columns corresponding to the main table, showing opening details for A0.1A in Building 2. Includes opening numbers C01AC, C01C, C02C, SB0C and notes like 'NHR, Existing To Remain'.

DRAWING NO: A0.1A

BUILDING 2 - COMMISSARY LOWER LEVEL KEY PLAN

OPENING NOTES

Table with 13 columns corresponding to the main table, showing opening details for A0.1A in Building 2. Includes opening numbers O1C, O10AC, O10C, O11C, O12C, O13AC, O13C, O14C, O15AC, O15C, O16C, O17C, O18AC, O18C, O19C, O2C and notes like 'NHR, Existing To Remain', 'BODH, EXFR2'.

OPENINGS SCHEDULE

| OPENING NUMBER | DOOR | | | | | | | | | | FRAME | | | | FIRE RATING | | ACCESSIBILITY REQUIREMENTS | | | | | | | FIRE CODE | HARDWARE SET NO. | BULLETIN - REVISION NUMBER | | | |
|----------------|--------------|------------------|------------------|-------------|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|--------------------------|----------------------------|-------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|-----------|------------------|----------------------------|---------------------------|---------------------------|-------------------------|
| | SHEET NUMBER | SINGLE DOOR LEAF | DOUBLE DOOR LEAF | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | | | | "U" HANDLE / LEVER HANDLE | MOP, KICK, & ARMOR PLATES | TACTILE WARNING |
| 09AC | A0.1A | ○ | | | ACTIVE LEAF | | | RHR | 90 | ex | ex | ex | ex | ex | ex | | | | | ○ | | | | | | | | NHR | NHR, Existing To Remain |
| 09BC | A0.1A | ● | | 2'-4" | | 7'-0" | 1-3/4" | RHR | 90 | SCW-1 | ex | ex | ex | ex | ex | | | | | ● | | | | | | | | 404 | BODH, EXFR2 |
| 09C | A0.1A | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | | ○ | | | | | | | | NHR | NHR, Existing To Remain |

DRAWING NO: A0.1B BUILDING 2 - COMMISSARY FIRST FLOOR KEY PLAN

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------|-------|---|--|--|--|--|--|-----|----|----|----|----|----|----|----|--|--|--|--|---|--|--|--|--|--|--|--|-----|-------------------------|
| SBI_C | A0.1B | ○ | | | | | | LHR | 90 | ex | ex | ex | ex | ex | ex | | | | | ○ | | | | | | | | NHR | NHR, Existing To Remain |
|-------|-------|---|--|--|--|--|--|-----|----|----|----|----|----|----|----|--|--|--|--|---|--|--|--|--|--|--|--|-----|-------------------------|

DRAWING NO: A0.1B BUILDING 2 - COMMISSARY FIRST FLOOR KEY PLAN

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------|-------|---|--|-------|--|-------|--------|---------|-----|-------|------|----|----|----|----|--|--|--|--|---|--|--|--|--|--|--|-----|--------------------------------|-------------------------|
| 101AC | A0.1B | ○ | | | | | | RHR/LHR | 90 | ex | ex | ex | ex | ex | ex | | | | | ○ | | | | | | | | NHR | NHR, Existing To Remain |
| 101BC | A0.1B | ○ | | | | | | RHR/LHR | 90 | ex | ex | ex | ex | ex | ex | | | | | ○ | | | | | | | | NHR | NHR, Existing To Remain |
| 101CC | A0.1B | ○ | | | | | | RHR/LHR | 90 | ex | ex | ex | ex | ex | ex | | | | | ○ | | | | | | | | NHR | NHR, Existing To Remain |
| 101DC | A0.1B | ○ | | | | | | RHR/LHR | 90 | ex | ex | ex | ex | ex | ex | | | | | ○ | | | | | | | | NHR | NHR, Existing To Remain |
| 102AC | A0.1B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | | ○ | | | | | | | | NHR | NHR, Existing To Remain |
| 102C | A0.1B | ● | | 3'-0" | | 7'-0" | 1-3/4" | LHR | 90 | SCW-1 | HM-1 | -- | -- | -- | -- | | | | | ● | | | | | | | 322 | | |
| 103C | A0.1B | ○ | | | | | | RHR | 110 | ex | ex | ex | ex | ex | ex | | | | | ● | | | | | | | 601 | BODH, EXFR1, EXL1MK, CLO1, SW2 | |
| 104AC | A0.1B | ○ | | | | | | LH | 110 | ex | ex | ex | ex | ex | ex | | | | | ● | | | | | | | 301 | BODH, EXFR1, EXL1MK | |
| 104C | A0.1B | ● | | 3'-0" | | 7'-0" | 1-3/4" | LHR | 110 | SCW-3 | HM-1 | -- | -- | -- | -- | | | | | ● | | | | | | | 214 | CLO1, SW2 | |
| 105C | A0.1B | ○ | | | | | | RHR/LHR | 90 | ex | ex | ex | ex | ex | ex | | | | | ○ | | | | | | | NHR | NHR, Existing To Remain | |
| 106C | A0.1B | ○ | | | | | | LHR | 110 | ex | ex | ex | ex | ex | ex | | | | | ● | | | | | | | 601 | BODH, EXFR1, EXL1MK, CLO1, SW2 | |
| 107AC | A0.1B | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | ex | | | | | ● | | | | | | | 201 | BODH, EXFR1, EXL1MK | |
| 107BC | A0.1B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | | ● | | | | | | | 301 | BODH, EXFR1, EXL1MK | |
| 107C | A0.1B | ○ | | | | | | CO | | CO | ex | ex | ex | ex | ex | | | | | ● | | | | | | | 901 | | |
| 108C | A0.1B | ○ | | | | | | RH | | ex | ex | ex | ex | ex | ex | | | | | ● | | | | | | | 201 | BODH, EXFR1, EXL1MK | |
| 109C | A0.1B | ○ | | | | | | LH | 110 | ex | ex | ex | ex | ex | ex | | | | | ○ | | | | | | | NHR | NHR, Existing To Remain | |

OPENINGS SCHEDULE

| OPENING NUMBER | SHEET NUMBER | DOOR | | | | | | | | | | FRAME | | FIRE RATING | | FIRE CODE | | | | | | | ACCESSIBILITY REQUIREMENTS | | | | HARDWARE SET NO. | BULLETIN - REVISION NUMBER | | | |
|--|--------------|-------------|------------------|------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|--------------------------|---------------------------|-------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|----------------------------|---------------------------|-----------------|-------------------------|--------------------------|----------------------------|-----------------------|---------------------------|--|
| | | ACTIVE LEAF | DOUBLE DOOR LEAF | SINGLE DOOR LEAF | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK, & ARMOR PLATES | TACTILE WARNING | ACCESSIBLE THRESHOLD | | | ELECTRICAL / SECURITY | | |
| 132C | A0.1B | ○ | | | | | | LHR | 90 | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR, Existing To Remain | | NEW WORK EXISTING | | |
| 133C | A0.1B | ○ | | | | | | LH | | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR, Existing To Remain | | EX | EXISTING TO REMAIN | | |
| 134C | A0.1B | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR, Existing To Remain | | EX | EXISTING TO REMAIN | | |
| 135AC | A0.1B | ○ | | | | | | RH | 90 | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR, Existing To Remain | | EX | EXISTING TO REMAIN | | |
| 135BC | A0.1B | ○ | | | | | | LHR | 90 | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR, Existing To Remain | | EX | EXISTING TO REMAIN | | |
| 135C | A0.1B | ○ | | | | | | DBL-ACT | 90 | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR, Existing To Remain | | EX | EXISTING TO REMAIN | | |
| 136C | A0.1B | ○ | | | | | | RH-ACT | 110 | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR, Existing To Remain | | EX | EXISTING TO REMAIN | | |
| 137AC | A0.1B | ○ | | | | | | DBL-ACT | 90 | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR, Existing To Remain | | EX | EXISTING TO REMAIN | | |
| 137BC | A0.1B | ● | | | | | 7'-0" | 1-3/4" | RHR | M-2 | ex | ex | ex | ex | ex | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 405 | BODH, EXFR2 | | SP | SMOKE / POSITIVE PRESSURE | |
| DRAWING NO: A0.1C BUILDING 2 - COMMISSARY SECOND & THIRD FLOOR KEY PLAN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SA1 | A0.1C | ○ | | | | | | RHR | | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR | | NEW WORK EXISTING | | | |
| SB2C | A0.1C | ○ | | | | | | RHR | 120 | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR | | EX | EXISTING TO REMAIN | | |
| SB3C | A0.1C | ○ | | | | | | RHR | 110 | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR | | EX | EXISTING TO REMAIN | | |
| DRAWING NO: A0.1C BUILDING 2 - COMMISSARY SECOND & THIRD FLOOR KEY PLAN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 201C | A0.1C | ○ | | | | | | LH | | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR | | NEW WORK EXISTING | | | |
| 202C | A0.1C | ● | 3'-0" | | 7'-0" | 1-3/4" | RHR | 90 | SCW-1 | HM-1 | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 301 | BODH, EXFR1, EX1MK | | EX | EXISTING TO REMAIN | |
| 203C | A0.1C | ● | 3'-0" | | 7'-0" | 1-3/4" | RHR | | SCW-1 | HM-1 | -- | -- | -- | -- | -- | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 413 | CLO1, SW1 | | EX | EXISTING TO REMAIN | |
| 204C | A0.1C | ● | 3'-0" | | 7'-0" | 1-3/4" | LHR | | SCW-1 | HM-1 | -- | -- | -- | -- | -- | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 612 | | | EX | EXISTING TO REMAIN | |
| 205C | A0.1C | ○ | | | | | | RHR/LHR | 100 | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 902 | Replace Continuous Hinge | | EX | EXISTING TO REMAIN | |
| 206AC | A0.1C | ○ | | | | | | CO | | CO | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 901 | | | EX | EXISTING TO REMAIN | |
| 206BC | A0.1C | ○ | | | | | | CO | | CO | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 901 | | | EX | EXISTING TO REMAIN | |
| 206C | A0.1C | ○ | | | | | | LHR/LHR | 90 | ex | ex | ex | ex | ex | ex | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR | | EX | EXISTING TO REMAIN | | |

OPENINGS SCHEDULE

| DOOR | | | | | | | | | | FRAME | | | | | FIRE RATING | | FIRE CODE | | | | | | | ACCESSIBILITY REQUIREMENTS | | | | HARDWARE SET NO. | | OPENING NOTES | | | |
|----------------|--------------|------------------|------------------|-------------|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|--------------------------|---------------------------|-------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|----------------------------|---------------------------|-----------------|----------------------|-----------------------|------------------|-----------------------------|---------------|-------------------------|-------------------------|
| OPENING NUMBER | SHEET NUMBER | SINGLE DOOR LEAF | DOUBLE DOOR LEAF | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK, & ARMOR PLATES | TACTILE WARNING | ACCESSIBLE THRESHOLD | ELECTRICAL / SECURITY | HARDWARE SET NO. | NEW WORK ● EXISTING ○ | OPENING NOTES | | |
| 207C | A0.1C | ○ | | | | | | | LH | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | NHR, Existing To Remain | |
| 208C | A0.1C | ● | | 3'-0" | | | 7'-0" | 1-3/4" | LHR | | SCW-1 | HM-1 | | | | | | | | ○ | ○ | | | | | | | | | | | NHR, Existing To Remain | |
| 209C | A0.1C | ○ | | | | | | | LH | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | NHR, Existing To Remain | |
| 210AC | A0.1C | ○ | | | | | | | RHR/LHR | | ex | ex | ex | ex | ex | | | | | | ○ | | ● | | | | | | | | | BODH, EXFR1 | |
| 210C | A0.1C | ○ | | | | | | | CO | | CO | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | | | 901 | |
| 211C | A0.1C | ○ | | | | | | | RH | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | NHR, Existing To Remain | |
| 212C | A0.1C | ○ | | | | | | | LH | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | NHR, Existing To Remain | |
| 213C | A0.1C | ○ | | | | | | | LH | 90 | ex | ex | ex | ex | ex | | | | | ● | ● | | | | | | | | | | | BODH, EXFR1, EXL1MK | |
| 300C | A0.1C | ○ | | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | NHR, Existing To Remain | |
| 301AC | A0.1C | ○ | | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | BODH, EXFR1, EXL1MK | |
| 301C | A0.1C | ○ | | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | | ● | ● | | | | | | | | | | | BODH, EXFR1, EXL1MK | |
| 302AC | A0.1C | ○ | | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | ● | ● | | | | | | | | | | | BODH, EXFR1, EXL1MK | |
| 302C | A0.1C | ○ | | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | | ● | ● | | | | | | | | | | | BODH, EXFR1, EXL1MK | |
| 303AC | A0.1C | ● | | 3'-0" | | | 7'-0" | 1-3/4" | RH | | SCW-1 | HM-1 | - | - | - | | | | | ● | ● | | | | | | | | | | | 412 | |
| 303C | A0.1C | ● | | 3'-0" | | | 7'-0" | 1-3/4" | RH | 90 | SCW-1 | HM-1 | - | - | - | | | | | ● | ● | | | | | | | | | | | | 715 |
| 304AC | A0.1C | ○ | | | | | | | LHR | 90 | ex | ex | ex | ex | ex | | | | | ● | ● | | | | | | | | | | | | BODH, EXFR1, EXL1MK |
| 304C | A0.1C | ○ | | | | | | | LH | | ex | ex | ex | ex | ex | | | | | ● | ● | | | | | | | | | | | | BODH, EXFR1, EXL1MK |
| 306AC | A0.1C | ○ | | | | | | | LHR | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | | NHR, Existing To Remain |
| 306C | A0.1C | ○ | | | | | | | RH | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | | NHR, Existing To Remain |
| 307C | A0.1C | ○ | | | | | | | RH | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | | NHR, Existing To Remain |
| 308C | A0.1C | ○ | | | | | | | LH | 90 | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | | NHR, Existing To Remain |
| 309AC | A0.1C | ○ | | | | | | | LHR | 90 | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | | NHR, Existing To Remain |
| 309C | A0.1C | ○ | | | | | | | RH | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | | NHR, Existing To Remain |
| 310AC | A0.1C | ○ | | | | | | | RH-ACT | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | | | | | | | | | | 804 |

OPENINGS SCHEDULE

| OPENING NUMBER | DOOR | | | | | | | | | | FRAME | | | | | | FIRE RATING | | FIRE CODE | | | | | | | HARDWARE SET NO. | BULLETIN - REVISION NUMBER | | | |
|----------------|--------------|------------------|------------------|-------------|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|--------------------------|---------------------------|-------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|---------------------------|---------------------------|------------------|----------------------------|-----------------|-------------------------|-----------------------|
| | SHEET NUMBER | SINGLE DOOR LEAF | DOUBLE DOOR LEAF | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK, & ARMOR PLATES | | | TACTILE WARNING | ACCESSIBLE THRESHOLD | ELECTRICAL / SECURITY |
| 310BC | A0.1C | ○ | | | | | | LHR | 90 | ex | ex | ex | ex | ex | ○ | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 310C | A0.1C | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 311AC | A0.1C | ○ | | | | | | LHR | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 311C | A0.1C | ○ | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 312AC | A0.1C | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 312C | A0.1C | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 313AC | A0.1C | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 313C | A0.1C | ○ | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 314AC | A0.1C | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 314C | A0.1C | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 315AC | A0.1C | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 315C | A0.1C | ○ | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 316AC | A0.1C | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 316C | A0.1C | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 317AC | A0.1C | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 317C | A0.1C | ○ | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | | | ○ | | | | | | | | | NHR, Existing To Remain | |
| 318AC | A0.1C | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | | ● | | | | | | | | | BODH, EXFR1, EXL1MK | |
| 318C | A0.1C | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | | | | | | ● | | | | | | | | | BODH, EXFR1, EXL1MK | |
| 319AC | A0.1C | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | | ● | | | | | | | | | BODH, EXFR1, EXL1MK | |
| 319C | A0.1C | ○ | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | | | ● | | | | | | | | | BODH, EXFR1, EXL1MK | |
| 320AC | A0.1C | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | | ● | | | | | | | | | BODH, EXFR1, EXL1MK | |
| 320C | A0.1C | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | | | | | | ● | | | | | | | | | BODH, EXFR1, EXL1MK | |
| 321AC | A0.1C | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | | | ● | | | | | | | | | BODH, EXFR1, EXL1MK | |
| 321C | A0.1C | ○ | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | | | ● | | | | | | | | | BODH, EXFR1, EXL1MK | |

OPENINGS SCHEDULE

| OPENING NUMBER | SHEET NUMBER | DOOR | | | | | | | | | | | FRAME | | | | FIRE RATING | | ACCESSIBILITY REQUIREMENTS | | | | | | | HARDWARE SET NO. | BULLETIN - REVISION NUMBER | | | | | |
|----------------|--------------|-----------------------|------------------|-------------|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|--------------------------|---------------------------|-------------------------|----------------------------------|----------------------------------|-------------------|--------------------------|----------------------------------|---------------------------|---------------------------|------------------|----------------------------|-----------------|----------------------|-------------------------|------------------------------|--|
| | | SINGLE DOOR LEAF | DOUBLE DOOR LEAF | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK, & ARMOR PLATES | | | TACTILE WARNING | ACCESSIBLE THRESHOLD | ELECTRICAL / SECURITY | | |
| 322AC | A0.1C | <input type="radio"/> | | | | | | | | | LHR | 90 | ex | ex | ex | ex | ex | ex | <input checked="" type="radio"/> | <input checked="" type="radio"/> | | | <input checked="" type="radio"/> | | | | | | | 501 | BODH, EXFR1, EXL1MK | NEW WORK <input type="radio"/> EXISTING <input checked="" type="radio"/> |
| 322C | A0.1C | <input type="radio"/> | | | | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | <input checked="" type="radio"/> | <input checked="" type="radio"/> | | | <input checked="" type="radio"/> | | | | | | 503 | BODH, EXFR1, EXL1MK | EX EXISTING TO REMAIN | |
| 323C | A0.1C | <input type="radio"/> | | | | | | | | | LH | 120 | ex | ex | ex | ex | ex | ex | <input type="radio"/> | <input type="radio"/> | | | <input type="radio"/> | | | | | | NHR | NHR, Existing To Remain | SP SMOKE / POSITIVE PRESSURE | |
| 324 C | A0.1C | <input type="radio"/> | | | | | | | | | RHR | 90 | ex | ex | ex | ex | ex | ex | <input type="radio"/> | <input type="radio"/> | | | <input type="radio"/> | | | | | | NHR | NHR, Existing To Remain | | |

DRAWING NO: A0.2A BUILDING 3 - WEST DOMICILE FIRST FLOOR KEY PLAN

| OPENING NUMBER | SHEET NUMBER | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK, & ARMOR PLATES | TACTILE WARNING | ACCESSIBLE THRESHOLD | ELECTRICAL / SECURITY | HARDWARE SET NO. | BULLETIN - REVISION NUMBER | |
|----------------|--------------|----------------------------------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|--------------------------|---------------------------|-------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|----------------------------------|----------------------------------|-----------------|----------------------|-----------------------|------------------|----------------------------|-------------------------|
| E10W | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |
| E11W | A0.2A | <input checked="" type="radio"/> | | | | | | | | | | | | | | | | | <input checked="" type="radio"/> | <input checked="" type="radio"/> | | | | | 801 | EXFR2, MH32, OAL, SW1 |
| S10W | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |
| S12W | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |
| S13AW | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |
| S13W | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |

DRAWING NO: A0.2A BUILDING 3 - WEST DOMICILE FIRST FLOOR KEY PLAN

| OPENING NUMBER | SHEET NUMBER | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK, & ARMOR PLATES | TACTILE WARNING | ACCESSIBLE THRESHOLD | ELECTRICAL / SECURITY | HARDWARE SET NO. | BULLETIN - REVISION NUMBER | |
|----------------|--------------|----------------------------------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|--------------------------|---------------------------|-------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|----------------------------------|----------------------------------|-----------------|----------------------|-----------------------|------------------|----------------------------|-------------------------|
| 101AW | A0.2A | <input checked="" type="radio"/> | | | | | | | | | | | | | | | | | <input checked="" type="radio"/> | <input checked="" type="radio"/> | | | | | 001 | AOL, AOR, BODH |
| 101BW | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |
| 101CW | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |
| 101W | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |
| 102AW | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input checked="" type="radio"/> | <input type="radio"/> | | | | | 401 | BODH, EXFR1, EXL1MK |
| 102BW | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |
| 102CW | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |
| 103AW | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |
| 103BW | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |
| 104AW | A0.2A | <input type="radio"/> | | | | | | | | | | | | | | | | | <input type="radio"/> | <input type="radio"/> | | | | | NHR | NHR, Existing To Remain |

OPENINGS SCHEDULE

| OPENING NUMBER | DOOR | | | | | | | | | | FRAME | | | | FIRE RATING | | FIRE CODE | | | | | | | ACCESSIBILITY REQUIREMENTS | | ELECTRICAL / SECURITY | HARDWARE SET NO. | NEW WORK EXISTING | OPENING NOTES | BULLETIN - REVISION NUMBER | |
|----------------|--------------|------------------|------------------|-------------|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|--------------------------|---------------------------|-------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|----------------------------|---------------------------|-----------------------|------------------|-------------------------|---------------|----------------------------|-----------------|
| | SHEET NUMBER | SINGLE DOOR LEAF | DOUBLE DOOR LEAF | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK, & ARMOR PLATES | | | | | | TACTILE WARNING |
| 104BW | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 106W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | AC, BODH | | ○ | |
| 107W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 108W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 109W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 110W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 111W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 112W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 113W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 114W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 115W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 116W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 117W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 118W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 119W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 120W | A0.2A | ● | | | | 3'-0" | | | | 2'-8" | 7'-0" | 1-3/4" | RHR/LHR | 90 | SCW-4 | | | | | ● | ● | | | ● | | | | AC, BODH | | ● | |
| 122W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | AORL, PREV, MLR 5 | | ○ | |
| 123AW | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | AC, BODH | | ○ | |
| 123W | A0.2A | ● | | | | 3'-0" | | | | 3'-0" | 7'-0" | 1-3/4" | RHR/RHR | | SCW-4 | | | | | ● | ● | | | ● | | | | BODH, EXFR1, EXL1MK | | ● | |
| 124W | A0.2A | ○ | | | | 3'-0" | | | | 3'-0" | 7'-0" | 1-3/4" | LH | | SCW-1 | | | | | ○ | ○ | | | ○ | | | | AORL, MH11.1 | | ○ | |
| 125W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |
| 126AW | A0.2A | ● | | | | 3'-0" | | | | 3'-0" | 7'-0" | 1-3/4" | LHR | | SCW-1 | | | | | ● | ● | | | ● | | | | CLO1, SW1 | | ● | |
| 126BW | A0.2A | ● | | | | 3'-0" | | | | 3'-0" | 7'-0" | 1-3/4" | RHR | | SCW-1 | | | | | ● | ● | | | ● | | | | DS1, SW1 | | ● | |
| 126W | A0.2A | ○ | | | | | | | | | ex | ex | ex | ex | ex | | | | | ○ | ○ | | | ○ | | | | NHR, Existing To Remain | | ○ | |

OPENINGS SCHEDULE

| | | DOOR | | | | | | FRAME | | | FIRE RATING | | ACCESSIBILITY REQUIREMENTS | | | | | | | HARDWARE SET NO. | | BULLETIN - REVISION NUMBER | | | | | | | | | |
|----------------|--------------|------------------|------------------|-------------|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|----------------------------|-------------|-------------------------|--------------------------|---------------------------|-------------------------|------------------------|-------------------|-------------------|----------------------------|---------------------------------|---------------------------|--------------------------|-----------------|----------------------|-----------------------|------------------|-------------------------|---------------|
| OPENING NUMBER | SHEET NUMBER | SINGLE DOOR LEAF | DOUBLE DOOR LEAF | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | FIRE RATING | | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK & ARMOR PLATES | TACTILE WARNING | ACCESSIBLE THRESHOLD | ELECTRICAL / SECURITY | HARDWARE SET NO. | NEW WORK EXISTING | OPENING NOTES |
| | | | | | | | | | | | | | | | | | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | | | | | | | | | | | | | |
| 232W | A0.2B | ○ | | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |
| 233W | A0.2B | ○ | | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |
| 234W | A0.2B | ○ | | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |
| 235W | A0.2B | ○ | | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |
| 236W | A0.2B | ○ | | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |
| 237W | A0.2B | ○ | | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |
| 238W | A0.2B | ○ | | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |
| 239W | A0.2B | ○ | | | | | | | LH | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |
| 240W | A0.2B | ○ | ● | 3'-0" | 2'-8" | 7'-0" | 1-3/4" | RHR/LHR | 90 | SCW-4 | ex | ex | ex | ex | ex | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | 812 | AC, BODH | | |
| 242W | A0.2B | ○ | | | | | | | RH | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | AORL, PREV.MLR 5 | |
| 243AW | A0.2B | ○ | | | | | | | LHR | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | AC, BODH | |
| 243W | A0.2B | ○ | ● | 3'-0" | 3'-0" | 7'-0" | 1-3/4" | RHR/LHR | | SCW-4 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | BODH, EXFR1, EXL1MK | |
| 244W | A0.2B | ○ | ● | 3'-0" | 3'-0" | 7'-0" | 1-3/4" | LH | | SCW-1 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | AORL, MH11.1 | |
| 245W | A0.2B | ○ | | | | | | | LHR | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | 412 | |
| 246AW | A0.2B | ○ | ● | 3'-0" | 3'-0" | 7'-0" | 1-3/4" | LHR | | SCW-1 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |
| 246BW | A0.2B | ○ | ● | 3'-0" | 3'-0" | 7'-0" | 1-3/4" | RHR | | SCW-1 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | CL01, SW1 | |
| 246W | A0.2B | ○ | | | | | | | LH | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | DS1, SW1 | |
| | | | | | | | | | | | | | | | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |

DRAWING NO: A0.3A BUILDING 4 - EAST DOMICILE FIRST FLOOR KEY PLAN

| OPENING NUMBER | SHEET NUMBER | SINGLE DOOR LEAF | DOUBLE DOOR LEAF | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | FIRE RATING | | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK & ARMOR PLATES | TACTILE WARNING | ACCESSIBLE THRESHOLD | ELECTRICAL / SECURITY | HARDWARE SET NO. | NEW WORK EXISTING | OPENING NOTES |
|----------------|--------------|------------------|------------------|-------------|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|--------------------------|---------------------------|-------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|---------------------------|--------------------------|-----------------|----------------------|-----------------------|------------------|-------------------------|--------------------------|
| | | | | | | | | | | | | | | | | | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | | | | | | | | | | | | | |
| 123BE | A0.3A | ○ | | | | | | | RHR/LHR | 90 | M-3 | HM-5 | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | 104 | AORL, DS5, PR, ER, MLR 0 |
| E10E | A0.3A | ○ | | | | | | | ELEV | | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |
| E11E | A0.3A | ○ | ● | 2'-8" | 2'-8" | 7'-0" | 1-3/4" | RH-ACT | | 90 | SCW-1 | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | 801 | EXFR2, MH32, OAL, SW1 |
| S10E | A0.3A | ○ | | | | | | | LHR | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |
| S11E | A0.3A | ○ | | | | | | | RHR | 90 | ex | ex | ex | ex | ex | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | | | NHR, Existing To Remain | |

OPENINGS SCHEDULE

| OPENING NUMBER | DOOR | | | | | | | | FRAME | | | | FIRE RATING | FIRE CODE | | | | | | HARDWARE SET NO. | BULLETIN - REVISION NUMBER | | | | | | |
|----------------|--------------|------------------|------------------|-------------|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------|-------------------------|--------------------------|---------------------------|-------------------------|------------------|----------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|---------------------------|
| | SHEET NUMBER | SINGLE DOOR LEAF | DOUBLE DOOR LEAF | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | | | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE |

DRAWING NO: A0.3B BUILDING 4 - EAST DOMICILE SECOND FLOOR KEY PLAN

| OPENING NUMBER | SHEET NUMBER | SINGLE DOOR LEAF | DOUBLE DOOR LEAF | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK & ARMOR PLATES | TACTILE WARNING | ACCESSIBLE THRESHOLD | ELECTRICAL / SECURITY | HARDWARE SET NO. | BULLETIN - REVISION NUMBER | |
|----------------|--------------|----------------------------------|------------------|-------------|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|--------------------------|---------------------------|-------------------------|------------------------|----------------------------------|-----------------------|--------------------------|---------------------------------|---------------------------|--------------------------|-----------------|----------------------|-----------------------|------------------|----------------------------|-----------------------------|
| 201E | A0.3B | <input type="radio"/> | | | | | 7'-0" | 1-3/4" | RH/LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 202AE | A0.3B | <input type="radio"/> | | | | | | | RHR | | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 202BE | A0.3B | <input type="radio"/> | | | | | | | LHR | | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 203AE | A0.3B | <input type="radio"/> | | | | | | | RHR/LHR | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 203BE | A0.3B | <input type="radio"/> | | | | | | | RHR/LHR | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 204AE | A0.3B | <input type="radio"/> | | | | | | | RHR/LHR | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 204BE | A0.3B | <input type="radio"/> | | | | | | | RHR/LHR | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 206E | A0.3B | <input type="radio"/> | | | | | | | RHR | | EX | EX | EX | EX | EX | | | | | <input checked="" type="radio"/> | <input type="radio"/> | | | | | | | | ● | 811 AO, BODH | |
| 207E | A0.3B | <input type="radio"/> | | | | | | | LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 208E | A0.3B | <input type="radio"/> | | | | | | | LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 209E | A0.3B | <input type="radio"/> | | | | | | | LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 210E | A0.3B | <input type="radio"/> | | | | | | | LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 211E | A0.3B | <input type="radio"/> | | | | | | | LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 212E | A0.3B | <input type="radio"/> | | | | | | | LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 213E | A0.3B | <input type="radio"/> | | | | | | | LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 214E | A0.3B | <input type="radio"/> | | | | | | | LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 215E | A0.3B | <input type="radio"/> | | | | | | | LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 216E | A0.3B | <input type="radio"/> | | | | | | | LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 217E | A0.3B | <input type="radio"/> | | | | | | | LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 218E | A0.3B | <input type="radio"/> | | | | | | | LH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 219E | A0.3B | <input type="radio"/> | | | | | | | RH | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | NHR, Existing To Remain | |
| 220E | A0.3B | <input checked="" type="radio"/> | | | | | 3'-0" | 2'-8" | RHR/LHR | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | ● | 812 AO, BODH |
| | | | | | | | 7'-0" | 1-3/4" | RHR/LHR | 90 | EX | EX | EX | EX | EX | | | | | <input type="radio"/> | <input type="radio"/> | | | | | | | | | ● | 112 AORL, P.R.E.V./MLR 5 |

OPENING NOTES

OPENINGS SCHEDULE

| OPENING NUMBER | DOOR | | | | | | | | | | FRAME | | | | FIRE RATING | | FIRE CODE | | | | | | | ACCESSIBILITY REQUIREMENTS | | | HARDWARE SET NO. | OPENING NOTES | BULLETIN - REVISION NUMBER | | |
|----------------|--------------|------------------|------------------|-------------|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|--------------------------|---------------------------|-------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|----------------------------|---------------------------|-----------------|------------------|---------------|----------------------------|----------------------|-----------------------|
| | SHEET NUMBER | SINGLE DOOR LEAF | DOUBLE DOOR LEAF | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK, & ARMOR PLATES | TACTILE WARNING | | | | ACCESSIBLE THRESHOLD | ELECTRICAL / SECURITY |
| 222E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | ● | | | ○ | | ● | | | 812 | AC, BODH | |
| 223AE | A0.3B | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | ex | | | | ● | ● | | | | ● | | | | 401 | BODH, EXFR1, EXL1MK | | |
| 223E | A0.3B | ● | | | 3'-0" | 7'-0" | 1-3/4" | RHR/RHR | | SCW-4 | HM-3 | ex | ex | ex | ex | | | | ○ | ○ | | | | ● | | | | 813 | AORL, MH11.1 | | |
| 224E | A0.3B | ● | | | 3'-0" | 7'-0" | 1-3/4" | RH | | SCW-1 | HM-1 | ex | ex | ex | ex | | | | | | | | | | | | 402 | | | | |
| 225E | A0.3B | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 226AE | A0.3B | ● | | | 3'-0" | 7'-0" | 1-3/4" | RHR | 90 | SCW-1 | HM-1 | - | ex | ex | - | | | | ○ | ○ | | | | ● | | | 611 | CLO1, SW1 | | | |
| 226BE | A0.3B | ● | | | 3'-0" | 7'-0" | 1-3/4" | LHR | 90 | SCW-1 | HM-1 | - | ex | ex | - | | | | ○ | ○ | | | | ● | | | 407 | DS1, SW1 | | | |
| 226E | A0.3B | ○ | | | | | | RH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 227E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 228E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 229E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 230E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 231E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 232E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 233E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 234E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 235E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 236E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 237E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 238E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 239E | A0.3B | ○ | | | | | | RH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | NHR | NHR, Existing To Remain | | |
| 240E | A0.3B | ● | | | 3'-0" | 7'-0" | 1-3/4" | RHR/LHR | 90 | SCW-4 | | ex | ex | ex | ex | | | | ● | ● | | | | ● | | | | 812 | AC, BODH | | |
| 242E | A0.3B | ○ | | | | | | LH | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | 112 | AORL, PREV, MLR 5 | | |
| 243AE | A0.3B | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | 812 | AC, BODH | | |
| 243E | A0.3B | ○ | | | | | | RHR | 90 | ex | ex | ex | ex | ex | ex | | | | ○ | ○ | | | | ○ | | | | 401 | BODH, EXFR1, EXL1MK | | |

OPENINGS SCHEDULE

| OPENING NUMBER | DOOR | | | | | | | | | | FRAME | | | | FIRE RATING | FIRE CODE | | | | | | | ACCESSIBILITY REQUIREMENTS | | | | HARDWARE SET NO. | BULLETIN - REVISION NUMBER |
|----------------|-------------|------------------|------------------|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|-------------|--------------------------|---------------------------|-------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|---------------------------|---------------------------|-----------------|-------------------------|----------------------------|
| | ACTIVE LEAF | DOUBLE DOOR LEAF | SINGLE DOOR LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK, & ARMOR PLATES | TACTILE WARNING | | |
| 243E | 3'-0" | ● | 3'-0" | 3'-0" | 7'-0" | 1-3/4" | RHR/RHR | SCW-4 | HM-3 | ex | ex | ex | ex | ex | | | | | ● | ● | ○ | ● | ● | ● | ● | ● | 813 | AORL, MH11.1 |
| 244E | 3'-0" | ● | 3'-0" | | 7'-0" | 1-3/4" | RH | SCW-1 | HM-1 | - | - | - | - | - | | | | | ● | ● | ○ | ● | ● | ○ | ○ | 412 | | |
| 245E | | | | | | | RHR | ex | ex | ex | ex | ex | ex | ex | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR | NHR, Existing To Remain | |
| 246AE | 3'-0" | ● | 3'-0" | | 7'-0" | 1-3/4" | RHR | SCW-1 | HM-1 | - | - | - | - | - | | | | | ● | ○ | ○ | ○ | ○ | ○ | ○ | 611 | CL01, SW1 | |
| 246BE | 3'-0" | ● | 3'-0" | | 7'-0" | 1-3/4" | LHR | SCW-1 | HM-1 | - | - | - | - | - | | | | | ● | ○ | ○ | ○ | ○ | ○ | ○ | 407 | DS1, SW1 | |
| 246E | | ○ | | | | | RH | ex | ex | ex | ex | ex | ex | ex | | | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | NHR | NHR, Existing To Remain | |

SCHEDULE GENERAL NOTES

CONSTRUCTION MANAGER / GENERAL CONTRACTOR:

"NO EXCEPTIONS"

ALL DOOR HARDWARE MUST BE FURNISHED BY SECTION 087100 DOOR HARDWARE SUPPLIER.
 "CONTRACTS, Including Door Hardware, ISSUED TO ALUMINUM DOOR SUPPLIER" must stipulate aluminum door hardware must be purchased from SECTION 087100 HARDWARE SUPPLIER.

"NO EXCEPTIONS"

CONSTRUCTION MANAGER / GENERAL CONTRACTOR / HARDWARE SUPPLIER:

Shall coordinate an inspection, with all manufacturer's representatives to confirm that all hardware has been installed and adjusted properly;
 See "Specification Section - 08 71 00 - 3.2 - INSTALLATION"

HARDWARE SUPPLIER:

Must employ an experienced Architectural Hardware Consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.

CONFLICTS between the SPECIFIED DOOR HARDWARE and the DOORS / FRAMES must be brought to the attention of the ARCHITECT prior to submitting HARDWARE SUBMITTAL to the ARCHITECT.

OPENINGS SCHEDULE

| DOOR | | | | | | | | | | FRAME | | FIRE RATING | FIRE CODE | ACCESSIBILITY REQUIREMENTS | | | | | HARDWARE SET NO. | NEW WORK EXISTING | | OPENING NOTES | | | | | | | | |
|----------------|--------------|------------------|------------------|-------------|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|----------------------------|-------------------------|--------------------------|---------------------------|-------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|---------------------------|--------------------------|-----------------|----------------------|-----------------------|----------------------------|---|
| OPENING NUMBER | SHEET NUMBER | SINGLE DOOR LEAF | DOUBLE DOOR LEAF | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK & ARMOR PLATES | TACTILE WARNING | ACCESSIBLE THRESHOLD | ELECTRICAL / SECURITY | BULLETIN - REVISION NUMBER | |
| EXFR1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <ul style="list-style-type: none"> <input type="radio"/> NEW WORK <input type="radio"/> EXISTING <p>EX EXISTING TO REMAIN</p> <p>SP SMOKE / POSITIVE PRESSURE</p> |

"EXISTING FRAMES & DOORS, NEW HARDWARE" - All openings scheduled to receive a new door, prior to fabrication, must be verified in field, along with "General Contractor" / "Construction Manager", by the Door & Frame Suppliers for correct size and hardware compatibility. Where Existing Door Hardware has been removed, All holes from previously used fasteners must be welded close and finished to accept new Door Hardware. Field check to be noted on shop drawing submittal.

All conflicts shall be brought to the Architect for their clarification and direction prior to proceeding with fabrication of new Doors. It is the responsibility of the "General Contractor" / "Construction Manager" to insure that all new hardware will work with any and all existing conditions, including retrofitting and reinforcing Existing Frames as required to accept all new hardware.

Hardware supplier will furnish all necessary strike and hinge filler plates where required to complete a finished look of door frame.

If Opening is called out on the Door Schedule as U.L. Rated, Field verify the Opening meets all requirements of a Rated Opening. (U.L. Labels on Frames)..

Remove Existing Door Hardware, refinish Doors for installation of New Door Hardware.

Refurbish Existing Frame including modifying Hardware Prep's as required to accommodate new Door Hardware. and the filling all existing original hardware prep's not required by the new Door Hardware.

"EXISTING FRAMES, NEW DOORS & HARDWARE" - All openings scheduled to receive a new door, prior to fabrication, must be verified in field, along with "General Contractor" / "Construction Manager", by the Door & Frame Suppliers for correct size and hardware compatibility.

Where Existing Door Hardware has been removed, All holes from previously used fasteners must be welded close and finished to accept new Door Hardware. Field check to be noted on shop drawing submittal.

All conflicts shall be brought to the Architect for their clarification and direction prior to proceeding with fabrication of new Doors. It is the responsibility of the "General Contractor" / "Construction Manager" to insure that all new hardware will work with any and all existing conditions, including retrofitting and reinforcing Existing Frames as required to accept all new hardware.

Hardware supplier will furnish all necessary strike and hinge filler plates where required to complete a finished look of door frame.

If Opening is called out on the Door Schedule as U.L. Rated, Field verify the Opening meets all requirements of a Rated Opening. (U.L. Labels on Frames)..

"EXL1" Remove Existing LOCKSET, Furnish and Install New LOCKSET, modify door as required to accept new lock. Refurbish Existing Frame including modifying Strike Plate Prep. and filling all existing original hardware preps.

"WRAP PLATES", Provide Mod-Kit if required to complete a finish Installation.

Remove Existing Doors and Hardware. Furnish & Install Filler Plates

OPENINGS SCHEDULE

| OPENING NUMBER | DOOR | | | | | | | | | | FRAME | | SOUND DOOR AND GASKETING | FIRE RATING | FIRE CODE | ACCESSIBILITY REQUIREMENTS | | | | | HARDWARE SET NO. | NEW WORK EXISTING | OPENING NOTES | | | | | | |
|----------------|--|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|----------------|-------------|-------------|-------------------------|--------------------------|-------------|-----------|---------------------------------|---------------------------|---------------------------|-----------------|----------------------|------------------|----------------------|---------------|-----------------------|----------------------------|--|--|--|--|
| | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | | | | PUSH / PULL (Interior Openings) | "U" HANDLE / LEVER HANDLE | MOP, KICK, & ARMOR PLATES | TACTILE WARNING | ACCESSIBLE THRESHOLD | | | | ELECTRICAL / SECURITY | BULLETIN - REVISION NUMBER | | | | |
| LD.M01 | "LD.M01" Electro-Magnetic Locks For Use on Single Door - FAIL SECURE - Powered on and off by CARD READER and / or Key Switch at Each Side of Opening. - Power Supply & Magnetic Locks by Section 08 71 00. - Power and Control Wiring to be furnished and installed by Electrical / Section 17000. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MH11.1 | "MH11" (1 Ea.) Wall Mounted Electromagnetic Door Release Salvage Existing Wall Mounted Magnet and reuse on new doors | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MH12 | "MH12" (2 Ea.) Wall Mounted Wall Mounted Electromagnetic Door Release shall release doors upon receiving signal from "FIRE ALARM SYSTEM" or "LOCKDOWN ALARM". EMDR to be furnished by Section 08 71 00 EMDR installed by Electrical Contractor under the direction of the Door Hardware Supplier. POWER SUPPLY: "24 VAC/DC" 60 Hz. .020 amp Power furnished by Electrical Division | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MH31 | "MH31" (1 Ea.) Hold Open Door Closer, Electromagnetically Controlled, Door Release shall release doors upon receiving signal from "FIRE ALARM SYSTEM" or "LOCKDOWN ALARM". EDR to be furnished by Section 08 71 00 EDR installed by Electrical Contractor under the direction of the Door Hardware Supplier. Required POWER SUPPLY: "24 VAC/DC" .3 amp, Power furnished by Electrical Division | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MH32 | "MH32" (2 Ea.) Hold Open Door Closers, Electromagnetically Controlled, Door Release shall release doors upon receiving signal from "FIRE ALARM SYSTEM" or "LOCKDOWN ALARM". EMDR to be furnished by Section 08 71 00 EMDR installed by Electrical Contractor under the direction of the Door Hardware Supplier. Required POWER SUPPLY: "24 VAC/DC" .3 amp, Power furnished by Electrical Division | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NHR | No Hardware Required | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

OPENINGS SCHEDULE

| OPENING NUMBER | DOOR | | | | | FRAME | | | FIRE RATING | FIRE CODE | ACCESSIBILITY REQUIREMENTS | | | | | HARDWARE SET NO. | NEW WORK EXISTING | OPENING NOTES | | | | | | | |
|----------------|--|---------------------------------|------------------|--------|-----------|---------|--------------------------|---------------|-------------|-----------|----------------------------|-------------|-------------|-------------------------|--------------------------|------------------|----------------------|---------------|---------------------------|-------------------------|------------------------|-------------------|-------------------|--------------------------|---------------------------------|
| | ACTIVE LEAF | ACTIVE LEAF (PRH & PP Hardware) | IN - ACTIVE LEAF | HEIGHT | THICKNESS | HANDING | DEGREE OF SWING REQUIRED | DOOR MATERIAL | | | FRAME MATERIAL | HEAD DETAIL | JAMB DETAIL | SILL / THRESHOLD DETAIL | SOUND DOOR AND GASKETING | | | | U. L. RATING (IN MINUTES) | GASKETS AND SMOKE SEALS | PANIC RELEASE HARDWARE | POSITIVE LATCHING | AUTOMATIC CLOSING | ELECT. MAG. DOOR RELEASE | PUSH / PULL (Interior Openings) |
| OAL | "OAL" OVERLAPPING ASTRAGAL Install on "LH" Outside Inactive Leaf | | | | | | | | | | | | | | | | | | | | | | | | |
| PR.ER.MLR 0 | "PR.EV.MLR 0" "LHR / RHR" Electric Motor Latch Retraction Electric Motorized Latch Retraction Panic Release Hardware. Section 08 71 00 to provide ONE(1) each (EPTL) Wire Power Transfer Hinge, and Power Supply (See Hardware Sets for PS Requirements). | | | | | | | | | | | | | | | | | | | | | | | | |
| PR.EV.MLR 5 | "PR.EV.MLR 5" Electric Motorized Latch Retraction ("RHR/LHR" Leafs). Bolt Monitor (Latch) Monitor, Touchbar Monitor Switch (Request to Exit Function), and Trim Monitor Switch' (BOTH LEAFS). Section 08 71 00 to provide TWO(2) each (10 RETW) Wire Power Transfer Hinge, and Power Supply (See Hardware Sets for PS Requirements). | | | | | | | | | | | | | | | | | | | | | | | | |
| PS2 | "PS2" POWER SUPPLIES, SHARED , ELECTRIFIED TRIM & LOCKS: Power Supply "PS 1" (Shared) - See Openings "143.1W" - Headings "021 | | | | | | | | | | | | | | | | | | | | | | | | |
| SW1 | "SW1" DEGREE SWING (90) - Template Hardware (Door Closers / Overhead Stops) Installation to Specified Degree of Swing (90), See Door Schedule. | | | | | | | | | | | | | | | | | | | | | | | | |
| SW2 | "SW2" DEGREE SWING (110 - 120) - Template Hardware (Door Closers / Overhead Stops) Installation to Specified Degree of Swing (110 - 120), See Door Schedule. | | | | | | | | | | | | | | | | | | | | | | | | |
| SW3 | "SW3" DEGREE SWING (180) - Door must be able to swing 180 degrees. Template Hardware installation for 180 Degree swing operation. (175 Degrees where limited by field conditions or hardware specified) | | | | | | | | | | | | | | | | | | | | | | | | |

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section includes hollow-metal work.
- B. Related Requirements:
 - 1. Division 04 Section "Unit Masonry" for building anchors into and grouting hollow metal frames in masonry construction.
 - 2. Division 08 Section "Door Hardware" for door hardware for hollow metal doors.
 - 3. Division 08 Section "Glazing" for glazed lites in hollow metal doors and frames.
 - 4. Division 09 Section "Painting" for field painting hollow metal doors and frames, and for patching and repair of existing hollow metal frames to remain.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.4 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Architect, electrical contractor, security systems supplier, and hardware installers whose work interfaces with or affects hollow metal doors and frames.
 - 2. Review requirements for type of cut-out and back-box as part of the door and frame assembly.
 - 3. Document proceedings, including receipt of samples and approved shop drawings of security contact devices which accurately represent the installation of the device, back-box, and conduit terminations required.
 - 4. Distribute an installation book, including all manuals and instructions.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each door type.
 - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
 - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 - 4. Locations of reinforcement and preparations for hardware.
 - 5. Details of each different wall opening condition.
 - 6. Details of anchorages, joints, field splices, and connections.
 - 7. Details of accessories.
 - 8. Details of moldings, removable stops, and glazing.
 - 9. Details of conduit and preparations for power, signal, and control systems.
- C. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.7 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 - 1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ceco Door; ASSA ABLOY.
 - 2. Curries Company; ASSA ABLOY.
 - 3. DE LA FONTAINE.
 - 4. Steelcraft; an Allegion brand.

- B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.2 REGULATORY REQUIREMENTS

- A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

2.3 INTERIOR DOORS AND FRAMES

- A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

- B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2.
 - 1. Physical Performance: Level B according to SDI A250.4.
 - 2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Uncoated, cold-rolled steel sheet, minimum thickness of 0.042 inch (18 gauge).
 - 1) Provide 16 gauge face sheets for doors over 3'-0" wide.
 - d. Edge Construction: Model 2, Seamless.
 - e. Core: Vertical steel stiffener with fiberglass insulation.
 - f. Fire Rated Core: Mineral fiber.
 - 3. Frames:
 - a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (16 gauge).
 - b. Sidelite Frames: Fabricated from same thickness material as adjacent door frame.
 - c. Construction: Face welded.
 - 4. Exposed Finish: Prime.

2.4 FRAME ANCHORS

- A. Jamb Anchors:
1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
 2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
 3. Postinstalled Expansion Type for In-Place Masonry: Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.
- B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows:
1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.5 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.
- C. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- D. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- E. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M. Comply with Division 04 Section "Unit Masonry."
- F. Glazing: Comply with Division 08 Section "Glazing."
- G. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.6 FABRICATION

- A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Hollow-Metal Doors:

1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
 2. Fire Door Cores: As required to provide fire-protection ratings indicated.
 3. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches.
 4. Top Edge Closures: Close top edges of doors with inverted closures.
 5. Bottom Edge Closures: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets.
 6. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.
- C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. Sidelite Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 4. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
 5. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Masonry Type: Locate anchors not more than 16 inches from top and bottom of frame. Space anchors not more than 32 inches o.c., to match coursing, and as follows:
 - 1) Two anchors per jamb up to 60 inches high.
 - 2) Three anchors per jamb from 60 to 90 inches high.
 - 3) Four anchors per jamb from 90 to 120 inches high.
 - 4) Four anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
 - b. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high.
 - 2) Four anchors per jamb from 60 to 90 inches high.
 - 3) Five anchors per jamb from 90 to 96 inches high.
 - 4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
 - c. Compression Type: Not less than two anchors in each frame.
 - d. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
 6. Head Anchors: Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.

-
- 7. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

 - D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.

 - E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
 - 1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 - 2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.
 - 3. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

 - F. Hardware Reinforcement: Fabricate reinforcement plates from same material as frames to comply with manufacturer's standard gauges and sizes, but not less than the following minimum sizes.
 - 1. Hinges: Minimum 10 gauge by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
 - 2. Lock Face, Flush and Surface Bolts, Closers, and Concealed Holders: Minimum 14 gauge.
 - 3. Pull Plates and Bar: Minimum 16 gauge.

 - G. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with mitered hairline joints.
 - 1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.
 - 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
 - 3. Provide fixed frame moldings on secure side of interior doors and frames.
 - 4. Provide loose stops and moldings on inside of hollow-metal work.
 - 5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
- 2.7 STEEL FINISHES
- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.
- 2.8 ACCESSORIES
- A. Mullions: Join to adjacent members by welding or rigid mechanical anchors.

- B. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.
- B. Hollow-Metal Frames: Install hollow-metal frames for doors, transoms, sidelites, borrowed lites, and other openings, of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install frames with removable stops located on secure side of opening.
 - d. Install door silencers in frames before grouting.
 - e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
 5. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 6. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
1. Non-Fire-Rated Steel Doors:
 - a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
 - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.
 - e. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.
 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80, and the following:
 - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
 - c. Between Bottom of Door and Top of noncombustible Threshold: Maximum 3/8 inch.
 - d. Between Bottom of Door and Top of noncombustible Finish Floor (No Threshold): Maximum 3/4 inch.
 - e. Between Bottom of Door and all other Finish Floor Coverings: Maximum 1/2 inch.
- D. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow-metal manufacturer's written instructions.
1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow-metal work immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- D. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
- E. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in Division 09 Section "Painting."

END OF SECTION 08 11 13

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

A. Section Includes:

1. Solid-core doors with wood-veneer faces.
2. Factory finishing flush wood doors.
3. Factory fitting flush wood doors to frames and factory machining for hardware.

B. Related Sections:

1. Division 08 Section "Hollow Metal Doors and Frames" for hollow metal door frames for flush wood doors.
2. Division 08 Section "Glazing" for glazed frames in flush wood doors.
3. Division 08 Section "Door Hardware."
4. Division 26 Electrical Sections.
5. Division 28 Security Sections.

1.3 SUBMITTALS

- A. Product Data: For each type of door indicated. Include details of core and edge construction, louvers, and trim for openings. Include factory-finishing specifications.

- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.

1. Provide a schedule of wood doors using same reference numbers for details, openings, and door types as those indicated in the Door Schedule.
2. Indicate dimensions and locations of mortises and holes for hardware.
3. Indicate dimensions and locations of cutouts.
4. Indicate location of security door contacts; coordinate with security systems requirements.
5. Indicate fire-protection ratings for fire-rated doors.
6. Indicate factory finish requirements.

- C. Samples for Initial Selection: For factory-finished doors.

- D. Samples for Verification:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish.
2. Corner sections of doors, approximately 8 by 10 inches, with door faces and edges representing actual materials to be used.
 - a. Provide samples for each species of veneer and solid lumber required.
 - b. Finish veneer-faced door samples with same materials proposed for factory-finished doors.
3. Frames for light openings, 6 inches long, for each material, type, and finish required.

E. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain flush wood doors from single manufacturer.
- B. Quality Standard: In addition to requirements specified, comply with AWI's "Architectural Woodwork Quality Standards Illustrated."
- C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
 1. Meet with Architect, electrical contractor, security systems supplier, and installers whose work interfaces with or affects flush wood doors.
 2. Review requirements for type of cut-out and back-box as part of the wood door and frame assembly.
 3. Document proceedings, including receipt of samples and approved shop drawings of security contact devices which accurately represent the installation of the device, back-box, and conduit terminations required.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in plastic bags and wrap bundles of doors in plastic sheeting.
- C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
 - a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
 - b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
 2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
 3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Eggers Industries.
 2. Masonite Architectural; Marshfield-Algoma.
 3. Oshkosh Architectural Door Company.
 4. VT Industries Inc.

2.2 FLUSH WOOD DOORS, GENERAL

- A. Quality Standard: In addition to requirements specified, comply with AWI "Architectural Woodwork Standards."
1. Contract Documents contain selections chosen from options in quality standard and additional requirements beyond those of quality standard. Comply with those selections and requirements in addition to quality standard.
- B. Particleboard-Core Doors:
1. Particleboard: ANSI A208.1, Grade LD-2.
 2. Blocking: Provide all wood blocking in particleboard-core doors as needed to allow secure application of all hardware.

2.3 VENEERED-FACED DOORS FOR TRANSPARENT FINISH

- A. Interior Solid-Core Doors:
1. Grade: Custom (Grade A faces).
 2. Species: White maple.
 3. Cut: Plain sliced.
 4. Match between Veneer Leaves: Book match.
 5. Assembly of Veneer Leaves on Door Faces: Running match.

6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
 7. Transom Match: Continuous match.
 8. Adjacent Side Panels: Sequence match.
 9. Core: Particleboard.
 10. Construction: Five plies. Stiles and rails are bonded to core, then entire unit abrasive planed before veneering. Faces are bonded to core using a hot press.
 11. Stiles: 1-3/8- inch laminated strand lumber (LSL) with veneer band to match veneer face.
 12. Crossbands: Engineered fiber.
 13. Top and bottom rails: 1-1/8- inch LSL or hardwood.
 14. Doors with glazed opening cutouts that exceed more than 40% of the door area shall have structural composite lumber cores (AWI SLC core) to maintain the Life Time Warranty.
- B. Fire-Protection-Rated Doors: Provide manufacturer's standard mineral core as needed to provide fire-protection rating indicated.
1. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed edges.
 2. Pairs: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.
- C. Blocking: Provide blocking in all doors to allow for secure application of all hardware.

2.4 LIGHT FRAMES

- A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads as follows unless otherwise indicated.
1. Wood Species: Same species as door faces.
 2. Profile: Flush rectangular beads.
 3. At 20-minute, fire-rated, wood-core doors, provide wood mouldings and metal glazing clips approved for such use.
- B. Metal Frames for Light Openings in Fire-Rated Doors: Manufacturer's standard frame formed of 0.048-inch- thick, cold-rolled steel sheet; with powder-coated finish; and approved for use in doors of fire-protection rating indicated.
1. Color: As selected by Architect from manufacturer's full range.
 2. Cutting of fire rated doors in field is not permitted.
- C. All cutouts for glazed openings in all wood doors must be a minimum of 6 inches from the edge of the door and/or other cutouts for locks, closers or other hardware.

2.5 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
- B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.

1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.
 - C. Openings: Cut and trim openings through doors in factory.
 1. Light Openings: Trim openings with moldings of material and profile indicated.
 2. Glazing: Furnished and installed by Division 08 Section "Glazing."
 - D. Drill all pilot holes for butt hinges and lock fronts at the factory.
 - E. Prepare doors to receive security systems hardware in accordance with final security systems shop drawings and templates provide by security systems supplier.
 1. Include an integral ½-inch diameter wire tube in doors to receive electrified locksets, exit devices, mortised electrical locksets, or electric strikes in the inactive leaf of pairs of doors to accommodate wiring associated with the power transfer hinges, knuckles, and electrified hardware within the door.
- 2.6 FACTORY FINISHING
- A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
 1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.
 - B. Finish doors at factory.
 - C. Transparent Finish:
 1. Grade: Premium.
 2. Finish: AWI's "Architectural Woodwork Standards" System 11, catalyzed polyurethane.
 3. Staining: As selected by Architect from manufacturer's full range.
 4. Effect: Open grain finish.
 5. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames before hanging doors.
 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, comply with requirements in Division 06 Section "Miscellaneous Rough Carpentry" and Division 08 Section "Door Hardware."
- B. Installation Instructions: Install doors to comply with manufacturer's written instructions and the referenced quality standard, and as indicated.
 - 1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80 and UL 10C.
- C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
 - 1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.
 - a. Comply with NFPA 80 for fire-rated doors.
 - 2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
 - 3. Bevel fire-rated doors 1/8 inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.
- D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- E. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.
- F. Light openings.
 - 1. Install wood-veneered beads for light openings in flush wood doors using 16 gauge finish nails spaced at 3-inch from end of each molding and at 6-inch spacing. Fill all nail holes with wood putty to match molding.

3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 08 14 16

SECTION 08 31 13 – ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Access doors and frames for walls and ceilings.
- B. Related Sections include the following:
 - 1. Division 08 Section "Door Hardware" for mortise or rim cylinder locks and master keying.
 - 2. Division 09 Section "Painting" for field finishing factory-primed access doors and frames.
 - 3. Division 23 Section for heating and air-conditioning duct access doors.

1.3 SUBMITTALS

- A. Product Data: For each type of access door and frame indicated. Include construction details, fire ratings, materials, individual components and profiles, and finishes.
- B. Shop Drawings: Show fabrication and installation details of access doors and frames for each type of substrate. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each door face material, at least 3 by 5 inches in size, in specified finish.
- D. Access Door and Frame Schedule: Provide complete access door and frame schedule, including types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

1.4 QUALITY ASSURANCE

- A. Size Variations: Obtain Architect's acceptance of manufacturer's standard-size units, which may vary slightly from sizes indicated.

1.5 COORDINATION

- A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed plumbing, mechanical, or other concealed work, and indicate in the schedule specified in "Submittals" Article.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 that are identical to access door and frame assemblies tested for fire-test-response characteristics per the following test method and that are listed and labeled by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
1. NFPA 252 or UL 10B for vertical access doors and frames.
 2. ASTM E 119 or UL 263 for horizontal access doors and frames.

2.2 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

- A. Source Limitations: Obtain access doors and frames through one source from a single manufacturer.
- B. Basis of Design Product: Subject to compliance with requirements, provide product indicated, or comparable product by one of the following:
1. J. L. Industries, Inc.
 2. Karp Associates, Inc.
 3. Larsen's Manufacturing Company.
 4. Milcor Inc.
 5. Nystrom, Inc.
- C. Flush Access Doors with Exposed Flanges:
1. **Basis-of-Design Product: Babcock Davis; Model BNT.**
 2. Assembly Description: Fabricate door to fit flush to frame. Provide manufacturer's standard-width exposed flange, proportional to door size.
 3. Locations: Wall and ceiling, gypsum board and masonry walls.
 4. Uncoated Steel Sheet for Door: Nominal 14 gage.
 - a. Finish: Factory prime.
 5. Frame Material: Nominal 16 gauge, factory prime.
 6. Hinges: concealed pivoting rod hinge.
 7. Hardware: Mortise cylinder preparation.
 8. Door Size: 12x12.
- D. Flush Access Doors with Exposed Flanges:
1. **Basis-of-Design Product: Babcock Davis; Model BNT.**
 2. Assembly Description: Fabricate door to fit flush to frame. Provide manufacturer's standard-width exposed flange, proportional to door size.
 3. Locations: Wall, gypsum board and masonry walls with ceramic tile finish.
 4. Stainless-Steel Sheet for Door: Nominal 14 gage.
 - a. Finish: No. 4.
 5. Frame Material: Nominal 16 gauge, stainless steel.
 6. Hinges: concealed pivoting rod hinge.

7. Hardware: Mortise cylinder preparation.
8. Door Size: 12x12.

E. Fire-Rated, Flush Access Doors with Exposed Flanges:

1. **Basis-of-Design Product: Babcock Davis; BU-Series Model BUT.**
2. Assembly Description: Fabricate door to fit flush to frame, uninsulated. Provide self-latching door with automatic closer and interior latch release. Provide manufacturer's standard-width exposed flange, proportional to door size.
3. Locations: Wall and ceiling, gypsum board.
4. Fire-Resistance Rating: Not less than 1 hour.
5. Uncoated Steel Sheet for Door: Nominal 14 gage.
 - a. Finish: Factory prime.
6. Frame Material: Nominal 16 gauge, factory prime.
7. Hinges: concealed pivoting rod hinge.
8. Hardware: Mortise cylinder preparation.
9. Door Size: 12x12.

F. Hardware:

1. Lock: Mortise cylinder.
 - a. Lock Preparation: Prepare door panel to accept cylinder specified in Division 08 Section "Door Hardware."

2.3 MATERIALS

- A. Steel Sheet: Uncoated cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.
- B. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304. Remove tool and die marks and stretch lines or blend into finish.
- C. Drywall Beads: Edge trim formed from 0.0299-inch zinc-coated steel sheet formed to receive joint compound and in size to suit thickness of gypsum board.

2.4 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.
 1. Exposed Flanges: As indicated.
 2. Provide mounting holes in frames for attachment of units to metal framing.

- D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.
 - 1. For cylinder lock, furnish two keys per lock and key all locks alike.

2.5 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Steel and Metallic-Coated-Steel Finishes:
 - 1. Factory Prime: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.
- E. Stainless-Steel Finishes:
 - 1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
 - 2. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
 - a. Run grain of directional finishes with long dimension of each piece.
 - b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
 - c. Directional Satin Finish: No. 4.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.
- B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.
- C. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.2 ADJUSTING AND CLEANING

- A. Adjust doors and hardware after installation for proper operation.

- B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 08 31 13

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 08 42 29 – AUTOMATIC ENTRANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section “Summary”, Paragraph 1.1A, entitled “Related Documents.”

1.2 SUMMARY

- A. Section Includes:
 - 1. Exterior, sliding, power-operated automatic entrances.
- B. Related Sections:
 - 1. Division 26 Sections for electrical connections provided separately in Division 26 including conduit and wiring for power to, and monitoring of, and control of, sliding automatic entrances.

1.3 DEFINITIONS

- A. AAADM: American Association of Automatic Door Manufacturers.
- B. Activation Device: Device that, when actuated, sends an electrical signal to the door operator to open the door.
- C. Safety Device: Device that, to avoid injury, prevents a door from opening or closing.
- D. For automatic door terminology, refer to BHMA A156.10 for definitions of terms.

1.4 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design automatic entrances, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Automatic entrances shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to SEI/ASCE 7 and the Connecticut State Building Code.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

- D. Operating Temperature Range: Provide automatic entrances that operate within minus 30 deg F to plus 130 deg F.
- E. Opening-Force Requirements:
 - 1. Power-Operated Doors: Not more than 50 lbf required to manually set door in motion if power fails, and not more than 15 lbf required to open door to minimum required width.
 - 2. Breakaway Device for Power-Operated Doors: Not more than 50 lbf required for a breakaway door or panel to open.
- F. Entrapment Force Requirements:
 - 1. Power-Operated Sliding Doors: Not more than 30 lbf required to prevent stopped door from closing.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for automatic entrances. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings: For automatic entrances. Include plans, elevations, sections, details, hardware mounting heights, and attachments to other work.
 - 1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 2. Wiring Diagrams: For power, signal, and control wiring.
 - 3. Activation and safety devices.
 - 4. Include hardware schedule and indicate hardware types, functions, quantities, and locations.
- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.
- E. Delegated-Design Submittal: For automatic entrances indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Design Calculations: Calculate requirements for seismic restraints.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and manufacturer.
- B. Product Certificates: For each type of automatic entrance, from manufacturer.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for automatic entrances.

- D. Field quality-control reports.
- E. Warranties: Sample of special warranties.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For automatic entrances, safety devices, and control systems to include in maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer with company certificate issued by AAADM.
- B. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation and maintenance of units required for this Project.
 - 1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.
- C. Certified Inspector Qualifications: Certified by AAADM.
- D. Source Limitations for Automatic Entrances: Obtain automatic entrances from single source from single manufacturer.
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- F. Power-Operated Door Standard: BHMA A156.10.
- G. Emergency-Exit Door Requirements: Comply with requirements of authorities having jurisdiction for automatic entrances serving as a required means of egress.
- H. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to automatic entrances including, but not limited to, the following:
 - a. Structural load limitations.
 - b. Construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - c. Coordination with electrical, glazing, and other trades.
 - d. Required testing, inspecting, and certifying procedures.

1.9 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings to receive automatic entrances by field measurements before fabrication.

1.10 COORDINATION

- A. Templates: Obtain templates for doors, frames, and other work specified to be factory prepared for installing automatic entrances, and distribute to parties involved. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing automatic entrances to comply with indicated requirements.
- B. Coordinate hardware with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish. Coordinate hardware for automatic entrances with hardware required for rest of Project.
- C. Electrical System Roughing-in: Coordinate layout and installation of automatic entrances with connections to power supplies and access-control system.
- D. System Integration: Integrate sliding automatic entrances with other systems as required for a complete working installation.
 - 1. Provide electrical interface control capability for operation of sliding automatic entrances by secure activation system on doors with electric locking.
 - 2. Provide electrical interface to allow for remote monitoring of automatic entrance door panel status.

1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of automatic entrances that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Faulty operation of operators, controls, and hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 - 2. Warranty Period: One year from date of Substantial Completion.
- B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Warranty Period: 20 years from date of Substantial Completion.

1.12 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of automatic entrance Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper automatic entrance operation at rated speed and capacity. Provide parts and supplies the same as those used in the manufacture and installation of original equipment.
1. Engage a certified inspector to perform safety inspection after each adjustment or repair and at end of maintenance period. Furnish completed inspection reports to Owner.
 2. Perform maintenance, including emergency callback service, during normal working hours.
 3. Include 24-hour-per-day, 7-day-per-week, emergency callback service.

PART 2 - PRODUCTS

2.1 SLIDING AUTOMATIC ENTRANCES

- A. General: Provide manufacturer's standard automatic entrances including doors, sidelites, framing, headers, carrier assemblies, roller tracks, door operators, activation and safety devices, and accessories required for a complete installation.
- B. Sliding Automatic Entrances:
1. Basis-of-Design Product: Subject to compliance with requirements, provide **Stanley Access Technologies; Dura-Glide 2000 Series** or comparable product by one of the following:
 - a. Besam North America, an ASSA ABLOY company.
 - b. Dormakaba.
 - c. Horton Automatics.
 2. Configuration: Biparting-sliding doors, with two sliding leaves and sidelites on each side.
 - a. Traffic Pattern: Two-way.
 - b. Emergency Breakaway Capability: Sliding leaves only.
 - c. Mounting: Between jambs.
 3. Electromechanical Operators: Self-contained overhead unit powered by a minimum of 1/4 horsepower, permanent-magnet DC motor with gear reduction drive, microprocessor controller; and encoder.
 - a. Operation: Power opening and closing.
 - b. Operator Features:
 - 1) Adjustable opening and closing speeds.
 - 2) Adjustable back-check and latching.
 - 3) Adjustable braking.
 - 4) Adjustable hold-open time between 0 and 30 seconds.
 - 5) Obstruction recycle.
 - 6) On/Off switch to control electric power to operator.
 - 7) Energy conservation switch that reduces door-opening width.

- 8) Closed loop speed control with active braking and acceleration.
 - 9) Variable obstruction recycle time delay.
 - 10) Self-adjusting stop position.
 - 11) Self-adjusting closing compression force.
 - 12) Optional Switch to open/Switch to close operation.
- c. Mounting: Concealed.
 - d. Drive System: Synchronous belt type.
4. Sliding Door Carrier Assemblies and Overhead Roller Tracks: Manufacturer's standard carrier assembly that allows vertical adjustment of at least 1/8-inch; consisting of urethane with ball-bearing-center steel wheels operating on a continuous roller track. Support doors from carrier assembly by 2-inch diameter anti-riser wheels with factory adjusted cantilever and pivot assembly.
- a. Rollers: Minimum of two ball-bearing roller wheels and two anti-rise rollers for each active leaf.
5. Sliding Door Threshold: Manufacturer's standard threshold members and bottom-guide track system, with stainless-steel, ball-bearing-center roller wheels.
- a. Configuration: Saddle-type threshold across door opening and recessed guide track system at sidelites.
6. Activation Device: Motion sensor mounted on exterior side of door header to detect pedestrians in activating zone and to open door.
7. Activation Device: Push-plate switch on interior side of door to activate door operator.
8. Safety Devices: Two photoelectric beams mounted in sidelite jambs to detect pedestrians in presence zone and to prevent door from closing.
9. Sidelite Safety Device: Presence sensor, mounted above each sidelite on side of door opening through which doors travel, to detect obstructions and to prevent door from opening.
10. Finish: Finish framing, doors, sidelites and header with two-coat fluoropolymer finish matching aluminum-framed entrances and storefronts.
- a. Color: Custom, as selected by Architect.

2.2 ELECTRICAL CONTROLS

- A. Electrical Control System: Include a microprocessor controller and position encoder. The encoder shall monitor revolutions of the operator shaft and send signals to microprocessor controller to define door position and speed. Systems utilizing external magnets and magnetic switches are not acceptable.
- B. Life Cycle Data Counter: The electrical control system shall incorporate a non-re-settable counter to track door operation cycles.
- C. Controller Protection: The microprocessor controller shall incorporate the following features to ensure trouble free operation:
 1. Automatic Reset Upon Power Up.
 2. Main Fuse Protection.
 3. Electronic Surge Protection.
 4. Internal Power Supply Protection.

5. Resettable sensor supply fuse protection.
 6. Motor Protection, over-current protection.
- D. Soft Start/Stop: Provide a “soft-start” “soft-stop” motor driving circuit for smooth normal opening and recycling.
- E. Obstruction Recycle: Provide system to recycle the sliding panels when an obstruction is encountered during the closing cycle. If an obstruction is detected, the system shall search for that object on the next closing cycle by reducing door closing speed prior to the previously encountered obstruction location, and will continue to close in check speed until doors are fully closed, at which time the doors will reset to normal speed. If obstruction is encountered again, the door will come to a full stop. The doors shall remain stopped until obstruction is removed and operate signal is given, resetting the door to normal operation.
- F. Programmable Controller: Microprocessor controller shall be programmable and shall be designed for connection to a local configuration tool. Local configuration tool shall be software driven and shall be utilized via Palm® handheld interface. The following parameters may be adjusted via the configuration tool.
1. Operating speeds and forces as required to meet BHMA A156.10.
 2. Adjustable and variable features as specified for door operators.
 3. Reduced opening position.
 4. Fail Safe/Secure control.
 5. Firmware update.
 6. Trouble Shooting
 - a. I/O Status.
 - b. Electrical component monitoring including parameter summary.
 7. Software for local configuration tool shall be available as a free download from the sliding automatic entrance manufacturer’s internet site.

2.3 ENTRANCE COMPONENTS

- A. Framing and Transom Members: Manufacturer's standard extruded aluminum, minimum 0.125 inch thick and reinforced as required to support imposed loads.
1. Nominal Size: 1-3/4 by 4-1/2 inches.
 2. Extruded Glazing Stops and Applied Trim: Minimum 0.062-inch wall thickness.
- B. Stile and Rail Doors and Sidelights, Vestibule: Manufacturer's standard 1-3/4-inch- thick, glazed doors with minimum 0.125-inch- thick, extruded-aluminum tubular stile and rail members. Mechanically fasten corners with reinforcing brackets that are welded, or incorporate concealed tie-rods that span full length of top and bottom rails.
1. Glazing Stops and Gaskets: Beveled, snap-on, extruded-aluminum stops and manufacturer's standard preformed gaskets.
 2. Glazing: Comply with Division 08 Section “Glazing.”
 - a. Exterior Doors: Insulated, fully tempered.
 3. Stile Design: Narrow stile, 2-inch nominal width.
 4. Rail Design: 10-inch nominal height.
 5. Muntin Bars: Horizontal tubular rail member for each door; match stile design and finish.

- C. Headers: Fabricated from minimum 0.125-inch- thick, extruded aluminum and extending full width of automatic entrance units to conceal door operators and controls. Provide hinged or removable access panels for service and adjustment of door operators and controls. Secure panels to prevent unauthorized access.
 - 1. Mounting: Concealed, with one side of header flush with framing.
 - 2. Capacity, Exterior: Capable of supporting doors up to 400 lb per leaf, up to four panels, over spans up to 14 feet without intermediate supports.
- D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- E. Signage: Affixed to both sides of each door as required by BHMA A156.10 for type of door and its operation.
 - 1. Application Process: Door manufacturer's standard process.
 - 2. Provide sign materials with instructions for field application after glazing is installed.

2.4 DOOR OPERATORS AND ACTIVATION AND SAFETY DEVICES

- A. Door Operators: Provide door operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated.
 - 1. Door Operator Performance: Provide door operators that will open and close doors and maintain them in fully closed position when subjected to Project's design wind loads.
 - 2. Electromechanical Operators: Concealed, self-contained, overhead unit powered by fractional-horsepower, permanent-magnet dc motor; with closing speed controlled mechanically by gear train and dynamically by braking action of electric motor; with solid-state microprocessor controller; UL 325; and with manual operation with power off.
- B. Motion Sensors: Self-contained, K-band-frequency, microwave-scanner units with metal or plastic housing; adjustable to provide detection field sizes and functions required by BHMA A156.10; with relay hold time of not less than 2 to 10 seconds.
 - 1. Provide capability for switching between bidirectional and unidirectional detection.
- C. Presence Sensors: Presence sensors shall be provided to sense people or objects in the threshold safety zone in accordance with BHMA A156.10. Units shall be self-contained, fully adjustable, and shall function accordingly with motion sensors provided. The sensor shall be enabled simultaneously with the door-opening signal and shall emit an elliptical shaped infrared presence zone, centered on the doorway threshold line. Presence sensors shall be capable of selectively retuning to adjust for objects which may enter the safety zone; tuning out, or disregarding, the presence of small nuisance objects and not tuning out large objects regardless of the time the object is present in the safety zone. The door shall close only after all sensors detect a clear surveillance field.
- D. Push-Plate Switch: Momentary-contact door-control switch with flat push-plate actuator, with contrasting-colored, engraved message.
 - 1. Configuration: Square push plate with 4-by-4-inch junction box.
 - a. Mounting: Surface mounted on wall.

2. Push-Plate Material: Stainless steel, as selected by Architect from manufacturer's full range.
 3. Message: International symbol of accessibility and "Push to Open."
- E. Photoelectric Beams: Pulsed infrared, sender-receiver assembly for recessed mounting. Beams shall not be active when doors are fully closed.
- F. Electrical Interlocks: Unless units are equipped with self-protecting devices or circuits, provide electrical interlocks to prevent activation of operator when door is locked, latched, or bolted.
- G. Opening-Width Control: Two-position switch that in the normal position allows sliding doors to travel to full opening width and in the alternate position reduces opening to a selected partial opening width.

2.5 HARDWARE

- A. General: Provide units in sizes and types recommended by automatic entrance and hardware manufacturers for entrances and uses indicated. Finish exposed parts to match door finish.
- B. Breakaway Device for Power-Operated Doors: Provide breakaway device that allows door to swing out in direction of egress to full 90 degrees from any operating position. Maximum force to open door shall be 50 lbf according to BHMA A156.10. Interrupt powered operation of door operator while in breakaway mode.
1. Include at least one adjustable detent device mounted in the top of each breakaway panel to control panel breakaway force.
 2. Limit Arms: Limit arms shall be provided to control swing of sliding panels on break-out; swing shall not exceed 90 degrees.
- C. Deadlocks: Manufacturer's standard deadbolt operated by exterior cylinder and interior thumb turn, with minimum 1-inch-long throw bolt; BHMA A156.5, Grade 1.
1. Cylinders: As specified in Division 08 Section "Door Hardware."
 2. Deadbolts: Laminated-steel hook, mortise type, BHMA A156.5, Grade 1.
 3. Two-Point Locking for Sliding Doors: Mechanism in stile of active door leaf that automatically extends second lockbolt into overhead carrier assembly.
- D. Thresholds: BHMA A156.21, extruded-aluminum raised thresholds; with beveled edges with a slope of not more than 1:2 and a maximum height of 1/2 inch. Provide cutouts as required for door operating hardware.
- E. Weather Stripping: Manufacturer's standard replaceable components.
1. Sliding Type: AAMA 701, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.
 2. Compression Type: Made of ASTM D 2000, molded neoprene, or ASTM D 2287, molded PVC.
 3. Weather Sweeps: Manufacturer's standard nylon brush sweep mounted to underside of door bottom.

2.6 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - 1. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
 - 2. Sheet and Plate: ASTM B 209.
- B. Steel Reinforcement: With manufacturer's standard corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
 - 1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
 - 2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
 - 3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.
- C. Glazing: As specified in Division 08 Sections "Glazing."
- D. Sealants and Joint Fillers: As specified in Division 07 Section "Joint Sealants."
- E. Nonmetallic, Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout; complying with ASTM C 1107; of consistency suitable for application.
- F. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements, except containing no asbestos; formulated for 30-mil thickness per coat.
- G. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

2.7 FABRICATION

- A. General: Factory fabricate automatic entrance components to designs, sizes, and thicknesses indicated and to comply with indicated standards.
 - 1. Form aluminum shapes before finishing.
 - 2. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
 - 3. Use concealed fasteners to greatest extent possible. Where exposed fasteners are required, use countersunk Phillips flat-head machine screws, finished to match framing.
 - a. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
 - b. Reinforce members as required to receive fastener threads.
 - 4. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
- B. Framing: Provide automatic entrances as prefabricated assemblies. Complete fabrication, assembly, finishing, hardware application, and other work before shipment to Project site.

1. Fabricate tubular and channel frame assemblies with manufacturer's standard welded or mechanical joints. Provide subframes and reinforcement as required for a complete system to support required loads.
 2. Perform fabrication operations in manner that prevents damage to exposed finish surfaces.
 3. Form profiles that are sharp, straight, and free of defects or deformations.
 4. Provide components with concealed fasteners and anchor and connection devices.
 5. Fabricate components with accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion.
 6. Fabricate exterior components to drain water passing joints and condensation and moisture occurring or migrating within system to the exterior.
 7. Provide anchorage and alignment brackets for concealed support of assembly from building structure.
 8. Allow for thermal expansion of exterior units.
- C. Doors: Factory fabricated and assembled in profiles indicated. Reinforce as required to support imposed loads and for installing hardware.
- D. Door Operators: Factory fabricated and installed in headers, including adjusting and testing.
- E. Glazing: Fabricate framing with minimum glazing edge clearances for thickness and type of glazing indicated, according to GANA's "Glazing Manual."
- F. Hardware: Factory install hardware to greatest extent possible; remove only as required for final finishing operation and for delivery to and installation at Project site. Cut, drill, and tap for factory-installed hardware before applying finishes.
1. Provide sliding-type weather stripping, mortised into door, at perimeter of doors.
 2. Provide compression-type weather stripping at fixed stops of exterior doors. At locations without fixed stops, provide sliding-type weather stripping retained in adjustable strip mortised into door edge.
 3. Provide weather sweeps mounted to underside of door bottoms of exterior doors.
- G. Activation and Safety Devices:
1. General: Factory install devices in doors and headers as required by BHMA A156.10 for type of door and direction of travel.
 2. Install photoelectric beams in vertical jambs of sidelites, with dimension above finished floor as follows:
 - a. Top Beam: 48 inches.
 - b. Bottom Beam: 24 inches.
- 2.8 GENERAL FINISH REQUIREMENTS
- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
 - C. Apply organic and anodic finishes to formed metal after fabrication unless otherwise indicated.

- D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.9 ALUMINUM FINISHES

- A. Provide the following finish for Exterior Doors:
 - 1. High-Performance Organic Finish: 2-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - a. Color: Custom, to match Architect's sample.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances, header support, and other conditions affecting performance of automatic entrances.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints. Seal joints watertight.
 - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
 - 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- B. Entrances: Install automatic entrances plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.
 - 1. Install surface-mounted hardware using concealed fasteners to greatest extent possible.
 - 2. Set headers, carrier assemblies, tracks, operating brackets, and guides level and true to location with anchorage for permanent support.
 - 3. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within system to exterior.
 - 4. Level recesses for recessed thresholds using nonshrink grout.
 - 5. Provide thresholds at exterior doors.
- C. Door Operators: Connect door operators to electrical power distribution system.
- D. Activation and Safety Devices: Install and adjust devices to provide detection field and functions indicated.

- E. Glazing: Install glazing as specified in Division 08 Section "Glazing."
- F. Sealants: Comply with requirements specified in Division 07 Section "Joint Sealants" to provide weathertight installation.
 - 1. Set thresholds, bottom-guide track system, framing members and flashings in full sealant bed.
 - 2. Seal perimeter of framing members with sealant.
- G. Signage: Apply signage on both sides of each door as required by referenced door standards.
- H. Wiring within Automatic Entrance Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's written limitations on bending radii. Provide and use lacing bars and distribution spools.

3.3 FIELD QUALITY CONTROL

- A. Inspection: Engage Installer's certified inspector to test and inspect automatic entrances and prepare test and inspection reports.
 - 1. Certified inspector shall test and inspect each automatic entrance to determine compliance of installed systems with applicable BHMA standards.
 - 2. Inspection Report: Certified inspector shall submit report in writing to Architect and Contractor within 24 hours after inspection.
- B. Work will be considered defective if it does not pass tests and inspections.

3.4 ADJUSTING

- A. Adjust door operators, controls, and hardware for smooth and safe operation and for weathertight closure; comply with requirements in BHMA A156.10.
- B. Lubricate operating hardware and other moving parts as recommended by manufacturer.
- C. Readjust door operators and controls after repeated operation of completed installation equivalent to 3 days' use by normal traffic (100 to 300 cycles). Lubricate hardware, operating equipment, and other moving parts.
- D. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

3.5 CLEANING AND PROTECTION

- A. Clean glass and metal surfaces promptly after installation. Remove excess glazing and sealant compounds, dirt, and other substances. Repair damaged finish to match original finish.
 - 1. Comply with requirements in Division 08 Section "Glazing" for cleaning and maintaining glass.

3.6 DEMONSTRATION

- A. Engage a certified inspector to train Owner's maintenance personnel to adjust, operate, and maintain automatic entrances.

END OF SECTION 08 42 29

08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same Sections as the doors and door frames on which they are installed. Furnish and deliver all door hardware necessary for all doors, also hardware as specified herein and as enumerated in hardware sets and as indicated and required by actual conditions at the building. The hardware shall include the furnishing of all necessary screws, bolts, expansion shields, drop plates, and all other devices necessary for the proper application of the hardware.
- B. **ALL DOOR HARDWARE MUST BE FURNISHED BY SECTION 087100 DOOR HARDWARE SUPPLIER.**
- "CONTRACTS, Including Door Hardware, ISSUED TO ALUMINUM DOOR SUPPLIER" must stipulate aluminum door hardware must be purchased from SECTION 087100 HARDWARE SUPPLIER**
- C. **Hardware Supplier:** Must employ an experienced **Architectural Hardware Consultant (AHC)** who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
- D. Related Sections: The following Sections contain requirements that relate to this Section:
1. Division 08 06 10 SCHEDULE FOR OPENINGS
 2. Division 08 11 13 STEEL DOORS AND FRAMES
 3. Division 08 14 00 FLUSH WOOD DOORS
 4. Division 08 36 13 OVERHEAD SECTIONAL DOORS
 5. Division 08 41 13 ALUMINUM ENTRANCES AND STOREFRONTS
 6. Division 08 42 29 AUTOMATIC ENTRANCES
 7. Division 08 71 13 AUTOMATIC DOOR OPERATORS
 8. Division 26 00 00 ELECTRICAL

1.3 REFERENCES

- A. Standards:
1. ANSI/BHMA, A156.1 (2013) - Butts & Hinges
 2. ANSI/BHMA, A156.2 (2011) - Bored and Preassembled Locks and Latches
 3. ANSI/BHMA, A156.3 (2008) - Exit Devices
 4. ANSI/BHMA, A156.4 (2008) - Door Controls - Closers

5. ANSI/BHMA, A156.5 (2010) - Auxiliary Locks and Associated Products
 6. ANSI/BHMA, A156.6 (2010) - Architectural Door Trim
 7. ANSI/BHMA, A156.7 (2009) - Template Hinge Dimensions
 8. ANSI/BHMA, A156.8 (2010) - Door Controls - Overhead Stops and Holders
 9. ANSI/BHMA, A156.13 (2012) - Mortise Locks & Latches, Series 1000
 10. ANSI/BHMA, A156.15 (2011) - Release Devices - Closer Holder,
Electromagnetic and Electromechanical
 11. ANSI/BHMA, A156.16 (2008) - Auxiliary Hardware
 12. ANSI/BHMA, A156.18 (2012) - Materials and Finishes
 13. ANSI/BHMA, A156.19 (2007) - Power Assist and Low Energy Power
Operated Doors
 14. ANSI/BHMA, A156.21 (2009) - American National Standard for Thresholds
 15. ANSI/BHMA, A156.22 (2012) - Door Gaskets and Edge Seal Systems
 16. ANSI/BHMA, A156.25 (2007) - Electrified Locking Devices
 17. ANSI/BHMA, A156.26 (2012) - Continuous Hinges
 18. ANSI/BHMA, A156.28 (2007) - Recommended Practices for Keying Systems
 19. ANSI/BHMA, A156.29 (2012) - American National Standard for Exit Locks,
Exit Alarms, Alarms for Exit Devices
 20. ANSI/BHMA, A156.30 (2003) - American National Standard for High Security
Cylinders
 21. ANSI/BHMA, A156.31 (2007) - American National Standard for Electric
Strikes and Frame Mounted Actuators
 22. ANSI/BHMA, A156.32 (2008) - American National Standard for Integrated
Door Opening Assemblies
 23. ANSI/BHMA, A156.36 (2010) - American National Standard for Auxiliary
Locks
 24. ANSI/BHMA, A156.115 (2006) - Hardware Preparation in Steel Doors and
Steel Frames
 25. NFPA 80 - Fire Doors and Windows
 26. UL10C - Positive Pressure Fire Tests of Door Assemblies
 27. AIA 232 2009 - General Conditions of the Contract for Construction,
Construction Manager as Advisor Edition.
- B. Codes:
1. Applicable state and local building codes.
 2. 2003 International Building Code / 2005 State Building Code
– State of Connecticut
 3. NFPA 101 - Life Safety code
 4. NFPA 105 - Smoke and Draft Control Door Assemblies
 5. ICC / ANSI A117.1 - Accessible and Usable Buildings and Facilities
 6. ADA - Americans with Disabilities Act
- C. UL Underwriters Laboratories
1. UL 10C – Fire Tests of Door Assemblies
 2. UL 305 – Panic Hardware
- D. DHI – Door and Hardware Institute
1. Sequence and Form and for the Hardware Schedule
 2. Recommended Locations for Builders Hardware

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Section 1 Specification Sections.
- B. Product data including manufacturer's technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish of door hardware.
- C. Final hardware schedule must be coordinated with doors, frames, and related work to ensure proper size, thickness, hand function, and finish of door hardware. **Conflicts between the SPECIFIED DOOR HARDWARE and the DOORS / FRAMES must be brought to the attention of the ARCHITECT prior to submitting HARDWARE SUBMITTAL to the ARCHITECT.**
- D. **HARDWARE SUPPLIER shall confirm specified LOCK FUNCTIONS with the OWNER at the KEYING MEETING.**
1. **Final Hardware Schedule Content:** Based on hardware indicated, organize schedule into **"HARDWARE SETS"** indicating complete designation of every item required for each door or opening. Include the following information:
 - Type, style, function, size, and finish of each hardware item.
 - a. Name and manufacturer of each item.
 - b. Fastenings and other pertinent information.
 - c. Location of Hardware Set, cross-referenced to indication of Drawings both on floor plans, in door, and frame schedule.
 - d. Explanation of all abbreviations, symbols, and codes contained in schedule.
 - e. Mounting locations for hardware.

Door handles, pulls, latches, locks and other operating devices shall be installed 34 inches (864 mm) minimum and 48 inches (1219 mm) maximum above the finish floor. Locks used only for security purposes and not used for normal operation are permitted at any height.

Provide "DHI" Standard Mounting Locations in the Hardware Submittal.
 - f. Door and frame sizes and materials.
 - g. Keying information.
 - h. Name and phone number for the local manufacturer's representative for each product.
 - 2. Submittal Sequence: submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review to schedule.
 - 3. Keying Schedule: After a keying meeting between representatives of the Owner, Architect, hardware supplier, and, if requested, the representative for the lock manufacturer, provide a keying schedule, listing the levels of keying, as well as an explanation of the key system's function, the key symbols used, and the door numbers controlled.
- E. Samples: If requested by Architect, submit samples of each type of exposed hardware unit in finish indicated and tagged with full description for coordination with schedule. Submit samples prior to submission of final hardware schedule.
1. Samples will be returned to the supplier. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated in the Work, within limitations of keying coordination requirements.

- F. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- G. Wiring Diagrams: Upon final approval of the hardware schedule, submit wiring and riser diagrams as required for the complete and proper installation of all electrical, electromechanical, and electromagnetic products. Submittals must represent that coordination has occurred with the security system submittals and shop drawings. Also, that shop drawings submitted and schedules developed have been specifically reviewed and coordinated for both physical equipment fitment and power requirements with the security system contractor approved shop drawings.
- H. "Hardware Schedule and Templates", Hardware schedules shall be created which reference specifically to the specified lock voltages and separately indicating whether the door is a "fail safe" or "fail secure" electrified lock arrangement.
- I. Electrified Hardware: Electrified Hardware to be used for security purposes must be UL Listed for Burglary Applications.
- J. At the completion of hardware installation, and prior to issuance of certificate of occupancy, prepare and submit the hardware inspection report to include the following:
 - 1. Current and predictable problems of substantial nature in the performance of the hardware.
 - 2. Hardware has been installed and adjusted in accordance with manufacturer's recommendations and instructions.
- K. At the completion of the project, provide Owner with two (2) copies of an Operation and Maintenance Manual. This manual shall consist of a hard cover (3) ring binder with the project name listed on the front. Included will be:
 - 1. A final copy of the approved and as built hardware schedule.
 - 2. A final copy of the approved keying schedule.
 - 3. Catalog cuts for each item used in the project.
 - 4. Parts list and numbers for each item used.
 - 5. Maintenance instructions for all items.
 - 6. Name, address and phone number of local representatives for each item used.

1.5 QUALITY ASSURANCE

- A. Substitutions: Products are to be those specified to ensure a uniform basis of acceptable materials. Requests for substitutions must be made in accordance with Section 1 requirements. If proposing a substitute to a specified item, indicate basis for substitution and savings to be made. Provide sample if requested. Certain products have been selected for their unique characteristics and particular project suitability. All Hardware is "Basis-of-Design" product specification as defined in Section 08 71 00. Model numbers (and Manufacturer's) listed in "Hardware Set Schedule" are "Basis-of-Design".
 - 1. Items specified, as "no substitution" shall be provided exactly as listed.
 - 2. Items listed with no substitute manufacturers listed have been requested by the Owner or Architect to match existing for continuity and/or future performance and maintenance standards or because there is no known equal product.
 - 3. If no other products are listed in a category, then "no substitution" is implied.

- B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, architect, and Contractor, at reasonable times during the course of the Work, for consultation.
1. Require supplier to meet with Owner to finalize keying requirements and to obtain final instructions in writing.
- C. A pre-installation meeting shall be held to instruct installers on the proper installation and adjustment of door hardware. A representative of each major hardware category, including, but not limited to, Locks, Exit Devices, & Closers, shall instruct the installers on the correct installation of their products. The manufacturers of the Door Hardware provided on this project shall certify to the Architect that the door hardware installer for this project has been trained in the proper installation procedures and is certified to install the door hardware.
- D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by UL, Intertek Testing Services, Warnock Hersey, Factory Mutual, or other testing and inspecting organization acceptable to authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.
- E. Accessible Hardware: Door Hardware; *Handles, pulls, latches, locks and other operable parts on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, pinching, or twisting of the wrist to operate. Such hardware shall 34 inches (865 mm) minimum and 48 inches (1220 mm) maximum above the floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides. EXCEPTION: Locks used only for security purposes and not used for normal operation are permitted in any location.*
- F. Accessible Hardware: Door-Opening Force; Fire Doors shall have the minimum opening force allowable by the appropriate administrative authority. The maximum force for pushing open or pulling open doors other than fire doors shall be as follows:
1. Interior hinged door: 5.0 pounds
 2. Sliding or folding door: 5.0 pounds
 3. Fire Doors: Minimum opening force allowable by authorities having jurisdiction, but not greater than 10 lbf
- These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. The maximum force required to release the latch shall not exceed 15 lbf.*
4. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
 5. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

1.6 PRODUCT HANDLING

- A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.

- B. Each item of hardware shall be individually packaged in manufacturer's original container.
- C. Receiving and storing of door hardware is responsibility of supplier. Prior to delivery of door hardware to the project, Hardware Supplier must sort and clearly mark with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.
- D. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- E. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).
- F. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.7 MAINTENANCE

- A. Maintenance Tools and Instructions: Furnish two (2) complete sets of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware. Furnish two (2) extra screws or fasteners of each type size and of the same finish used in this project.

1.8 WARRANTY

- A. Provide manufacturer's warranties as follows:
 - 1. Closers: 30 years, except electronic closers, 2 years.
 - 2. Exit Devices: 3 years, except electrified devices, 1 year.
 - 3. Hinges: Life of the building.
 - 4. Continuous Hinges: 10 years.
 - 5. All other hardware: 1 year
- B. Starting date for all warranty periods to be date of substantial completion of the Project.
- C. No liability is to be assumed where damage or faulty operation is due to improper installation, improper use, or abuse.
- D. Products judged to be defective during the warranty period shall be replaced or repaired in accordance with the manufacturer's warranty, at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Butts and Hinges:

- a. Hager Companies
 - b. Bommer
 - c. Ives, Allegion
 - d. McKinney Hinge, Div of Assa Abloy.
 - e. PBB World Class Hinges
 - f. Stanley Hardware
2. Continuous Hinges:
- a. Hager Companies
 - b. Bommer
 - c. Ives, Allegion
 - d. McKinney Hinge, Div of Assa Abloy.
 - e. PBB World Class Hinges
 - f. Pemko
 - g. Select
3. Key Control System:
- a. HPC
 - b. Lund, Inc.
 - c. Telkee Inc.
4. Cylinders and Locks:
- a. DORMA Architectural Hardware, "ML9000", "CL800" Series.
 - b. Best Access Systems, Div of Stanley Security Solutions, "45H", "9k" Series.
 - c. Corbin-Russwin Architectural Hardware, Div of Assa Abloy, "ML2000", "CL3300" Series.
 - d. Sargent, Div of Assa Abloy "8200", "10-Line x LL" Series.
 - e. Schlage Lock, Allegion, "L" Series, "ND" Series.
5. Electro-Mechanical Locks:
- a. Alarm Lock
 - b. Best Lock
 - c. Locknetics, Allegion
 - d. Security Door Controls
6. Flush Bolts (auto as required), used @t pairs of doors not requiring Panic Release Hardware
- a. Hager Companies
 - b. Glynn Johnson, Allegion.
 - c. Ives, Allegion
 - d. Rockwood Manufacturing
 - e. Trimco Triangle Brass
7. Exit/Panic Devices (provide U.L. label at rated doors):
- a. DORMA Architectural Hardware "9000" Series.
 - b. Corbin/Russwin, Div of Assa Abloy, "5000" Series.
 - c. Precision Hardware, a Div. of STANLEY Security Solutions, "2000 Series"
 - d. Sargent, Div of Assa Abloy, "80" Series.
 - e. Von Duprin, Allegion, "98/99" Series.
8. Push/Pull Units:

- a. Hager Companies
 - b. Burns Manufacturing, Inc
 - c. Ives, Allegion
 - d. Rockwood, Mfr.
9. Overhead Surface Closers:
- a. DORMA Architectural Hardware "8900" Series.
 - b. LCN, Allegion. "4000 (Heavy Duty Arms)" Series
 - c. Norton, Div of Assa Abloy. "PR7500/PR7700" Series
 - d. Sargent, Div of Assa Abloy, Inc., "351 (Heavy Duty Arms)" Series
10. Electro Magnetic Hold Opens:
- a. DORMA Architectural Hardware.
 - b. LCN, Div of Ingersoll-Rand.
 - c. Rixson, Div of Assa Abloy
 - d. Sargent, Div of Assa Abloy
11. Electric Strikes:
- a. HES, Inc.
 - b. Folger Adam Co.
 - c. Security Door Controls
 - d. Von Duprin, Allegion
12. Door Control Devices:
- a. DORMA Architectural Hardware.
 - b. Burns Manufacturing, Inc
 - c. Glynn Johnson, Allegion.
 - d. MAG Security
 - e. Rixson, Div of Assa Abloy
 - f. Sargent, Div of Assa Abloy
13. Kick and Mop Plates:
- a. Hager Companies
 - b. Burns Manufacturing, Inc.
 - c. Ives, Allegion.
 - d. Rockwood
14. Weather-stripping and Seals:
- a. Hager Companies
 - b. National Guard Products.
 - c. Pemko Manufacturing Co., Inc.
 - d. Reese Enterprises, Inc.
15. Thresholds:
- a. Hager Companies
 - b. National Guard Products.
 - c. Pemko Manufacturing Co., Inc.

d. Reese Enterprises, Inc.

16. Automatic Drop Seals:

- a. Hager Companies
- b. National Guard Products.
- c. Pemko Manufacturing Co., Inc.
- d. Reese Enterprises, Inc.

17. Smoke and Sound Stripping:

- a. Hager Companies
- b. National Guard Products.
- c. Pemko Manufacturing Co., Inc.
- d. Reese Enterprises, Inc.

18. Astragals:

- a. Hager Companies
- b. National Guard Products.
- c. Pemko Manufacturing Co., Inc.
- d. Reese Enterprises, Inc.

19. Door Stops

- a. Hager Companies
- b. Burns Manufacturing, Inc
- c. Glynn Johnson, Allegion.
- d. H.B. Ives, Allegion
- e. Rockwood Manufacturing

20. Electrified Hinges

- a. Hager Companies
- b. Bommer
- c. McKinney Hinge, Div of Assa Abloy
- d. PBB World Class Hinges
- e. Stanley Hardware

21. Electrified Power Transfers

- a. DORMA Architectural Hardware.
- b. Locknetics, Allegion
- c. Precision Hardware.
- d. Security Door Controls
- e. Securitron, Div of Assa Abloy
- f. Von-Duprin, Allegion

2.2 SCHEDULED HARDWARE

- A. Requirements for each type of door hardware are indicated on the "Door Schedule", and in the Schedule at the end of this Section. Products are identified by using hardware designation numbers of the following:

1. Manufacturer's Product Designations: The product designation and name of one manufacturer are listed for each hardware type required for the purpose of establishing minimum requirements. Manufacturer and model numbers indicated in Hardware Sets constitute a "Basis-of-Design" product specification as defined in this Section.

2.3 MATERIALS AND FABRICATION

- A. Manufacturer's Name Plate: Do not use manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.
1. Manufacturer's identification will be permitted on rim of lock cylinders only.
- B. Base Metals: Product hardware units of basic metal and forming methods indicated, using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized), quality than specified for applicable hardware units by applicable ANSI/BHMA A156 series standards for each type of hardware item and with ANSI/BHMA A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.
- C. Fasteners: Provide hardware manufactured to conform to published templates generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.
- D. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive paint.
- E. Provide concealed fasteners. Provide tamper resistant fasteners when they cannot be concealed. Fasteners shall be of the same finish as the balance of the hardware. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

2.4 HINGES, BUTTS, AND CONTINUOUS HINGES

- A. Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- B. Screws: Provide Phillips flat-head screws complying with the following requirements:
1. For metal doors and frames install machine screws into drilled and tapped holes.
 2. For wood doors and frames install wood screws.
 3. For fire-rated wood doors install #12 x ¼ inch, threaded-to-the-head steel wood screws.
 4. Finish screw heads to match surface of hinges or pivots.
- C. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
1. Out-Swing Exterior Doors: Non-removable pins.
 2. Interior Doors: Non-rising pins.
 3. All "Card Reader Doors": Non-removable pins.

- D. Number of Hinges: Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90 inches of additional height.
 - 1. Fire-Rated Doors: Not less than 3 hinges per door leaf for doors 86 inches or less in height with same rule for additional hinges.
- E. Size and weight of butts:
 - 1. See Hardware Sets for Details.
- F. Power Transfer Hinges
 - 1. Power transfer hinges may be EPT or ETW types. Armored cable may be used only where EPT or ETW electrified hinges are not practical.
 - 2. Furnish all power transfer hinges as 12 conductor units.

2.5 LOCK CYLINDERS AND KEYING

- A. Review the keying system with the Owner and provide the type required grandmaster or great-grandmaster, integrated with Owner's existing system.
- B. HARDWARE SUPPLIER SHALL CONFIRM SPECIFIED LOCK FUNCTIONS WITH OWNER AT THE KEYING MEETING.
- C. Construction Keying: Provide temporary keyed construction cores where specified. Provide construction master keys in quantity as required by project Contractor. Replace construction cores with permanent cores. Furnish permanent cores for installation by contractor unless directed in writing otherwise.
- D. Key Registration List: Provide keying transcript list to Owner's representative in the proper format for importing into key control software.

- E. Keyway to be selected by the owner from manufacturers Standard Keyways. Equip locks with manufacturer's special 6-pin tumbler cylinder with construction masterkey feature that permits voiding of construction keys without cylinder removal.
 - 1. Furnish one extra blank for each lock.
 - 2. Key Quantity: Furnish 3 change keys for each lock, 5 master keys for each master system, and 5 grandmaster keys for each grandmaster system.
 - 3. Deliver keys to Owner.
- F. Equip locks with manufacturer's 6-pin tumbler "interchangeable core" cylinder employing "RESTRICTED KEYWAY". Such cylinders have cores that are removable by the use of a special "control key". Deliver hardware to the contractor with temporary cores installed and keyed alike. Permanent cores are to be mastered keyed as directed by the owner. Deliver permanent cores and keys to the owner when notified by the owner in writing. Temporary cores and keys are to be returned to the hardware supplier by the contractor within 10 days of their replacement by permanent cores.
(Do Not Provide Extra Key Blanks if Restricted Keyway has been specified.)

1. Furnish 12 each "Temporary Change Keys" and 2 each "Temporary Core Control Keys".
2. Key Quantity: Furnish 3 change keys for each lock, 5 master keys for each master system, and 5 grandmaster keys for each grandmaster system. Furnish 6 each "Core Control Keys". Furnish 12 Temporary Change Keys and 2 Temporary Core Control Keys.
3. Furnish 12 each additional core for owner's stock.
4. Install "FINAL CORES" when instructed by Owner.
5. Deliver keys to Owner.

- G. Metals: Construct lock cylinder parts from brass or bronze, stainless steel, or nickel silver.
- H. Comply with Owner's instructions for master keying and, except as otherwise indicated, provide individual change key for each lock that is not designated to be keyed alike with a group of related locks.
- I. Key Material: Provide keys of nickel silver only.
- J. Final cores to be installed by the hardware supplier, installer must verify that all cylinders are working correctly.

2.6 KEY CONTROL SYSTEM

- A. Provide a key control system including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150 percent of the number of "Key Sets" required for the Project.
 1. Provide complete cross-index system set up by key control manufacturer, and place keys on markers and hooks in the cabinet as determined by the final key schedule.
 2. Provide hinged-panel type cabinet for wall mounting.
 3. Acceptable Manufacturers
 - a. Lund Equipment.
 - b. MMF Industries.
 - c. Telkee.

2.7 LOCKS, LATCHES, AND BOLTS

- A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set, unless otherwise indicated.
 1. Provide flat lip strikes for locks with 3 pieces, anti-friction latchbolt as recommended by manufacturer.
 2. Provide recess type top strikes for bolts locking into head frames, unless otherwise indicated.
 3. Provide dust-proof strikes for foot bolts, except where special threshold construction provides non-recessed strike for bolt.
 4. Provide roller type strikes where recommended by manufacturer of the latch and lock units.
 5. Electrified locks, wherever possible, shall be "fail secure". Specified hardware must always allow exiting in the path of exiting travel from the secured room. Where "fail safe" doors are

- required to comply with life safety exiting code, insure that the fire alarm specifications call for an appropriate relay to kill power between the lock power supply and the electrified lock so that it must go to an unlocked condition.
- B. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the 2010 ADA Standards, ICC/ANSI A117.1.
1. Comply with the following maximum opening-force requirements:
 - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
 - b. Folding Doors: 5 lbf applied parallel to door at latch.
 - c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction, but not greater than 10 lbf.
 2. Comply with the following maximum closing speed requirements:
 - a. Adjust closers so that from an open position of 90 degrees, the time required to move the door to an open position of 12 degrees is to be 5 seconds minimum.
 - b. Adjust closers so that from an open position of 70 degrees, the time required to move the door to an open position of 3 inches from the latch is to be 3 seconds minimum.
- C. Mortise Locks
1. Mortise locks shall be certified as ANSI A156.13, Series 1000, Operational and Security Grade 1, and meets A117.1 Accessibility Code, and shall be manufactured from heavy gauge steel, containing components of steel with zinc dichromate plating for corrosion resistance. Lock case shall be multi-function and field reversible for handling.
 2. Locks are to have a standard 2-3/4" backset with a full 3/4" throw 2-piece stainless steel mechanical anti-friction latch-bolt.
 3. Lever trim shall be solid brass, bronze, or stainless steel, cast or forged in the design specified, with wrought roses and external Security requirement. Levers shall be thru-bolted to assure proper alignment, and shall have a 2-piece spindle. Lever trim on the secure side of doors serving rooms considered by the authority having jurisdiction to be hazardous shall have a tactile warning.
- D. Cylindrical Locks
1. Cylindrical locks shall be certified as ANSI A156.2, Series 4000, Grade 1, and meet A117.1 Accessibility Code, with solid cast levers without plastic inserts, and shall have wrought roses on both sides. Lever trim on the secure side of doors serving rooms considered by the authority having jurisdiction to be hazardous shall have a tactile warning.
 2. Locks are to have a standard 2-3/4" backset with a 1/2" latch throw. At U.L. Rated pairs of doors, provide a 3/4" latch throw, no exception.
 3. Locksets shall have separate anti-rotation through-bolts, and shall have no exposed screws. Levers shall operate independently, and shall have 2 external return spring cassettes mounted under roses to prevent lever sag.
 4. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
 5. Locksets shall have "CLUTCH" / FREE WHEELING" type trim.
- E. Exit Devices
1. Exit devices shall be touchpad type, fabricated of brass, bronze, stainless steel, or aluminum, plated to the standard architectural finishes to match the balance of the door hardware.

2. Touchpad shall extend a minimum of one half of the door width. End-cap shall be flush mounted, and will have two-point attachment to door. Nylon bearings and stainless steel springs shall be used for long life and durability; compression or torsion springs will be used in devices, latches, and outside trims or controls.
3. Where panic and fire exit hardware is installed, it shall comply with the following: See 2003 IBC / 2005 SBC, paragraph 1008.1.9: (2) *A maximum unlatching force of 15 pounds.*
4. All devices to incorporate a security dead latching feature.
5. Mechanism case shall sit flush on the face of all flush doors, or spacers shall be furnished to fill gaps behind devices. Where glass trims or moldings projects off the face of the door, provide glass bead kits.
6. All non-fire-rated exit devices shall have cylinder dogging, unless noted otherwise in Hardware Sets.
7. Removable mullions shall be a steel tube, except at aluminum entrances, mullions to be aluminum. Where scheduled, mullion shall be of a type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
8. Where lever handles are specified as outside trim for exit devices, provide heavy-duty lever trims with forged or cast escutcheon plates. Where scheduled, provide vandal-resistant levers that can easily be re-setting. Lever style will match the lever style of the locksets. Lever handles shall meet A117.1 Accessibility Code.
9. Exit devices shall be UL listed panic exit hardware. All exit devices for fire rated openings shall be UL labeled fire exit hardware.
10. **Furnish and Install "THRU BOLTS" on Aluminum, Hollow Metal, and Wood Doors.**
11. Provide electrical options as scheduled.
 - a. "Request to Exit / Touch Bar Monitor", Electrified Panic Hardware shall be provided with one internal SPDT switch which monitors the touch bar, as called for on the security system drawings.
 - b. "Latch bolt Monitoring", Electrified Panic Hardware shall be provided with one internal SPDT switch which monitors the latch bolt, as called for on the security system drawings.
 - c. Openings requiring delayed exit-locking devices shall be von-Duprin "Chexit" or similar products by Corbin-Russwin Architectural Hardware, Sargent, and Dorma.
 - d. **Lock Power Supplies: It is imperative that the security contractor and hardware supplier coordinate the lock voltage requirements, fail safe/fail secure requirements, lock in-rush current requirements, whether locks are continuous duty or not and any other related issues. Power supplies to be furnished by Door Hardware Suppliers and installed by the Security or Electrical Contractor. Locate power supplies and battery backup in the access control mechanical space when wire run lengths permit. Where wire runs exceed manufacturer's written recommendations, coordinate the installation location with Construction Manager / General Contractor and Architect..**
 - e. **Local Audible Alarms shall be furnished and installed by the Security Contractor.**
 - f. Power transfer hinges may be "EPT" or "ETW" types. Armored cable may be used only where "EPT" or "ETW" electrified hinges are not practical.
 - g. Furnish all power transfer hinges as 10 conductor units.

F. Where notation for knurling appears on door schedule, provide knurled outside lever.

2.8 CLOSERS AND DOOR CONTROL DEVICES.

- A. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit depending on size of door, exposure to weather, and anticipated frequency of use.
 1. Where parallel arms are indicated for closers, provide closer with Heavy Duty Arm.

2. Provide parallel arms for all overhead closers, except as otherwise indicated.
 3. Closers must operate at 180 degree opening where indicated on plans and door schedule.
 4. Provide all necessary Drop Plate Brackets, Shims, and Angle Brackets, where required to complete installation of closers on doors and frames.
 5. **Furnish and Install "THRU BOLTS" on Hollow Metal, and Wood Doors.**
- B. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A117.1 provisions for door opening force and closing speed.
- C. Combination Door Closers and Holders: Where indicated, provide units designed to hold door in open position under normal usage and to release and close door automatically under normal usage and to release and close door automatically under fire conditions. Incorporate and integral electromagnetic holder mechanism designed for use with UL listed fire detectors, provided with normally closed switching contacts.
- D. Coordinators: Provide Door Coordinators where required, including Parallel Arm Brackets. Verify bracket configuration with frame profile for each opening requiring door coordinator.
- E. Magnetic Holders: Provide wall- or floor-mounted electromagnetic door release with a minimum of 25 pounds of holding force. Projection of holder and armature must be coordinated with other hardware and wall conditions to ensure that door sits parallel to wall when fully open. Where magnetic holders are used on fire-rated doors, they must be wired into the fire control panel for fail-safe operation.

2.9 DOOR STOPS AND HOLDERS

- A. It shall be the responsibility of the hardware supplier to provide door stops for all doors in accordance with the following requirements. Provide Door Stops as indicated in Hardware Sets.

2.10 DOOR TRIM UNITS

- A. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units consisting of either machine screws or self-tapping screws.
- B. Fabricate protection plates not more than 2 inches less than door width on push side of door and by height indicated.
1. Metal Plates: Stainless steel, 0.050 inch (U.S. 18 gage).
 2. Provide UL Rated "KICK / ARMOR" Plates where detailed on UL Rated Openings.

2.11 THRESHOLDS, WEATHER-STRIPPING, SOUND STRIPPING AND SEALS

- A. Furnish as scheduled and per architectural details. Match finish of other items as closely as possible. Provide only those units where resilient or flexible seal strip is easily replaceable and readily available.

2.12 MISCELLANEOUS HARDWARE

- A. Furnish four (4) extra screws or fasteners of each type, used for the hinges, door closers, holders and protective plates of the same finish used in this project.
- B. Furnish two (2) additional adjusting wrenches for the door closers.

2.13 HARDWARE FINISHES

- A. Match items to the manufacturer's standard color and texture finish for the latch and lock sets (or push-pull units if not latch or lock sets).
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes", including coordination with the traditional U.S. finishes show by certain manufacturers for their products.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installation of any hardware, examine all doors, frames, walls and related items for conditions that would prevent proper installation of door hardware. Correct all defects prior to proceeding with installation.

3.2 INSTALLATION

- A. All hardware to be installed by qualified tradesmen, skilled in the application of commercial grade hardware. For technical assistance if necessary, installers may contact the manufacturer's rep for the item in question.
- B. Furnish and Install "THRU BOLTS" on Hollow Metal and Wood Doors.
- C. Electronic hardware shall be furnished and installed by qualified tradesmen, but shall be wired by the security system contractor. Door Hardware installer shall be present to complete final adjustments to door hardware, when security contractor completes electrical terminations.
- D. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
- E. Install each hardware item in compliance with the manufacturer's instructions and recommendations, using only the fasteners provided by the manufacturer.
- F. Do not install surface mounted items until finishes have been completed on the substrate. Protect all installed hardware during painting.
- G. Set units' level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

- H. All operating parts shall move freely and smoothly without binding, sticking, or excessive clearance.

3.3 ADJUSTING, CLEANING, AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door, to insure proper operation or function of every unit. Replace units, which cannot be adjusted to operate freely and smoothly.
- B. Where door hardware is installed more than one-month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy to perform a final check and adjustment of all hardware items in such space or area. Clean operating doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- C. Clean adjacent surfaces soiled by hardware installation.
- D. At the completion of "BALANCING" of all "AIR HANDLING SYSTEMS", prior to owner taking occupancy, "Hardware Installer" will re-adjust all closer closing and latching cycles.
- E. **Approximately six months after the Date of Substantial Completion, the installer shall perform the following:**
 - 1. **Examine and readjust each item of door hardware as necessary to ensure function of doors, door hardware, and electrified hardware.**
 - 2. **Consult with and instruct owners' personnel on recommend maintenance procedures.**
 - 3. **Replace door hardware items that have deteriorated or failed due to faulty design, materials, or installation of door hardware units.**

3.4 FIELD QUALITY CONTROL

- A. Prior to Substantial Completion, the installer, accompanied by representatives of the manufacturers of latchsets and locksets, door closers, and exit devices, and of other major hardware suppliers, shall perform the following work.
- B. Examine (by representatives of the manufacturers) and re-adjust (by hardware installer) each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.
- C. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures.
- D. Replace hardware items that have deteriorated or failed due to faulty design or materials (work to be performed by representatives of the manufacturers including removal and reinstallation).
- E. Replace hardware items that have deteriorated or failed due to incorrect installation (work to be performed by hardware installer including removal and reinstallation) of hardware units.
- F. Prepare a written report of current and predictable problems of substantial nature in the performance of the hardware.

3.5 PROTECTION

- A. Provide for the proper protection of all items of hardware until the Owner accepts the project as complete. Damaged or disfigured hardware shall be replaced or repaired by the responsible party.

3.6 HARDWARE SCHEDULE

- A. General: Provide hardware for each door to comply with requirements of this Section, Door and Hardware Schedule Section 08 06 10", and the following Hardware Sets. The door hardware sets listed herein shall not be considered as a complete hardware schedule and shall only be considered as an indication of the hardware requirements desired by the Owner. It shall be this Contractor's responsibility to visit the site, examine the drawings and door schedule and provide all necessary hardware as shown. Such items shall be of same quality, quantity and type as that scheduled for similar doors or parts of the building used for similar purposes.
- B. As part of the submittal process, the Contractor and/or Door, Frame, and Hardware Suppliers must inspect all existing doors and frames to confirm that the new hardware will work with existing conditions, and if necessary, Door, Frame, and Hardware Suppliers shall advise the contractor of modifications that must be made to existing doors and frames to accommodate new hardware. The Contractor is responsible for making all such modifications.
- C. **Conflicts between the SPECIFIED DOOR HARDWARE and the DOORS / FRAMES must be brought to the attention of the ARCHITECT prior to submitting HARDWARE SUBMITTAL to the ARCHITECT.**

Hardware Set 001

| | | | |
|---|-------------------------|---|---------|
| 1 | Auto Door Opener/Closer | Auto Door Opener/Closer - LHR Leaf | Section |
| 1 | Auto Door Opener/Closer | Auto Door Opener/Closer - RHR Leaf | Section |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Heading Notes

Remove Existing Door Closers, Fill all holes where closers have been removed.

Hardware Set 021

| | | | |
|---|----------------------------|--|----------------|
| 1 | Hinge, Continuous Geared | 780 - 224 HD - 83" - CLEAR - Concealed Leaf x 1/2 WD Screws - RETW-QC (12-Wire) - LHR Leaf | Roton |
| 1 | Exit Device, VR_Surf. | ED5470 - EO - 630 - LHR - M55 (LBR) | Corbin-Russwin |
| 1 | Cylinder, Mortise - Switch | Cylinder - Mortise - 626 (Key Switch) | Section 087100 |
| 1 | Auto Door Opener/Closer | Auto Door Opener/Closer - LHR Leaf | Section |
| 1 | Armor Plate | K1050 - 34" x 34" - 18 ga. - US32D | Rockwood |
| 1 | Stop, Wall | 409 - US26D | Rockwood |
| 1 | Electro-Magnetic Lock | Electro-Magnetic Lock - Verify In Filed Type Required. | Securitron |
| 1 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |
| 1 | Power Supply | BPS-24-2 (24VDC @ 2 Amps), (Provide Necessary Relays) | Securitron |
| 1 | Key Switch, Momentary | MK - 1 SPDT Momentary | Corbin-Russwin |
| 1 | Diagrams | Diagrams - Elevation and Riser | By MFR |
| 1 | Diagrams | Diagrams - Point To Point | By MFR |

Hardware Set 022

| | | | |
|---|--------------------------|--|----------------|
| 1 | Hinge, Continuous Geared | 780 - 224 HD - 83" - CLEAR - Concealed Leaf x 1/2 WD Screws - RETW-QC (12-Wire) - RHR Leaf | Roton |
| 1 | Exit Device, VR_Surf. | ED5470 - EO - 630 - LHR - M55 (LBR) | Corbin-Russwin |
| 1 | Auto Door Opener/Closer | Auto Door Opener/Closer - LHR Leaf | Section |
| 1 | Armor Plate | K1050 - 34" x 34" - 18 ga. - US32D | Rockwood |
| 1 | Stop, Wall | 409 - US26D | Rockwood |
| 1 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |
| 1 | Power Supply, Shared | Power Supply (Shared) - See Opening "143.1W" | - |
| 1 | Diagrams | Diagrams - Elevation and Riser | By MFR |
| 1 | Diagrams | Diagrams - Point To Point | By MFR |

Hardware Set 102

| | | | |
|---|-------------------------------|---|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D - NRP | Hager |
| 1 | Exit Device, Rim_Key | ED5200 - N955 - 630 - LHR - M52 (CD) | Corbin-Russwin |
| 1 | Cylinder, Mortise - Dogging | Cylinder - Mortise - 626 (Dogging) | Section 087100 |
| 1 | Cylinder, Rim | Cylinder - Rim - 626 | Section 087100 |
| 1 | Closer, Overhead Parallel Arm | CLP-7500 - 689 - SN (Sex Bolt) (Set Stop Arm at 90 Degrees) | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 1 | Weatherstrip | 316AS - 36" x 84" | Pemko |
| 3 | Door Bottom Sweep | 315CN x 36" | Pemko |
| 1 | Threshold | 195A x ___A (Fluted Plate) x 196A (Supp) x 195A x (Frm Depth + 1/2") - 1 Welded Unit x 36" W x 1/2" H | Pemko |

Hardware Set 103

| | | | |
|---|-------------------------------|---|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D - NRP | Hager |
| 1 | Exit Device, Rim_Key | ED5200 - N955 - 630 - RHR - M52 (CD) | Corbin-Russwin |
| 1 | Cylinder, Mortise - Dogging | Cylinder - Mortise - 626 (Dogging) | Section 087100 |
| 1 | Cylinder, Rim | Cylinder - Rim - 626 | Section 087100 |
| 1 | Closer, Overhead Parallel Arm | CLP-7500 - 689 - SN (Sex Bolt) (Set Stop Arm at 90 Degrees) | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 1 | Weatherstrip | 316AS - 36" x 84" | Pemko |
| 3 | Door Bottom Sweep | 315CN x 36" | Pemko |
| 1 | Threshold | 195A x ___A (Fluted Plate) x 196A (Supp) x 195A x (Frm Depth + 1/2") - 1 Welded Unit x 36" W x 1/2" H | Pemko |

Hardware Set 104

| | | | |
|---|--------------------------|--|----------------|
| 2 | Hinge, Continuous Geared | 780 - 224 HD - 83" - CLEAR - Concealed Leaf | Roton |
| 2 | Power Transfer | EPTL | Corbin-Russwin |
| 1 | Exit Device, VR_Surf. | ED5470 - EO - 630 - LHR - M55 (LBR) - MELR | Corbin-Russwin |
| 1 | Exit Device, VR_Surf. | ED5470 - EO - 630 - RHR - M55 (LBR) - MELR | Corbin-Russwin |
| 2 | Auto Door Opener/Closer | Auto Door Opener/Closer & Push Plates | Section 087113 |
| 2 | Armor Plate | K1050 - 34" x 34" - 18 ga. - US32D | Rockwood |
| 2 | Stop, Overhead - Conc. | 1ADJ-336 - Stop Only - (33-1/16" - 38" Door) - 689 | Rixson |
| 1 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |
| 1 | Power Supply | BPS-24-2 (24VDC @ 2 Amps), (Provide Necessary Relays) | Securitron |
| 1 | Diagrams | Diagrams - Elevation and Riser | By MFR |
| 1 | Diagrams | Diagrams - Point To Point | By MFR |

Hardware Set 111

| | | | |
|---|-------------------------------|--|----------------|
| 2 | Hinge, Continuous Geared | 780 - 224 HD - 83" - CLEAR - Concealed Leaf | Roton |
| 1 | Exit Device, VR_Surf._Key | ED5470 - N955 - 630 - LHR - M55 (LBR) - M52 (CD) | Corbin-Russwin |
| 1 | Exit Device, VR_Surf._Key | ED5470 - N955 - 630 - RHR - M55 (LBR) - M52 (CD) | Corbin-Russwin |
| 2 | Cylinder, Mortise - Dogging | Cylinder - Mortise - 626 (Dogging) | Section 087100 |
| 2 | Cylinder, Rim | Cylinder - Rim - 626 | Section 087100 |
| 2 | Closer, Overhead Parallel Arm | CLP-7500 - 689 - SN (Sex Bolt) (Set Stop Arm at 90 Degrees) | Norton |
| 2 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 2 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Heading Notes

NOTE:

1. Remove Existing Door and all Door Hardware.
2. See Door Schedule Note "EXFR2"

Hardware Set 112

| | | | |
|---|---------------------------|---|----------------|
| 2 | Hinge, Continuous Geared | 780 - 224 HD - 83" - CLEAR - Concealed Leaf x 1/2 WD Screws - RETW-QC (12-Wire) | Roton |
| 2 | Mortar Box | 430 | Hager |
| 1 | Exit Device, VR_Surf._Key | ED5470 - N955 - 630 - LHR - M55 (LBR) - M91 (TBM) - M92 (REX) - M94 (MLR) | Corbin-Russwin |
| 1 | Exit Device, VR_Surf._Key | ED5470 - N955 - 630 - RHR - M55 (LBR) - M91 (TBM) - M92 (REX) - M94 (MLR) | Corbin-Russwin |
| 2 | Cylinder, Rim | Cylinder - Rim - 626 | Section 087100 |
| 2 | Auto Door Opener/Closer | Stanley Magic Force & Push Plates | Section 087113 |
| 2 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 2 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |
| 1 | Power Supply | BPS-24-2 (24VDC @ 2 Amps), (Provide Necessary Relays) | Securitron |
| 1 | Diagrams | Diagrams - Elevation and Riser | By MFR |
| 1 | Diagrams | Diagrams - Point To Point | By MFR |

Hardware Set 201

| | | | |
|---|--------------------|---|----------------|
| 1 | Lockset, Classroom | CL3355 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 202

| | | | |
|---|-------------------------------|---|----------------|
| 1 | Lockset, Classroom | CL3355 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Parallel Arm | PR7500 - 689 - SN (Sex Bolt) - 180 Degree Swing | Norton |
| 1 | Kick Plate | K1050 - 16" x VIF" - 18 ga. - US32D | Rockwood |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 203

| | | | |
|---|------------------------------|---|----------------|
| 1 | Lockset, Classroom | CL3355 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Regular Arm | 7500 - 689 - SN (Sex Bolt) | Norton |
| 1 | Kick Plate | K1050 - 16" x VIF" - 18 ga. - US32D | Rockwood |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 204

| | | | |
|---|-------------------------------|--|----------------|
| 1 | Lockset, Classroom | CL3355 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Parallel Arm | CLP-7500 - 689 - SN (Sex Bolt) (Set Stop Arm at 90 Degrees) | Norton |
| 1 | Kick Plate | K1050 - 16" x VIF" - 18 ga. - US32D | Rockwood |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 211

| | | | |
|---|------------------------------|---|----------------|
| 1 | Lockset, Classroom | CL3355 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Regular Arm | 7500 - 689 - SN (Sex Bolt) | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 212

| | | | |
|---|------------------------------|------------------------------------|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D | Hager |
| 1 | Lockset, Classroom | CL3355 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Regular Arm | 7500 - 689 - SN (Sex Bolt) | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 213

| | | | |
|---|-------------------------------|---|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D - NRP | Hager |
| 1 | Lockset, Classroom | CL3355 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Parallel Arm | PR7500 - 689 - SN (Sex Bolt) - 180 Degree Swing | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 214

| | | | |
|---|-------------------------------|--|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D - NRP | Hager |
| 1 | Lockset, Classroom | CL3355 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Parallel Arm | CLP-7500 - 689 - SN (Sex Bolt) (Set Stop Arm at 110 Degrees) | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 301

| | | | |
|---|--------------------------|---|----------------|
| 1 | Lockset, Entrance/Office | CL3351 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 321

| | | | |
|---|--------------------------|---|----------------|
| 1 | Lockset, Entrance/Office | CL3351 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 322

| | | | |
|---|--------------------------|----------------------------------|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D - NRP | Hager |
| 1 | Lockset, Entrance/Office | CL3351 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Stop, Wall | 409 - US26D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 323

| | | | |
|---|------------------------------|---|----------------|
| 1 | Lockset, Entrance/Office | CL3351 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Regular Arm | 7500 - 689 - SN (Sex Bolt) | Norton |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 401

| | | | |
|---|---------------------------|---|----------------|
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 402

| | | | |
|---|---------------------------|----------------------------|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D | Hager |
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Stop, Wall | 409 - US26D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 403

| | | | |
|---|---------------------------|---|----------------|
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 404

| | | | |
|---|---------------------------|---|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D - NRP | Hager |
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 405

| | | | |
|---|---------------------------|---|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D - NRP | Hager |
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 406

| | | | |
|---|---------------------------|---|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D - NRP | Hager |
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 407

| | | | |
|---|---------------------------|--|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D - NRP | Hager |
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Stop, Overhead - Surf. | 9ADJ-336 - Stop Only - (33-1/16" - 38" Door) - 689 | Rixson |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 408

| | | | |
|---|------------------------------|------------------------------------|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D | Hager |
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Regular Arm | 7500 - 689 - SN (Sex Bolt) | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 409

| | | | |
|---|------------------------------|------------------------------------|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D | Hager |
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Regular Arm | 7500 - 689 - SN (Sex Bolt) | Norton |
| 1 | Kick Plate | K1050 - 16" x 30" - 18 ga. - US32D | Rockwood |

Hardware Set 411

| | | | |
|---|-------------------------------|--|----------------|
| 1 | Hinge, Continuous Geared | 780 - 224 HD - 83" - CLEAR - Concealed Leaf x 1/2 WD Screws | Roton |
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Parallel Arm | CLP-7500 - 689 - SN (Sex Bolt) (Set Stop Arm at 90 Degrees) (Install "PUSH" Side) | Norton |
| 1 | Kick Plate | K1050 - 16" x 40" - 18 ga. - US32D | Rockwood |

Hardware Set 412

| | | | |
|---|------------------------------|------------------------------------|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D | Hager |
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Regular Arm | 7500 - 689 - SN (Sex Bolt) | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 413

| | | | |
|---|-------------------------------|--|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D - NRP | Hager |
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Parallel Arm | CLP-7500 - 689 - SN (Sex Bolt) (Set Stop Arm at 90 Degrees) | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 501

| | | | |
|---|-------------------|---|----------------|
| 1 | Latchset, Passage | CL3310 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 502

| | | | |
|---|-------------------|---|----------------|
| 1 | Latchset, Passage | CL3310 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 503

| | | | |
|---|-------------------|---|----------------|
| 1 | Latchset, Passage | CL3310 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 504

| | | | |
|---|-------------------|---|----------------|
| 1 | Latchset, Passage | CL3310 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 511

| | | | |
|---|-------------------------------|---|----------------|
| 1 | Latchset, Passage | CL3310 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Coordinator, Door | 2654 - BLK (VIF") | Rockwood |
| 2 | Closer, Overhead Parallel Arm | PR7500 - 689 - SN (Sex Bolt) | Norton |
| 2 | Stop, Wall | 409 - US26D | Rockwood |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 601

| | | | |
|---|-------------------------------|--|----------------|
| 1 | Lockset, Privacy | CL3320 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Parallel Arm | CLP-7500 - 689 - SN (Sex Bolt) (Set Stop Arm at 110 Degrees) | Norton |
| 1 | Kick Plate | K1050 - 16" x VIF" - 18 ga. - US32D | Rockwood |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 611

| | | | |
|---|-------------------------------|---|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D | Hager |
| 1 | Lockset, Privacy | CL3320 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Parallel Arm | CLP-7500 - 689 - SN (Sex Bolt) (Set Stop Arm at 90 Degrees) | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 612

| | | | |
|---|-------------------------------|------------------------------------|----------------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D | Hager |
| 1 | Lockset, Privacy | CL3320 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Closer, Overhead Parallel Arm | PR7500 - 689 - SN (Sex Bolt) | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 1 | Stop, Wall | 409 - US26D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 701

| | | | |
|---|-------------------|--|----------|
| 1 | Lockset, Existing | Remove Existing Mortise Lock | - |
| 2 | Push Plate | 70C - 4" x 16" - US32D | Rockwood |
| 2 | Pull Plate | BF-107 - 70C - 4" x 16" - US32D | Rockwood |
| 1 | Filler Plate | Filler Plate Sets [Latch / Strike / Hinge] - verify in field type, size and quantity required to finish opening. | Don-Jo |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Heading Notes

NOTE:

1. Remove Latch for Lockset, furnish and install filler plates at Latch and Strike.
2. F & I New Push / Pull Hardware

Hardware Set 711

| | | | |
|---|-------------------------------|---|----------|
| 2 | Hinge, Continuous Geared | 780 - 224 HD - 83" - CLEAR - Concealed Leaf | Roton |
| 2 | Push Plate | 70C - 4" x 16" - US32D | Rockwood |
| 2 | Pull Plate | BF-107 - 70C - 4" x 16" - US32D | Rockwood |
| 2 | Closer, Overhead Parallel Arm | CLP-7500 - T - 689 - SN (Sex Bolt) | Norton |
| 1 | Armor Plate | K1050 - 34" x 27" - 18 ga. - US32D | Rockwood |
| 1 | Armor Plate | K1050 - 34" x 35" - 18 ga. - US32D | Rockwood |

Hardware Set 713

| | | | |
|---|-------------------------------|--|----------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D | Hager |
| 1 | Push Plate | 70C - 4" x 16" - US32D | Rockwood |
| 1 | Pull Plate | BF-107 - 70C - 4" x 16" - US32D | Rockwood |
| 1 | Closer, Overhead Parallel Arm | CLP-7500 - 689 - SN (Sex Bolt) (Set Stop Arm at 110 Degrees) | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 714

| | | | |
|---|------------------------------|--|----------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D | Hager |
| 1 | Push Plate | 70C - 4" x 16" - US32D | Rockwood |
| 1 | Pull Plate | BF-107 - 70C - 4" x 16" - US32D | Rockwood |
| 1 | Closer, Overhead Regular Arm | 7500 - 689 - SN (Sex Bolt) | Norton |
| 1 | Mop Plate | K1050 - 04" x 35" - 18 ga. - US32D (Pull Side of Door) | Rockwood |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 715

| | | | |
|---|-------------------------------|---|----------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D | Hager |
| 1 | Push Plate | 70C - 4" x 16" - US32D | Rockwood |
| 1 | Pull Plate | BF-107 - 70C - 4" x 16" - US32D | Rockwood |
| 1 | Closer, Overhead Parallel Arm | CLP-7500 - 689 - SN (Sex Bolt) (Set Stop Arm at 90 Degrees) (Install "PUSH" Side) | Norton |
| 1 | Mop Plate | K1050 - 04" x 35" - 18 ga. - US32D (Pull Side of Door) | Rockwood |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 716

| | | | |
|---|-------------------------------|------------------------------------|----------|
| 3 | Hinge, Ball Bearing | BB1279 - 4.5 x 4.5 - US26D | Hager |
| 1 | Push Plate | 70C - 4" x 16" - US32D | Rockwood |
| 1 | Pull Plate | BF-107 - 70C - 4" x 16" - US32D | Rockwood |
| 1 | Closer, Overhead Parallel Arm | PR7500 - 689 - SN (Sex Bolt) | Norton |
| 1 | Kick Plate | K1050 - 16" x 34" - 18 ga. - US32D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 717

| | | | |
|---|-------------------------------|---|----------|
| 1 | Hinge, Continuous Geared | 780 - 224 HD - 83" - CLEAR - Concealed Leaf x 1/2 WD Screws | Roton |
| 1 | Lock, Programmable | REUSE EXIST COMBO | - |
| 1 | Push Plate | 70C - 4" x 16" - US32D | Rockwood |
| 1 | Pull Plate | BF-107 - 70C - 4" x 16" - US32D | Rockwood |
| 1 | Closer, Overhead Parallel Arm | CLP-7500 - 689 - SN (Sex Bolt) (Set Stop Arm at 90 Degrees) (Install "PUSH" Side) | Norton |
| 1 | Mop Plate | K1050 - 04" x 41" - 18 ga. - US32D (Pull Side of Door) | Rockwood |
| 1 | Kick Plate | K1050 - 16" x 40" - 18 ga. - US32D | Rockwood |

Heading Notes

NOTE:

1. Remove the Existing Combo Lock from the Existing Door, Reinstall in New Door.

Hardware Set 721

| | | | |
|---|--------------------------|--|----------------|
| 1 | Hinge, Continuous Geared | 780 - 224 HD - 83" - CLEAR - Concealed Leaf x 1/2 WD Screws | Roton |
| 1 | Push Plate | 70C - 4" x 16" - US32D | Rockwood |
| 1 | Pull Plate | BF-107 - 70C - 4" x 16" - US32D | Rockwood |
| 1 | Auto Door Opener/Closer | Auto Door Opener/Closer & Push Plates | Section 087113 |
| 1 | Mop Plate | K1050 - 04" x 41" - 18 ga. - US32D (Pull Side of Door) | Rockwood |
| 1 | Kick Plate | K1050 - 16" x 40" - 18 ga. - US32D | Rockwood |
| 1 | Stop, Wall | 409 - US26D | Rockwood |

Hardware Set 801

| | | | |
|---|----------------------------|--|----------------|
| 2 | Hinge, Continuous Geared | 780 - 224 HD - 83" - CLEAR - Concealed Leaf x 1/2 WD Screws | Roton |
| 1 | Lockset, Storeroom/Closet | CL3357 - NZD - 626 - M17 | Corbin-Russwin |
| 1 | Bolts, Flush - Automatic | 2942 - US26D (Top and Bottom Set) | Rockwood |
| 1 | Dust Proof Strike | 570 - US26D | Rockwood |
| 1 | Coordinator, Door | 2654 - BLK (64") + 2 Mtg Bkts | Rockwood |
| 2 | Closer, Electro-Mech, Pull | 7231 - 24VAC/DC - 689 | Norton |
| 2 | Kick Plate | K1050 - 16" x 32" - 18 ga. - US32D | Rockwood |
| 1 | Astragal, Overlapping | 357SP x 84" (Apply to Outside face of LH In-Active | Pemko |
| 2 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Hardware Set 802

| | | | |
|---|-------------|---|----------|
| 1 | Armor Plate | K1050 - 34" x VIF" - 18 ga. - US32D | Rockwood |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 803

| | | | |
|---|----------------------------|---|--------|
| 1 | Closer, Electro-Mech, Pull | 7231 - 24VAC/DC - 689 | Norton |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Hardware Set 804

| | | | |
|---|--------------|---|--------|
| 2 | Filler Plate | Filler Plate Sets [Latch / Strike / Hinge] - verify in field type, size and quantity required to finish opening. | Don-Jo |
|---|--------------|---|--------|

Hardware Set 811

| | | | |
|---|-------------------------|---|----------------|
| 1 | Auto Door Opener/Closer | Stanley Magic Force & Push Plates | Section 087113 |
| 1 | Armor Plate | K1050 - 34" x VIF" - 18 ga. - US32D | Rockwood |
| 1 | Filler Plate | Filler Plate Sets [Latch / Strike / Hinge] - verify in field type, size and quantity required to finish opening. | Don-Jo |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Heading Notes

NOTE:

1. Remove existing Door Closer.
2. Remove Latch for Lockset, furnish and install filler plates at Latch and Strike.
3. Furnish & Install New Auto Operator.
4. Furnish & Install New Armor Plate, 34" High by Width of Door (VIF), less 2 inches.

Hardware Set 812

| | | | |
|---|-------------------------|--|----------------|
| 1 | Auto Door Opener/Closer | Stanley Magic Force & Push Plates | Section 087113 |
| 1 | Armor Plate | K1050 - 34" x VIF" - 18 ga. - US32D | Rockwood |
| 1 | Filler Plate | Filler Plate Sets [Latch / Strike / Hinge] - verify in field type, size and quantity required to finish opening. | Don-Jo |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

Heading Notes

NOTE:

1. Remove existing Door Closer.
2. Remove Latch for Lockset, furnish and install filler plates at Latch and Strike.
3. Furnish & Install New Auto Operator.
4. Furnish & Install New Armor Plate, 34" High by Width of Door (VIF), less 2 inches.

Hardware Set 813

| | | | |
|---|--------------------------|---|----------------|
| 1 | Hinge, Continuous Geared | 780 - 224 HD - 83" - CLEAR - Concealed Leaf x 1/2 WD Screws | Roton |
| 2 | Push Plate | 70C - 4" x VIF" - US32D | Rockwood |
| 2 | Pull Plate | BF-107 - 70C - 4" x VIF" - US32D | Rockwood |
| 2 | Auto Door Opener/Closer | Stanley Magic Force & Push Plates | Section 087113 |
| 2 | Armor Plate | K1050 - 34" x VIF" - 18 ga. - US32D | Rockwood |
| 3 | Silencer, HM Dr. Frame | 608 - Gray | Rockwood |

Heading Notes

NOTE:

1. Remove existing Locks, Door Closers, etc, Furnish & Install Push / Pull Hardware (Plates must be large enough to conceal the existing hardware preps.)
2. Remove Latch for Lockset, furnish and install filler plates at Latch and Strike.
3. Furnish & Install New Auto Operators.
4. Furnish & Install New Armor Plate, 34" High by Width of Door (VIF), less 2 inches.

Hardware Set 901

| | | | |
|---|--------------|--|--------|
| 1 | Filler Plate | Filler Plate Sets [Latch / Strike / Hinge] - verify in field type, size and quantity required to finish opening. | Don-Jo |
|---|--------------|--|--------|

Heading Notes

NOTE:

1. VIF Filler Plate Requirements

Hardware Set 902

| | | | |
|---|--------------------------|--|-------|
| 1 | Hinge, Continuous Geared | 780 - 224 HD - VIF" - CLEAR - Concealed Leaf | Roton |
| 1 | HBO | Balance of Existing Hardware to Remain. | HBO |

END OF SECTION 087100

SECTION 08 71 13 - AUTOMATIC DOOR OPERATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Low-energy, power-operating door operators.
- B. Related Sections include the following:
 - 1. Division 08 Section "Door Hardware" for door hardware that must be coordinated with automatic door operator.
 - 2. Division 26 Sections for electrical connections including conduit and wiring for automatic door operators.

1.3 DEFINITIONS

- A. Activation Device: Device that, when actuated, sends electrical signal to automatic door operator to open door.
- B. Safety Device: Device that prevents door from opening or closing.

1.4 REFERENCES

- A. American National Standards Institute (ANSI) / Builders' Hardware Manufacturer's Association (BHMA).
 - 1. ANSI/BHMA A156.10: Standard for Power Operated Pedestrian Doors.
 - 2. ANSI/BHMA A156.19: Standard for Power Assist and Low Energy Power Operated Doors.
- B. American Association of Automatic Door Manufacturers (AAADM).

1.5 PERFORMANCE REQUIREMENTS

- A. General: Provide automatic door operators capable of withstanding structural loads and thermal movements based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Operating Range: Minus 30 deg F to 130 deg F.

- C. Opening and Closing Forces: Not more than 15 lbf, 1 inch from the latch edge of the door.
 - 1. Automatic door operators provided with a breakaway device shall require no more than 50 lbf applied at 1 inch from the latch edge of the door.
- D. Door Energy: The kinetic energy of a door in motion shall not exceed 1.25 lbd-ft.
- E. Closing Time:
 - 1. Doors to be field adjusted to close from 90 degrees to 10 degrees in 3 seconds or longer.
 - 2. Doors to be field adjusted to close from 10 degrees to fully closed in not less than 1.5 seconds.

1.6 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for automatic door operators and activation and safety devices.
- B. Shop Drawings: Show fabrication and installation details for automatic door operators. Include locations and elevations of entrances showing activation and safety devices, and wiring for electrical supply.
- C. Samples for Initial Selection: For each type of exposed component and door control indicated.
- D. Samples for Verification: For exposed components and activation and safety devices with factory-applied color finishes.
- E. Qualification Data: For manufacturer.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.
- G. Operation and Maintenance Data: For automatic door operators to include in emergency, operation, and maintenance manuals.
- H. Warranties: Special warranties specified in this Section.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Manufacturer Qualifications: Company certificate issued by AAADM.
- C. Testing Agency Qualifications: An independent agency with inspector certified by AAADM.
- D. Source Limitations: Obtain automatic door operators through one source from a single manufacturer.
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

- F. UL Standard: Comply with UL 325.
- G. Power Operated Door Standard: ANSI/BHMA A156.19.
- H. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.8 PROJECT CONDITIONS

- A. Field Measurements: Verify door openings by field measurements before fabrication of exposed covers for automatic door operators and indicate measurements on Shop Drawings.

1.9 COORDINATION

- A. Templates: Review Shop Drawings of other work to confirm that adequate provisions are made for locating and installing automatic door operators to comply with indicated requirements.
- B. Electrical System Roughing-in: Coordinate layout and installation of automatic door operators with connections to power supplies and security access control system.
- C. System Integration: Integrate automatic door operators with other systems as required for a complete working installation.
 - 1. Where required for proper operation, provide a time delay relay to signal automatic door operator to activate only after the electric lock system is released.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of automatic door operators that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Faulty or sporadic operation of automatic door operator or activation and safety devices.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering or use.
 - 2. Warranty Period: One year from date of Substantial Completion.

1.11 MAINTENANCE SERVICE

- A. Maintenance: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of automatic door operator Installer. Include quarterly planned and preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door operation. Provide parts and supplies same as those used in the manufacture and installation of original equipment.
 - 1. Engage inspector certified by AAADM to perform safety inspection after each adjustment or repair and at end of maintenance period. Submit completed inspection form to Owner.

2. Perform maintenance, including emergency callback service, during normal working hours.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design Product: Subject to compliance with requirements, provide **Stanley Access Technologies; Magic-Force Series** or comparable product by one of the following:
 1. Besam North America, an ASSA ABLOY company.
 2. Dormakaba.
 3. Horton Automatics.

2.2 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with standards indicated below:
 1. Sheet: ASTM B 209.
 2. Extrusions: ASTM B 221, Alloy 6063-T6.
- B. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.

2.3 AUTOMATIC DOOR OPERATORS, GENERAL

- A. General: Provide operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated.
- B. Electromechanical Operating System: Unit powered by permanent-magnet dc motor; with closing speed controlled mechanically by gear train and dynamically by braking action of electric motor, and with manual operation including spring closing with power off.
- C. Exposed Cover: Fabricated from 0.125-inch- thick extruded aluminum; 6 inches square in section; with enclosed end caps, provision for maintenance access, and fasteners concealed when door is in closed position.
 1. Finish: Baked enamel or powder coat, in color to match aluminum doors and framing.

2.4 LOW-ENERGY, POWER-OPERATING DOOR OPERATORS

- A. Standard: Comply with BHMA A156.19.
- B. Performance Requirements:
 1. Not more than 15 lbf 1 inch from latch edge of door to prevent stopped door from opening or closing.
 2. If power fails, not more than 30 lbf 1 inch from latch edge of door to manually set door in motion.

- C. Operation: Power opening and power-assisted spring closing.
 - 1. Power-Assisted Opening: Power-assisted opening that reduces force to open self-closing door. Pushing or pulling on door activates automatic door operator.
 - 2. Closing spring: Helical compression spring, adjustable for positive closing action, without removing the operator from the header.
 - 3. Provide a rheostat module to allow for independent field adjustment of closing and latching speeds using the motor as a dynamic brake.
 - 4. Provide a field adjustable open stop to accommodate opening angles from 80 to 135 degrees without the need for additional components.
 - 5. The operator shall deliver an even, consistent open force across the entire transition from door fully closed to door fully open, with a field adjustable force to accommodate on-site conditions.
 - 6. Design operator to output audible noise ratios less than or equal to 50 dba.
 - 7. Manual Use: The operator is to function as a manual door closer in the direction of swing with or without electrical power.
 - 8. Electrical: 120 VAC, 10 amps.
- D. Handing: Non-handed; no tools required to change handing.
- E. Capacity: Rated for door panels weighing up to 350 lbs.
- F. Operating System: Electromechanical.
- G. Microprocessor Control Unit: Solid-state controls.
- H. Features:
 - 1. Adjustable opening and closing speed.
 - 2. Adjustable opening and closing force.
 - 3. Adjustable backcheck.
 - 4. Adjustable hold-open time of not less than 0 to 30 seconds.
 - 5. Reverse on obstruction.
- I. Mounting: Surface.

2.5 ELECTRICAL CONTROLS

- A. Electrical Control System: The electrical control system includes a microprocessor controller and position encoder. The encoder monitors revolutions of the operator shaft and sends signals to the microprocessor controller to define door position. Systems utilizing external magnets and magnetic switches are not acceptable.
 - 1. Life Cycle Data Counter (LCD): Incorporate a non-resettable counter to track door operation cycles.
 - 2. Controller Protection: Incorporate the following features to ensure trouble-free operation:
 - a. Automatic reset upon power up.
 - b. Fuse protection.
 - c. Electronic surge protection.
 - d. Internal power supply protection.
- B. Program Dip Switches: Allow selection of change at the following parameters:

1. Carpet or timer logic.
 2. Single or dual door.
 3. Activation options.
 4. Normal back check or large back check.
 5. Push-to-open assist on/off.
- C. Soft Start/Stop: Provide a "soft-start" "soft-stop" motor driving circuit for smooth reopening and recycling.
- D. Emergency Breakout Switch: Provide a cam actuated emergency breakout switch to disconnect power to the motor when an in-swing door is manually pushed in the emergency out direction. The operator will then automatically reset and power will be resumed.
- E. Control Switch: Equip each automatic door operator with a three-position function switch to control operation of the door; automatic, off, and hold-open.

2.6 ACTIVATION AND SAFETY DEVICES

- A. Wall Push-Plate Switch: Manufacturer's standard door control switch; consisting of square, flat push plate; of material indicated; and actuator mounted in recessed junction box. Provide engraved message as indicated.
1. Interior push plates: Wall mounted in single or double gang electrical boxes and hardwired to door operator controls.
 2. Exterior push plates: Wall mounted and hardwired to door operator controls.
 3. Size: 4-1/2- inches square.
 4. Material: Stainless steel.
 5. Message: International symbol of accessibility and "Push to Open."
- B. Electrical Interlocks: Unless units are equipped with self-protecting devices or circuits, provide electrical interlocks to prevent activation of operator when door is locked, latched, or bolted.

2.7 ACCESSORIES

- A. Low-Energy Automatic Door Operator Signage: Comply with BHMA A156.19.

2.8 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.9 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances, door and frame supports, and other conditions affecting performance of automatic door operators.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
- B. Examine roughing-in for electrical systems to verify actual locations of power connections before automatic door operator installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install complete automatic door operator system, including activation and safety devices, control wiring, and remote power units.
- B. Low-Energy Power Door Operator Installation Standard: Comply with BHMA A156.19 for installation.
 - 1. Mounting: Install surface mounted hardware using concealed fasteners to greatest extent possible.
 - 2. Set headers, arms, and linkages level and true to location with anchorage for permanent support.
- C. Automatic Door Operators: Install door operator system, including control wiring, as follows:
 - 1. Refer to Division 26 Sections for connection to electrical power distribution system.
- D. Activation and Safety Devices: Install devices and wiring, including connections to automatic door operators, according to BHMA A156.10 and as follows:
 - 1. Wall Switches: Provide push plates on both sides of each opening indicated to receive automatic door operators.
- E. Connect wiring according to Division 26 Sections.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing and Inspecting: After installation has been completed, testing and inspecting of each automatic door operator shall be performed to verify compliance with applicable BHMA standards.
 - 1. Inspection Report: Submit report in writing to Architect and Contractor within 24 hours after inspection.
- C. Remove and replace automatic door operators where test results indicate they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, shall be performed to determine compliance of replaced or additional work with specified requirements.

3.4 ADJUSTING

- A. Adjust automatic door operators and activation and safety devices to operate smoothly, easily, and properly, and for safe operation and weathertight closure.
 - 1. Adjust doors with low-energy door operators to close according to BHMA A156.19.
- B. Lubricate operators, hardware, and other moving parts.
- C. After completing installation of exposed, factory-finished automatic door operators, inspect exposed finishes and repair damaged finishes.
- D. Readjust automatic door operators and activation and safety devices after repeated operation of completed installation equivalent to three days' use by normal traffic (100 to 300 cycles). Lubricate hardware, operating equipment, and other moving parts.
- E. Occupancy Adjustment: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to site outside normal occupancy hours for this purpose, without additional cost.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain automatic door operators. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION 08 71 13

SECTION 08 80 00 – GLAZING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section “Summary”, Paragraph 1.1A, entitled “Related Documents.”

1.2 SUMMARY

- A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
 - 1. Flush wood doors.
 - 2. Hollow metal doors.
 - 3. Automatic entrance doors.
- B. Related Sections include the following:
 - 1. Division 08 Section “Hollow Metal Doors and Frames” for installing glazing in hollow metal doors.
 - 2. Division 08 Section “Flush Wood Doors” for installing glazing in flush wood doors.
 - 3. Division 08 Section “Automatic Entrance Doors” for factory glazed automatic entrances.

1.3 DEFINITIONS

- A. Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:

1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:
 - a. Specified Design Wind Loads: As indicated, but not less than wind loads applicable to Project as required by ASCE 7 "Minimum Design Loads for Buildings and Other Structures": Section 6.0 "Wind Loads", and the Connecticut State Building Code.
 - 1) Ultimate Design Wind Speed: **95** mph.
 - b. Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not more than 15 degrees off vertical and under wind action.
 - 1) Load Duration: 3 seconds or less.
 - c. Thickness of Tinted and Heat-Absorbing Glass: Provide the same thickness for each tint color indicated throughout Project.
 - C. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
 - D. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:
 1. Center-of-Glass Values: Based on using LBL-35298 WINDOW 5.2 computer program for the following methodologies:
 - a. U-Factors: NFRC 100 expressed as Btu/ sq. ft. x h x deg F.
 - b. Solar Heat Gain Coefficient: NFRC 200.
 - c. Solar Optical Properties: NFRC 300.
- 1.5 PRECONSTRUCTION TESTING
- A. Preconstruction Adhesion and Compatibility Testing: Submit to elastomeric glazing sealant manufacturers, for testing indicated below, samples of each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member that will contact or affect elastomeric glazing sealants:
 1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
 2. Submit not fewer than eight pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
 3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 4. For materials failing tests, obtain sealant manufacturer's written instructions for corrective measures, including the use of specially formulated primers.
 5. Testing will not be required if elastomeric glazing sealant manufacturers submit data based on previous testing of current sealant products for adhesion to, and compatibility with, glazing materials matching those submitted.

1.6 ACTION SUBMITTALS

- A. Product Data: For each glass product and glazing material indicated.
- B. Samples: For the following products, in the form of 12-inch- square Samples for glass.
 - 1. Fire-resistive (safety) glazing products.
 - 2. Insulating glass for each designation indicated.
- C. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.
- D. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.
 - 1. For solar-control low-e-coated glass, provide documentation demonstrating that manufacturer of coated glass is certified by coating manufacturer.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For installers.
- B. Preconstruction Adhesion and Compatibility Test Report: From glazing sealant manufacturer indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.
- C. Product Test Reports: For each of the following types of glazing products:
 - 1. Glazing sealants.
 - 2. Insulating glass.
- D. Warranties: Special warranties specified in this Section.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.
- B. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
- C. Source Limitations for Glass: Obtain each type of glass through one source from a single manufacturer.
- D. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.
- E. Glass Product Testing: Obtain glass test results for product test reports in "Submittals" Article from a qualified testing agency based on testing glass products.

1. Glass Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
- F. Elastomeric Glazing Sealant Product Testing: Obtain sealant test results for product test reports in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.
1. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
 2. Test elastomeric glazing sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.
- G. Safety Glazing Products: Comply with testing requirements in 16 CFR 1201.
1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of the Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.
 2. Where glazing units, including Kind FT glass and laminated glass, are specified in Part 2 articles for glazing lites more than 9 sq. ft. in exposed surface area of one side, provide glazing products that comply with Category II materials, for lites 9 sq. ft. or less in exposed surface area of one side, provide glazing products that comply with Category I or II materials, except for hazardous locations where Category II materials are required by 16 CFR 1201 and regulations of authorities having jurisdiction.
- H. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
1. IGMA Publication for Insulating Glass: SIGMA TM-3000, "Glazing Guidelines for Sealed Insulating Glass Units."
- I. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the following testing and inspecting agency:
1. Insulating Glass Certification Council.
- J. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
- 1.9 DELIVERY, STORAGE, AND HANDLING
- A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
 - B. For insulating-glass units that will be exposed to substantial altitude changes, comply with insulating-glass manufacturer's written recommendations for venting and sealing to avoid hermetic seal ruptures.

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F.

1.11 WARRANTY

- A. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS

- A. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) as indicated, Quality-Q3.
1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- B. Sputter-Coated Float Glass: ASTM C 1376, float glass with metallic-oxide or -nitride coating deposited by vacuum deposition process after manufacture and heat treatment (if any), and complying with other requirements specified.

2.2 FIRE-RATED SAFETY GLAZING PRODUCTS

- A. Glazing for Fire-Rated Door Assemblies: Glazing for assemblies that comply with NFPA 80 and that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252, including hose stream test.
- B. Laminated Ceramic Glazing (Fire Rated Safety Glazing): Proprietary Category II safety glazing product in the form of two lites of clear ceramic glazing material laminated together to produce a laminated lite of 5/16-inch nominal thickness; polished on both surfaces, transparent; weighing 4 lb/sq. ft.; complying with testing requirements in 16 CFR 1201 for Category II materials, and as follows:
1. Fire-Protection Rating: 20, 45, 60 and 90 minutes as indicated for the assembly in which glazing material is installed, and permanently labeled by a testing and inspecting agency acceptable to authorities having jurisdiction.
 2. Visible Light Transmission: 80 percent minimum.

3. Products: Subject to compliance with requirements, provide one of the following:
 - a. Nippon Electric Glass Co., Ltd. (distributed by Technical Glass Products); FireLite Plus.
 - b. SAFTI *FIRST*; Pyran Platinum L.
 - c. Schott North America, Inc.; Pyran Platinum L.
 - d. Vetrotech Saint-Gobain; Keralite FR-L.

2.3 INSULATING GLASS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide **Vitro Architectural; Solarban 60** or comparable product by one of the following:
 1. Guardian Industries Corp; Sun-Guard.
 2. Viracon, Inc.; VE 1-2M.
- B. Insulating-Glass Units, General: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA units and with requirements specified in this Article and in Part 2 "Insulating-Glass Units" Article.
 1. Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated for insulating-glass units are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites at unit's edge.
 2. Sealing System: Dual seal, with primary and secondary sealants as follows:
 - a. Polyisobutylene and silicone.
 3. Spacer Specifications: Manufacturer's standard spacer material and construction complying with the following requirements:
 - a. Spacer Material: Aluminum with mill or clear anodic finish.
 - b. Desiccant: Molecular sieve or silica gel, or blend of both.
 - c. Corner Construction: Manufacturer's standard corner construction.

2.4 GLAZING SEALANTS

- A. General: Provide products of type indicated, complying with the following requirements:
 1. Compatibility: Select glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 795.

- b. GE Advanced Materials - Silicones; SilPruf SCS2000.
 - c. Pecora Corporation; 895.
 - d. Tremco Incorporated; Spectrem 2.
2. Type and Grade: S (single component) and NS (nonsag).
 3. Class: 50.
 4. Use Related to Exposure: NT (nontraffic).
 5. Uses Related to Glazing Substrates: M, G, A, and, as applicable to glazing substrates indicated, O.
 - a. Use O Glazing Substrates: Coated glass and aluminum coated with a high-performance coating.
- C. Glazing Sealants for Fire-Rated Glazing Products: Products that are approved by testing agencies that listed and labeled fire-resistant glazing products with which they are used for applications and fire-protection ratings indicated.

2.5 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
1. AAMA 804.3 tape, where indicated.
 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:
1. Type 1, for glazing applications in which tape acts as the primary sealant.
 2. Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.6 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.
- G. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistance rating.

2.7 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites in a manner that produces square edges with slight kerfs at junctions with outdoor and indoor faces.
- C. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing glazing, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep system.
 - 3. Minimum required face or edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Glazing channel dimensions provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.

- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches as follows:
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until just before each glazing unit is installed.
- F. Apply heel bead of elastomeric sealant.
- G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.6 CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.
- E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.7 MONOLITHIC FLOAT-GLASS UNITS

- A. **Glass Type A:** Clear fully tempered float glass.
 - 1. Thickness: 6.0 mm (1/4 inch.).
 - 2. Provide safety glazing labeling.

3.8 FIRE-RESISTANT GLAZING SCHEDULE

- A. **Glass Type B:** 45-, 60-, or 90-minute fire-protection-rated glazing; laminated ceramic glazing.

3.9 INSULATING-GLASS SCHEDULE

A. **Glass Type C:** Low-E Insulating-Glass Units for use in automatic entrances:

1. Overall Unit Thickness and Thickness of Each Lite: 1-inch unit thickness and 1/4-inch each lite.
2. Interspace Content: Argon.
3. Outdoor Lite: Clear fully tempered float glass.
4. Indoor Lite: Clear fully tempered float glass.
5. Low-E Coating: Sputtered on second surface.
6. Visible Light Transmittance: 70 percent minimum.
7. Winter Nighttime U-Factor: 0.24 maximum.
8. Solar Heat Gain Coefficient: 0.39 maximum.
9. Outdoor Visible Reflectance: 11 percent maximum.
10. Provide safety glazing labeling.

END OF SECTION 08 80 00

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 08 84 00 - PLASTIC GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section Includes:
 - 1. Monolithic acrylic glazing panels.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review temporary protection requirements for plastic glazing during and after installation.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Plastic Glazing Samples: For each color and finish of plastic glazing indicated, 12 inches square and of same thickness indicated for final Work.
- C. Glazing Accessory Samples: For gaskets and sealants, in 12-inch lengths. Install sealant Samples between two strips of material representative in color of the adjoining framing system.
- D. Plastic Glazing Schedule: List plastic glazing types and thicknesses for each size opening and location. Use same designations indicated on Drawings. Indicate coordinated dimensions of plastic glazing and construction that receives plastic glazing, including clearances and glazing channel dimensions.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Product Certificates: For plastic glazing and glazing products.
- C. Product Test Reports: For plastic glazing, for tests performed by a qualified testing agency.

D. Research/Evaluation Reports: For plastic glazing.

E. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For plastic glazing to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Install plastic glazing in mockups to match plastic glazing systems required for Project, including glazing methods.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect plastic glazing materials according to manufacturer's written instructions. Prevent damage to plastic glazing and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Maintain protective coverings on plastic glazing to avoid exposures to abrasive substances, excessive heat, and other sources of possible deterioration.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or below 40 deg F.

1.10 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to replace products that break or develop defects from normal use that are attributable to manufacturing process and not to practices for maintaining and cleaning plastic glazing contrary to manufacturer's written instructions.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain plastic glazing from single source from single manufacturer. Obtain sealants and glazing gaskets from single source from single manufacturer for each product and installation method.

2.2 PERFORMANCE REQUIREMENTS

- A. Plastic glazing sheets and glazing materials shall withstand normal temperature changes, wind, and impact loads without failure, including loss or breakage of plastic sheets attributable to the following: failure of sealants or gaskets to remain watertight and airtight, deterioration of plastic sheet and glazing materials, or other defects in materials and installation.
- B. Safety Glazing: Plastic glazing shall comply with 16 CFR 1201, Category II.
1. Labeling: Permanently mark plastic glazing with certification label of an agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of plastic, thickness, and safety glazing standard with which plastic glazing complies.

2.3 PLASTIC GLAZING, GENERAL

- A. Glazing Publication: Comply with published instructions of plastic glazing manufacturers and with GANA's "Glazing Manual" unless more stringent requirements are indicated. See this publication for definitions of glazing terms not otherwise defined in this Section or in other referenced standards.
- B. Plastic Glazing Labeling: Identify plastic sheets with appropriate markings of applicable testing and inspecting agency, indicating compliance with required fire-test-response characteristics.

2.4 MONOLITHIC ACRYLIC GLAZING

- A. Translucent Resin Panels: Engineered acrylic resin material fabricated with 40 percent pre-consumer recycled material.
1. Basis of Design Product: Subject to compliance with requirements, provide the following, or equal:
- a. **3form, Inc.; Varia Ecoresin.**
2. Physical Properties:
- a. Rate of Burning (ASTM D 635): Self-extinguishing, CC2 Rating.
- b. Self-Ignition Temperature (ASTM D 1929): Material must have a Self-ignition temperature greater than 650°F.
- c. Density of Smoke (ASTM D 2843): Less than 75.
- d. Flame Spread and Smoke Generated (ASTM E 84) 1-inch thickness: Flame spread meeting Class B (65) with smoke developed (250) less than 450.

3. Thickness: 3/8 inch.
 4. Finish/Texture: As selected by Architect from manufacturer's full range.
 5. Color: As selected by Architect from manufacturer's full range.
- B. Suspend Hardware System: Suspended side-fastening partition for concrete floors and wood blocking (ceiling) with smooth connectors and a drop ceiling cover. Panel mounting for 3/8-inch thick resin panels.
1. Product: 3form; SimpleSpec 200.08.
 2. Components: Per panel.
 - a. Two cable tensioners with cover plate kit.
 - b. Two 3 mm cables with six single panel connector kits.
 - c. Two cable coupler kits.
 - d. Two universal anchoring kit.

2.5 FABRICATION

- A. Sizes: Fabricate plastic glazing to sizes required for openings indicated. Allow for thermal expansion and contraction of plastic glazing without restraint and without withdrawal of edges from frames, with edge clearances and tolerances complying with plastic glazing manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine plastic glazing framing, with glazing Installer present, for compliance with the following:
1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 2. Minimum required face or edge clearances.
 3. Effective sealing between joints of plastic glazing framing members.
- B. Proceed with glazing only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members immediately before glazing. Remove coatings not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of plastic glazing materials, sealants, gaskets, and other glazing materials unless more stringent requirements are indicated, including those in referenced glazing publication.

- B. Sand or scrape cut edges of plastic glazing to provide smooth edges, free of chips and hairline cracks.
- C. Remove burrs and other projections from glazing channel surfaces.
- D. Protect plastic glazing surfaces from abrasion and other damage during handling and installation, according to the following requirements:
 - 1. Retain plastic glazing manufacturer's protective covering or protect by other methods according to plastic glazing manufacturer's written instructions.
 - 2. Remove covering at border of each piece before glazing; remove remainder of covering immediately after installation where plastic glazing is exposed to sunlight or where other conditions make later removal difficult.
 - 3. Remove damaged plastic glazing sheets from Project site and legally dispose of off-site. Damaged plastic glazing sheets are those containing imperfections that, when installed, result in weakened glazing and impaired performance and appearance.

3.4 CLEANING AND PROTECTION

- A. Protect plastic glazing from contact with contaminating substances from construction operations. If, despite such protection, contaminating substances do come into contact with plastic glazing, remove immediately and wash plastic glazing according to plastic glazing manufacturer's written instructions.
- B. Remove and replace plastic glazing that is broken, chipped, cracked, abraded, or damaged in other ways during construction period, including natural causes, accidents, and vandalism.
- C. Wash plastic glazing on both faces before date scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Wash plastic glazing according to plastic glazing manufacturer's written instructions.

END OF SECTION 08 84 00

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 09 01 20.91 – PLASTER REPAIR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Patching and repair of existing plaster.
- B. Related Sections:
 - 1. Division 09 Section "Painting" for painting plaster surfaces.

1.3 UNIT PRICES

- A. Work of this Section is affected by unit prices specified in Division 01 Section "Unit Prices."
 - 1. Unit prices apply to additions to and deletions from Work as authorized by Change Orders.
 - 2. Perform the following work under unit prices and only as authorized. Authorized work includes work required by Drawings and the Specifications and work authorized in writing by Architect.
 - a. Patching and repair of existing plaster, in addition to locations indicated.
 - 3. Notify Architect and Project Manager weekly of extent of work performed that is attributable to unit prices.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.5 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: For portland cement plaster assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

- B. Mockups: Before plaster repair, install mockups of repairs in area of at least 100 sq. ft. to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

1.7 PROJECT CONDITIONS

- A. Comply with ASTM C 926 requirements.
- B. Interior Plasterwork: Maintain room temperatures at greater than 40 deg F for at least 48 hours before plaster application, and continuously during and after application.
 - 1. Avoid conditions that result in plaster drying out during curing period. Distribute heat evenly; prevent concentrated or uneven heat on plaster.
 - 2. Ventilate building spaces as required to remove water in excess of that required for hydrating plaster in a manner that prevents drafts of air from contacting surfaces during plaster application and until plaster is dry.

PART 2 - PRODUCTS

2.1 METAL LATH

- A. Expanded-Metal Lath: ASTM C 847 with ASTM A 653/A 653M, G60, hot-dip galvanized zinc coating.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Alabama Metal Industries Corporation (AMICO).
 - b. California Expanded Metal Products Company (CEMCO).
 - c. Clark Western Building Systems, a division of ClarkDietrich Building Systems.
 - 2. Diamond-Mesh Lath: Flat and Self-furring, 3.4 lb/sq. yd.

2.2 ACCESSORIES

- A. General: Comply with ASTM C 1063 and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.
- B. Zinc-Coated (Galvanized) Accessories:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Alabama Metal Industries Corporation (AMICO).
 - b. California Expanded Metal Products Company (CEMCO).
 - c. Clark Western Building Systems, a division of ClarkDietrich Building Systems.
2. Cornerbeads: Fabricated from zinc-coated (galvanized) steel.
3. Casing Beads: Fabricated from zinc-coated (galvanized) steel; square-edged style; with expanded flanges.
4. Control Joints: Fabricated from zinc-coated (galvanized) steel; one-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.
5. Expansion Joints: Fabricated from zinc-coated (galvanized) steel; folded pair of unperforated screeds in M-shaped configuration; with expanded flanges.

2.3 MISCELLANEOUS MATERIALS

- A. Water for Mixing: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
- B. Bonding Compound: ASTM C 932.
- C. Steel Drill Screws: For metal-to-metal fastening, ASTM C 1002 or ASTM C 954, as required by thickness of metal being fastened; with pan head that is suitable for application; in lengths required to achieve penetration through joined materials of not fewer than three exposed threads.
- D. Fasteners for Attaching Metal Lath to Substrates: Complying with ASTM C 1063.
- E. Acoustical Sealant: As specified in Division 07 Section "Joint Sealants."

2.4 PLASTER MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
 1. Color for Finish Coats: White.
- B. Lime: ASTM C 206, Type S; or ASTM C 207, Type S.
- C. Sand Aggregate: ASTM C 897.
 1. Color for Job-Mixed Finish Coats: White.

2.5 PLASTER MIXES

- A. General: Comply with ASTM C 926 for applications indicated.
- B. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork as follows:

1. Portland Cement Mixes:
 - a. Scratch Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material (sum of separate volumes of each component material).
 - b. Brown Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 3 to 5 parts aggregate per part of cementitious material (sum of separate volumes of each component material).
- C. Base-Coat Mixes: Single base coats for two-coat plasterwork as follows (over existing masonry):
 1. Portland Cement Mix: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
- D. Job-Mixed Finish-Coat Mixes:
 1. Portland Cement Mix: For cementitious materials, mix 1 part portland cement and 1-1/2 to 2 parts lime. Use 1-1/2 to 3 parts aggregate per part of cementitious material (sum of separate volumes of each component material).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.
 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.

3.3 INSTALLATION, GENERAL

- A. Sound Attenuation Blankets: Where required, install blankets before installing lath unless blankets are readily installed after lath has been installed on one side.
- B. Acoustical Sealant: Where required, seal joints between edges of plasterwork and abutting construction with acoustical sealant.

3.4 INSTALLING METAL LATH

- A. Expanded-Metal Lath: Install according to ASTM C 1063.
 1. Partition Framing and Vertical Furring: Install flat diamond-mesh lath.

2. On Solid Surfaces, Not Otherwise Furred: Install self-furring, diamond-mesh lath.

3.5 INSTALLING ACCESSORIES

- A. Install according to ASTM C 1063 and at locations indicated on Drawings.
- B. Reinforcement for External Corners:
 1. Install cornerbead at interior locations.
- C. Control Joints: Install control joints at locations indicated on Drawings, and as follows:
 1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:
 - a. Vertical Surfaces: 144 sq. ft.
 - b. Horizontal and other Nonvertical Surfaces: 100 sq. ft.
 2. At distances between control joints of not greater than 18 feet o.c.
 3. As required to delineate plasterwork into areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
 4. Where control joints occur in surface of construction directly behind plaster.

3.6 PLASTER APPLICATION

- A. General: Comply with ASTM C 926.
 1. Do not deviate more than plus or minus 1/4 inch in 10 feet from a true plane in finished plaster surfaces, as measured by a 10-foot straightedge placed on surface.
 2. Provide plaster surfaces that are ready to receive field-applied finishes indicated.
- B. Bonding Compound: Apply on existing unit masonry plaster bases.
- C. Walls; Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork; 3/4-inch thickness.
 1. Portland cement mixes.
- D. Plaster Finish Coats: Apply to provide float finish, to match existing adjacent surfaces.

3.7 CUTTING AND PATCHING

- A. Cut, patch, replace, and repair plaster as necessary to accommodate other work and to restore cracks, dents, and imperfections. Repair or replace work to eliminate blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

3.8 PATCHING AND REPAIR OF EXISTING PLASTER

- A. Preparation: Scrape and sand existing plaster surfaces to be repaired. Remove all loose and peeling paint.

-
- B. Removal: Remove all existing plaster in area of repair that is loose, bubbled, crumbling or deteriorated. Make clean, sharp edges to bond new plaster.
 - C. Install metal lath and accessories as required in areas of repair and patching.
 - D. Apply new plaster and restore existing adjacent surfaces to a smooth finish.

3.9 CLEANING AND PROTECTION

- A. Remove temporary protection and enclosure of other work. Promptly remove plaster from doorframes, windows, and other surfaces not indicated to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.

END OF SECTION 09 01 20.91

SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Non-load-bearing steel framing members for the following applications:
 - a. Interior framing systems (e.g., supports for partition walls).
 - 2. Interior gypsum board.
- B. Related Sections include the following:
 - 1. Division 06 Section "Miscellaneous Rough Carpentry" for wood blocking built into gypsum board assemblies.
 - 2. Division 07 Section "Thermal Insulation" for sound attenuation insulation installed in assemblies that incorporate gypsum board.
 - 3. Division 07 Section "Fire-Resistive Joint Systems" for head-of-wall assemblies that incorporate gypsum board.
 - 4. Division 09 Section "Tiling" for tile backing panels.
 - 5. Division 09 Section "Painting" for primers applied to gypsum board surfaces.
- C. Products installed, but not furnished, under this Section include the following:
 - 1. Access doors and frames, furnished by Fire Protection, Plumbing, Mechanical, and Electrical Subcontractors in accordance with Division 08 Section "Access Doors and Frames."

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide interior non-load-bearing metal framing capable of withstanding design loads within limits and under conditions indicated.
 - 1. Design Loads: In accordance with the Connecticut State Building Code.
 - 2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
 - a. Interior Framing Systems:
 - 1) Maximum Deflection: L/240 at 5 psf, stud spacing at 16 inches o.c.

3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.
4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
 - a. Upward and downward movement of 3/4 inch.

B. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."

1. Provide interior framing systems sized to accommodate maximum deflection using limiting heights of metal studs without contribution of gypsum wallboard (non-composite).

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

1. For non-load-bearing metal framing indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer licensed in the State of Connecticut responsible for their preparation.
2. Include calculations for span capabilities of cold-formed metal framing for deflection criteria specified.

C. Samples: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.

D. Qualification Data: For professional engineer.

E. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:

1. Steel sheet.
2. Expansion anchors.
3. Power-actuated anchors.
4. Mechanical fasteners.

F. Research/Evaluation Reports: For cold-formed metal framing.

1.5 QUALITY ASSURANCE

A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.

- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the State of Connecticut and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated.
- D. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.
- E. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
- F. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- G. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
- H. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Install mockups for the following:
 - a. Each level of gypsum board finish indicated for use in exposed locations.
 - 2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
 - 3. Simulate finished lighting conditions for review of mockups.
 - 4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.
- C. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install interior products until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 COLD-FORMED STEEL FRAMING, GENERAL

- A. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing by one of the following:
 - 1. ClarkDietrich Building Systems.
 - 2. MarinoWare; a division of Ware Industries.
 - 3. SCAFCO Steel Stud Company.

2.2 INTERIOR NON-LOAD-BEARING STEEL FRAMING

- A. Interior Framing Members, General: Comply with ASTM C 645 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
 - 2. Protective Coating: Comply with ASTM C 645; roll-formed from hot-dipped galvanized steel; complying with ASTM A 1003/A 1003M and ASTM A 653/A 653M G40 or having a coating that provides equivalent corrosion resistance. A40 galvanized products are not acceptable.
 - a. Coatings shall demonstrate equivalent corrosion resistance with an evaluation report acceptable to the authority having jurisdiction.
- B. Steel Studs and Runners: ASTM C 645.
 - 1. Non-Structural Studs: Cold-formed galvanized steel C-studs as per ASTM C 645 for conditions indicated below:
 - a. Flange Size: 1-1/4-inch.
 - b. Web Depth: As indicated on Drawings.
 - 1) Minimum Thickness: 0.033 inch.
 - 2) Minimum Design Thickness: 0.0346 inch.

- C. Slip-Type Head Joints: Where indicated, provide the following:
1. Deflection Track: Slotted steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- D. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. ClarkDietrich Building Systems; BlazeFrame.
 - b. Fire Trak Corp.; Fire Trak attached to studs with Fire Trak Posi Clips.
 - c. Metal-Lite, Inc.; The System.
 - d. Sliptrack Systems; SLP-TRK.
- E. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
1. Minimum Design Thickness: 0.018 inch.
 2. Depth: 7/8 inch.

2.3 INTERIOR GYPSUM BOARD

- A. General: Complying with ASTM C 36 or ASTM C 1396, as applicable to type of gypsum board indicated and whichever is more stringent.
- B. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.
- C. Abuse-Resistant and Moisture- and Mold-Resistant Gypsum Board: Manufactured to produce greater resistance to surface indentation and abrasion than standard, regular-type and Type X gypsum board.
1. Core: 5/8 inch, Type X.
 2. Long Edges: Tapered.
 3. Mold Resistance: ASTM D 3273, score of 10.
 4. Abuse-Resistant Performance: Comply with ASTM C 1629 and the following:
 - a. Surface Abrasion: ASTM D 4977 modified with 25 lbs of additional weight, 0.059" maximum (Level 2 minimum).
 - b. Surface Indentation: ASTM D 5420, 0.10" maximum (Level 1).
 - c. Soft-Body Impact: ASTM E 695, surface failure at 195 ft.-lbs minimum (Level 2).
 - d. Hard-Body Impact: ASTM E 1629 Annex A.1, surface failure at 50 ft.-lbs minimum (Level 1).
 5. Products: Subject to compliance with requirements, provide one of the following:
 - a. CertainTeed; AirRenew Extreme Abuse Resistant Gypsum Board.
 - b. Continental Building Products; Protecta AR 100.
 - c. National Gypsum Company; Gold Bond Hi-Abuse Brand XP Gypsum Board.
 - d. USG Corporation; Mold Tough AR Panels.

- D. Impact-Resistant and Moisture- and Mold-Resistant Gypsum Board: Manufactured to produce greater resistance to surface indentation and abrasion than standard, regular-type and Type X gypsum board, with a fiberglass mesh core.
1. Core: 5/8 inch, Type X.
 2. Long Edges: Tapered.
 3. Mold Resistance: ASTM D 3273, score of 10.
 4. Abuse-Resistant Performance: Comply with ASTM C 1629 as follows:
 - a. Surface Abrasion: Level 3.
 - b. Surface Indentation: Level 1.
 - c. Soft-Body Impact: Level 3.
 - d. Hard-Body Impact: Level 3.
 5. Products: Subject to compliance with requirements, provide one of the following:
 - a. CertainTeed; AirRenew Extreme Impact Resistant Gypsum Board.
 - b. Continental Building Products; Protecta HIR 300.
 - c. National Gypsum Company; Gold Bond Hi-Impact XP Gypsum Board.
 - d. USG Corporation; Mold Tough VHI Abuse-Resistant Interior Panels.

2.4 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
 2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. U-Bead: J-shaped; exposed short flange does not receive joint compound.
 - d. Expansion (control) joint.

2.5 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
1. Interior Gypsum Wallboard: Paper.
- C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 3. Fill Coat: For second coat, use drying-type, all-purpose compound.
 4. Finish Coat: For third coat, use drying-type, all-purpose compound.

2.6 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Sound Attenuation Blankets: As specified in Division 07 Section "Thermal Insulation."
 - 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
- C. Acoustical Sealant: As specified in Division 07 Section "Joint Sealants."

2.7 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work indicates acceptance of areas and substrates.

3.2 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.
 - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.

- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.3 INTERIOR NON-LOAD-BEARING WALL INSTALLATION

- A. Install studs so flanges within framing system point in same direction.
 - 1. Space studs for all applications at 16 inches o.c., unless otherwise indicated.
- B. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb, unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
 - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 - 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
 - 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- C. Direct Furring:
 - 1. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- D. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.4 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

3.5 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Abuse-Resistant Type: Typical, walls.
 - 2. Impact Resistant Type: Walls, Lower Level Passage 013AC.
 - 3. Glass-Mat, Water-Resistant Backing Board: At all locations indicated to receive tile, furnished and installed by Division 09 Section "Tiling."
- B. Single-Layer Application:
 - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels either vertically (parallel to framing) or horizontally (perpendicular to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.

3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.6 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints at locations indicated on Drawings, or if not indicated, according to ASTM C 840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
 1. Cornerbead: Use at outside corners.
 2. LC-Bead: Use at exposed panel edges.

3.7 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 2. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.

3.8 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 21 16

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 09 31 00 - TILING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Glazed wall tile.
 - 2. Mosaic tile.
 - 3. Stone thresholds installed as part of tile installations.
 - 4. Waterproof membrane.
 - 5. Metal edge strips installed as part of tile installations.
 - 6. Tile backing panels.
- B. Related Sections include the following:
 - 1. Division 07 Section "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.
- D. Facial Dimension: Nominal tile size as defined in ANSI A137.1.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.5 PERFORMANCE REQUIREMENTS

- A. Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per the DCOF AcuTest in accordance with ANSI A137.1 – 2012 standard.
 - 1. Level Surfaces: Minimum 0.42 wet.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
- C. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.
- D. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required.
 - 2. Full-size units of each type of trim and accessory for each color and finish required.
 - 3. Stone thresholds in 6-inch lengths.
 - 4. Metal edge strips in 6-inch lengths.

1.7 INFORMATIONAL SUBMITTALS

- A. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- B. Product Certificates: For each type of product, signed by product manufacturer.
- C. Qualification Data: For Installer.
- D. Material Test Reports: For each tile-setting and -grouting product.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated.

1.9 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution.

1. Build mockup of each type of floor tile installation.
2. Build mockup of each type of wall tile installation.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

B. Preconstruction Testing Service: Engage a qualified independent testing agency to perform testing indicated below.

1. ASTM F 2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in Situ Probes.
2. ASTM F 3191, Standard Practice for Field Determination of Substrate Water Absorption (Porosity) for Substrates to Receive Resilient Flooring.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Store liquid latexes and emulsion adhesives in unopened containers and protected from freezing.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.11 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Tile: Obtain all tile of same type and color or finish from one source or producer.
 1. Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer for each product:
1. Stone thresholds.
 2. Waterproof membrane.
 3. Metal edge strips.

2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
1. Provide tile complying with Standard grade requirements, unless otherwise indicated.
 2. For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.
- C. ISO 13007 Standards for Ceramic Tile, Adhesives and Grouts.
- D. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:
1. As indicated by manufacturer's designations.
- E. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- F. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer, unless otherwise indicated.
1. Where tile is indicated for installation in wet areas or on exterior walls, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.
- G. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.3 TILE PRODUCTS

A. Mosaic Tile (**CT**): Factory-mounted flat tile as follows:

1. Basis-of-Design Product: Subject to compliance with requirements, provide **Daltile; Keystone**s or a comparable product of one of the following:
 - a. American Olean.
 - b. Crossville.
2. Surface: Smooth.
3. Module Size: 2 by 2 inches.
4. Nominal Thickness: 1/4 inch.
5. Face: Plain, with cushion edges.
6. Color: As indicated on Finish Legend.
7. Grout Color: As indicated on Finish Legend.
8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Base (**CTB**): Built up base with surface bullnose top edge, 2 by 2, MB-5A.

B. Wall Tile (**CWT**): Flat tile as follows:

1. Basis-of-Design Product: Subject to compliance with requirements, provide **Daltile; Semi Gloss** or a comparable product of one of the following:
 - a. American Olean.
 - b. Crossville.
2. Surface: Smooth.
3. Module Size: 4-1/4 by 4-1/4 inches.
4. Nominal Thickness: 3/8 inch.
5. Face: Plain, with cushion edges.
6. Color: As indicated on Finish Legend.
7. Grout Color: As indicated on Finish Legend.

2.4 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, aligning lower edge of bevel with adjacent floor finish. Limit height of bevel to 1/2 inch or less, and finish bevel to match face of threshold.

B. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.

1. Description: Uniform, fine- to medium-grained white stone with gray veining.

2.1 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

- B. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Custom Building Products; RedGard Crack Prevention and Waterproofing Membrane.
 - b. Laticrete International, Inc.; Laticrete Hydro Ban.
 - c. MAPEI Corporation; Mapelastic AquaDefense.

2.2 TILE BACKING PANELS

- A. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.
 - 1. Manufacturers: Subject to compliance with requirements, provide one of the following:
 - a. CertainTeed Corporation; Diamondback Tile Backer.
 - b. Georgia-Pacific Building Products; DensShield Tile Backer.
 - c. National Gypsum; Gold Bond eXP Tile Backer.
 - 2. Core: 5/8 inch, Type X.
 - 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.3 SETTING AND GROUTING MATERIALS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Custom Building Products.
 - 2. LATICRETE International Inc.
 - 3. MAPEI Corporation.
- B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4 and ISO 13007 C2EP1, consisting of the following:
 - 1. Prepackaged dry-mortar mix containing dry, redispersible, ethylene vinyl acetate additive to which only water must be added at Project site.
 - a. Product: Subject to compliance with requirements, provide one of the following:
 - 1) Custom Building Products; Versa Bond.
 - 2) LATICRETE International, Inc.; 253 Gold.
 - 3) MAPEI Corporation; Ultraflex 2.
 - 2. For wall applications, provide nonsagging mortar that complies with Paragraph F-4.6.1 in addition to the other requirements in ANSI A118.4 and ISO 13007 C2TES1.
 - a. Product: Subject to compliance with requirements, provide one of the following, or equal:
 - 1) Custom Building Products; LFT.
 - 2) MAPEI Corporation; Ultraflex LFT.
- C. Polymer-Modified Tile Grout: ANSI A118.7, color as indicated.

1. Polymer Type: Ethylene vinyl acetate, in dry, redispersible form, prepackaged with other dry ingredients.
 - a. Unsanded grout mixture for joints 1/8 inch and narrower.
 2. Basis of Design Product: Subject to compliance with requirements, provide **MAPEI Corporation; MAPEI Keracolor U Premium Unsanded Grout with Polymer** or the following:
 - a. LATICRETE International Inc.; Laticrete 1600 Series Tri-Poly Fortified Unsanded Grout.
- D. Epoxy Based Tile Grout: ANSI A118.3, color as selected by Architect from manufacturer's full range.
1. Basis of Design Product: Subject to compliance with requirements, provide **MAPEI Corporation; MAPEI Opticolor** or the following:
 - a. LATICRETE International Inc.; Laticrete SpectraLOCK.

2.4 ELASTOMERIC SEALANTS

- A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements in Division 07 Section "Joint Sealants."
- B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

2.5 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic, designed specifically for flooring and wall applications, exposed-edge material as indicated.
 1. Basis of Design Products: Provide products indicated by **Schluter Systems**, or equal.
 2. Provide the following metal edge strips at all conditions indicated:
 - a. Vertical transitions at outside corner, wall tile to wall tile:
 - 1) Schlüter-QUADEC, satin anodized aluminum.
 - a) Height: As required to suit tile thickness.
 - b. Vertical transitions at wall tile to door frames:
 - 1) Schlüter-QUADEC, satin anodized aluminum.
 - a) Height: As required to suit tile thickness.

- C. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
 - 1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F per ASTM D 87.
 - 2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.
- D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.6 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
 - 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
 - 3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.
- B. Concrete Substrates: Prepare according to ASTM F 710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
 3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
 4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform relative humidity test using in situ probes, in accordance with ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement, or up to the manufacturer's allowed limit for the installed products.
 - b. Concrete slab substrates for testing should be at service temperature and relative humidity expected during normal use or at the conditions required for installation of a floor covering material in accordance with manufacturer's written installation instructions for at least 48 hours before making relative humidity measurements.
 - c. Perform three tests for the first 1,000 square feet and at least one additional test for each additional 1,000 square feet.
 5. Porosity Testing: Perform tests as follows prior to installation of flooring.
 - a. Perform water absorption testing in accordance with ASTM F 3191 to determine if the substrate surface is porous or non-porous.
 - b. Substrate and ambient temperature: 75 +/- 10 degrees F.
 - c. Ambient humidity: 50 +/- 10 percent relative humidity.
- C. Provide concrete substrates for tile floors installed with thin-set mortar that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.
1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
 2. Remove protrusions, bumps, and ridges by sanding or grinding.
- D. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- E. Field-Applied Temporary Protective Coating: Where indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.
- 3.3 INSTALLATION, GENERAL
- A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.
 - B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.

- C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
- F. Lay out tile wainscots to next full tile beyond dimensions indicated.
- G. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 - 1. Locate joints in tile surfaces directly above joints in concrete substrates.
 - 2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."
- H. Grout tile to comply with requirements of the following tile installation standards:
 - 1. For ceramic tile grouts (sand-portland cement; dry-set, commercial portland cement; and latex-portland cement grouts), comply with ANSI A108.10.

3.4 TILE BACKING PANEL INSTALLATION

- A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

3.5 WATERPROOFING INSTALLATION

- A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.
- B. Do not install tile or setting materials over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.6 FLOOR TILE INSTALLATION

- A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCA installation methods and ANSI A108 Series of tile installation standards.
- B. Joint Widths: Install tile on floors with the following joint widths:

1. Mosaic Tile: 1/8 inch.

C. Stone Thresholds: Install stone thresholds at locations indicated; set in same type of setting bed as abutting field tile, unless otherwise indicated.

1. Set thresholds in latex-portland cement mortar for locations where mortar bed would otherwise be exposed above adjacent nontile floor finish.

3.7 WALL TILE INSTALLATION

A. Install types of tile designated for wall installations to comply with requirements in the Wall Tile Installation Schedule, including those referencing TCA installation methods and ANSI setting-bed standards.

B. Joint Widths: Install tile on walls with the following joint widths:

1. Wall Tile: 1/16 inch.

3.8 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove epoxy and latex-portland cement grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
3. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

E. Protect all installed floor tile work with heavy duty kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

1. Protect tile floors with kraft paper and additional hardboard covering during entire construction period and for duration of subsequent phases including but not limited to FF&E and Technology installations.
2. Remove coverings at Substantial Completion for final review by Architect. Reinstall protective coverings following review and correction of punch list items as required.

3.9 FLOOR TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

1. Tile Installation: TCNA F125A; interior floor installation on waterproofing membrane over concrete; thin-set mortar.
 - a. Tile Type: Mosaic tile.
 - b. Thin-Set Mortar: Latex-portland cement mortar.
 - c. Grout: Epoxy based grout.

3.10 WALL TILE INSTALLATION SCHEDULE

A. Interior Wall Installations, Metal Studs:

1. Tile Installation: TCNA W245; thinset mortar on glass-mat, water-resistant gypsum backer board.
 - a. Tile Type: Wall tile.
 - b. Thin-Set Mortar: Latex-portland cement mortar.
 - c. Grout: Unsanded grout.

END OF SECTION 09 31 00

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section includes:
 - 1. Acoustical panels and exposed suspension systems for ceilings.
- B. Related Sections include the following:
 - 1. Division 07 Section "Joint Sealants" for acoustical sealants furnished and installed by this Section in acoustical panel ceiling assemblies.

1.3 DEFINITIONS

- A. CAC: Ceiling Attenuation Class.
- B. LR: Light Reflectance coefficient.
- C. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
 - 1. Acoustical Panel: Set of 6-inch- square Samples of each type, color, pattern, and texture.
 - 2. Exposed Suspension System Members, Moldings, and Trim: Set of 12-inch- long Samples of each type, finish, and color.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical panel ceiling.
- D. Research/Evaluation Reports: For each acoustical panel ceiling and components.
- E. Maintenance Data: For finishes to include in maintenance manuals.

- F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 COORDINATION

- A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, and partition assemblies.

1.9 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Acoustical Ceiling Panels: Full-size panels equal to 2 percent of quantity installed, for each ceiling panel type.
 - 2. Suspension System Components: Quantity of each exposed component equal to 2 percent of quantity installed, for each suspension system type.

1.10 WARRANTY

- A. Special Warranty for Acoustical Panel Ceilings and Suspension Systems: Manufacturer's standard form in which manufacturer agrees to replace acoustical panel ceilings and suspension systems that fail in materials or workmanship within specified warranty period.
1. Failure of ceiling panels includes sagging and warping, and growth of mold, mildew and stain causing bacteria.
 2. Failure of suspension systems includes rusting.
 3. Warranty does not cover damages that may occur from vibrations, fire, water, freezing temperatures, accident or any form of abuse or exposure to abnormal conditions.
 4. Warranty Period: 30 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7 and the Connecticut State Building Code.
- B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
 2. Smoke-Developed Index: 450 or less.

2.2 ACOUSTICAL PANELS, GENERAL

- A. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer.
- B. Glass-Fiber-Based Panels: Made with binder containing no urea formaldehyde.
- C. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E 795.
- D. Antimicrobial Fungicide Treatment: Provide acoustical panels with face and back surfaces coated with antimicrobial treatment consisting of manufacturer's standard formulation with fungicide added to inhibit growth of mold and mildew and showing no mold or mildew growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.3 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING

- A. Basis-of-Design Product: Subject to compliance with requirements, provide products as indicated by **Armstrong World Industries, Inc.** or a comparable product by one of the following:
1. CertainTeed, Inc.
 2. Rockfon.
 3. USG Interiors, Inc.
- B. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:
1. **Ceiling Type:**
 - a. Basis of Design Product: **Armstrong World Industries, Inc.; Cortega #769.**
 - 1) Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
 - 2) Pattern: CD (perforated, small holes and fissured).
 - 3) Color: White.
 - 4) LR: Not less than 0.82.
 - 5) NRC: Not less than 0.75.
 - 6) CAC: Not less than 35.
 - 7) Edge/Joint Detail: Square.
 - 8) Thickness: 5/8 inch.
 - 9) Modular Size: 24 by 48 inches.
 - 10) Antimicrobial Treatment: BioBlock + and HumiGuard Plus.
- C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.4 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.
- B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.

2. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- diameter wire.

- E. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
- F. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.
- G. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.
- H. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in-place.

2.5 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING

- A. Wide-Face, Capped, Double-Web, Hot-Dip Galvanized, G30, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, hot-dip galvanized according to ASTM A 653/A 653M, G30 coating designation, with prefinished, cold-rolled, 15/16-inch- wide, metal caps on flanges.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide **Armstrong World Industries, Inc.; Prelude XL 15/16" Exposed Tee System** or a comparable product by one of the following:
 - a. CertainTeed; 15/16" Classic Stab System.
 - b. Rockfon/Chicago Metallic; 15/16" Suspension.
 - c. USG Interiors, Inc.; Donn DX/DXL.
 2. Structural Classification: Intermediate duty system.
 3. Face Design: Flat, flush.
 4. Face Finish: White, typical.

2.6 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.
 1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners, unless otherwise indicated.

2.7 ACOUSTICAL SEALANT

- A. Products: Comply with Division 07 Section "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 8. Do not attach hangers to steel deck tabs.
 9. Do not attach hangers to steel roof deck. Attach hangers to structural members.

-
10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
 - a. Install moldings in one piece at all walls 12 feet or less in length. Minimize quantity of pieces at longer walls.
 - b. Use factory edges where joining lengths of molding. Abut moldings where joined; do not overlap.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
 2. Install hold-down clips in areas indicated.
- 3.4 CLEANING
- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 09 65 13 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section Includes:
 - 1. Resilient base.
 - 2. Resilient molding accessories.
- B. Related Sections:
 - 1. Division 09 Section "Resilient Tile Flooring" for resilient tile flooring and flooring preparation requirements.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of product indicated.
- C. Samples for Verification: For each type of product indicated, in manufacturer's standard-size Samples but not less than 12 inches long, of each resilient product color, texture, and pattern required.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.
- B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to flooring installation including, but not limited to, the following:
 - 1. Review substrate conditions, moisture and pH test results, manufacturer's installation instructions, and warranty requirements.
 - 2. Document proceedings, including required corrective measures.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.6 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish not less than 10 percent (50 linear feet for every 500 linear feet) or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.8 WARRANTY

- A. General Warranty: Special warranties specified in this Section shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Manufacturer's Warranty: Written warranty, signed by manufacturer agreeing to repair or replace resilient flooring, installed according to manufacturer's written recommendations, that fails in performance, materials, or workmanship within specified warranty period.
 - 1. Warranty Period: One year from date of Substantial Completion.
 - 2. Exclusions from warranty include the following:
 - a. Problems caused by moisture, hydrostatic pressure, or alkali in the subfloor.
 - b. Damage to flooring products from high heels or spiked shoes.
- C. Installer Warranty: Written warranty, signed by Installer agreeing to repair or replace resilient flooring, installed according to manufacturer's written recommendations, that fails in performance, materials, or workmanship within specified warranty period.
 - 1. Warranty Period: One year from date of Substantial Completion.

2. Exclusions from warranty include the following:
 - a. Problems caused by moisture, hydrostatic pressure, or alkali in the subfloor.
 - b. Damage to flooring products from high heels or spiked shoes.

PART 2 - PRODUCTS

2.1 RESILIENT BASE

- A. Basis-of-Design Product (**RB-1**): Subject to compliance with requirements, provide **Johnsoite; Rubber Wall Base** or a comparable product by one of the following:
 1. Mannington; Premium Edge.
 2. Roppe Corporation, 700 Series Base.
- B. Product Standard: ASTM F 1861, Type TP (rubber, thermoplastic), Group I (solid, homogeneous).
 1. Style: Cove (base with toe).
- C. Minimum Thickness: 0.125 inch.
- D. Height: 4 inches.
- E. Lengths: Coils in manufacturer's standard length.
- F. Inside and Outside Corners: Job formed.
- G. Color: As indicated on Finish Legend.

2.2 RESILIENT MOLDING ACCESSORY

- A. Resilient Molding Accessory:
 1. Basis of Design Product: Subject to compliance with requirements, provide **Johnsonite; Wheeled Traffic Transitions** for conditions indicated, or comparable product by one of the following:
 - a. Mannington Commercial.
 - b. Roppe Corporation.
- B. Material: Rubber.
- C. Provide manufacturer's standard reducer strip for conditions indicated.
- D. Colors: As selected by Architect from full range of industry colors.

2.3 INSTALLATION MATERIALS

- A. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

1. Comply with manufacturer's requirements for adhesives installed as part of warranties.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Comply with floor preparation and underlayment requirements in Division 09 Section "Resilient Tile Flooring."
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient products until they are same temperature as the space where they are to be installed.
 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.

- F. Preformed Corners: Install preformed corners before installing straight pieces.
- G. Job-Formed Corners:
 - 1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends.
 - 2. Inside Corners: Use straight pieces of maximum lengths possible.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of resilient floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.
- B. Perform the following operations immediately after completing resilient product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover resilient products until Substantial Completion.

END OF SECTION 09 65 13

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 09 65 19 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section Includes:
 - 1. Vinyl composition tile.
 - 2. Luxury vinyl tile (planks).
 - 3. Floor preparation.
- B. Related Sections:
 - 1. Division 09 Section "Resilient Base and Accessories" for resilient base, reducer strips, and metal edge strips installed with resilient floor coverings.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of floor tile indicated.
- C. Samples for Verification: Full-size units of each color and pattern of floor tile required.
- D. Qualification Data: For qualified Installer.
- E. Maintenance Data: For each type of floor tile to include in maintenance manuals.
- F. Warranty: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation indicated.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by manufacturer for installation techniques required. Provide one Master Installer for each product specified.

- B. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.
- C. Preconstruction Testing Service: Engage a qualified independent testing agency to perform testing indicated below.
 - 1. ASTM F 2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in Situ Probes.
 - 2. ASTM F 3191, Standard Practice for Field Determination of Substrate Water Absorption (Porosity) for Substrates to Receive Resilient Flooring.
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to flooring installation including, but not limited to, the following:
 - 1. Review substrate conditions, moisture and pH test results, manufacturer's installation instructions, and warranty requirements.
 - 2. Document proceedings, including required corrective measures.
- E. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockups for each type of resilient flooring including resilient base and accessories.
 - a. Size: Minimum 100 sq. ft. for each type, color, and pattern in locations directed by Architect.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.6 PROJECT CONDITIONS

- A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F , in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Close spaces to traffic during floor covering installation.
- D. Close spaces to traffic for 48 hours after floor covering installation.
- E. Install resilient products after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.8 WARRANTY

- A. General Warranty: Special warranties specified in this Section shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Manufacturer Warranty: Written warranty, signed by manufacturer agreeing to repair or replace resilient flooring and adhesives that fails in performance, materials, or workmanship within specified warranty period.
1. Warranty Period: Commencing from date of Substantial Completion:
 - a. Vinyl Composition Tile: Five years.
 - b. Luxury Vinyl Tile: 20 years.
 2. Exclusions from warranty include the following:
 - a. Problems caused by moisture, hydrostatic pressure, or alkali in the subfloor.
 - b. Damage to flooring products from high heels or spiked shoes.
- C. Installer Warranty: Written warranty, signed by Installer agreeing to repair or replace resilient flooring, installed according to manufacturer's written recommendations, that fails in performance, materials, or workmanship within specified warranty period.
1. Warranty Period: One year from date of Substantial Completion.
 2. Exclusions from warranty include the following:
 - a. Problems caused by moisture, hydrostatic pressure, or alkali in the subfloor.
 - b. Damage to flooring products from high heels or spiked shoes.

PART 2 - PRODUCTS

2.1 VINYL COMPOSITION FLOOR TILE

- A. Vinyl Composition Tile (**VCT-1**):
1. Basis of Design Product: Subject to compliance with requirements, provide **Armstrong World Industries, Inc.; Premium Excelon ChromaSpin** or comparable product by one of the following:
 - a. Johnsonite.
 - b. Tarkett.

2. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.
3. Wearing Surface: Smooth.
4. Thickness: 0.125 inch.
5. Static Load Limit: ASTM F 970, 125 psi.
6. Size: 12 by 12 inches.
7. Colors: As indicated on Finish Legend.

2.3 LUXURY VINYL TILE

A. Luxury Vinyl Tile (LVT-1):

1. Basis of Design Product: Subject to compliance with requirements, provide **Armstrong World Industries, Inc.; Natural Creations with Diamond 10 Arbor Art** or comparable product by one of the following:
 - a. Johnsonite.
 - b. Tarkett.
2. Tile Standard: ASTM F1700.
 - a. Class: Class III, Printed Film Vinyl Tile.
 - b. Type: B, Embossed Surface.
3. Thickness: 0.125 inch.
4. Wear Layer Thickness: 0.020 inch.
5. Size: 4 by 36 inches.
6. Colors: As indicated on Finish Legend.

2.4 INSTALLATION MATERIALS

A. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

1. Adhesives shall comply with the following limits for VOC content:
 - a. Vinyl Tile Adhesives: 50 g/L or less.
 - b. Rubber Floor Adhesives: 60 g/L or less.

2.5 SUBSTRATE PREPARATION

A. Primer: ASTM C1059, Type I, latex formulation for use with underlayments.

1. Product: Subject to compliance with requirements, provide one of the following:
 - a. Ardex; P 51 Primer.
 - b. Laticrete; Admix & Primer for underlayments.
 - c. MAPEI Corporation; Primer T for underlayments.

B. Underlayment: ASTM A118.4, 5000 psi compressive strength at 28 days; trowel applied cementitious underlayment for filling holes, depressions, and damaged areas of concrete slabs in excess of 1/2-inch depth.

1. Product: Subject to compliance with requirements, provide one of the following:
 - a. Ardex; SD-P.
 - b. Laticrete; 816 Latipatch Rapid Underlayment.
 - c. MAPEI Corporation; Mapecem Quickpatch

- C. Self-Leveling Underlayment: ASTM C109, 4300 psi compressive strength at 28 days; cementitious powder mixed with water to produce a free-flowing self-leveling underlayment for rapid leveling of concrete slabs that have been shot-blasted and/or with depressions of up to 1-inch depth.
 1. Product: Subject to compliance with requirements, provide one of the following:
 - a. Ardex; K 15.
 - b. Laticrete; 86 LatiLevel Self Leveling Underlayment.
 - c. MAPEI Corporation; Ultraplan 1 Plus.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work indicates acceptance of substrates.

3.2 PREPARATION FOR EXISTING CONCRETE SLABS

- A. Prepare existing substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710.
 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- C. Prime all existing concrete surfaces. Allow primer to dry for 2 to 3 hours at 70 deg F, but not more than 24 hours before installation of underlayment. Areas of primer that have dried for more than 24 hours must be re-primed prior to application of underlayment. Comply with manufacturer's written recommendations and the following:
 1. Primer: Pour, mop or spray primer onto the surface. Apply an even thickness of primer to the prepared substrate using a bristle broom. Remove any puddles or thick areas.

2. Underlayment: Apply underlayment to existing holes, depressions, and cracks in substrate as required for preparation of installation of self-leveling underlayment.
3. Self-Leveling Underlayment: Prime surface and install self-leveling underlayment within 24 hours. Pour or pump self-leveling underlayment over the primed substrate and spread with a spike roller or gauging rake. Use a smoothing paddle to combine pours and to obtain a flat smooth surface.
 - a. Furnish and install self-leveling underlayment on all existing slabs to receive new flooring, including those that have had existing VAT, VCT and/or mastic removed by the shot-blast method.
 - 1) Floor preparation work includes installation of underlayment as required and self-leveling underlayment in 1/4-inch thickness, unless otherwise indicated.
 - 2) Additional floor preparation work required in excess of 1/4-inch thickness for self-leveling underlayment, will be included in a Unit Price.
- D. Test concrete slabs for moisture following installation of underlayment(s), but do not test surface of self-leveling underlayment for moisture or pH.
 1. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
 2. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform relative humidity test using in situ probes, in accordance with ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement, or up to the manufacturer's allowed limit for the installed products.
 - b. Concrete slab substrates for testing should be at service temperature and relative humidity expected during normal use or at the conditions required for installation of a floor covering material in accordance with manufacturer's written installation instructions for at least 48 hours before making relative humidity measurements.
 - c. Perform three tests for the first 1,000 square feet and at least one additional test for each additional 1,000 square feet.
 3. Porosity Testing: Perform tests as follows prior to installation of flooring.
 - a. Perform water absorption testing in accordance with ASTM F 3191 to determine if the substrate surface is porous or non-porous.
 - b. Substrate and ambient temperature: 75 +/- 10 degrees F.
 - c. Ambient humidity: 50 +/- 10 percent relative humidity.
- E. Do not install floor tiles until they are same temperature as space where they are to be installed.
 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.

1. Installation is not to begin until the HVAC system is operational, and the following conditions are maintained for at least 48 hours before, during and 72 hours after completion:
 - a. Ambient Temperature: Between 65 and 85 degrees F, unless otherwise stated by installed products manufacturer.
 - b. Ambient Humidity: Between 35 and 55 percent, unless otherwise stated by installed products manufacturer.
 - c. Substrate Temperature: Not less than 65 degrees F or more than 85 degrees F before, during and after installation, unless otherwise stated by installed products manufacturer.
 - 1) Do not install flooring unless substrate temperature is at least 5 degrees above dew point with temperature rising.
 - B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 1. Lay vinyl tiles with grain direction alternating in adjacent tiles (basket-weave pattern).
 2. Lay vinyl planks in random staggered pattern.
 - C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 - D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
 - E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
 - F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.
 - G. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- 3.4 CLEANING AND PROTECTION
- A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.
 - B. Perform the following operations immediately after completing floor tile installation:
 1. Remove adhesive and other blemishes from exposed surfaces.
 2. Sweep and vacuum surfaces thoroughly.
 3. Damp-mop surfaces to remove marks and soil.
 - C. Vinyl composition tile flooring:

1. Apply a minimum of 3 to 5 coats of protective, acrylic floor polish to horizontal surfaces that are free from soil, visible adhesive, and surface blemishes as recommended in writing by manufacturer.
 - a. Use commercially available product acceptable to manufacturer.
 - b. Coordinate selection of floor polish and final number of coats with Owner's maintenance service.

- D. Protect floor tile products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

- E. Cover floor tile until Substantial Completion.

END OF SECTION 09 65 19

SECTION 09 67 23 - RESINOUS FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes:
 - 1. High-performance resinous flooring system.
- B. Related Sections include the following:
 - 1. Division 05 Section "Metal Fabrications" for metal nosing installed on concrete steps scheduled to receive resinous flooring.
 - 2. Division 07 Section "Joint Sealants" for sealants installed at joints in resinous flooring systems.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.
- B. Samples for Initial Selection: For each type of exposed finish required.
- C. Samples for Verification: For each resinous flooring system required, 6 inches square, applied to a rigid backing by Installer for this Project.
- D. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
- E. Material Test Reports: For each resinous flooring component.
- F. Material Certificates: For each resinous flooring component, signed by manufacturer.
- G. Maintenance Data: For resinous flooring to include in maintenance manuals.
- H. Warranty: Special warranty included in this Section.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.
 - 1. Engage an installer who employs only persons trained and approved by resinous flooring manufacturer for applying resinous flooring systems indicated.
 - 2. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
- B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.
- C. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Apply full-thickness mockups on 48-inch- square floor area selected by Architect.
 - a. Include 48-inch length of integral cove base.
 - 2. Simulate finished lighting conditions for Architect's review of mockups.
 - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- D. Preconstruction Testing Service for Existing Concrete: Engage a qualified independent testing agency to perform moisture vapor emission testing indicated below.
 - 1. ASTM F 2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in Situ Probes.
- E. Preinstallation Conference: Prior to installation of resinous flooring, conduct preinstallation meeting at Project site in accordance with Division 01 Section "Project Management and Coordination."
 - 1. Meet with Architect and Owner's Representative.
 - 2. Review substrate conditions, moisture testing reports, manufacturer's installation instructions, and warranty requirements.
 - 3. Document proceedings, including corrective measures or actions required, and furnish copy to each participant.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
- B. Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.

1.7 WARRANTY

- A. General Warranty: Special warranties specified in this Section shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Limited Warranty: Written warranty, signed by manufacturer agreeing to repair or replace resinous flooring, installed according to manufacturer's written recommendations, that fails in performance, materials, or workmanship within specified warranty period.
 - 1. Warranty Period: One year from date of Substantial Completion.
 - 2. Exclusions from warranty include the following:
 - a. Problems caused by moisture, hydrostatic pressure, or alkali in the subfloor.
 - b. Damage to flooring products from high heels or spiked shoes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Resinous Flooring: Abrasion-, impact- and chemical-resistant, epoxy/urethane -based, monolithic floor surfacing including preparation, primers and finish coats, designed to produce a seamless floor and integral cove base.
 - 1. Basis of Design Product: Subject to compliance with requirements, provide **Dur-A-Flex, Inc.;** **Hybri-Flex EB** or one of the following:
 - a. Florock; FloroCrete SLX with FloroWear 7100 Topcoat.
 - b. Tnemec Company, Inc.; System Series 241, 238 and 256 Topcoat.
 - 2. Basis of Design Product: Subject to compliance with requirements, provide **Dur-A-Flex, Inc.;** **Shop Floor** or one of the following:
 - a. Florock; FloroShop.
 - b. Tnemec Company, Inc.; System Series 241, 238 and 256 Topcoat.

2.2 RESINOUS FLOORING

A. System Characteristics:

1. Colors: As selected by Architect from manufacturer's full range for system indicated.
2. Application: Broadcast aggregate.
3. Wearing Surface: Orange peel.
4. Integral Cove Base: 4 inches high.
5. Overall System Thickness: 1/4- inch (1/8-inch at stairs).

B. System Components: Provide manufacturer's standard components that are compatible with each other and as follows:

1. Typical Resinous Flooring System: **Dur-A-Flex, Inc.; Hybri-Flex EB.**
 - a. Topping: Poly-Crete MD resin, hardener, and SL aggregate.
 - b. Broadcast and Seal Coats: Shop Floor, epoxy based, two component resin.
 - c. Broadcast Aggregate: Flintshot quartz aggregate.
 - d. Top Coat: Armor-Top aliphatic urethane multi-component resin.
2. Resinous Flooring System for Stairs: **Dur-A-Flex, Inc.; Shop Floor.**
 - a. Primer: Dur-A-Glaze #4 water based resin and hardener.
 - b. Broadcast and Grout Coats: Shop Floor, epoxy based, two component resin.
 - c. Broadcast Aggregate: Flintshot quartz aggregate.
 - d. Top Coat: Armor-Top aliphatic urethane multi-component resin, hardener and grit.

C. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:

1. Hardness: 75-80 Shore D per ASTM D 2240.
2. Compressive Strength: 17,500 psi per ASTM D 695.
3. Tensile Strength: 4,000 psi per ASTM D 638.
4. Flexural Modulus of Elasticity: 6.2×10^5 per ASTM D 790.
5. Water Absorption: 0.04% per ASTM D 570.
6. Indentation: .025 percent maximum per MIL-D-3134.
7. Impact Resistance: No chipping, cracking, or delamination and not more than 1/16-inch permanent indentation per MIL-D-3134.
8. Resistance to Elevated Temperature: No slip or flow of more than 1/16 inch (1.6 mm) per MIL-D-3134.
9. Abrasion Resistance: 4 mg maximum weight loss per ASTM C 501.
10. Flammability: Self-extinguishing per ASTM D 570.
11. Bond Strength: 400 psi, 100 percent concrete failure per ASTM D 4541.
12. Coefficient of Friction: 0.8 per ASTM D 2047.

D. System Chemical Resistance: Test specimens of cured resinous flooring system are unaffected when tested according to ASTM C 267 for immersion in the following reagents for not less than 7 days:

1. Acetic Acid 5 percent
2. Acetone
3. Ammonium Hydroxide 10 percent
4. Citric Acid 10 percent
5. Cola
6. Ethylene Glycol
7. Formaldehyde 10 percent

8. Gasoline
9. Hydrochloric Acid 10 percent and 20 percent
10. Lactic Acid 10-50 percent
11. Mineral Spirits
12. Nitric Acid 10 percent
13. Phosphoric Acid 10-80 percent
14. Salad Oil
15. Sodium Carbonate 2 percent and 20 percent
16. Sodium Chloride 10 percent
17. Syrup
18. Urine
19. Xylene

2.3 ACCESSORY MATERIALS

- A. Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.
- B. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral Ph substrate for resinous flooring application.
- B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
 1. Roughen concrete substrates as follows:
 - a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
 - b. Comply with ASTM C 811 requirements, unless manufacturer's written instructions are more stringent.
 2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
 3. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

4. Verify that concrete substrates have neutral Ph and that resinous flooring will adhere to them. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- C. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.
- D. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- E. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations.

3.2 APPLICATION

- A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.
 - a. Apply joint sealant to comply with manufacturer's written recommendations.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Apply reinforcing membrane to substrate cracks.
- D. Integral Cove Base: Apply cove base mix, 4 inches high, to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, and topcoating of cove base. Round internal and external corners.

3.3 SYSTEM INSTALLATION - TYPICAL

- A. System Installation: Install specified system in five distinct steps as follows:
 1. Substrate preparation.
 2. Topping/overlay application with quartz aggregate broadcast.
 3. Resin application with quartz aggregate broadcast.
 4. Topcoat application.
 5. Second topcoat application.
- B. Topping
 1. The topping shall be applied as a self-leveling system. The topping shall be applied in one lift with a nominal thickness of 1/8 inch.
 2. The topping shall be comprised of three components, a resin, hardener and filler as supplied by the Manufacturer.

3. The hardener shall be added to the resin and thoroughly dispersed by suitably approved mechanical means. SL Aggregate shall then be added to the catalyzed mixture and mixed in a manner to achieve a homogenous blend.
4. The topping shall be applied over horizontal surfaces using 1/2- inch "v" notched squeegee, trowels or other systems approved by the Manufacturer.
5. Immediately upon placing, the topping shall be degassed with a loop roller.
6. Quartz aggregate shall be broadcast to excess into the wet material at the rate of 0.8 lbs/sf.
7. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.

C. Broadcast

1. The broadcast coat resin shall be applied at the rate of 90 sf/gal.
2. The broadcast coat shall be comprised of liquid components, combined at a ratio of 2 parts resin to 1 part hardener by volume and shall be thoroughly blended by mechanical means such as a high speed paddle mixer.
3. Quartz aggregate shall be broadcast into the wet resin at the rate of 0.5 lbs/sf.
4. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.

D. Topcoat

1. The first pigmented topcoat shall be squeegee applied with a coverage rate of 90 sf/gal.
2. The topcoat shall be comprised of liquid components, combined at a ratio of 2 parts resin to 1 part hardener by volume and shall be thoroughly blended by mechanical means such as a high speed paddle mixer.
3. The first topcoat will be back rolled and cross rolled to provide a uniform texture and finish
4. The second pigmented topcoat (Armor-Top) shall be roller applied with a coverage rate of 500 sf/gal.
5. The finish floor will have a nominal thickness of 1/4- inch.

3.4 SYSTEM INSTALLATION – STAIRS

A. System Installation: Install specified system in seven distinct steps as follows:

1. Substrate preparation
2. Priming
3. First broadcast coat application with first aggregate broadcast
4. Second broadcast coat with second aggregate broadcast
5. Grout coat application, sand floor (if required)
6. Topcoat application, urethane

B. Primer

1. The primer shall consist of a liquid resin and hardener that is mixed at the ratio of 1 parts resin to 4 part hardener per the manufacturer's instructions.
2. The primer shall be applied by flat squeegee and back rolled at the rate of 200-250 sf/gal to yield a dry film thickness of 4 mils.

C. Broadcast Coat

1. The broadcast coat shall be applied as a double broadcast system as specified by the Architect.
2. The broadcast coat shall be comprised of two components, a resin, and hardener as supplied by the Manufacturer and mixed in the ratio of 2 parts resin to 1 part hardener.

3. The resin shall be added to the hardener and thoroughly mixed by suitably approved mechanical means.
4. The broadcast coat shall be applied over horizontal surfaces using "v" notched squeegee and back rolled at the rate of 90-100 sf/gal.
5. Quartz aggregate shall be broadcast to excess into the wet material at the rate of 0.5 lbs/sf.
6. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.
7. Apply a second coat of resin with a coverage rate of 90-100 sf/gal and broadcast aggregate to excess at the rate of 0.5 lbs/sf.
8. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.

D. Grout Coat

1. The grout coat shall be comprised of liquid components, combined at a ratio of 2 parts resin to 1 part hardener by volume and shall be thoroughly blended by mechanical means such as a high speed paddle mixer.
2. The grout coat shall be squeegee applied with a coverage rate of 90 sf/gal (flintshot) or 50 sf/gal (Q-Rok).
3. The grout coat will be back rolled and cross rolled to provide a uniform texture and finish.
4. For an orange-peel texture is desired, sand screen the floor and apply a second grout coat of epoxy. The epoxy shall be applied by squeegee and back-roll with a coverage rate of 200 sf/gal (Flintshot) .

E. Topcoat (Urethane)

1. The topcoat of Armor Top shall be roller applied at the rate of 500 sf/gal to yield a dry film thickness of 3 mils.
2. The topcoat shall be comprised of a liquid resin, hardener and grit that is mixed per the manufacturer's instructions.
3. The finished floor will have a nominal thickness of 1/8- inch.

3.5 FIELD QUALITY CONTROL

A. The following tests shall be conducted by the Applicator:

1. Temperature: Air, substrate temperatures and, if applicable, dew point.
2. Coverage Rates: Rates for all layers shall be monitored by checking quantity of material used against the area covered.

3.6 CLEANING AND PROTECTING

- A. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

END OF SECTION 09 67 23

SECTION 09 91 00 - PAINTING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes surface preparation and the application of paint systems on the following substrates:
1. Concrete masonry units (CMU).
 2. Hollow metal doors and frames.
 3. Gypsum board.
- B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
1. Painting includes field painting of exposed bare and covered pipes and ducts, conduits, hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
1. Prefinished items include the following factory-finished components:
 - a. Factory finished exterior railings.
 - b. Stainless steel interior railings.
 - c. Plastic toilet enclosures.
 - d. Prefinished wood doors.
 - e. Finished mechanical and electrical equipment.
 - f. Light fixtures and wiring devices.
 - g. Switchgear.
 - h. Distribution cabinets in closets or equipment rooms.
 2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Furred areas.
 - b. Ceiling plenums.
 - c. Pipe spaces.
 - d. Duct shafts.

3. Finished metal surfaces include the following:
 - a. Anodized or coated aluminum.
 - b. Stainless steel.
 - c. Chromium plate.
 - d. Copper and copper alloys.
 - e. Bronze and brass.
 4. Operating parts include moving parts of operating equipment and the following:
 - a. Valve and damper operators.
 - b. Linkages.
 - c. Sensing devices.
 - d. Motor and fan shafts.
 5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- D. Related Sections include the following:
1. Division 08 Section "Hollow Metal Doors and Frames" for factory priming steel doors and frames.
 2. Division 09 Section "Gypsum Board Assemblies" for surface preparation of gypsum board.

1.3 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
 4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.
1. Submit Samples on rigid backing, 8 inches square.
 2. Step coats on Samples to show each coat required for system.
 3. Label each coat of each Sample.

4. Label each Sample for location and application area.
- C. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Architects and Owners, and other information specified.
- D. Product List: For each product indicated, include the following:
 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 2. VOC content.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For coatings to include in maintenance manuals. Include the following:
 1. Area summary with Finish Schedule and area detail designating where each product, color, and finish is used.
 2. Product data pages.
 3. Material safety data sheets.
 4. Care and cleaning instructions.
 5. Touch-up procedures.
 6. Color samples of each color and finish (gloss level) used.
- B. Manual: Provide Sherwin Williams; "Custodian Project Color and Product Information" manual, or equal.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
 1. Quantity: Furnish an additional 1 gallon of each material and color applied.

1.7 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Wall Surfaces: Provide samples of at least 100 sq. ft. for each color and accent color.

2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
3. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.
4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.9 PROJECT CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Benjamin Moore & Co., including affiliate the following affiliate brand:
 - a. Corotech.
 2. PPG Architectural Finishes, Inc.; Pittsburgh Paints.
 3. Sherwin-Williams Co.

2.2 PAINT, GENERAL

- A. Material Compatibility:
 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. VOC Content for Interior Paints and Coatings:

1. All interior paints and coatings shall comply with the VOC content regulations of the Ozone Transportation Commission (OTC) effective in the **State of Connecticut**. For interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - a. Flat Coatings: 100 g/L.
 - b. Nonflat Coatings: 150 g/L.
 - c. Nonflat-High Gloss Coatings: 250 g/L.
 - d. Primers, sealers and undercoaters: 200 g/L.
 - e. Anti-corrosive and Anti-rust Paints Applied to Ferrous Metals: 250 g/L.

- C. Colors: As selected by Architect from manufacturer's full range.

2.3 CONCRETE UNIT MASONRY BLOCK FILLERS

A. Concrete Unit Masonry Block Filler: Factory-formulated high-performance latex block fillers **(50 g/L)**.

1. Benjamin Moore; Super Spec Masonry Hi-Build Block Filler 206: Applied at a dry film thickness of not less than 8.5 mils.
2. Pittsburgh Paints; 6-7 SpeedHide Interior/Exterior Masonry Latex Block Filler: Applied at a dry film thickness of not less than 7.1 mils.
3. Sherwin-Williams; Prep Rite Block Filler B25W25: Applied at a dry film thickness of not less than 8.0 mils.

B. Concrete Unit Masonry Block Filler: Factory-formulated high performance block filler for use with epoxy finish coats **(100 g/L)**:

1. Benjamin Moore; Super Spec Masonry Hi-Build Block Filler 206: Applied at a dry film thickness of not less than 8.5 mils.
2. Pittsburgh Paints; 6-15 Speedhide Interior/Exterior Masonry Hi Fill Latex Block Filler: Applied at a dry film thickness of not less than 7.0 mils.
3. Sherwin-Williams; Loxon Block Surfacer A24W200: Applied at a dry film thickness of not less than 8.0 mils.

2.4 INTERIOR PRIMERS

A. General: Provide tinted primers as required for dark colors.

B. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application **(100 g/L)**.

1. Benjamin Moore, Ultra Spec 500 Interior Latex Primer N534: Applied at a dry film thickness of not less than 1.8 mils.
2. Pittsburgh Paints; 6-2 Speedhide Interior Latex Sealer Quick-Drying: Applied at a dry film thickness of not less than 1.0 mil.
3. Sherwin-Williams; ProMar 200 Zero VOC Primer B28W2600: Applied at a dry film thickness of not less than 1.5 mils.

- C. Interior Gypsum Board Primer for Epoxy Finish Coat: Factory-formulated waterborne acrylic epoxy for interior application **(100 g/L)**.
1. Benjamin Moore; Fresh Start Multi-Purpose Latex Primer N023: Applied at a dry film thickness of not less than 1.2 mils.
 2. Pittsburgh Paints; 6-2 Speedhide Interior Latex Sealer Quick-Drying: Applied at a dry film thickness of not less than 1.0 mil.
 3. Sherwin-Williams; ProMar 200 Zero VOC Primer B28W2600: Applied at a dry film thickness of not less than 1.5 mils.
- D. Interior Metal Primer: Factory-formulated metal primer **(250 g/L)**.
1. Benjamin Moore; Super Spec Acrylic Metal Primer No. P04: Applied at a dry film thickness of not less than 1.7 mils.
 2. Pittsburgh Paints; 90-712 Series Pitt-Tech Interior/Exterior Primer/Finish DTM Industrial Enamel: Applied at a dry film thickness of not less than 2.0 mils.
 3. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Acrylic Primer B66 Series: Applied at a dry film thickness of not less than 2.0 mils.

2.5 INTERIOR PAINTS

- A. Interior Flat Acrylic Paint: Factory-formulated flat acrylic-emulsion latex paint for interior application ceilings and soffits **(50 g/L)**.
1. Benjamin Moore, Ultra Spec 500 Interior Flat N536: Applied at a dry film thickness of not less than 1.8 mils.
 2. Pittsburgh Paints; 6-70 Series Speedhide Interior Latex Flat: Applied at a dry film thickness of not less than 1.3 mils.
 3. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Flat Wall Paint B30-2600 Series: Applied at a dry film thickness of not less than 1.6 mils.
- B. Interior Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel for walls **(100 g/L)**.
1. Benjamin Moore, Ultra Spec 500 Interior Eggshell N538: Applied at a dry film thickness of not less than 1.8 mils.
 2. Pittsburgh Paints; 6-411 Series Speedhide Interior Enamel Latex Eggshell: Applied at a dry film thickness of not less than 1.5 mils.
 3. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Egg-Shell Enamel B20-2600 Series: Applied at a dry film thickness of not less than 1.6 mils.
- C. Interior Semi-Gloss Acrylic Enamel for Metal Surfaces: Factory-formulated semi-gloss acrylic interior enamel **(250 g/L)**.
1. Benjamin Moore; Super Spec HP DTM Acrylic Semi-Gloss Enamel P29: Applied at a dry film thickness of not less than 1.5 mils.
 2. Pittsburgh Paints; 90-1210 Series Pitt-Tech Plus Interior/Exterior Semi-Gloss DTM Industrial Enamel: Applied at a dry film thickness of not less than 2.0 mils.
 3. Sherwin-Williams; Pro Industrial Acrylic B66-650 Series Semi-Gloss: Applied at a dry film thickness of not less than 2.5 mils.

2.6 EPOXY COATINGS

- A. Epoxy Low Luster Coating for Masonry and Gypsum Board Surfaces (**100 g/L**).
1. Corotech; V342 Pre-Catalyzed Waterborne Epoxy Eggshell, applied at a dry film thickness of not less than 1.5 mils.
 2. Pittsburgh Paints; 16-310 Series Pitt-Glaze WB1 Interior Eggshell Pre-Catalyzed Water-Borne Acrylic Epoxy: Applied at a dry film thickness of not less than 1.5 mils.
 3. Sherwin-Williams; Pro Industrial Water Based Catalyzed Epoxy B73-360 Series: Applied at a dry film thickness of not less than 2.0 mils.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Masonry (Clay and CMU): 12 percent.
 2. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.
- E. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- D. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- E. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- G. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 1. Use applicators and techniques suited for paint and substrate indicated.
 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:
 1. Mechanical Work:
 - a. Uninsulated metal piping.
 - b. Uninsulated plastic piping.
 - c. Pipe hangers and supports.

- d. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
- 2. Electrical Work:
 - a. Switchgear.
 - b. Panelboards.
 - c. Electrical equipment that is indicated to have a factory-primed finish for field painting.

3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE

- A. Concrete Unit Masonry: Provide the following finish systems over interior concrete masonry:
 - 1. Low-Luster Acrylic-Enamel Finish: Two finish coats over a filled surface.
 - a. Block Filler: Concrete unit masonry block filler.
 - b. Finish Coats: Interior low-luster acrylic enamel.
 - 2. Low-Luster Epoxy Finish: Two finish coats over a filled surface.
 - a. Block Filler: Concrete unit masonry block filler for epoxy finish
 - b. Finish Coats: Epoxy low-luster finish.
- B. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:
 - 1. Flat Acrylic Finish (ceilings): Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior flat acrylic paint.
 - 2. Low-Luster Acrylic-Enamel Finish (Walls): Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.

3. Low-Luster Epoxy Finish: Two finish coats over a primer.
 - a. Block Filler: Interior gypsum board primer for epoxy finish.
 - b. Finish Coats: Epoxy low-luster finish.

C. Ferrous and Zinc-Coated Metal: Provide the following finish systems over ferrous metal:

1. Semi-Gloss Acrylic-Enamel Finish: Two finish coats.
 - a. Primer: Metal primer, including surfaces with factory prime coat.
 - b. Finish Coats: Interior semi-gloss acrylic enamel for metal surfaces.

END OF SECTION 09 91 00

SECTION 10 14 00 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Panel signs.
- B. Related Sections include the following:
 - 1. Division 26 Sections for illuminated Exit signs.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details for signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
 - 3. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.
 - 4. Provide vector images or other digital media that may be required to enlarge small format logos, images, symbols, etc. furnished by Architect for application on all sign types.
- C. Samples for Initial Selection: For each type of sign material indicated that involves color selection.
 - 1. Include representative Samples of available typestyles and graphic symbols.
- D. Samples for Verification: For each of the following products and for the full range of color, texture, and sign material indicated, of sizes indicated:
 - 1. Panel Signs: Not less than 12 inches square.
- E. Sign Schedule: Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.
- B. Warranty: Special warranty specified in this Section.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For signs to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
- B. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.
- C. Regulatory Requirements: Comply with handicapped accessibility requirements of the 2010 ADA Standards and ICC/ANSI A117.1.

1.7 COORDINATION

- A. Coordinate placement of anchorage devices with templates for installing signs.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PANEL SIGNS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide **ASI Sign Systems; InTouch**, or a comparable product by one of the following:
 - 1. Advance Corporation; Braille-Tac Division.
 - 2. Best Sign Systems, Inc.
 - 3. Mohawk Sign Systems, Inc.
 - 4. Southwell Co. (The)

- B. Interior Panel Signs: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner, complying with the following requirements:
1. Provide manufacturer's standard one-piece construction:
 - a. Phenolic-Backed Photopolymer Sheet: Provide light-sensitive, water-wash photopolymer face layer bonded to a phenolic base layer to produce a composite sheet with overall, face-layer, and base-layer thickness of 1/8-inch; and a Type D Shore durometer hardness of 80.
 2. Edge Condition: Square cut.
 3. Corner Condition: Square.
 4. Mounting: Unframed.
 - a. Wall mounted with mechanical fasteners or two-face tape required by substrate.
 5. Color: As selected by Architect from manufacturer's full range.
 6. Font: As selected by Architect from manufacturer's full range.
 7. Character proportion: Width to height ratio between 3:5 and 1:1, and a stroke-width-to-height ratio between 1:5 and 1:10.
 8. Size of characters and symbols:
 - a. Room numbers: 1-inch.
 - b. Room letters: 5/8-inch minimum.
 9. Pictograms: Accompanied by the equivalent verbal description placed directly below the pictogram. The border dimension of the pictogram to be no less than 6 inches in height.
 10. Finish and Contrast: Characters, symbols and background to be matte or other non-glare finish. Characters and symbols to be in contrasting color to the background; either light characters on a dark background or dark characters on a light background.
 11. Tactile Characters: Characters and Grade 2 Braille raised 1/32 inch above surface with contrasting colors. Glue-on characters or etched backgrounds are not permitted.
 - a. Manufacturer's standard process for producing text and symbols complying with ADA-ABA Accessibility Guidelines (ADAAG), ICC/ANSI A117.1, and UFAS. Produce precisely formed characters with square-cut edges free from burrs and cut marks; Braille dots with domed or rounded shape.
 - b. Braille to be separated from corresponding raised characters or symbols by 1/2-inch.

2.2 ACCESSORIES

- A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors.
- B. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

2.3 FABRICATION

- A. General: Provide manufacturer's standard signs of configurations indicated.

2.4 FINISHES, GENERAL

- A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.
- B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.
- C. Verify that anchor inserts are correctly sized and located to accommodate signs.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.
1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
 3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
 4. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls.
 - a. Locate sign with baseline of the lowest tactile character (Braille) 48" minimum above finish floor and the baseline of the highest tactile character not more than 60" above finish floor.
 - b. Locate signs so that clear floor area 18 inches minimum by 18 inches minimum centered on the tactile character, is provided beyond the arc of any door swing between the closed position and 45 degree open position.
 - c. At double doors with two active leaves, mount sign on wall to the right hand side of the door. At double doors with one inactive leaf, mount sign on inactive leaf unless otherwise indicated.

-
- B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.
1. Mechanical Fasteners: Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
 2. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.
 - a. Mount signs to glass only. Do not use this method for any other substrate.
 3. Signs Mounted on Glass: Provide matching opaque plate on opposite side of glass to conceal mounting materials.

3.3 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 10 14 00

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 10 21 13.19 - PLASTIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section Includes:
 - 1. Solid-plastic toilet compartments configured as toilet enclosures and urinal screens.
- B. Related Requirements:
 - 1. Division 06 Section "Miscellaneous Rough Carpentry" for wood blocking.
 - 2. Division 10 "Toilet and Bath Accessories" for toilet tissue dispensers, grab bars, and similar accessories.

1.3 REFERENCES

- A. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.
- B. Shop Drawings: For toilet compartments.
 - 1. Include plans, elevations, sections, details, and attachment details.
 - 2. Show locations of cutouts for compartment-mounted toilet accessories.
 - 3. Show locations of centerlines of toilet fixtures.
 - 4. Show locations of floor drains.
- C. Samples for Initial Selection: For each type of toilet compartment material indicated.
 - 1. Include Samples of hardware and accessories involving material and color selection.

- D. Samples for Verification: For the following products, in manufacturer's standard sizes unless otherwise indicated:
 - 1. Each type of material, color, and finish required for toilet compartments, prepared on 6-inch-square Samples of same thickness and material indicated for Work.
 - 2. Each type of hardware and accessory.
- E. Product Schedule: For toilet compartments, prepared by or under the supervision of supplier, detailing location and selected colors for toilet compartment material.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of toilet compartment.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet compartments to include in maintenance manuals.
- B. Warranty: Special warranty included in this Section.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents and source.
 - 1. Door Hinges: Two hinges with associated fasteners.
 - 2. Latch and Keeper: Two latches and keepers with associated fasteners.
 - 3. Door Bumper: Two bumpers with associated fasteners.
 - 4. Door Pull: Two door pulls with associated fasteners.
 - 5. Fasteners: Ten fasteners of each size and type.

1.8 QUALITY ASSURANCE

- A. Coordination: Furnish inserts and anchorages which must be built into other work for installation of toilet compartments and related items. Coordinate delivery with other work to avoid delay.
 - 1. Coordinate with wall finishes indicated on the Finish Schedule. Allow for thickness of ceramic wall tile and tile wainscots as required.

1.9 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of phenolic partitions, including panels, doors, stiles, and continuous hinges that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Breakage, corrosion, delamination and defects in factory workmanship.
 - 2. Warranty Period: 15 years from date of Substantial Completion.
 - 3. Warranty Period for Stainless Steel hardware: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire Hazard Classification: Fire Propagation Characteristics: Passes NFPA 286 testing.
- B. Regulatory Requirements: Comply with applicable provisions in the 2010 ADA Standards and ICC/ANSI A117.1 for toilet compartments designated as accessible.

2.2 SOLID-PLASTIC TOILET COMPARTMENTS

- A. Basis of Design Product: Subject to compliance with requirements, provide **Scranton Products; Hiny Hiders** or comparable product by one of the following:
 - 1. Accurate Partitions Corp.; ASI Group.
 - 2. General Partitions.
- B. Toilet-Enclosure Style: Overhead braced.
- C. Urinal-Screen Style: Wall hung, flat panel.
- D. Door, Panel, and Pilaster Construction: Solid, high-density polyethylene (HDPE) panel material, not less than 1 inch thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.
 - 1. Heat-Sink Strip: Manufacturer's standard continuous, extruded-aluminum or stainless-steel strip fastened to exposed bottom edges of solid-plastic components to hinder malicious combustion.
 - 2. Color: As indicated on Finish Legend.
- E. Pilaster Shoes and Sleeves (Caps): Manufacturer's standard design; stainless steel.
- F. Brackets (Fittings):
 - 1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

2.3 HARDWARE AND ACCESSORIES

- A. Hardware and Accessories: Manufacturer's heavy-duty operating hardware and accessories.
 - 1. Hinges: Manufacturer's minimum 16 gauge stainless-steel continuous, cam type that swings to a closed or partially open position, allowing emergency access by lifting door. Mount with through-bolts.
 - 2. Latch and Keeper: Manufacturer's heavy-duty surface-mounted cast-stainless-steel latch unit designed to resist damage due to slamming, with combination rubber-faced door strike and keeper, and with provision for emergency access. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible. Mount with through-bolts.
 - 3. Coat Hook: Manufacturer's heavy-duty combination cast-stainless-steel hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories. Mount with through-bolts.
 - 4. Door Bumper: Manufacturer's heavy-duty rubber-tipped cast-stainless-steel bumper at out-swinging doors. Mount with through-bolts.
 - 5. Door Pull: Manufacturer's heavy-duty cast-stainless-steel pull at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible. Mount with through-bolts.
 - a. Mount an additional door pull on inside of handicapped accessible stalls at 36 inches above the floor, located at 6 inches from hinge side of door.
- B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.
- C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless-steel, hot-dip galvanized-steel, or other rust-resistant, protective-coated steel compatible with related materials.

2.4 MATERIALS

- A. Aluminum Castings: ASTM B 26/B 26M.
- B. Aluminum Extrusions: ASTM B 221.
- C. Stainless-Steel Sheet: ASTM A 666, Type 304, stretcher-leveled standard of flatness.
- D. Stainless-Steel Castings: ASTM A 743/A 743M.

2.5 FABRICATION

- A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories where required for attachment of toilet accessories.
- B. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

- C. Door Size and Swings: Unless otherwise indicated, provide 24-inch-wide, in-swinging doors for standard toilet compartments and 36-inch-wide, out-swinging doors with a minimum 32-inch-wide, clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.
 - 1. Confirm location and adequacy of blocking and supports required for installation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
 - 1. Maximum Clearances:
 - a. Pilasters and Panels: 1/2 inch.
 - b. Panels and Walls: 1 inch.
 - 2. Full-Height (Continuous) Brackets: Secure panels to walls and to pilasters with full-height brackets.
 - a. Locate bracket fasteners so holes for wall anchors occur in masonry or tile joints.
 - b. Align brackets at pilasters with brackets at walls.
- B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace when doors are in closed position.
- C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.3 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 10 21 13.19

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 10 28 00 – TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Washroom accessories.
- B. Related Sections include the following:
 - 1. Division 22 Section "Plumbing" for underlavatory guards.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include the following:
 - 1. Construction details and dimensions.
 - 2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
 - 3. Material and finish descriptions.
 - 4. Features that will be included for Project.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
 - 1. Identify locations using room designations indicated on Drawings.
 - 2. Identify products using designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.
- B. Accessibility: Comply with applicable provisions in ICC/ANSI A117.1 and the 2010 ADA Standards.

1.7 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.8 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch minimum nominal thickness, unless otherwise indicated.
- B. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.0359-inch minimum nominal thickness.
- C. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- D. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.2 WASHROOM ACCESSORIES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide products indicated by **Bobrick Washroom Equipment, Inc.** or a comparable product by one of the following:
 - 1. AJW.
 - 2. American Specialties, Inc.
 - 3. Bradley Corporation.
- B. Toilet Tissue (Roll) Dispenser:

1. Basis-of-Design Product: **Bobrick; B-2888.**
2. Description: Double-roll dispenser.
3. Mounting: Surface mounted.
4. Operation: Noncontrol delivery with theft-resistant spindle. Tissue rolls are loaded and locked into dispensing mechanism. Extra roll automatically drops in place when bottom roll is depleted. Depleted rolls can only be removed after unlocking door.
5. Capacity: Designed for up to 5-1/4-inch- diameter, standard core tissue rolls.
6. Material and Finish: Stainless steel, No. 4 finish (satin) with heavy-duty one-piece ABS plastic spindles.
 - a. Cabinet: 22 gauge stainless steel, all-welded construction.
 - b. Door: 22 gauge stainless steel with 18 gauge stainless steel door frame. Front of door is drawn, one-piece seamless construction, secured to cabinet with two rivets.
 - c. Dispensing mechanism: 18 gauge stainless steel.
 - d. Spindles: Heavy duty, theft resistant, one-piece molded ABS. Spindles are retained in dispensing unit when door is locked.
7. Lockset: Tumbler type.

C. Paper Towel (Folded) Dispenser:

1. Basis-of-Design Product: **Bobrick; B-262.**
2. Mounting: Surface mounted.
3. Minimum Capacity: 400 C-fold or 525 multifold towels.
4. Material and Finish: Stainless steel, No. 4 finish (satin).
 - a. Cabinet: 22 gauge stainless steel, all-welded construction. Provide towel tray with hemmed opening to dispense towels without tearing.
 - b. Door: 22 gauge stainless steel, secured to cabinet with a full-length stainless steel piano-hinge.
5. Lockset: Tumbler type.
6. Refill Indicators: Pierced slots at sides or front.

D. Liquid-Soap Dispenser:

1. Basis-of-Design Product: **Bobrick; B-2111.**
2. Description: Designed for dispensing all commercially marketed all-purpose soap in liquid form.
3. Mounting: Vertically oriented, surface mounted.
4. Capacity: 40 fl oz.
5. Material and Finish: Stainless steel, No. 4 finish (satin).
 - a. Container: 22 gauge stainless steel, drawn, one-piece seamless construction. Equip with a back plate and attached mounting bracket, and a locked, hinged stainless steel lid for top filling. Furnish with concealed wall plate.
 - b. Valve: Corrosion resistant, black molded plastic push button and spout with soap-holding mushroom valve; stainless steel spring and u-packing seal and duckbill.
6. Lockset: Tumbler type.
7. Refill Indicator: Window type, clear acrylic and unbreakable.

E. Sanitary-Napkin Receptacle:

1. Basis-of-Design Product: **Bobrick; B-254.**

2. Mounting: Surface mounted.
3. Receptacle: Removable.
4. Material and Finish: Stainless steel, No. 4 finish (satin).
 - a. Cabinet: 22 gauge stainless steel, all-welded construction. Provide towel tray with hemmed opening to dispense towels without tearing.
 - b. Door: 22 gauge stainless steel, secured to cabinet with a full-length stainless steel piano-hinge.
 - c. Disposal Panel: 22 gauge stainless steel with bottom edge hemmed for safety. Panel is secured to door with a spring-loaded, full-length stainless steel piano hinge. Equip with the international handicapped accessible graphic symbol for identifying sanitary napkin disposal.
 - d. Waste Receptacle: Leak-proof, rigid molded polyethylene, with a 1.2 gallon capacity.

F. Grab Bar:

1. Basis-of-Design Product: **Bobrick; B-6806.99 Series.**
2. Mounting: Flanges with concealed fasteners.
3. Material: Stainless steel, 18 gauge.
 - a. Finish: Smooth, No. 4, satin finish on ends and slip-resistant texture in grip area.
4. Outside Diameter: 1-1/2 inches.
5. Configuration and Length: Provide in straight lengths, in sizes indicated.

G. Mirror Unit:

1. Basis-of-Design Product: **Bobrick; B-290 Series.**
2. Frame: Stainless-steel angle, 0.05 inch thick, 3/4 inch x 3/4 inch angle with vertical-grain satin finish, one-piece roll-formed construction.
 - a. Corners: Welded and ground smooth.
 - b. Backing: Galvanized steel fastened to frame with concealed screws and equipped with integral horizontal hanging brackets near the top and bottom of the mirror.
3. Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.
 - a. Wall bracket of 20 gauge galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
4. Mirror: No. 1 quality, 1/4-inch select float glass, with all edges protected by plastic filler strips. Provide protective backing of full-size, shock absorbing, water resistant, nonabrasive, 3/16-inch thick polyethylene padding.
5. Sizes: As indicated.

H. Robe Hook:

1. Basis-of-Design Product: **Bobrick; B-6707.**

2. Mounting: Surface mounted.
3. Material and Finish: Stainless steel, No. 4 finish (satin).
 - a. Flange and Support Arm: 22 gauge stainless steel with concealed 16 gauge stainless steel mounting bracket, all-welded construction. Secure to wall plate with stainless steel setscrew.
 - b. Concealed Wall Plate: 16 gauge stainless steel.
 - c. Cap: 10 gauge stainless steel, welded to support arm.

2.3 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 10 28 00

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 14 01 20.71 – ELEVATOR REHABILITATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes rehabilitation of an existing holed, hydraulic passenger elevator, including removal and replacement of the following:
 - 1. Car operating panel.
 - 2. Car position indicator.
 - 3. Emergency car lighting.
 - 4. Hall buttons and hall position indicator.
- B. Related Sections include the following:
 - 1. Division 26 Section "Fire Alarm System" for smoke detectors in elevator lobbies to initiate emergency recall operation, and heat detectors in shafts and machine rooms to disconnect power from elevator equipment before sprinkler activation, and for connection to elevator controllers.
 - 2. Division 26 Sections for electrical service for elevators to and including fused disconnect switches at machine room door, and standby power source, transfer switch, and connection from auxiliary contacts in transfer switch to controller.
 - 3. Division 26 Section "Electrical" for telephone service to elevators.

1.3 DEFINITIONS

- A. Definitions in ASME A17.1 apply to work of this Section.
- B. Defective Elevator Work: Repeated operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

1.4 SUBMITTALS

- A. Product Data: Include capacities, sizes, performances, operations, safety features, finishes, and similar information. Include product data for the following:
 - 1. Operation, control, and signal systems.

- B. Shop Drawings: Show plans, elevations, sections, and large-scale details indicating service at each landing, and locations of equipment and signals. Include large-scale layout of car control station and standby power operation control panel. Indicate variations from specified requirements and maximum and average power demands.
 - 1. Include detailed report based on field investigation of existing elevator and components indicated to be replaced.
- C. Samples for Initial Selection: For finishes involving color selection.
- D. Samples for Verification: For exposed finishes of cars, hoistway doors and frames, and signal equipment; 3-inch- square Samples of sheet materials; and 4-inch lengths of running trim members.
- E. Manufacturer Certificates: Signed by elevator manufacturer certifying that existing electrical service, as shown and specified, are adequate for new elevator system components being provided.
- F. Qualification Data: For Installer.
- G. Operation and Maintenance Data: For elevators to include in emergency, operation, and maintenance manuals.
- H. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted elevator use.
- I. Warranty: Special warranty specified in this Section.
- J. Continuing Maintenance Proposal: Service agreement specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Elevator manufacturer or manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain elevator components through one source from a single manufacturer.
 - 1. Provide major elevator components, including pump-and-tank units, plunger-cylinder assemblies, controllers, signal fixtures, and door operators manufactured by a single manufacturer.
- C. Regulatory Requirements: Comply with ASME A17.1, elevator design requirements for earthquake loads in ASCE 7, the Connecticut State Building Code, and Chapter 538 of the Connecticut General Statutes.
- D. Accessibility Requirements: Comply with 2010 ADA Standards and ICC/ANSI A117.1.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials, components and equipment in manufacturer's original protective packaging.

- B. Store materials, components, and equipment off of ground, under cover, and in a dry location. Handle according to manufacturer's written recommendations to prevent damage, deterioration, or soiling.

1.7 WARRANTY

- A. Special Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to repair, restore, or replace defective elevator work within specified warranty period.
 - 1. Warranty Period: One year from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide one year's full maintenance service by skilled employees of elevator Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation at rated speed and capacity. Provide parts and supplies same as those used in the manufacture and installation of original equipment.
 - 1. Perform maintenance, including emergency callback service, during normal working hours.
 - 2. Include 24-hour-per-day, 7-day-per-week emergency callback service.
 - a. Response Time: One hour or less.
- B. Continuing Maintenance Proposal: Provide a continuing maintenance proposal from Installer to Owner, in the form of a standard one-year maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide elevator replacement components by **Otis Elevator Company** or one of the following:
 - 1. Schindler Elevator Corp.
 - 2. ThyssenKrupp Elevator.

2.2 SYSTEMS AND COMPONENTS

- A. General: Provide manufacturer's standard elevator system components to replace existing components. Where components are not otherwise indicated, provide standard components published by manufacturer as required for complete system.

2.3 OPERATION SYSTEMS

- A. General: Replace existing operation system with manufacturer's standard microprocessor operation system as required to provide type of operation system indicated.
 - 1. Mount components in a NEMA 1 enclosure.
 - 2. Logic Control System: Microprocessor based and protected from environmental extremes and excessive vibrations.
- B. Single-Car Auxiliary Operations: In addition to primary operation system features, provide the following operational features for elevators where indicated:
 - 1. Battery-Powered Lowering: When power fails, cars are lowered to the lowest floor, cycle their doors, and shut down with the doors closed. System includes rechargeable battery and automatic recharging system.

2.4 SIGNAL EQUIPMENT

- A. General: Provide hall-call and car-call buttons that light when activated and remain lit until call has been fulfilled. Fabricate lighted elements with LEDs.
- B. Car Control Stations: Provide manufacturer's standard applied car control stations. Mount in return panel adjacent to car door, to replace existing.
 - 1. Mark buttons and switches with standard identification for required use or function that complies with ASME A17.1. Use both tactile symbols and Braille.
 - a. Call button for the main entry floor to be designated by a raised star at the left side of the floor designation.
 - b. All raised designations for control buttons shall be placed immediately to the left of the button to which they apply.
 - 2. All floor buttons shall be no higher than 48-inches above finish floor. Emergency control buttons to be grouped at the bottom of the panel with their centerlines no less than 35 inches above finish floor.
 - a. Buttons: A minimum of 3/4-inch in the smallest dimension, raised or flush.
 - 3. Provide "No Smoking" sign matching car control station, either integral with car control station or mounted adjacent to it, with text and graphics as required by authorities having jurisdiction.
- C. Emergency Communication System: Provide system that complies with ASME A17.1 and the ICC/ANSI A117.1 and the 2010 ADA Standards. On activation, system dials preprogrammed number of monitoring station and identifies elevator location to monitoring station. System provides two-way voice communication without using a handset and provides visible signals that indicate when system has been activated and when monitoring station has responded. System is contained in flush-mounted cabinet, with identification, instructions for use, and battery backup power supply.
 - 1. Identify emergency communication system with a raised symbol and characters located adjacent to the device.

- D. Firefighters' Two-Way Telephone Communication Service: Provide new cabinet in car and required conductors in traveling cable for firefighters' two-way telephone communication service specified in Division 26 Section "Fire Alarm System."

- E. Car Position Indicator: Provide new illuminated, digital-type car position indicator, located above car door or above car control station. Also provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served.
 - 1. Include travel direction arrows if not provided in car control station.
 - 2. Numerals: A minimum of 1/2-inch high and illuminated on a contrasting background.
 - 3. Audible signal: No less than 20 decibels with a frequency no higher than 1500 Hz.

- F. Hall Push-Button Stations: Provide new hall push-button stations at each landing.
 - 1. Provide manufacturer's standard wall-mounted units.
 - a. Mount buttons at 42 inches above finish floor to center.
 - b. Buttons: A minimum of 3/4-inch in the smallest dimension, raised or flush, with button designating up direction on the top.
 - 2. Provide units with flat faceplate for mounting with body of unit recessed in wall.
 - 3. Equip units with buttons for calling elevator and for indicating desired direction of travel.
 - 4. Provide telephone jack in each unit for firefighters' two-way telephone communication service specified in Division 26 Section "Fire Alarm."

- G. Hall Lanterns: Provide new units with illuminated arrows; provide single arrow at terminal landings, as follows:
 - 1. Manufacturer's standard wall-mounted units, mounted at 72 inches minimum to centerline of unit.
 - 2. Visible signals: At least 2-1/2-inches in the smallest dimension, visible from the vicinity of the hall call buttons.

- H. Hall Annunciator: With each hall lantern, provide audible signals indicating car arrival and direction of travel. Signals sound once for up and twice for down.

- I. Door Jamb Markings: At each hoistway entrance, provide raised and Braille floor designation characters on each jamb. Install centerline of characters at 60 inches above finish floor.
 - 1. Characters: A minimum of 2-inches high, on a contrasting background.

- J. Emergency Lighting: Provide a new emergency power unit to comply with ASME A17.1, employing a 12-volt sealed rechargeable battery and a totally static circuit to illuminate the elevator car and provide current to the alarm bell in case of normal power failure.

- K. Standby Power Elevator Selector Switches: Provide switches, as required by ASME A17.1, where indicated. Adjacent to switches, provide illuminated signal that indicates when normal power supply has failed. For each elevator, provide illuminated signals that indicate when they are operational and when they are at the designated emergency return level with doors open.

- L. Fire Command Center Annunciator Panel: Provide panel containing illuminated position indicators for each elevator, clearly labeled with elevator designation; include illuminated signal that indicates when elevator is operational and when it is at the designated emergency return level with doors open. Provide standby power elevator selector switch(es), as required by ASME A17.1, adjacent to position indicators. Provide illuminated signal that indicates when normal power supply has failed.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. Verify critical dimensions and examine supporting structure and other conditions under which elevator work is to be installed.
 - 1. For the record, prepare a written report, endorsed by Installer, listing dimensional discrepancies and conditions detrimental to performance or indicating that dimensions and conditions were found to be satisfactory.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts designed to effectively prevent transmission of vibrations to structure and thereby eliminate sources of structure-borne noise from elevator system.
- B. Lubricate operating parts of systems as recommended by manufacturers.
- C. Leveling Tolerance: 1/4 inch, up or down, regardless of load and direction of travel.
- D. Locate hall signal equipment for elevators as follows, unless otherwise indicated:
 - 1. Place hall lanterns either above or beside each hoistway entrance.
 - 2. Mount hall lanterns at a minimum of 72 inches above finished floor.

3.3 FIELD QUALITY CONTROL

- A. Acceptance Testing: On completion of elevator installation and before permitting use (either temporary or permanent) of elevators, perform acceptance tests as required and recommended by ASME A17.1 and by governing regulations and agencies.
- B. Advise Owner, Architect, Construction Manager and authorities having jurisdiction in advance of dates and times tests are to be performed on elevators.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to operate elevator. Refer to Division 01 Section "Demonstration and Training."

- B. Check operation of elevator with Owner's personnel present and before date of Substantial Completion. Determine that operation systems and devices are functioning properly.
- C. Check operation of elevator with Owner's personnel present not more than one month before end of warranty period. Determine that operation systems and devices are functioning properly.

END OF SECTION 14 0120.71

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 14 42 00 - WHEELCHAIR LIFTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section Includes:
 - 1. Vertical platform lifts.
- B. Related Sections:
 - 1. Division 26 Sections for electrical service to lifts, including fused disconnect switches.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, dimensions, electrical characteristics, safety features, controls, and finishes.
- B. Shop Drawings: For each lift. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Wiring Diagrams: For power, signal, and control wiring.
- C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
 - 1. Metal Finish: Manufacturer's standard-size unit, not less than 3 inches square.
 - 2. Tubular Products and Running Trim: Manufacturer's standard-size unit, 6 inches long.
 - 3. Hardware: Manufacturer's standard, exposed, door-operating device.
- D. Qualification Data: For qualified Installer.
- E. Manufacturer Certificates: Signed by lift manufacturer certifying that runway, ramp or pit, and dimensions as shown on Drawings and that electrical service as shown and specified are adequate for lift being provided.
- F. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted use of lifts.

- G. Operation and Maintenance Data: For each type of lift to include in operation and maintenance manuals. Include the following:
 - 1. Parts list with sources indicated.
 - 2. Recommended parts inventory list.
- H. Warranty: Sample of special warranty.
- I. Continuing maintenance proposal.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
 - 1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.
- B. Regulatory Requirements: Comply with the following:
 - 1. ASME A18.1, "Safety Standard for Platform Lifts and Stairway Chairlifts."
 - 2. Connecticut State Building Code and ICC/ANSI A117.1.
 - 3. 2010 ADA Standards.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of lifts that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

1.6 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of lift Installer. Include quarterly preventive maintenance and repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper lift operation at rated speed and capacity. Provide parts and supplies the same as those used in the manufacture and installation of original equipment.
- B. Continuing Maintenance Proposal: From Installer to Owner, in the form of a standard bi-yearly maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

- B. Steel Tubing: ASTM A 500.
- C. Steel Pipe: ASTM A 53/A 53M; standard weight (Schedule 40) unless otherwise indicated or required by structural loads.
- D. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, commercial steel (CS), Type B, exposed, matte finish.
- E. Galvanized-Steel Sheet: ASTM A 653/A 653M, G90 zinc coating,
- F. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
 - 1. ASTM A 123/A 123M, for galvanizing steel and iron products.
 - 2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.
- G. Inserts: Furnish required concrete inserts and similar anchorage devices for installing structural members, guide rails, machines, and other lift components.
- H. Expansion Anchors: Anchor-bolt-and-sleeve assembly of material indicated below with capability to sustain a load equal to 10 times the load imposed as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
 - 1. Material: Group 1, Alloy 304 or Alloy 316, stainless-steel bolts and nuts complying with ASTM F 593 and ASTM F 594.

2.2 VERTICAL PLATFORM LIFTS

- A. Vertical Platform Lifts: Manufacturer's standard pre-engineered lift systems as indicated.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide **Garaventa;** **Genesis OPAL** or comparable product by the following, or equal:
 - a. Savaria Corporation.
- B. Number of Stops: Two.
- C. Travel Distance: As indicated, field verify.
- D. Platform Size: 36 by 48-7/8 inches.
- E. Rated Speed: 20 fpm.
- F. Rated Load: 750 lbs. capacity.
- G. Power Supply: 120 V, 60 Hz, 1 phase.
- H. Emergency Operation: Provide emergency manual operation and emergency battery power system to raise or lower units in case of malfunction or power loss.
 - 1. Provide emergency battery power system as a means of egress, to raise or lower units in case of malfunction or power loss.

- a. Provide standby power operation for a minimum of 30 minutes.
- I. Emergency Operation: Provide emergency manual operation and emergency battery power system to raise or lower units in case of malfunction or power loss.
- J. Self-Supporting Units: Support vertical loads of units only at base, with lateral support only at landing levels.
- K. Hydraulic pump unit: Include motor with adequate size oil reservoir for full piston stroke. Hydraulic connections to be metal and have rated pressures to withstand the working pressure times the appropriate safety factor. Equip hydraulic leaf chain with slack chain safety device and stainless steel linkage.
- L. Door Operation and Clear Opening Width: Low-energy, power-operated doors that remain open for 20 seconds minimum; end door with minimum 32-inch clear opening width and side door with minimum 42-inch clear opening width.
 - 1. Platform Controls: Directional paddle switch, on/off key switch, emergency stop switch with alarm and illuminated alarm button.
 - 2. Landing Controls: Directional paddle switch, on/off key switch, emergency stop switch with alarm mounted inside door frames.
 - 3. Constant pressure operations.
 - 4. Mount all door operation controls at 48 inches above finish floor, maximum.
- M. Platform: Galvanized-steel sheet, 12 gauge, with black rubber flooring.
 - 1. Provide grab rail mounted at 36-inches above platform surface.
 - 2. Equip platform underpanel with obstruction sensors.
- N. Platform Enclosure: Rectangular steel-tube frame with flush steel-sheet panels of 18 gauge steel sheet.
 - 1. Height: 42- inches minimum.
 - 2. Mainframe Support Tubing: A combination of square and rectangular tubing with a minimum 0.120 wall thickness.
 - 3. Carriage Arms: Steel flat bar with ½-inch thick steel flat bar uprights. Provide cam rollers for axial carriage guidance and wear pads for horizontal stability.
- O. Provide removable machine tower sides with front and back covers fabricated from 14 gauge steel sheet.
- P. Equip lift with a 42-inch high upper landing gate and a lower landing gate which remains at lower level to prevent access to the underside of the platform while in raised position. Fabricate gate from steel tubing with steel panel infill. Provide all gates with combination mechanical lock with electrical contacts.
- Q. Fixed Ramp: Provide fixed ramp matching platform to provide transition from floor to lift platform at bottom landing, as required if installation of recessed pit is not provided.
 - 1. Ramp Size: End ramps a minimum of 32 inches wide; length as required for slope.
 - 2. Ramp Slope: Maximum 1:12.
 - 3. Ramp Finish: Finish ramps to match lift platform.

2.3 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.4 FINISHES

- A. Steel Factory Finish:
 - 1. Powder-Coat Finish: Immediately after cleaning and pretreating, apply manufacturer's standard, thermosetting polyester or acrylic urethane powder coating with a cured film thickness not less than 1.5 mils.
 - 2. Color: Manufacturer's standard.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, critical dimensions, and other conditions affecting performance.
- B. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work indicates acceptance of substrates.

3.2 INSTALLATION

- A. Wiring Method: Conceal conductors and cables within housings of units or building construction. Do not install conduit exposed to view in finished spaces. Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii.
- B. Coordinate runway doors with platform travel and positioning, for accurate alignment and minimum clearance between platforms, runway doors, sills, and door frames.
- C. Position sills accurately and fill space under sills solidly with nonshrink, nonmetallic grout.
- D. Coordinate platform doors with platform travel and positioning.
- E. Adjust stops for accurate stopping and leveling at each landing, within required tolerances.

1. Leveling Tolerance: 1/4 inch up or down, regardless of load and direction of travel.

F. Lubricate operating parts of lift, including drive mechanism, guide rails, hinges, safety devices, and hardware.

G. Test safety devices and verify smoothness of required protective enclosures and fascias

3.3 FIELD QUALITY CONTROL

A. Acceptance Testing: On completion of lift installation and before permitting use of lifts, perform acceptance tests as required and recommended by ASME A18.1 and authorities having jurisdiction.

B. Operating Test: In addition to above testing, load lifts to rated capacity and operate continuously for 30 minutes between lowest and highest landings served. Readjust stops, signal equipment, and other devices for accurate stopping and operation of system.

C. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times tests are to be performed on lifts.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain lifts. Include a review of emergency systems and emergency procedures to be followed at time of operational failure and other building emergencies.

B. Check operation of lifts with Owner's personnel present and before date of Substantial Completion. Determine that operating systems and devices are functioning properly.

C. Check operation of lifts with Owner's personnel present not more than one month before end of warranty period. Determine that operating systems and devices are functioning properly.

END OF SECTION 14 42 00

SECTION 220500 - COMMON WORK RESULTS FOR PLUMBING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Identification for Plumbing Piping and Equipment.
 - 2. Sleeves.
 - 3. Mechanical sleeve seals.
 - 4. Formed steel channel.

- B. Related Sections:
 - 1. Section 09 90 00 - Painting and Coating: Execution requirements for painting specified by this section.
 - 2. Section 22 05 00 – Common work results for Plumbing
 - 3. Section 22 05 03 – Pipes and Tubes for Plumbing Piping and Equipment
 - 4. Section 22 05 16 - Expansion Fittings and Loops for Plumbing Piping
 - 5. Section 22 05 23 - General-Duty Valves for Plumbing Piping
 - 6. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment
 - 7. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment
 - 8. Section 22 07 00 - Plumbing Insulation
 - 9. Section 22 30 00 – Plumbing Specialties
 - 10. Section 22 40 00 – Plumbing Fixtures
 - 11. Refer to Division 01 for General Conditions required for this section.

1.2 SUBMITTALS

- A. Shop Drawings: Submit for piping and equipment identification list of wording, symbols, letter size, and color coding for pipe identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

- B. Product Data for Pipe and Equipment Identification: Submit for mechanical identification manufacturers catalog literature for each product required.

1.3 QUALITY ASSURANCE

- A. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

- A. Manufacturers:
 - 1. Thunderline Link-Seal, Inc.
 - 2. Link Seal
 - 3. Fernco
 - 4. Substitutions: Permitted.

- B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.2 SLEEVES

- A. Sleeves for Pipes through Non-fire Rated Floors: 18 gage thick galvanized steel.
- B. Sleeves for Pipes through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
- C. Sealant: Acrylic; refer to Section 07 90 00.

2.3 MECHANICAL SLEEVE SEALS

- A. Manufacturers:
 - 1. Thunderline Link-Seal, Inc.
 - 2. Link Seal
 - 3. Fernco
 - 4. Substitutions: Permitted.
- B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.4 FORMED STEEL CHANNEL

- A. Manufacturers:
 - 1. Allied Tube & Conduit Corp.
 - 2. B-Line Systems
 - 3. Unistrut Corp.
 - 4. Substitutions: Permitted.
- B. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify openings are ready to receive sleeves.
- B. Furnish inspection and verification of plumbing piping systems (including but not limited to plumbing piping, plumbing hangers and supports, plumbing equipment, and plumbing specialties) by Division of Construction Services building official. Schedule inspections and verification with Owner, provide at least seven (7) days' notice to Architect/Engineer of inspection date.

3.2 INSTALLATION - PIPING AND EQUIPMENT IDENTIFICATION

- A. Install plastic nameplates with adhesive.
- B. Install plastic tags with corrosion resistant metal chain.

3.3 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with mechanical sleeve seals.
- B. Set sleeves in position in forms. Provide reinforcing around sleeves.
- C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- D. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
- E. Where piping penetrates floor, ceiling, or wall, close off space between pipe and adjacent work with stuffing firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- F. Install chrome plated steel escutcheons at finished surfaces.

END OF SECTION 220500

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 220503 - PIPES AND TUBES FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Pipe and pipe fittings for the following systems:
 - 1. Domestic water piping, within 5 feet of building.
 - 2. Sanitary sewer piping, within 5 feet of building.
 - 3. Unions and flanges.

- B. Related Sections:
 - 1. Section 07 84 00 - Firestopping: Product requirements for firestopping for placement by this section.
 - 2. Section 08 31 13 - Access Doors and Frames
 - 3. Section 09 90 00 - Painting and Coating
 - 4. Section 22 05 00 – Common work results for Plumbing
 - 5. Section 22 05 16 - Expansion Fittings and Loops for Plumbing Piping
 - 6. Section 22 05 23 - General-Duty Valves for Plumbing Piping
 - 7. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment
 - 8. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment
 - 9. Section 22 05 53 – Identification for Plumbing Piping and Equipment
 - 10. Section 22 07 00 - Plumbing Insulation
 - 11. Section 22 30 00 – Plumbing Specialties
 - 12. Section 22 40 00 – Plumbing Fixtures
 - 13. Refer to Division 01 for General Conditions required for this section.

1.2 REFERENCES

- A. American Society of Mechanical Engineers:
 - 1. ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings.
 - 2. ASME B16.3 - Malleable Iron Threaded Fittings.
 - 3. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
 - 4. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
 - 5. ASME B16.23 - Cast Copper Alloy Solder Joint Drainage Fittings (DWV).
 - 6. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes.
 - 7. ASME B16.29 - Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV.
 - 8. ASME B31.9 - Building Services Piping.
 - 9. ASME B36.10M - Welded and Seamless Wrought Steel Pipe.
 - 10. ASME Section IX - Boiler and Pressure Vessel Code - Welding and Brazing Qualifications.

- B. ASTM International:
 - 1. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings.
 - 2. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
 - 3. ASTM A536 - Standard Specification for Ductile Iron Castings.
 - 4. ASTM B32 - Standard Specification for Solder Metal.
 - 5. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes.
 - 6. ASTM B75 - Standard Specification for Seamless Copper Tube.
 - 7. ASTM B88 - Standard Specification for Seamless Copper Water Tube.
 - 8. ASTM B251 - Standard Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube.

9. ASTM B302 - Standard Specification for Threadless Copper Pipe, Standard Sizes.
 10. ASTM B306 - Standard Specification for Copper Drainage Tube (DWV).
 11. ASTM B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.
 12. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
 13. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
 14. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
 15. ASTM F1476 - Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications.
- C. American Welding Society:
1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.
 2. AWS D1.1 - Structural Welding Code - Steel.
- D. American Water Works Association:
1. AWWA C104 - American National Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
 2. AWWA C105 - American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems.
 3. AWWA C110 - American National Standard for Ductile-Iron and Grey-Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids.
 4. AWWA C111 - American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 5. AWWA C151 - American National Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.
- E. Cast Iron Soil Pipe Institute:
1. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.
 2. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.
- F. NSF International:
1. NSF 61 - Standard for Drinking Water System Components - Health Effects.
- G. Safe Drinking Water Act.
1. SDWA 1417 - Standard for Lead Free Drinking Water.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate layout of piping systems, including equipment, critical dimensions, and sizes. Submit shop drawings sealed by registered professional engineer.
- C. Product Data: Submit data on pipe materials and fittings. Submit manufacturers catalog information. Clearly indicate on submittal "Lead Free" where required.

- D. Design Data: Indicate pipe sizes. Indicate pipe sizing methods. Indicate calculations used. Submit sizing methods calculations sealed by registered professional engineer.
- E. Welders' Certificate: Include welders' certification of compliance with ASME Section IX. AWS D1.1.
- F. High Performance Building Submittal Requirements: The contractor or subcontractor shall submit the following High Performance Building certification items:
 - 1. A Connecticut High Performance Building Compliance letter shall be provided verifying agreement with relevant High Performance requirements. Information to be supplied includes, but is not limited to:
 - a. The percentage by weight of recycled content in the product(s). Identify post-consumer and/or pre-consumer recycled content.
 - b. The manufacturing location for the product(s); and the location (source) of the raw materials used to manufacture the product(s).
 - c. Provide material costs for the materials included in the contractor's or subcontractor's work. Material cost does not include costs associated with labor and equipment.
 - 2. Letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the amount of recycled content.
 - 3. Product Cut Sheets for all materials of this Section that meet High Performance Building Requirements.
 - 4. Material Safety Data Sheets (MSDS), for all applicable products. Applicable products include, but are not limited to adhesives, sealants, carpets, paints and coatings applied on the interior of the building. MSDS shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC content, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC content).

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with ASME B31.9 code for installation of piping systems and ASME Section IX for welding materials and procedures.
- B. All cast iron soil pipe and fittings shall be marked with the collective trademark of the cast iron soil pipe institute.
- C. All couplings for hubless cast iron soil pipe and fittings shall meet the requirements of CISPI 310 and be certified by NSF International.
- D. All components of the potable domestic water system shall meet the requirements of SDWA-1417 & NSF 372 for compliance to Low Lead Content law
- E. To assure uniformity and compatibility of piping components in grooved end piping systems, all grooved products utilized shall be supplied by Victaulic or an Engineer Approved Equal. Grooving tools shall be supplied by the same manufacturer as the grooved components
- F. The International Association of Plumbing and Mechanical Officials
- G. Maintain one copy of each document on site.

- H. High Performance Building Requirements:
 - 1. Adhesives, sealants, paints or coatings used for work in this section for interior applications shall meet the requirements of Division 1, Section 018113: "Volatile Organic Compound (VOC) Limits for Adhesives, Sealants, Paints and Coatings", where applicable.
 - 2. Materials manufactured within a radius of 500 miles from the project site where all or a portion of the raw resources also originate within a radius of 500 miles shall be documented in accordance with the High Performance Building Requirements of this Section.
 - 3. Materials that contain recycled content shall be documented in accordance with the High Performance Building Requirements of this Section.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum years documented experience.
- C. Design piping systems pipe hangers and supports under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.

1.6 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Furnish temporary end caps and closures on piping and fittings. Maintain in place until installation.
- C. Protect piping from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not install underground piping when bedding is wet or frozen.

1.9 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.10 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
- B. Coordinate installation of buried piping with trenching.

PART 2 PRODUCTS

2.1 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tubing: ASTM B88, Type L, drawn.
 - 1. Fittings: ASME B16.18, cast bronze, or ASME B16.22, wrought copper and bronze or extruded tee connections conforming to ASTM F2014-00.
 - 2. Joints: ASTM B32, solder, Grade 95TA or extruded tee connections brazed in compliance with the manufacturer's written instructions.
 - 3. Other Acceptable Joining Methods:
 - a. Press Fitting: Copper and copper alloy press fittings conforming to ASME B16.18 or ASME B16.22. Sealing elements for press fittings shall be EPDM and factory installed. Press ends shall have SC feature design (leakage path) to assure detection and easy identification of leakage of liquids from inside the system past the sealing element of an unpressed connection.

2.2 SANITARY SEWER PIPING, ABOVE GRADE

- A. Cast Iron Pipe: CISPI 301, hub-less, service weight.
 - 1. Fittings: Cast iron, CISPI 301.
 - 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.

2.3 UNIONS AND FLANGES

- A. Unions for Pipe 2 inches and Smaller:
 - 1. Ferrous Piping: Class 150, malleable iron, threaded.
 - 2. Copper Piping: Class 150, bronze unions with soldered brazed joints.
 - 3. Dielectric Connections: Union or waterways with galvanized or plated steel or copper-silicon casting with threaded end, copper solder end, grooved end, lead free, water impervious isolation barrier.
- B. Flanges for Pipe 2-1/2 inches and Larger:
 - 1. Ferrous Piping: Class 150, forged steel, slip-on flanges or grooved joint flange adapters.
 - 2. Gaskets: 1/16 inch thick preformed neoprene gaskets.
 - 3. Dielectric Connections: Waterways with galvanized or plated steel or copper-silicon casting with grooved end, lead free, water impervious isolation barrier

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify excavations are to required grade, dry, and not over-excavated.
- C. Verify trenches are ready to receive piping.

3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel or groove plain end ferrous pipe.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare piping connections to equipment with flanges or unions.
- D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

3.3 INSTALLATION - ABOVE GROUND PIPING

- A. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- B. Install piping to maintain headroom without interfering with use of space or taking more space than necessary.
- C. Group piping whenever practical at common elevations.
- D. Sleeve pipe passing through partitions, walls and floors. Refer to Section 22 05 29.
- E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. Refer to Section 22 05 16.
- F. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 22 07 00.
- G. Provide access where valves and fittings are not accessible. Coordinate size and location of access doors with Section 08 31 13.
- H. Install non-conducting dielectric connections wherever jointing dissimilar metals.
- I. Establish invert elevations, slopes for drainage to ¼ inch per foot for piping 2 ½" and smaller or 1/8 inch per foot minimum for piping 3" and larger. Maintain gradients.
- J. Slope piping and arrange systems to drain at low points.
- K. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

- L. Install piping penetrating roofed areas to maintain integrity of roof assembly.
- M. Install valves in accordance with Section 22 05 23.
- N. Install piping specialties in accordance with Section 22 30 00.
- O. Insulate piping. Refer to Section 22 07 00.
- P. Install pipe identification in accordance with Section 22 05 53.
- Q. The plumbing contractor shall furnish and install hot and cold water supplies to all plumbing fixtures and equipment throughout the project. All piping shall be supplied from the water source, mains, and branch piping.
- R. Shut off valves shall be provided on all supply piping where more than two fixtures are provided. Valve type shall be as determined by the engineer or as indicated on the drawings and specifications.
- S. Provide line sized balance valves at all connections between domestic hot water system and hot water recirculation system.

3.4 INSTALLATION - DOMESTIC WATER PIPING SYSTEMS

- A. Install domestic water piping system in accordance with SDWA - 1417.
- B. Install domestic water piping system in accordance with ASME B31.9.

3.5 INSTALLATION – PRESS STYLE FITTINGS

- A. Press connections: Copper and copper alloy press connections shall be made in accordance with the manufacturer's installation instructions. The tubing shall be fully inserted into the fitting and the tubing marked at the shoulder of the fitting. The fitting alignment shall be checked against the mark on the tubing to assure the tubing is fully engaged (inserted) in the fitting. The joints shall be pressed using the tool(s) recommended by the manufacturer. Contractor shall be trained on the use and installation of the system by manufacturer's representative.

3.6 INSTALLATION - SANITARY WASTE AND VENT PIPING SYSTEMS

- A. Install sanitary waste and vent piping systems in accordance with ASME B31.9.
- B. Install sanitary waste and vent piping systems in accordance with local plumbing code.
- C. Install bell and spigot pipe with bell end upstream.
- D. Support cast iron drainage piping at every joint.
- E. Sanitary and vent piping shall be provided for all plumbing fixtures, devices and equipment throughout the project. All piping shall be installed in compliance with the adopted edition of the international Plumbing Code and State of Connecticut Amendments and Supplements.
- F. Vents from individual fixtures shall be combined and extend through the roof in multiple locations. Vent terminations at the roof shall not be installed within 25' of fresh air intakes for mechanical equipment.

- G. Sanitary piping from individual fixtures, devices and equipment shall combine into multiple buried laterals and exit the building below finished grade and connect to the one site piping network.
- H. Furnish and install cleanouts at all changes in direction greater than 45 degrees and not more than 75' foot intervals for horizontal runs. Provide finished grade cleanouts at lateral exiting the building.
- I. The project includes multiple approved techniques for venting, including but not limited to wet venting, circuit venting, combination drain and vent and island fixture vents. The contractor shall install the vent system accordingly to comply with the adopted edition of the International Plumbing Code.

3.7 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Test domestic water piping system in accordance with applicable code local authority having jurisdiction
- C. Pressure test to identify un-pressed fittings: Utilizing air or water, the system shall be pressurized, not to exceed 85 psi. If there is a significant drop in pressure, the system shall be walked to check for un-pressed fittings. Should an un-pressed fitting be located, the pressure should be released from the system and the un-pressed fitting shall be pressed. If no un-pressed fitting is identified the system shall be pressurized to test pressures required by code, not to exceed 600 psi.
- D. Pressure test sanitary waste and vent piping system: Utilizing water the system will be tested in sections; each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than 10-foot (3048 mm) head of water. In testing successive sections, at least the upper 10 feet (3048 mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost 10 feet (3048 mm) shall have been submitted to a test of less than 10-foot (3048 mm) head of water. This pressure shall be held for not less than 15 minutes in each section tested. The system shall be tight at all points.
- E. Pressure test storm drainage system: Utilizing water the system will be tested in sections; each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than 10-foot (3048 mm) head of water. In testing successive sections, at least the upper 10 feet (3048 mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost 10 feet (3048 mm) shall have been submitted to a test of less than 10-foot (3048 mm) head of water. This pressure shall be held for not less than 15 minutes in each section tested. The system shall be tight at all points.

3.8 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Clean and disinfect domestic new water distribution systems in accordance with IPC 2012, local AHJ

END OF SECTION 220503

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 220516 - EXPANSION FITTINGS AND LOOPS FOR PLUMBING PIPING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Each Contractor, Subcontractor and/or supplier providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section Includes:
 - 1. Flexible pipe connectors.
 - 2. Expansion joints.
 - 3. Expansion compensators.
 - 4. Pipe alignment guides.
 - 5. Swivel joints.
 - 6. Pipe anchors.

- B. Related Sections:
 - 1. Section 22 05 00 – Common work results for Plumbing
 - 2. Section 22 05 03 – Pipes and Tubes for Plumbing Piping and Equipment
 - 3. Section 22 05 23 - General-Duty Valves for Plumbing Piping
 - 4. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment
 - 5. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment
 - 6. Section 22 05 53 – Identification for Plumbing Piping and Equipment
 - 7. Section 22 07 00 - Plumbing Insulation
 - 8. Section 22 30 00 – Plumbing Specialties
 - 9. Section 22 40 00 – Plumbing Fixtures
 - 10. Refer to Division 01 for General Conditions required for this section.

1.3

REFERENCES

- A. American Society of Mechanical Engineers:
 - 1. ASME B31.9 - Building Services Piping.
 - 2. ASME Section IX - Boiler and Pressure Vessel Code - Welding and Brazing Qualifications.

- B. American Welding Society:
 - 1. AWS D1.1 - Structural Welding Code - Steel.

1.4 DESIGN REQUIREMENTS

- A. Provide structural work and equipment required for expansion and contraction of piping. Verify anchors, guides, and expansion joints provide and adequately protect system.

- B. Expansion Compensation Design Criteria:
 - 1. Installation Temperature: 50 degrees F.
 - 2. Domestic Hot Water: 140 degrees F.
 - 3. Safety Factor: 30 percent.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Indicate layout of piping systems, including flexible connectors, expansion joints, expansion compensators, loops, offsets and swing joints. Submit shop drawings sealed by a registered professional engineer.
- C. Product Data:
 - 1. Flexible Pipe Connectors: Indicate maximum temperature and pressure rating, face-to-face length, live length, hose wall thickness, hose convolutions per foot and per assembly, fundamental frequency of assembly, braid structure, and total number of wires in braid.
 - 2. Expansion Joints: Indicate maximum temperature and pressure rating, and maximum expansion compensation.
- D. Design Data: Indicate criteria and show calculations. Submit sizing methods and calculations sealed by a registered professional engineer.
- E. Manufacturer's Installation Instructions: Submit special procedures.
- F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- G. Welders' Certificate: Include welders' certification of compliance with ASME Section IX. AWS D1.1.
- H. Manufacturer's Field Reports: Indicate results of inspection by manufacturer's representative.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Record actual locations of flexible pipe connectors, expansion joints, anchors, and guides.
- C. Operation and Maintenance Data: Submit adjustment instructions.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with ASME B31.9 code for installation of piping systems and ASME Section IX for welding materials and procedures.
- B. All pre-manufactured expansion fittings and loops installed on the domestic water system shall meet the requirements of SDWA 1417.
- C. Maintain one copy of each document on site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.
- C. Design expansion compensating system under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.

1.9 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Accept expansion joints on site in factory packing with shipping bars and positioning devices intact. Inspect for damage.
- C. Protect equipment from exposure by leaving factory coverings, pipe end protection, and packaging in place until installation.

1.11 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for leak free performance of packed expansion joints.

1.12 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Supply two 12 ounce containers of packing lubricant and cartridge style grease gun.

PART 2 PRODUCTS

2.1 FLEXIBLE PIPE CONNECTORS

- A. Manufacturers:
 - 1. Metroflex
 - 2. Mason
 - 3. Vibration Eliminator
 - 4. Substitutions: Section 01 60 00 - Product Requirements.
- B. Copper Piping:
 - 1. Inner Hose: Bronze.
 - 2. Exterior Sleeve: Braided bronze.
 - 3. Pressure Rating: 200 psig WOG and 250 degrees F.
 - 4. Joint: As specified in Section 22 05 03.
 - 5. Size: Use pipe sized units.

6. Maximum offset: 3/4 inch on each side of installed center line.
7. Maximum lead content shall be .25%.

2.2 EXPANSION JOINTS

- A. Manufacturers:
1. Metroflex
 2. Mason
 3. Vibration Eliminator
 4. Substitutions: Section 01 60 00 - Product Requirements.
- B. Stainless Steel Bellows Type:
1. Pressure Rating: 200 psig WOG and 250 degrees F.
 2. Maximum Compression: 1-3/4 inch.
 3. Maximum Extension: 1/4 inch.
 4. Joint: As specified in Section 22 05 03.
 5. Size: Use pipe sized units.
 6. Application: Steel piping 3 inch and smaller.
- C. External Ring Controlled Stainless Steel Bellows Type:
1. Pressure Rating: 200 psig WOG and 250 degrees F.
 2. Maximum Compression: 1-1/4 inch.
 3. Maximum Extension: 3/8 inch.
 4. Maximum Offset: 5/16 inch.
 5. Joint: Flanged.
 6. Size: Use pipe sized units.
 7. Accessories: Internal flow liner.
 8. Application: Steel piping 3 inch and larger.
- D. Double Sphere, Flexible Compensators:
1. Body: Teflon Neoprene and nylon
 2. Working Pressure: 200 psi.
 3. Maximum Temperature: 250 degrees F.
 4. Maximum Compression: 1 inch.
 5. Maximum Elongation: 5/8 inch.
 6. Maximum Offset: 3/4 inch.
 7. Maximum Angular Movement: 30 degrees.
 8. Joint: Tapped steel flanges Galvanized flanges Galvanized unions.
 9. Size: Use pipe sized units.
 10. Accessories: Control rods Control cables.
 11. Application: Steel piping 2 inch and larger.
- E. Two-ply Bronze Bellows Type:
1. Construction: Bronze with anti-torque device, limit stops, internal guides.
 2. Pressure Rating: 200 psi WOG and 250 degrees F.
 3. Maximum Compression: 1-3/4 inch.
 4. Maximum Extension: 1/4 inch.
 5. Joint: As specified in Section 22 05 03.
 6. Size: Use pipe sized units.
 7. Application: Copper piping.

- F. Low Pressure Compensators with two-ply Bronze Bellows:
 - 1. Working Pressure: 80 psig.
 - 2. Maximum Temperatures: 250 degrees F.
 - 3. Maximum Compression: 1/2 inch.
 - 4. Maximum Extension: 5/32 inch.
 - 5. Joint: Soldered.
 - 6. Size: Use pipe sized units.
 - 7. Application: Copper or steel piping 2 inch and smaller.

- G. Copper with Packed Sliding Sleeve:
 - 1. Maximum Temperature: 250 degrees F.
 - 2. Joint: As specified in Section 22 05 03.
 - 3. Size: Use pipe sized units.
 - 4. Copper or steel piping 2 inches and larger.
 - 5. Application: Copper or steel piping 2 inch and larger.

2.3 ACCESSORIES

- A. Manufacturers:
 - 1. Metroflex
 - 2. Mason
 - 3. Vibration Eliminator
 - 4. Substitutions: Section 01 60 00 - Product Requirements.

- B. Pipe Alignment Guides: Two piece welded steel with enamel paint, bolted, with spider to fit standard pipe, frame with four mounting holes, clearance for minimum 1 inch thick insulation, minimum 3 inch travel.

- C. Swivel Joints: Fabricated steel Cast steel body, double ball bearing race, field lubricated, with rubber (Buna-N) O-ring seals.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install Work in accordance with ASME B31.9

- B. Install flexible pipe connectors on pipes connected to equipment supported by vibration isolation. Refer to Section 22 05 48. Provide line size flexible connectors.

- C. Install flexible connectors at right angles to displacement. Install one end immediately adjacent to isolated equipment and anchor other end. Install in horizontal plane unless indicated otherwise.

- D. Rigidly anchor pipe to building structure. Provide pipe guides to direct movement only along axis of pipe. Erect piping so strain and weight is not on cast connections or apparatus.

- E. Provide support and anchors for controlling expansion and contraction of piping. Provide loops, pipe offsets, and swing joints, or expansion joints where required as indicated on Drawings. Refer to Section 22 05 29 for pipe hanger installation requirements.

- F. Provide grooved piping systems with minimum three flexible couplings per flexible connector supported by vibration isolation.
- G. Provide expansion loops as indicated on Drawings.

3.2 MANUFACTURER'S FIELD SERVICES

- A. Section 01 40 00 - Quality Requirements: Manufacturers' field services.
- B. Furnish inspection services by flexible pipe manufacturer's representative for final installation and certify installation is in accordance with manufacturer's recommendations and connectors are performing satisfactorily.

END OF SECTION 220516

SECTION 220523 - GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Ball valves.
 - 2. Balancing valves.

- B. Related Sections:
 - 1. Section 22 05 00 – Common work results for Plumbing
 - 2. Section 22 05 03 – Pipes and Tubes for Plumbing Piping and Equipment
 - 3. Section 22 05 16 - Expansion Fittings and Loops for Plumbing Piping
 - 4. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment
 - 5. Section 22 05 53 – Identification for Plumbing Piping and Equipment
 - 6. Section 22 07 00 - Plumbing Insulation
 - 7. Section 22 30 00 – Plumbing Specialties
 - 8. Section 22 40 00 – Plumbing Fixtures
 - 9. Refer to Division 01 for General Conditions required for this section.

1.2 REFERENCES

- A. Manufacturers Standardization Society of the Valve and Fittings Industry:
 - 1. MSS SP 67 - Butterfly Valves.
 - 2. MSS SP 70 - Cast Iron Gate Valves, Flanged and Threaded Ends.
 - 3. MSS SP 71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends.
 - 4. MSS SP 78 - Cast Iron Plug Valves, Flanged and Threaded Ends.
 - 5. MSS SP 80 - Bronze Gate, Globe, Angle and Check Valves.
 - 6. MSS SP 110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

- B. Safe Drinking Water Act:
 - 1. SDWA 1417 - Reduction of Lead in Drinking Water.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

- B. Product Data: Submit manufacturers catalog information with valve data and ratings for each service.

- C. Manufacturer's Installation Instructions: Submit hanging and support methods, joining procedures.

- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

- E. High Performance Building Submittal Requirements: The contractor or subcontractor shall submit the following High Performance Building certification items:
 - 1. A Connecticut High Performance Building Compliance letter shall be provided verifying agreement with relevant High Performance requirements. Information to be supplied includes, but is not limited to:
 - a. The percentage by weight of recycled content in the product(s). Identify post-consumer and/or pre-consumer recycled content.
 - b. The manufacturing location for the product(s); and the location (source) of the raw materials used to manufacture the product(s).
 - c. Provide material costs for the materials included in the contractor's or subcontractor's work. Material cost does not include costs associated with labor and equipment.
 - 2. Letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the amount of recycled content.
 - 3. Product Cut Sheets for all materials of this Section that meet High Performance Building Requirements.
 - 4. Material Safety Data Sheets (MSDS), for all applicable products. Applicable products include, but are not limited to adhesives, sealants, carpets, paints and coatings applied on the interior of the building. MSDS shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC content, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC content).

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of valves.
- C. Operation and Maintenance Data: Submit installation instructions, spare parts lists, exploded assembly views.

1.5 QUALITY ASSURANCE

- A. For drinking water service, provide valves complying with NSF 61.
- B. All valves installed on the domestic water distribution system shall comply with SDWA 1417. Exception shall be main shut-off valve at domestic water service entrance that is 2-inches or larger.
- C. All valve manufacturers shall demonstrate that valve products have been certified per NSF/ANSI Standard 372.
- D. All valves installed on the domestic water system shall have labeling of lead content engraved on the valve body.
- E. Maintain one copy of document on site.
- F. To assure uniformity and compatibility of piping components in grooved end piping systems, all grooved products utilized shall be supplied by Victaulic or an Engineer Approved Equal

- G. High Performance Building Requirements:
 - 1. Adhesives, sealants, paints or coatings used for work in this section for interior applications shall meet the requirements of Division 1, Section 018113: "Volatile Organic Compound (VOC) Limits for Adhesives, Sealants, Paints and Coatings", where applicable.
 - 2. Materials manufactured within a radius of 500 miles from the project site where all or a portion of the raw resources also originate within a radius of 500 miles shall be documented in accordance with the High Performance Building Requirements of this Section.
 - 3. Materials that contain recycled content shall be documented in accordance with the High Performance Building Requirements of this Section.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum years documented experience.

1.7 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- C. Provide temporary protective coating on cast iron and steel valves.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not install valves underground when bedding is wet or frozen.

1.10 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.
- B. Furnish five year manufacturer warranty for valves excluding packing.

1.11 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for extra materials.
- B. Furnish two packing kits for each size valve.

PART 2 PRODUCTS

2.1 BALL VALVES

- A. Manufacturers:
 - 1. Apollo
 - 2. Milwaukee Valve Co.
 - 3. NIBCO, Inc.
 - 4. American Valve Co.
 - 5. Watts
 - 6. Substitutions: Section 01 25 00 – Substitution Procedures.
- B. 2 inches and Smaller: MSS SP 110, 600 psi WOG, two piece bronze body, lead free, type 316 stainless steel ball, full port, Teflon seats, stainless steel blow-out proof stem, solder ends with lever handle, Milwaukee Valve Company Model #UPBA450S.
- C. 2 inches and Smaller: MSS SP 110, Class 600, bronze, three piece body, lead free, type 316 stainless steel ball, full port, Teflon seats, blow-out proof stem, solder ends, lever handle, Milwaukee Valve Company Model #UPBA350S.

2.2 BALANCING VALVES

- A. Bell & Gossett CB Series:
 - 1. Construction: Brass or bronze body with union on inlet, temperature and pressure test plug on inlet and outlet.
 - 2. Calibration: Control flow within 5 percent of selected rating, over operating pressure range of 10 times minimum pressure required for control.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify piping system is ready for valve installation.

3.2 INSTALLATION

- A. Install valves with stems upright or horizontal, not inverted.
- B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- C. Install 3/4 inch ball valves with cap for drains at main shut-off valves, low points of piping, and at bases of vertical risers,
- D. Install valves with clearance for installation of insulation and allowing access.
- E. Provide access where valves and fittings are not accessible. Coordinate size and location of access doors with Section 08 31 13.
- F. Refer to Section 22 05 29 for pipe hangers.

- G. Refer to Section 22 07 00 for insulation requirements for valves.
- H. Refer to Section 22 05 03 for piping materials applying to various system types.

3.3 VALVE APPLICATIONS

- A. Install shutoff and drain valves at locations indicated on Drawings in accordance with this Section.
- B. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- C. Provide line sized isolation valves on all domestic water branches greater than $\frac{3}{4}$ " when more than two fixtures are supplied.

END OF SECTION 220523

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 220529 - HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe hangers and supports.
 - 2. Hanger rods.
 - 3. Inserts.
 - 4. Flashing.
 - 5. Sleeves.
 - 6. Mechanical sleeve seals.
 - 7. Formed steel channel.
 - 8. Firestopping relating to plumbing work.
 - 9. Firestopping accessories.

- B. Related Sections:
 - 1. Section 03 10 00 - Concrete Forming and Accessories: Execution requirements for placement of inserts sleeves in concrete forms specified by this section.
 - 2. Section 03 30 00 - Cast-In-Place Concrete: Execution requirements for placement of concrete housekeeping pads specified by this section.
 - 3. Section 22 05 00 – Common work results for Plumbing
 - 4. Section 22 05 03 – Pipes and Tubes for Plumbing Piping and Equipment
 - 5. Section 22 05 16 - Expansion Fittings and Loops for Plumbing Piping
 - 6. Section 22 05 23 - General-Duty Valves for Plumbing Piping
 - 7. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment
 - 8. Section 22 05 53 – Identification for Plumbing Piping and Equipment
 - 9. Section 22 07 00 - Plumbing Insulation
 - 10. Section 22 30 00 – Plumbing Specialties
 - 11. Section 22 40 00 – Plumbing Fixtures
 - 12. Refer to Division 01 for General Conditions required for this section.

1.2 REFERENCES

- A. American Society of Mechanical Engineers:
 - 1. ASME B31.1 - Power Piping.
 - 2. ASME B31.5 - Refrigeration Piping.
 - 3. ASME B31.9 - Building Services Piping.

- B. ASTM International:
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
 - 3. ASTM E814 - Standard Test Method for Fire Tests of Through Penetration Fire Stops.
 - 4. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.
 - 5. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.

- C. American Welding Society:
 - 1. AWS D1.1 - Structural Welding Code - Steel.

- D. FM Global:
 - 1. FM - Approval Guide, A Guide to Equipment, Materials & Services Approved By Factory Mutual Research For Property Conservation.

- E. Manufacturers Standardization Society of the Valve and Fittings Industry:
 - 1. MSS SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
 - 2. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.
 - 3. MSS SP 89 - Pipe Hangers and Supports - Fabrication and Installation Practices.

- F. Underwriters Laboratories Inc.:
 - 1. UL 263 - Fire Tests of Building Construction and Materials.
 - 2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
 - 3. UL 1479 - Fire Tests of Through-Penetration Firestops.
 - 4. UL 2079 - Tests for Fire Resistance of Building Joint Systems.
 - 5. UL - Fire Resistance Directory.

- G. Intertek Testing Services (Warnock Hersey Listed):
 - 1. WH - Certification Listings.

1.3 DEFINITIONS

- A. Firestopping (Through-Penetration Protection System): Sealing or stuffing material or assembly placed in spaces between and penetrations through building materials to arrest movement of fire, smoke, heat, and hot gases through fire rated construction.

1.4 SYSTEM DESCRIPTION

- A. Firestopping Materials: ASTM E119 ASTM E814 UL 263 UL 1479 to achieve fire ratings as noted on Drawings for adjacent construction, but not less than 1 hour fire rating.

- B. Firestopping Materials: ASTM E119, ASTM E814, UL 263, UL 1479, to achieve fire ratings of adjacent construction noted in Schedule at end of this section. in accordance with FM UL WH noted in Schedule at end of this section.

- C. Firestop interruptions to fire rated assemblies, materials, and components.

1.5 PERFORMANCE REQUIREMENTS

- A. Firestopping: Conform to [applicable code] [FM] [UL] [WH] for fire resistance ratings and surface burning characteristics.

- B. Firestopping: Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

1.6 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

- B. Shop Drawings: Indicate system layout with location including critical dimensions, sizes, and pipe hanger and support locations and detail of trapeze hangers.

- C. Product Data:
 - 1. Hangers and Supports: Submit manufacturers catalog data including load capacity.
 - 2. Firestopping: Submit data on product characteristics, performance and limitation criteria.
- D. Firestopping Schedule: Submit schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly.
- E. Design Data: Indicate load carrying capacity of trapeze, multiple pipe, and riser support hangers. Indicate calculations used to determine load carrying capacity of trapeze, multiple pipe, and riser support hangers. Submit sizing methods calculations sealed by a registered professional engineer.
- F. Manufacturer's Installation Instructions:
 - 1. Hangers and Supports: Submit special procedures and assembly of components.
 - 2. Firestopping: Submit preparation and installation instructions.
- G. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- H. Engineering Judgements: For conditions not covered by UL or WH listed designs, submit judgements by licensed professional engineer suitable for presentation to authority having jurisdiction for acceptance as meeting code fire protection requirements.

1.7 QUALITY ASSURANCE

- A. Through Penetration Firestopping of Fire Rated Assemblies: UL 1479 or ASTM E814 with 0.10 inch water gage minimum positive pressure differential to achieve fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.
 - 1. Wall Penetrations: Fire F-Ratings as indicated on Drawings, but not less than 1-hour.
 - 2. Floor and Roof Penetrations: Fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.
 - a. Floor Penetrations within Wall Cavities: T-Rating is not required.
- B. Through Penetration Firestopping of Non-Fire Rated Floor and Roof Assemblies: Materials to resist free passage of flame and products of combustion.
 - 1. Noncombustible Penetrating Items: Noncombustible materials for penetrating items connecting maximum of three stories.
 - 2. Penetrating Items: Materials approved by authorities having jurisdiction for penetrating items connecting maximum of two stories.
- C. Fire Resistant Joints in Fire Rated Floor, Roof, and Wall Assemblies: ASTM E1966 or UL 2079 to achieve fire resistant rating as indicated on Drawings for assembly in which joint is installed.
- D. Fire Resistant Joints Between Floor Slabs and Exterior Walls: ASTM E119 with 0.10 inch water gage minimum positive pressure differential to achieve fire resistant rating as indicated on Drawings for floor assembly.
- E. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

- F. Perform Work in accordance with AWS D1.1 for welding hanger and support attachments to building structure.
- G. Maintain one copy of each document on site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years of documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years of documented experience.

1.9 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- C. Protect from weather and construction traffic, dirt, water, chemical, and damage, by storing in original packaging.

1.11 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F.
- C. Maintain this minimum temperature before, during, and for minimum 3 days after installation of firestopping materials.
- D. Provide ventilation in areas to receive solvent cured materials.

1.12 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.13 WARRANTY

- A. Division 1 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for pipe hangers and supports.

PART 2 PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

- A. Manufacturers:
 - 1. Nibco
 - 2. Empire
 - 3. Flex-Weld, Inc.
 - 4. Glope Pipe Hanger Products Inc.
 - 5. Michigan Hanger Co.
 - 6. Superior Valve Co.
 - 7. Substitutions: Section 01 25 00 – Substitution Procedures.

- B. Plumbing Piping - DWV:
 - 1. Conform to [ASME B31.9] [ASTM F708] [MSS SP58] [MSS SP69] [MSS SP89].
 - 2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron or Carbon steel, adjustable swivel, split ring.
 - 3. Hangers for Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.
 - 4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 - 5. Wall Support for Pipe Sizes 3 inches and Smaller: Cast iron hook.
 - 6. Wall Support for Pipe Sizes 4 inches and Larger: Welded steel bracket and wrought steel clamp.
 - 7. Vertical Support: Steel riser clamp.
 - 8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 - 9. Copper Pipe Support: Copper-plated, carbon-steel adjustable, ring.

- C. Plumbing Piping - Water:
 - 1. Conform to ASME B31.9 ASTM F708 MSS SP58 MSS SP69 MSS SP89.
 - 2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron Carbon steel, adjustable swivel, split ring.
 - 3. Hangers for Cold Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.
 - 4. Hangers for Hot Pipe Sizes 2 to 4 inches: Carbon steel, adjustable, clevis.
 - 5. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 - 6. Wall Support for Pipe Sizes 3 inches and Smaller: Cast iron hook.
 - 7. Wall Support for Pipe Sizes 4 inches and Larger: Welded steel bracket and wrought steel clamp.
 - 8. Vertical Support: Steel riser clamp.
 - 9. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 - 10. Floor Support for Hot Pipe Sizes 4 inches and Smaller: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 - 11. Copper Pipe Support: Copper-plated, Carbon-steel ring.

2.2 ACCESSORIES

- A. Hanger Rods: Mild steel threaded both ends, threaded on one end, or continuous threaded.

2.3 INSERTS

- A. Manufacturers:
 - 1. Thunderline
 - 2. Link Seal
 - 3. Fernco
 - 4. BWM
 - 5. Substitutions: Section 01 25 00 – Substitution Procedures.

- B. Inserts: Malleable iron case of [galvanized] steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

2.4 FLASHING

- A. Metal Flashing: 26 gage thick galvanized steel.

- B. Metal Counterflashing: 22 gage thick galvanized steel.

- C. Lead Flashing:
 - 1. Waterproofing: 4 lb./sq. ft sheet lead.
 - 2. Soundproofing: 1 lb./sq. ft sheet lead. (can't easily find 1 lb/sf sound lead sheet)

- D. Flexible Flashing: 47 mil thick sheet butyl; compatible with roofing.

- E. Caps: Steel, 22 gage minimum; 16 gage at fire resistant elements.

2.5 SLEEVES

- A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage thick galvanized steel.

- B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.

- C. Sealant: Acrylic; refer to Section 07 90 00.

2.6 MECHANICAL SLEEVE SEALS

- A. Manufacturers:
 - 1. Thunderline Link-Seal, Inc.
 - 2. NMP Corporation
 - 3. Fernco
 - 4. BWM
 - 5. Substitutions: Section 01 25 00 – Substitution Procedures.

- B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.7 FORMED STEEL CHANNEL

- A. Manufacturers:
 - 1. Allied Tube & Conduit Corp.
 - 2. B-Line Systems
 - 3. Midland Ross Corporation, Electrical Products Division
 - 4. Unistrut Corp.
 - 5. Substitutions: Section 01 25 00 – Substitution Procedures.

- B. Product Description: Galvanized 12 gage) thick steel. With holes 1-1/2 inches on center.

2.8 FIRESTOPPING

- A. Manufacturers:
 - 1. Dow Corning Corp.
 - 2. Fire Trak Corp.
 - 3. Hilti Corp.
 - 4. International Protective Coating Corp.
 - 5. 3M fire Protection Products
 - 6. Specified Technology, Inc.
 - 7. Substitutions: Section 01 25 00 – Substitution Procedures.

- B. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
 - 1. Silicone Firestopping Elastomeric Firestopping: [Single] [Multiple] component silicone elastomeric compound and compatible silicone sealant.
 - 2. Foam Firestopping Compounds: [Single] [Multiple] component foam compound.
 - 3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
 - 4. Fiber Stuffing and Sealant Firestopping: Composite of [mineral] [ceramic] fiber stuffing insulation with silicone elastomer for smoke stopping.
 - 5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
 - 6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
 - 7. Firestop Pillows: Formed mineral fiber pillows.

- C. Color: As selected from manufacturer's full range of colors.

2.9 FIRESTOPPING ACCESSORIES

- A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.

- B. Dam Material: Permanent:
 - 1. Mineral fiberboard.
 - 2. Mineral fiber matting.
 - 3. Sheet metal.
 - 4. Plywood or particle board.
 - 5. Alumina silicate fire board.

- C. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.
- D. General:
 - 1. Furnish UL listed products [or products tested by independent testing laboratory].
 - 2. Select products with rating not less than rating of wall or floor being penetrated.
- E. Non-Rated Surfaces:
 - 1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where piping is exposed.
 - 2. For exterior wall openings below grade, furnish mechanical sealing device to continuously fill annular space between piping and cored opening or water-stop type wall sleeve.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify openings are ready to receive sleeves.
- C. Verify openings are ready to receive firestopping.

3.2 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.
- B. Remove incompatible materials affecting bond.
- C. Install backing and damming materials to arrest liquid material leakage.
- D. Obtain permission from Architect/Engineer before using powder-actuated anchors.
- E. Obtain permission from Architect/Engineer before drilling or cutting structural members.

3.3 INSTALLATION - INSERTS

- A. Install inserts for placement in concrete forms.
- B. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.
- D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
- E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut flush with top of slab.

3.4 INSTALLATION - PIPE HANGERS AND SUPPORTS

- A. Install in accordance with ASME B31.1 ASME B31.5 ASME 31.9 ASTM F708 MSS SP 58 MSS SP 69 MSS SP 89.
- B. Support horizontal piping as scheduled.
- C. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.
- D. Place hangers within 12 inches of each horizontal elbow.
- E. Use hangers with 1-1/2 inch minimum vertical adjustment.
- F. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.
- G. Support vertical piping at every other floor. Support vertical cast iron pipe at each floor at hub.
- H. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.
- I. Support riser piping independently of connected horizontal piping.
- J. Provide copper plated hangers and supports for copper piping sheet lead packing between hangers or support and piping.
- K. Design hangers for pipe movement without disengagement of supported pipe.
- L. Prime coat exposed steel hangers and supports. Refer to Section 09 90 00. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
- M. Provide clearance in hangers and from structure and other equipment for installation of insulation. Refer to Section 22 07 00.
- N. Design hangers so that pipes are supported by building structure; no pipe to pipe hangers, supports, or anchoring.

3.5 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

- A. Provide housekeeping pads of concrete, minimum 4 inches thick and extending 6 inches beyond supported equipment. Refer to Division 01
- B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.
- C. Construct supports of steel members, formed steel channel, or steel pipe and fittings. Brace and fasten with flanges bolted to structure.
- D. Provide rigid anchors for pipes after vibration isolation components are installed. Refer to Section 21 05 48.

3.6 INSTALLATION - FLASHING

- A. Provide flexible flashing and metal counterflashing where piping penetrates weather or waterproofed walls, floors, and roofs.
- B. Flash vent and soil pipes projecting 3 inches minimum above finished roof surface with lead worked 1 inch minimum into hub, 8 inches minimum clear on sides with 24 x 24 inches sheet size. For pipes through outside walls, turn flanges back into wall and caulk, metal counter-flash, and seal.
- C. Flash floor drains in floors with topping over finished areas with lead, 10 inches clear on sides with minimum 36 x 36 inch sheet size. Fasten flashing to drain clamp device.
- D. Seal floors, showers, and mop sink drains watertight to adjacent materials.
- E. Adjust storm collars tight to pipe with bolts; caulk around top edge. Use storm collars above roof jacks. Screw vertical flange section to face of curb.

3.7 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with mechanical sleeve seals.
- B. Set sleeves in position in forms. Provide reinforcing around sleeves.
- C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- D. Extend sleeves through floors 1inch above finished floor level. Caulk sleeves.
- E. Where piping penetrates floor, ceiling, or wall, close off space between pipe and adjacent work with stuffing, and firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- F. Install chrome plated steel,, or stainless steel escutcheons at finished surfaces.

3.8 INSTALLATION - FIRESTOPPING

- A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping and other items, requiring firestopping.

3.9 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect installed firestopping for compliance with specifications and submitted schedule.

3.10 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Clean adjacent surfaces of firestopping materials.

3.11 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect adjacent surfaces from damage by material installation.

3.12 SCHEDULES

| PIPE HANGER SPACING | | |
|---|--------------------------------|-------------------------------|
| PIPE MATERIAL | MAXIMUM HANGER SPACING Feet | HANGER ROD DIAMETER Inches |
| Cast Iron (All Sizes) | 5 | 5/8 |
| Cast Iron (All Sizes) with 10 foot length of pipe | 10 | 5/8 |
| Copper Tube, 1-1/4 inches and smaller | 6 | 1/2 |
| Copper Tube, 1-1/2 inches and larger | 10 | 1/2 |
| Polybutylene | 2.67 | 3/8 |
| Polypropylene | 4 | 3/8 |
| PVC (All Sizes) | 4 | 3/8 |
| Steel, 3 inches and smaller | 12 | 1/2 |
| Steel, 4 inches and larger | 12 | 5/8 |

END OF SECTION 220529

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 220548 - VIBRATION & SEISMIC CONTROLS FOR PLUMBING PIPING & EQUIPMENT

PART 1 GENERAL

1.1 INTENT

- A. All plumbing equipment and piping as noted on the equipment schedule or in the specification shall be mounted on vibration isolators to prevent the transmission of vibration and mechanically transmitted sound to the building structure. Vibration isolators shall be selected in accordance with the weight distribution so as to produce reasonably uniform deflections.
- B. All isolators and isolation materials shall be of the same manufacturer and shall be certified by the manufacturer.
- C. It is the intent of the seismic portion of this specification to keep all mechanical and electrical building system components in place during a seismic event.
- D. All such systems must be installed in strict accordance with seismic codes, component manufacturer's recommendations and building construction standards. Whenever a conflict occurs between the manufacturer's recommendations or construction standards, the most stringent shall apply.
- E. This specification is considered to be minimum requirements for seismic consideration and is not intended as a substitute for legislated, more stringent, national, state or local construction requirements.
- F. Any variance or non-compliance with these specification requirements shall be corrected by the contractor in an approved manner.

1.2 SUMMARY

- A. Section Includes:
 - 1. Certification of seismic restraint designs and installation supervision.
 - 2. Certification of seismic attachment of housekeeping pads.
 - 3. NOTE: For all mechanical and electrical systems. Equipment buried underground is excluded but entry of services through the foundation wall is included.
 - 4. Seismic restraint products
 - a. Vibration isolation elements.
 - b. Equipment isolation bases.
 - c. Piping flexible connections.
 - d. Seismic restraints for isolated and non-isolated mechanical and electrical items.
 - 5. Inertia bases.
- B. Related Sections:
 - 1. Section 03 30 00 - Cast-In-Place Concrete: Execution requirements for placement of isolators in floating floor slabs specified by this section and product requirements for concrete for placement by this section.
 - 2. Section 07 90 00 - Joint Protection: Product requirements for joint sealers specified for placement by this section.

3. Section 22 05 16 - Expansion Fittings and Loops for Plumbing Piping: Product requirements for anchors and piping expansion compensation.
4. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment: Product requirements for pipe hangers and supports.
5. Refer to Division 01 for General Conditions required for this section.

1.3 REFERENCES

- A. American National Standards Institute:
 1. ANSI S1.4 - Sound Level Meters.
 2. ANSI S1.8 - Reference Quantities for Acoustical Levels.
 3. ANSI S12.36 - Survey Methods for the Determination of Sound Power Levels of Noise Sources.
- B. Air-Conditioning and Refrigeration Institute:
 1. ARI 575 - Method of Measuring Machinery Sound within Equipment Space.
- C. American Society of Heating, Refrigerating and:
 1. ASHRAE Handbook - HVAC Applications.

1.4 RELATED WORK

- A. Supplementary Support Steel
 1. Contractor shall supply supplementary support steel for all equipment, piping, ductwork, etc. including roof mounted equipment, as required or specified.
- B. Attachments
 1. Contractor shall supply restraint attachment plates cast into housekeeping pads, concrete inserts, double sided beam clamps, etc. in accordance with the requirements of the vibration vendor's calculations.

1.5 SEISMIC FORCE LEVELS

- A. Installations shall be designed to safely accept external forces determined in accordance with the International Building Code –2003, Section 1621 in any direction for all rigidly supported equipment without failure and permanent displacement of the equipment. Seismic restraints shall not short circuit vibration isolation systems or transmit objectionable vibration or noise.

1.6 PERFORMANCE REQUIREMENTS

- A. Provide vibration isolation on motor driven equipment over 0.5 hp, plus connected piping.
- B. Provide minimum static deflection of isolators for equipment as follows:
 1. Basement, Under 20 hp
 - a. Under 400 rpm:
 - b. 400 - 600 rpm: 1 inch
 - c. 600 - 800 rpm: 0.5 inch
 - d. 800 - 900 rpm: 0.2 inch
 - e. 1100 - 1500 rpm: 0.14 inch
 - f. Over 1500 rpm: 0.1 inch
 2. Basement, Over 20 hp
 - a. Under 400 rpm:
 - b. 400 - 600 rpm: 2 inch
 - c. 600 - 800 rpm: 1 inch

- d. 800 - 900 rpm: 0.5 inch
- e. 1100 - 1500 rpm: 0.2 inch
- f. Over 1500 rpm: 0.15 inch
- 3. Upper Floors, Normal
 - a. 0 - 600 rpm: 3.5 inch
 - b. 600 - 800 rpm: 2 inch
 - c. 800 - 900 rpm: 1 inch
 - d. 1100 - 1500 rpm: 0.5 inch
 - e. Over 1500 rpm: 0.2 inch
- 4. Upper Floors, Critical
 - a. 0 - 800 rpm: 3.5 inch
 - b. 800 - 900 rpm: 2 inch
 - c. 1100 - 1500 rpm: 1 inch
 - d. Over 1500 rpm: 0.5 inch

- C. Consider upper floor locations critical unless otherwise indicated.

- D. Use concrete inertia bases for motors in excess of 40 hp and on base mounted pumps over 10 hp.

- E. Maintain sound level of spaces at levels not to exceed those listed below by utilizing acoustical devices.

- F. Maintain rooms at following maximum sound levels, in Noise Criteria (NC) Room Criteria (RC) as defined by ASHRAE Handbook., HVAC Applications, ANSI S1.8.
 - 1. Hotels/Motels
 - a. Individual rooms/suites: 30
 - 2. Offices
 - a. Executive: 30
 - b. Conference rooms: 30
 - c. Private: 35
 - d. Open-plan areas: 40
 - e. Computer/business machine areas: 45
 - f. Public circulation: 45

1.7 DEFINITIONS

- A. Life Safety Systems:
 - 1. All systems involved with and/or connected to emergency power supply including all generators, transfer switches, transformers and all flow paths to fire protection and/or emergency lighting systems.
 - 2. All medical and life support systems.
 - 3. Fresh air relief systems on emergency control sequence including air handlers, conduit, duct, dampers, etc.

- B. Positive Attachment:
 - 1. A positive attachment is defined as a cast-in anchor, a drill-in wedge anchor, a double sided beam clamp loaded perpendicular to a beam, or a welded or bolted connection to structure. Single sided "C" type beam clamps for support rods of overhead piping, ductwork, fire protection, electrical conduit, bus duct, or cable trays, or any other equipment are not acceptable on this project as seismic anchor points.

- C. Transverse Bracing:
 - 1. Restraint(s) applied to limit motion perpendicular to the centerline of the pipe, duct or conduit.

- D. Longitudinal Bracing:
 - 1. Restraint(s) applied to limit motion parallel to the centerline of the pipe, duct or conduit.

- E. Failure
 - 1. For the purposes of this project, failure is defined as the discontinuance of any attachment point between equipment or structure, vertical permanent deformation greater than 1/8" (3mm) and/or horizontal permanent deformation greater than 1/4" (6mm).

1.8 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

- B. Shop Drawings:
 - 1. Submit fabrication details for equipment bases including dimensions, structural member sizes and support point locations.
 - 2. Provide Drawings showing methods of suspension and support guides for conduit, piping and ceiling hung equipment.
 - 3. Record actual locations and installation of vibration isolators and seismic restraints including attachment points.
 - 4. Where walls, floors, slabs or supplementary steel work are used for seismic restraint locations, details of acceptable attachment methods for conduit and pipe must be included and approved before the condition is accepted for installation. Restraint manufacturers' submittals must include spacing, static loads and seismic loads at all attachment and support points.
 - 5. Provide specific details of seismic restraints and anchors; include number, size and locations for each piece of equipment.
 - 6. Drawings showing methods for isolation of conduits and pipes penetrating walls and floor slabs.
 - 7. Specific details of restraints including anchor bolts for mounting and maximum loading at each location, for each piece of equipment and/or pipe locations.

- C. Product Data: Submit schedule of vibration isolator type with location and load on each. Submit catalog information indicating, materials, dimensional data, pressure losses, and acoustical performance for standard sound attenuation products.

- D. Seismic Certification and Analysis:
 - 1. Seismic restraint calculations must be provided for all connections of equipment to the structure. Calculations must be stamped by a registered professional engineer with at least five years of seismic design experience, licensed in the state of the job location.

2. All restraining devices shall have a preapproval number from some other recognized government agency showing maximum restraint ratings. Preapprovals based on independent testing are preferred to preapprovals based on calculations. Where preapproved devices are not available, submittals based on independent testing are preferred. Calculations (including the combining of tensile and shear loadings) to support seismic restraint designs must be stamped by a registered professional engineer with at least five years of seismic design experience and licensed in the state of the job location. Testing and calculations must include both shear and tensile loads as well as one test or analysis at 45 degrees to the weakest mode.
 3. Analysis must indicate calculated dead loads, static seismic loads and capacity of materials utilized for connections to equipment and structure. Analysis must detail anchoring methods, bolt diameter, embedment and/or welded length. All seismic restraint devices shall be designed to accept, without failure, the forces detailed in section 1.06 acting through the equipment center of gravity. Overturning moments may exceed forces at ground level.
- E. Design Data: Submit calculations indicating maximum room sound levels are not exceeded. Use sound power levels of actual equipment to be installed on project. Analysis shall include breakout noise calculations. In the absence of specified background sound level criteria, the guidelines as express in Table 34 of Chapter 47, "Sound and Vibration Control" of the 2015 ASHRAE Handbook – HVAC Applications, shall be used.
- F. Test Reports: Indicate dynamic insertion loss and noise generation values of silencers. Acoustic housings meet or exceed specified sound transmission loss values.
- G. Manufacturer's Installation Instructions: Submit special procedures and setting dimensions. Indicate installation requirements maintaining integrity of sound isolation.
- H. Manufacturer's Certificate: Certify isolators meet or exceed specified requirements.
- I. Manufacturer's Field Reports: Indicate sound isolation installation is complete and in accordance with instructions.
- 1.9 CLOSEOUT SUBMITTALS
- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
 - B. Project Record Documents: Record actual locations of hangers including attachment points.
- 1.10 QUALITY ASSURANCE
- A. Perform Work in accordance with ANSI S12.36.
 - B. Maintain one copy of each document on site.
- 1.11 QUALIFICATIONS
- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years [documented] experience.
 - B. Installer: Company specializing in performing Work of this section with minimum three years [documented] experience [approved by manufacturer].

- C. Design application of seismic bracing under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.

1.12 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.13 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.14 CONTRACTOR'S RESPONSIBILITIES

- A. Contractor shall have the following responsibilities:
 1. Determine vibration isolation and seismic restraint sizes and locations per specifications.
 2. Provide and install isolation systems and seismic restraints as scheduled or specified.
 3. Guarantee specified isolation system deflection.
 4. Provide installation instructions, drawings and field supervision to assure proper installation and performance.
 5. Provide installation instructions, drawings and trained field supervision to insure proper installation and performance.
 6. Substitution of "Internally Isolated" mechanical equipment in lieu of the specified isolation of this section is acceptable

1.15 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for inertia bases.

PART 2 PRODUCTS

2.1 VIBRATION ISOLATORS

- A. Manufacturers:
 1. Mason
 2. Vibration Eliminator
 3. Amber Booth
 4. Substitutions: Section 01 60 00 - Product Requirements.
- B. Open Spring Isolators:
 1. Spring Isolators:
 - a. For Exterior and Humid Areas: Furnish hot dipped galvanized housings and neoprene coated springs.
 - b. Code: Color code springs for load carrying capacity.
 2. Springs: Minimum horizontal stiffness equal to 75 percent vertical stiffness, with working deflection between 0.3 and 0.6 of maximum deflection.

3. Spring Mounts: Furnish with leveling devices, minimum 0.25 inch thick neoprene sound pads, and zinc chromate plated hardware.
 4. Sound Pads: Size for minimum deflection of 0.05 inch; meet requirements for neoprene pad isolators.
- C. Restrained Spring Isolators:
1. Spring Isolators:
 - a. For Exterior and Humid Areas: Furnish hot dipped galvanized housings and neoprene coated springs.
 - b. Code: Color code springs for load carrying capacity.
 2. Springs: Minimum horizontal stiffness equal to 75 percent vertical stiffness, with working deflection between 0.3 and 0.6 of maximum deflection.
 3. Spring Mounts: Furnish with leveling devices, minimum 0.25 inch thick neoprene sound pads, and zinc chromate plated hardware.
 4. Sound Pads: Size for minimum deflection of 0.05 inch; meet requirements for neoprene pad isolators.
 5. Restraint: Furnish mounting frame and limit stops.
- D. Closed Spring Isolators:
1. Spring Isolators:
 - a. For Exterior and Humid Areas: Furnish hot dipped galvanized housings and neoprene coated springs.
 - b. Code: Color code springs for load carrying capacity.
 2. Type: Closed spring mount with top and bottom housing separated with neoprene rubber stabilizers.
 3. Springs: Minimum horizontal stiffness equal to 75 percent vertical stiffness, with working deflection between 0.3 and 0.6 of maximum deflection.
 4. Housings: Incorporate neoprene isolation pad meeting requirements for neoprene pad isolators, and neoprene side stabilizers with minimum 0.25 inch clearance.
- E. Restrained Closed Spring Isolators:
1. Spring Isolators:
 - a. For Exterior and Humid Areas: Furnish hot dipped galvanized housings and neoprene coated springs.
 - b. Code: Color code springs for load carrying capacity.
 2. Type: Closed spring mount with top and bottom housing separated with neoprene rubber stabilizers.
 3. Springs: Minimum horizontal stiffness equal to 75 percent vertical stiffness, with working deflection between 0.3 and 0.6 of maximum deflection.
 4. Housings: Incorporate neoprene isolation pad meeting requirements for neoprene pad isolators, and neoprene side stabilizers with minimum 0.25 inch clearance and limit stops.
- F. Spring Hanger:
1. Spring Isolators:
 - a. For Exterior and Humid Areas: Furnish hot dipped galvanized housings and neoprene coated springs.
 - b. Code: Color code springs for load carrying capacity.
 2. Springs: Minimum horizontal stiffness equal to 75 percent vertical stiffness, with working deflection between 0.3 and 0.6 of maximum deflection.
 3. Housings: Incorporate neoprene isolation pad meeting requirements for neoprene pad isolators rubber hanger with threaded insert.
 4. Misalignment: Capable of 20 degree hanger rod misalignment.

- G. Neoprene Pad Isolators:
 - 1. Rubber or neoprene-waffle pads.
 - a. 30 durometer.
 - b. Minimum 1/2 inch thick.
 - c. Maximum loading 40 psi.
 - d. Height of ribs: not to exceed 0.7 times width.
 - 2. Configuration: Single layer. 1/2 inch thick waffle pads bonded each side of 1/4 inch thick steel plate.

- H. Rubber Mount or Hanger: Molded rubber designed for 0.5 inches deflection with threaded insert.

- I. Glass Fiber Pads: Neoprene jacketed pre-compressed molded glass fiber.

- J. Seismic Snubbers:
 - 1. Type: Non-directional and double acting unit consisting of interlocking steel members restrained by neoprene elements.
 - 2. Neoprene Elements: Replaceable, minimum of 0.75 inch thick.
 - 3. Capacity: 4 times load assigned to mount groupings at 0.4 inch deflection.
 - 4. Attachment Points and Fasteners: Capable of withstanding 3 times rated load capacity of seismic snubber.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify equipment and piping is installed before work in this section is started.

3.2 EXISTING WORK

- A. Provide access to existing piping and ductwork and other installations remaining active and requiring access.
- B. Extend existing piping and ductwork installations using materials and methods compatible with existing electrical installations.

3.3 INSTALLATION

- A. Install spring hangers without binding.
- B. On closed spring isolators, adjust so side stabilizers are clear under normal operating conditions.
- C. Prior to making piping connections to equipment with operating weights substantially different from installed weights, block up equipment with temporary shims to final height. When full load is applied, adjust isolators to load to allow shim removal.
- D. Provide pairs of horizontal limit springs on fans with more than 6.0 inch static pressure, and on hanger supported, horizontally mounted axial fans.

- E. Provide resiliently mounted equipment and piping with seismic snubbers. Provide each inertia base with minimum of four seismic snubbers located close to isolators. Snub equipment designated for post disaster use to 0.05 inch maximum clearance. Provide other snubbers with clearance between 0.15 inch and 0.25 inch.
- F. Support piping connections to isolated equipment resiliently to nearest flexible pipe connector. as follows:
 - 1. Up to 4 inch Diameter: First three points of support.
 - 2. 5 to 8 inch Diameter: First four points of support.
 - 3. 10 inch Diameter and Over: First six points of support.
 - 4. Select three hangers closest to vibration source for minimum 1.0 inch static deflection or static deflection of isolated equipment. Select remaining isolators for minimum 1.0 inch static deflection or 1/2 static deflection of isolated equipment.

3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements - 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect isolated equipment after installation and submit report. Include static deflections.
- C. After start-up, final corrections and balancing of systems take octave band sound measurements over full audio frequency range in areas adjacent to plumbing equipment rooms, duct and pipe shafts, and other critical locations. Provide one-third octave band measurements of artificial sound sources in areas indicated as having critical requirements. Submit complete report of test results including sound curves.
- D. Furnish services of testing agency to take noise measurement. Use meters meeting requirements of ANSI S1.4.

3.5 SCHEDULES

- A. Pipe Isolation Schedule:

| Pipe Size Inch | Isolated Distance from Equipment |
|----------------|----------------------------------|
| 1 | 120 diameters |
| 2 | 90 diameters |
| 3 | 80 diameters |
| 4 | 75 diameters |
| 6 | 60 diameters |
| 8 | 60 diameters |
| 10 | 54 diameters |
| 12 | 50 diameters |

3.6 VIBRATION ISOLATION AND SEISMIC RESTRAINT INSTALLATION

- A. Horizontal pipe isolation: The first three pipe hangers in the main lines near the mechanical equipment shall be as described in specification 11. Specification 11 hangers must also be used in all transverse braced isolated locations. Brace hanger rods with SRC clamps specification 14. Horizontal runs in all other locations throughout the building shall be isolated by hangers as described in specification 10. Floor supported piping shall rest on isolators as described in specification 6. Heat exchanger's and expansion tanks are considered part of the piping run. The first three isolators from the isolated equipment will have the same static deflection as specified for the mountings under the connected equipment. If piping is connected to equipment located in basements and hangs from ceilings under occupied spaces the first three hangers shall have 0.75" (19mm) deflection for pipe sizes up to and including 3" (75mm), 1 1/2" (38mm) deflection for pipe sizes up to and including 6" (150mm), and 2 1/2" (64mm) deflection thereafter. Hangers shall be located as close to the overhead structure as practical. Where piping connects to mechanical equipment install specification 23 expansion joints or specification 24 stainless hoses if 23 is not suitable for the service.
- B. Riser isolation: Risers shall be suspended from specification 10 hangers or supported by specification 5 mountings, anchored with specification 25 anchors, and guided with specification 26 sliding guides. Steel springs shall be a minimum of 0.75" (19mm) except in those expansion locations where additional deflection is required to limit load changes to $\pm 25\%$ of the initial load. Submittals must include riser diagrams and calculations showing anticipated expansion and contraction at each support point, initial and final loads on the building structure, spring deflection changes and seismic loads. Submittal data shall include certification that the riser system has been examined for excessive stresses and that none will exist in the proposed design.
- C. Seismic Restraint of Piping
1. Seismically restrain all piping listed as a, b or c below. Use specification 12 cables if isolated. Specification 12 or 13 restraints may be used on unisolated piping.
 - a. Fuel oil piping, gas piping, medical gas piping, and compressed air piping that is 1" (25mm) I.D. or larger.
 - b. Piping located in boiler rooms, mechanical equipment rooms, and refrigeration equipment rooms that is 1 1/4" (32mm) I.D. and larger.
 - c. All other piping 2 1/2" (64mm) diameter and larger.
 2. Transverse piping restraints shall be at 40' (12m) maximum spacing for all pipe sizes, except where lesser spacing is required to limit anchorage loads.
 3. Longitudinal restraints shall be at 80' (24m) maximum spacing for all pipe sizes, except where lesser spacing is required to limit anchorage loads.
 4. Where thermal expansion is a consideration, guides and anchors may be used as transverse and longitudinal restraints provided they have a capacity equal to or greater than the restraint loads in addition to the loads induced by expansion or contraction.
 5. For fuel oil and all gas piping transverse restraints must be at 20' (6m) maximum and longitudinal restraints at 40' (12m) maximum spacing.
 6. Transverse restraint for one pipe section may also act as a longitudinal restraint for a pipe section of the same size connected perpendicular to it if the restraint is installed within 24" (600mm) of the elbow or TEE or combined stresses are within allowable limits at longer distances.

7. Hold down clamps must be used to attach pipe to all trapeze members before applying restraints in a manner similar to clevis supports.
8. Branch lines may not be used to restrain main lines.
9. Cast iron pipe of all types, glass pipe and any other pipes joined with a four band shield and clamp assembly in Zones 2B, 3 and 4 shall be braced as in sections 3.2.D.2 and 3. For Zones 0, 1 and 2A, 2 band clamps may be used with reduced spacings of 1/2 of those listed in sections 3.2.D.2 and 3.

3.7 SEISMIC RESTRAINT EXCLUSIONS

- A. General: All mechanical and electrical components and systems that are considered exempt from the requirement for seismic restraint, in accordance with The International Building Code – 2003, Section.1621 and all related State of Connecticut Supplements, shall not require seismic restraint.
- B. Piping
 1. Piping in boiler and mechanical rooms less than 1 1/4" (32mm) inside diameter.
 2. All other piping less than 2 1/2" (64mm) inside diameter.
 3. All piping suspended by individual hangers 12" (300mm) or less as measured from the top of the pipe to the bottom of the support where the hanger is attached. However, if the 12" (300mm) limit is exceeded by any hanger in the run, seismic bracing is required for the run.
 4. The 12" (300mm) exemption applies for trapeze supported systems if the top of each item supported by the trapeze qualifies.

3.8 INSPECTION

- A. Examine systems under provisions of Division 1.
- B. On completion of installation of all vibration isolation devices herein specified, the local representative shall inspect the completed system and report in writing any installation error, improperly elected isolation devices, or other faults in the system that could affect the performance of the system. Contractor shall submit a report to the Owner, including the manufacturers representatives' final report, indicating all isolation reported as properly installed or requiring correction, and include a report by the Contractor on steps taken to properly complete the isolation work.

END OF SECTION 220548

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 220553 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Nameplates.
 - 2. Tags.
 - 3. Pipe markers.
 - 4. Ceiling tacks.
 - 5. Labels.
 - 6. Lockout devices.

- B. Related Sections:
 - 1. Section 09 90 00 - Painting and Coating: Execution requirements for painting specified by this section.
 - 2. Section 22 05 00 – Common work results for Plumbing
 - 3. Section 22 05 03 – Pipes and Tubes for Plumbing Piping and Equipment
 - 4. Section 22 05 16 - Expansion Fittings and Loops for Plumbing Piping
 - 5. Section 22 05 23 - General-Duty Valves for Plumbing Piping
 - 6. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment
 - 7. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment
 - 8. Section 22 07 00 - Plumbing Insulation
 - 9. Section 22 30 00 – Plumbing Specialties
 - 10. Section 22 40 00 – Plumbing Fixtures
 - 11. Refer to Division 01 for General Conditions required for this section.

1.2 REFERENCES

- A. American Society of Mechanical Engineers:
 - 1. ASME A13.1 - Scheme for the Identification of Piping Systems.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit manufacturers catalog literature for each product required.
- C. Shop Drawings: Submit list of wording, symbols, letter size, and color coding for mechanical identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- D. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.
- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Record actual locations of tagged valves; include valve tag numbers.

1.5 QUALITY ASSURANCE

- A. Conform to NFPA 99 requirements for labeling and identification of medical gas piping systems and accessories.
- B. Conform to ASME A13.1 for color scheme for identification of piping systems and accessories.
- C. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years [documented] experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years [documented] experience [approved by manufacturer].

1.7 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.9 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish two containers of spray-on adhesive

PART 2 PRODUCTS

2.1 NAMEPLATES

- A. Manufacturers:
 - 1. Craftmark Identification Systems
 - 2. Safety Sign Co.
 - 3. Seton Identification Products
 - 4. Substitutions: Section 01 25 00 – Substitution Procedures.

- B. Product Description: Laminated three-layer plastic with engraved black letters on light contrasting background color.

2.2 TAGS

- A. Metal Tags:
 - 1. Manufacturers:
 - a. Craftmark Identification Systems
 - b. Safety Sign Co.
 - c. Seton Identification Products
 - d. Substitutions: Section 01 25 00 – Substitution Procedures.
 - 2. Stainless Steel with stamped letters; tag size minimum 1-1/2 inches diameter with finished edges.

- B. Information Tags:
 - 1. Manufacturers:
 - a. Craftmark Identification Systems
 - b. Safety Sign Co.
 - c. Seton Identification Products
 - d. Section 01 25 00 – Substitution Procedures.
 - 2. Clear plastic with printed "Danger," "Caution," or "Warning" and message; size 3-1/4 x 5-5/8 inches with grommet and self-locking nylon ties.

- C. Tag Chart: Typewritten letter size list of applied tags and location plastic laminated.

2.3 PIPE MARKERS

- A. Color and Lettering: Conform to ASME A13.1.

- B. Plastic Pipe Markers:
 - 1. Manufacturers:
 - a. Craftmark Identification Systems
 - b. Safety Sign Co.
 - c. Seton Identification Products
 - d. Section 01 25 00 – Substitution Procedures.
 - 2. Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener.

- C. Plastic Tape Pipe Markers:
 - 1. Manufacturers:
 - a. Craftmark Identification Systems
 - b. Safety Sign Co.
 - c. Seton Identification Products
 - d. Section 01 25 00 – Substitution Procedures.
 - 2. Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

- D. Plastic Underground Pipe Markers:
 - 1. Manufacturers:
 - a. Seton
 - b. Northtown
 - c. Kolbi
 - d. Section 01 25 00 – Substitution Procedures.
 - 2. Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.4 CEILING TACKS

- A. Manufacturers:
 - 1. Seton
 - 2. Northtown
 - 3. Kolbi
 - 4. Section 01 25 00 – Substitution Procedures.

- B. Description: Steel with 3/4 inch diameter color-coded head.

- C. Color code as follows:
 - 1. Plumbing valves: Green.

2.5 LABELS

- A. Manufacturers:
 - 1. Seton
 - 2. Northtown
 - 3. Kolbi
 - 4. Section 01 25 00 – Substitution Procedures.

- B. Description: Aluminum, size 1.9 x 0.75 inches, adhesive backed with printed identification and bar code.

2.6 LOCKOUT DEVICES

- A. Lockout Hasps:
 - 1. Manufacturers:
 - a. Seton
 - b. Brady
 - c. Omark
 - d. Section 01 25 00 – Substitution Procedures.
 - 2. Reinforced nylon hasp with erasable label surface; size minimum 7-1/4 x 3 inches.

- B. Valve Lockout Devices:
 - 1. Manufacturers:
 - a. Seton
 - b. Brady
 - c. Omark
 - d. Section 01 25 00 – Substitution Procedures.
 - 2. Nylon device preventing access to valve operator, accepting lock shackle.

PART 3 EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.
- B. Prepare surfaces in accordance with Section 09 90 00 for stencil painting.

3.2 INSTALLATION

- A. Install identifying devices after completion of coverings and painting.
- B. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive.
- C. Install labels with sufficient adhesive for permanent adhesion and seal with clear lacquer. For unfinished canvas covering, apply paint primer before applying labels.
- D. Install tags using corrosion resistant chain. Number tags consecutively by location.
- E. Identify control panels and major control components outside panels with plastic nameplates.
- F. Identify valves in main and branch piping with tags.
- G. Identify piping, concealed or exposed, with [plastic pipe markers] [plastic tape pipe markers] [stenciled painting]. [Use tags on piping 3/4 inch diameter and smaller.] Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.
- H. Provide ceiling tacks to locate valves above T-bar type panel ceilings. Locate in corner of panel closest to equipment.

END OF SECTION 220553

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 220700 - PLUMBING INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Plumbing piping insulation, jackets and accessories.
 - 2. Plumbing equipment insulation, jackets and accessories.

- B. Related Sections:
 - 1. Section 07 84 13 – Penetration Fireproofing: Product requirements for firestopping for placement by this section.
 - 2. Section 22 05 03 – Pipes and Tubes for Plumbing Piping and Equipment
 - 3. Section 22 05 16 - Expansion Fittings and Loops for Plumbing Piping
 - 4. Section 22 05 23 - General-Duty Valves for Plumbing Piping
 - 5. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment
 - 6. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment
 - 7. Section 22 05 53 – Identification for Plumbing Piping and Equipment
 - 8. Section 22 30 00 – Plumbing Specialties
 - 9. Section 22 40 00 – Plumbing Fixtures
 - 10. Refer to Division 01 for General Conditions required for this section.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - 2. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
 - 3. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 4. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).
 - 5. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement.
 - 6. ASTM C449/C449M - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement.
 - 7. ASTM C450 - Standard Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping, and Vessel Lagging.
 - 8. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation.
 - 9. ASTM C534 - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.
 - 10. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation.
 - 11. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
 - 12. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
 - 13. ASTM C585 - Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System).

14. ASTM C591 - Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.
15. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
16. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.
17. ASTM C921 - Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.
18. ASTM C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
19. ASTM D1785 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
20. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
21. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.
- C. Manufacturer's Installation Instructions: Submit manufacturers published literature indicating proper installation procedures.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding [450] [50] in accordance with ASTM E84.
- B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.
- C. Factory fabricated fitting covers manufactured in accordance with ASTM C450.
- D. Maintain one copy of each document on site.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Applicator: Company specializing in performing Work of this section with minimum three years documented experience.

1.6 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- C. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.
- C. Maintain temperature before, during, and after installation for minimum period of 24 hours.

1.9 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.10 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for man made fiber.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Manufacturers for Glass Fiber and Mineral Fiber Insulation Products:
 - 1. CertainTeed.
 - 2. Knauf.
 - 3. Johns Manville.
 - 4. Owens-Corning.
 - 5. Section 01 25 00 – Substitution Procedures.
- B. Manufacturers for Closed Cell Elastomeric Insulation Products:
 - 1. Aeroflex. Aerocell.
 - 2. Armacell, LLC. Armaflex.
 - 3. Nomaco. K-flex.
 - 4. Section 01 25 00 – Substitution Procedures.

2.2 PIPE INSULATION

- A. TYPE P-1: ASTM C547, molded glass fiber pipe insulation. Conform to ASTM C795 for application on Austenitic stainless steel.
 - 1. Thermal Conductivity: 0.23 at 75 degrees F.
 - 2. Operating Temperature Range: 0 to 850 degrees F.
 - 3. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil kraft with self-sealing adhesive joints.
 - 4. Jacket Temperature Limit: minus 20 to 150 degrees F.
- B. TYPE P-5: ASTM C534, Type I, flexible, closed cell elastomeric insulation, tubular.
 - 1. Thermal Conductivity: 0.27 at 75 degrees F.
 - 2. Operating Temperature Range: Range: Minus 70 to 180 degrees F.

2.3 PIPE INSULATION JACKETS

- A. Vapor Retarder Jacket:
 - 1. ASTM C921, white Kraft paper with glass fiber yarn, bonded to aluminized film.
 - 2. Water Vapor Permeance: ASTM E96/E96M; 0.02 perms.
- B. PVC Plastic Pipe Jacket:
 - 1. Product Description: ASTM D1785, One piece molded type fitting covers and sheet material, off-white color.
 - 2. Thickness: 15 mil.
 - 3. Connections: Brush on welding adhesive Tacks Pressure sensitive color matching vinyl tape.

2.4 PIPE INSULATION ACCESSORIES

- A. Vapor Retarder Lap Adhesive: Compatible with insulation.
- B. Covering Adhesive Mastic: Compatible with insulation.
- C. Piping 1-1/2 inches diameter and smaller: Galvanized steel insulation protection shield. MSS SP-69, Type 40. Length: Based on pipe size and insulation thickness.
- D. Piping 2 inches diameter and larger: Wood insulation saddle, hard maple. Inserts length: not less than 6 inches long, matching thickness and contour of adjoining insulation.
- E. Closed Cell Elastomeric Insulation Pipe Hanger: Polyurethane insert with [aluminum] [stainless steel jacket] single piece construction with self-adhesive closure. Thickness to match pipe insulation.
- F. Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement: ASTM C449/C449M.
- G. Insulating Cement: ASTM C195; hydraulic setting on mineral wool.
- H. Adhesives: Compatible with insulation.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify piping and equipment has been tested before applying insulation materials.
- C. Verify surfaces are clean and dry, with foreign material removed.

3.2 INSTALLATION - PIPING SYSTEMS

- A. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.
- B. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide intumescent firestopping when continuing insulation through assembly. Finish at supports, protrusions, and interruptions. Refer to Section 07 84 00 for penetrations of assemblies with fire resistance rating greater than one hour.
- C. Piping Systems Conveying Fluids Below Ambient Temperature:
 - 1. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, [pump bodies,] and expansion joints.
 - 2. Furnish factory-applied or field-applied vapor retarder jackets. Secure factory-applied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.
 - 3. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor retarder adhesive or PVC fitting covers.
- D. Glass Fiber Board Insulation:
 - 1. Apply insulation close to equipment by grooving, scoring, and beveling insulation. Fasten insulation to equipment with studs, pins, clips, adhesive, wires, or bands.
 - 2. Fill joints, cracks, seams, and depressions with bedding compound to form smooth surface. On cold equipment, use vapor retarder cement.
 - 3. Cover wire mesh or bands with cement to a thickness to remove surface irregularities.
- E. Extruded Polystyrene Insulation:
 - 1. Wrap elbows and fitting with vapor retarder tape.
 - 2. Seal butt joints with vapor retarder tape.
- F. Hot Piping Systems less than 140 degrees F:
 - 1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.
 - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
 - 3. Do not insulate unions and flanges at equipment, but bevel and seal ends of insulation at such locations.

- G. Hot Piping Systems greater than 140 degrees F:
 - 1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.
 - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
 - 3. Insulate flanges and unions at equipment.

- H. Inserts and Shields:
 - 1. Piping 1-1/2 inches Diameter and Smaller: Install [galvanized] steel shield between pipe hanger and insulation.
 - 2. Piping 2 inches Diameter and Larger: Install insert between support shield and piping and under finish jacket.
 - a. Insert Configuration: Minimum 6 inches long, of thickness and contour matching adjoining insulation; may be factory fabricated.
 - b. Insert Material: Compression resistant insulating material suitable for planned temperature range and service.
 - 3. Piping Supported by Roller Type Pipe Hangers: Install [galvanized] steel shield between roller and inserts.

- I. Insulation Terminating Points:
 - 1. Coil Branch Piping 1 inch and Smaller: Terminate hot water piping at union upstream of the coil control valve.
 - 2. Chilled Water Coil Branch Piping: Insulate chilled water piping and associated components up to coil connection.
 - 3. Condensate Piping: Insulate entire piping system and components to prevent condensation.

- J. Closed Cell Elastomeric Insulation:
 - 1. Push insulation on to piping.
 - 2. Miter joints at elbows.
 - 3. Seal seams and butt joints with manufacturer's recommended adhesive.
 - 4. When application requires multiple layers, apply with joints staggered.
 - 5. Insulate fittings and valves with insulation of like material and thickness as adjacent pipe.

- K. High Temperature Pipe Insulation:
 - 1. Install in multiple layers to meet thickness scheduled.
 - 2. Attach each layer with bands. Secure first layer with bands before installing next layer.
 - 3. Stagger joints between layers.
 - 4. Finish with canvas jacket sized for finish painting.
 - 5. Cover with aluminum jacket stainless steel jacket with seams located on bottom side of horizontal piping.

- L. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet above finished floor): Finish with PVC jacket and fitting covers.

3.3 SCHEDULES

A. Water Supply Services Piping Insulation Schedule:

| PIPING SYSTEM | INSULATION TYPE | PIPE SIZE | INSULATION THICKNESS inches |
|---|-----------------|--------------------------|-----------------------------|
| Domestic Hot Water Supply and Recirculation | P-1 | 1-1/4 inches and smaller | 1.0 |
| | | 1-1/2 inches and larger | 1.0 |
| Domestic Hot Water Supply and Recirculation systems with domestic water temperature maintenance cable | P-1 | 1 inch and smaller | 1.0 |
| | | 1-1/4 inches to 2 inches | 1.5 |
| | | 2-1/2 inches and larger | 2.0 |
| Domestic Cold Water | P-1 or P-5 | 1-1/4 inches and smaller | 0.5 |
| | | 1-1/2 inches and larger | 1.0 |

B. Drainage Services Piping Insulation Schedule:

| PIPING SYSTEM | INSULATION TYPE | PIPE SIZE | INSULATION THICKNESS inches |
|--|-----------------|-----------|-----------------------------|
| Sanitary Sewer Piping (horizontal and vertical above ground within building when PVC piping is used) | P-1 or P-5 | All sizes | 1.0 |

END OF SECTION 220700

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 223000 - PLUMBING SPECIALTIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Hose bibs.
 - 2. Wall hydrants.
 - 3. Water hammer arrestors.
 - 4. Trap primers.
 - 5. Thermostatic mixing valves.
 - 6. Floor drains.

- B. Related Sections:
 - 1. Section 07 92 00 - Joint Sealants: Product requirements for calking between fixtures and building components for placement by this section.
 - 2. Section 22 05 00 – Common work results for Plumbing
 - 3. Section 22 05 03 – Pipes and Tubes for Plumbing Piping and Equipment
 - 4. Section 22 05 16 - Expansion Fittings and Loops for Plumbing Piping
 - 5. Section 22 05 23 - General-Duty Valves for Plumbing Piping
 - 6. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment
 - 7. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment
 - 8. Section 22 05 53 – Identification for Plumbing Piping and Equipment
 - 9. Section 22 07 00 - Plumbing Insulation
 - 10. Section 22 40 00 – Plumbing Fixtures
 - 11. Refer to Division 01 for General Conditions required for this section.

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI/ASSE 1011 - Hose Connection Vacuum Breakers.
 - 2. ANSI/ASSE 1019 - Wall Hydrants, Frost Proof Automatic Draining Anti-Backflow Types.
 - 3. ANSI A112.21.1 - Floor Drains.
 - 4. ANSI A112.21.2 - Roof Drains.

- B. Plumbing Drainage institute:
 - 1. PDI WH-201 – Water Hammer Arresters.

- C. Safe Drinking Water Act.
 - 1. SDWA 1417 - Standard for Lead Free Drinking Water.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

- B. Shop Drawings: Indicate dimensions, weights, and placement of openings and holes.

- C. Product Data: Provide component sizes, rough-in requirements, service sizes, capacities and finishes.

- D. Manufacturer's Installation Instructions: Submit installation methods and procedures. Indicate assembly and support requirements.
- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- F. Piping: Submit data on pipe materials, fittings, and accessories. Submit manufacturers catalog information.
- G. Valves: Submit manufacturers catalog information with valve data and ratings for each service.
- H. Hangers and Supports: Submit manufacturers catalog information including load capacity.
- I. Storm Drainage Specialties: Submit manufacturers catalog information, component sizes, rough-in requirements, service sizes, and finishes.
- J. Sanitary Drainage Specialties: Submit manufacturers catalog information, component sizes, rough-in requirements, service sizes, and finishes.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit fixture, trim, exploded view and replacement parts lists.

1.5 QUALITY ASSURANCE

- A. Record actual locations of equipment, cleanouts, etc.
- B. Provide products requiring electrical connections listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and indicated.
- C. Provide plumbing fixture fittings in accordance with ASME A112.18.1 that prevent backflow from fixture into water distribution system.
- D. All plumbing specialties installed on the domestic water distribution system including hose bibs, wall hydrants, meters, valves and stops shall be lead free and shall meet the requirements of SDWA 1417.
- E. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum three years documented experience.

1.7 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Accept specialties on site in factory packaging. Inspect for damage.
- C. Protect installed specialties from damage by securing areas.

1.9 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.

1.10 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Provide two loose keys for hose bibs and wall hydrants.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers:
 - 1. JR Smith.
 - 2. Watts.
 - 3. Josam.
 - 4. Wade.
 - 5. Zurn.
 - 6. MiFab.
 - 7. Substitutions: Section 01 25 00 – Substitution Procedures.

2.2 HOSE BIBS

- A. Manufacturers:
 - 1. Woodford.
 - 2. Josam.
 - 3. Wade.
 - 4. Zurn.
 - 5. Watts.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.
- B. ANSI/ASSE 1011 Bronze or brass with integral mounting flange, lead free.

2.3 WALL HYDRANTS

- A. Manufacturers:
 - 1. Woodford.
 - 2. Josam.
 - 3. Wade.
 - 4. Zurn.
 - 5. Watts.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.

- B. Wall Hydrant: ANSI/ASSE 1019; self-draining type, lead free, freeze proof with removable key.

2.4 WATER HAMMER ARRESTORS

- A. Manufacturers:
 - 1. Woodford.
 - 2. Josam.
 - 3. Wade.
 - 4. Zurn.
 - 5. Watts.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.

- B. ANSI A112.26.1; sized in accordance with PDI, lead free precharged, suitable for operation in temperature range -100 to 300 degrees F (-73 to 149 degrees C) and maximum 250 psig (1700 kPa) working pressure.

2.5 TRAP PRIMERS

- A. Manufacturers:
 - 1. Woodford.
 - 2. Josam.
 - 3. Wade.
 - 4. Zurn.
 - 5. Watts.
 - 6. PPP.
 - 7. Substitutions: Section 01 60 00 - Product Requirements.

- B. ASSE 1018: Corrosion resistant brass, lead free, temperature range -40 to 450 degrees, ½" male inlet and ½" female outlet, pressure operating range 35 to 75 psig.

2.6 THERMOSTATIC MIXING VALVES

- A. Manufacturers: Powers model as scheduled on the drawings.

- B. Other acceptable manufacturers offer equivalent products:
 - 1. Lawler
 - 2. Acorn
 - 3. Bradley
 - 4. Watts

- C. Accessories:
 - 1. Check valves on inlets.
 - 2. Volume control shut-off valve on outlet.
 - 3. Stem thermometer on outlet.
 - 4. Strainer stop checks on inlets.

- D. Cabinet: 16 gage (1.5 mm) prime coated steel, for recessed mounting with keyed lock.
 - 1. Mixing Valves installed in mechanical rooms may be exposed. Valves installed in finished space shall be installed in box.

2.7 FLOOR DRAINS

- A. Manufacturers:
 - 1. JR Smith
 - 2. Watts
 - 3. Zurn
 - 4. Mifab
 - 5. Substitutions: Section 01 25 00 – Substitution Procedures.

- B. Floor Drain: ASME A112.21.1; cast iron two piece body with double drainage flange, weep holes, reversible clamping collar, trap primer connection and round, adjustable round nickel-bronze strainer with maximum ½" grate spacing, removable perforated sediment bucket.

2.8 CLEANOUTS

- A. Manufacturers:
 - 1. JR Smith
 - 2. Watts
 - 3. Zurn
 - 4. Mifab
 - 5. Substitutions: Section 01 25 00 – Substitution Procedures.

- B. Exterior Surfaced Areas: Round Square cast nickel bronze access frame and non-skid cover.

- C. Exterior Unsurfaced Areas: Line type with lacquered cast iron body and round epoxy coated cover with gasket.

- D. Interior Finished Floor Areas: Lacquered Galvanized cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round scored cover with gasket in service areas and round square depressed cover with gasket to accept floor finish in finished floor areas.

- E. Interior Finished Wall Areas: Line type with lacquered cast iron body and round epoxy coated cover with gasket, and round stainless steel access cover secured with machine screw.

- F. Interior Unfinished Accessible Areas: Calked or threaded type. Provide bolted stack cleanouts on vertical rainwater leaders.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify walls and floor finishes are prepared and ready for installation of fixtures.
- C. Verify electric power is available and of correct characteristics.

3.2 PREPARATION

- A. Coordinate cutting and forming of roof and floor construction to receive drains to required invert elevations.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.
- C. Cleanouts shall be same size as the pipes served, up to 4 inches; 5 and 6 inch pipes shall have 4 inch cleanouts; 8 inch pipes shall have 6 inch cleanouts; 10 inch pipes and larger shall have 8 inch cleanouts.
- D. Install components level and plumb.
- E. Install water hammer arrestors with isolation valve in accessible locations.
- F. Trap primers shall be installed to serve all floor drains, provide distribution units as required for all drains.
- G. Trap primer connections shall be installed on cold water piping 1 ½ inch diameter or less.
- H. When floor finish includes tile, floor drain strainers and cleanout covers shall be provided to match tile shape to best extend possible. Square shall be used when square tiles are provided. When tile is a different shape, the contractor shall confirm with architect what shape shall be provided.

3.4 INTERFACE WITH OTHER PRODUCTS

- A. Review millwork shop-drawings. Confirm location and size of drains before rough in and installation.

3.5 ADJUSTING

- A. Section 01 77 00 - Execution and Closeout Requirements: Testing, adjusting, and balancing.

3.6 CLEANING

- A. Section 01 77 00 - Execution and Closeout Requirements: Final cleaning.

3.7 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01 77 00 - Execution and Closeout Requirements: Protecting installed construction.

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01 77 00 - Execution and Closeout Requirements: Protecting installed construction.

3.9 COMMISSIONING OF EQUIPMENT

- A. Engage a factory-authorized service representative, who is familiar with this project, to participate and assist, if necessary, in the functional performance testing of this equipment with the Commissioning Agent.

END OF SECTION 223000

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 224000 - PLUMBING FIXTURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Water closets.
 - 2. Urinals.
 - 3. Lavatories.

- B. Related Sections:
 - 1. Section 07 92 00 - Joint Sealant: Product requirements for calking between fixtures and building components for placement by this section.
 - 2. Section 22 05 03 – Pipes and Tubes for Plumbing Piping and Equipment
 - 3. Section 22 05 16 - Expansion Fittings and Loops for Plumbing Piping
 - 4. Section 22 05 23 - General-Duty Valves for Plumbing Piping
 - 5. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment
 - 6. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment
 - 7. Section 22 05 53 – Identification for Plumbing Piping and Equipment
 - 8. Section 22 07 00 - Plumbing Insulation
 - 9. Section 22 30 00 – Plumbing Specialties
 - 10. Refer to Division 01 for General Conditions required for this section.

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.

- B. American Society of Mechanical Engineers:
 - 1. ASME A112.6.1 - Floor-Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use.
 - 2. ASME A112.18.1 - Plumbing Fixture Fittings.
 - 3. ASME A112.19.1M - Enameled Cast Iron Plumbing Fixtures.
 - 4. ASME A112.19.2M - Vitreous China Plumbing Fixtures.
 - 5. ASME A112.19.3 - Stainless Steel Plumbing Fixtures (Designed for Residential Use).
 - 6. ASME A112.19.4 - Porcelain Enameled Formed Steel Plumbing Fixtures.
 - 7. ASME A112.19.5 - Trim for Water-Closet Bowls, Tanks and Urinals.

- C. ICC:
 - 1. IECC - 2012

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

- B. Product Data: Submit catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

- C. Manufacturer's Installation Instructions: Submit installation methods and procedures.

- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit fixture, trim, exploded view and replacement parts lists.

1.5 QUALITY ASSURANCE

- A. Provide products requiring electrical connections listed and classified by Underwriters Laboratories Inc., testing firm acceptable to authority having jurisdiction as suitable for purpose specified and indicated.
- B. Provide plumbing fixture fittings in accordance with ASME A112.18.1 that prevent backflow from fixture into water distribution system.
- C. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

1.7 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Accept fixtures on site in factory packaging. Inspect for damage.
- C. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.9 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for plumbing fixtures.

PART 2 PRODUCTS

2.1 FLUSH VALVE WATER CLOSETS

- A. Manufacturers:
 - 1. Kohler Co.
 - 2. American Standard Plumbing
 - 3. Zurn
 - 4. Sloan
 - 5. Substitutions: Section 01 25 00 – Substitution Procedures.
- B. Bowl: ASME A112.19.2M; wall hung, siphon jet vitreous china closet bowl, with elongated rim, 1-1/2 inch top or back spud, china bolt caps.
- C. Flush Valve: Exposed chrome plated, diaphragm type with oscillating handle, escutcheon, seat bumper, integral screwdriver stop and vacuum breaker.
- D. Seat: Solid white plastic, open front, extended back, self-sustaining hinge, brass bolts, without cover.
- E. Wall Mounted Carrier: Adjustable cast iron frame, integral drain hub and vent, adjustable spud. lugs for floor and wall attachment, threaded fixture studs with nuts and washers.

2.2 WALL HUNG URINALS

- A. Manufacturers:
 - 1. Kohler Co.
 - 2. American Standard Plumbing
 - 3. Sloan
 - 4. Zurn
 - 5. Substitutions: Section 01 25 00 – Substitution Procedures.
 - 6. Substitutions: [Permitted] [Not permitted].
- B. Urinal: ASME A112.19.2M or ANSI Z124.9, vitreous; vitreous china, wall hung washout siphon jet urinal with shields, integral trap, removable stainless steel strainer, 3/4 inch top or back spud, steel supporting hanger.
- C. Sensor Operated Flush Valve: ASME A112.18.1; concealed rough brass, diaphragm type with battery operated solenoid operator, infrared sensor and over-ride button in chrome plated plate, wheel handle stop and vacuum breaker; maximum 1/8 gallon flush volume.
- D. Wall Mounted Carrier: ASME A112.6.1; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded fixture studs for fixture hanger, bearing studs.
- E. Provide elastomeric gasket complying with ASME A112.4.3, or approved setting compound, for fixture to flange connection.

2.3 LAVATORIES

- A. Manufacturers:
 - 1. Kohler Co.
 - 2. American Standard Plumbing

3. Eljer Plumbing ware
 4. Crane
 5. Substitutions: Section 01 25 00 – Substitution Procedures.
- B. Vitreous China Basin: ASME A112.19.2M; vitreous china lavatory, drillings on 4 inch centers, round basin with splash lip, front overflow, and soap depression.
- C. Supply Fitting: ASME A112.18.1; low flow, chrome plated supply fitting with open grid strainer, water economy aerator with maximum 1.0 gpm flow rate.
- D. Waste Fittings: ASME A112.18.2 or ASTM F 409.
- E. For public hand washing facilities, provide tempered water through regulating device conforming to ASSE 1070.
- F. Accessories:
1. Chrome plated 17 gage brass P-trap and arm with escutcheon.
 2. Offset waste with perforated open strainer.
 3. Screwdriver stops.
 4. Flexible supplies.
 5. Trap and waste insulated and offset to meet ADA compliance.
- G. Wall Mounted Carrier: ASME A112.6.1; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, concealed arm supports, bearing plate and studs.

2.4 LAVATORY INSULATION KIT

- A. Manufacturers:
1. McGuire
 2. Truebro
 3. Plumerex
 4. Substitutions: Section 01 25 00 – Substitution Procedures.
- B. Product Description: Where Lavatories are noted to be insulated for ADA compliance, furnish the following: Safety Covers conforming to ANSI A177.1 and consisting of insulation kit of molded closed cell vinyl construction, 3/16 inch thick, white gray color, for insulating tailpiece, P-trap, valves, and supply piping. Furnish with weep hole and angle valve access covers.

2.5 DRINKING FOUNTAINS

- A. Manufacturers:
1. Elkay
 2. Halsey Taylor
 3. Oasis
 4. Acorn
 5. Substitutions: Section 01 60 00 - Product Requirements
- B. Fountain: Stainless steel surface mounted, hanger bracket, mounting plate, cane apron and wall support. See drawings for additional requirements and accessories.
- C. Architect shall provide wall recess to install drinking fountains. Units shall not project into corridor or walkways.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify walls and floor finishes are prepared and ready for installation of fixtures.
- C. Verify electric power is available and of correct characteristics.
- D. Confirm millwork is constructed with adequate provision for installation of counter top lavatories and sinks.

3.2 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.3 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome plated rigid or flexible supplies to fixtures with loose key screwdriver stops, reducers, and escutcheons.
- C. Install components level and plumb.
- D. Install and secure fixtures in place with wall supports wall carriers and bolts.
- E. Seal fixtures to wall and floor surfaces with sealant as specified in Section 07 90 00, color to match fixture.
- F. Solidly attach water closets to floor with lag screws. Lead flashing is not intended hold fixture in place.
- G. For ADA accessible water closets, install flush valve with handle to wide side of stall.
- H. Contractor shall furnish and install faucet aerators as required to comply with CT high performance building water conservation requirements.

3.4 INTERFACE WITH OTHER PRODUCTS

- A. Review millwork shop-drawings. Confirm location and size of fixtures and openings before rough in and installation.
- B. Review kitchen, finish, and equipment plans and specifications for additional work and materials to be furnished or installed by the plumbing contractor.

3.5 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.6 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Clean plumbing fixtures and equipment.

3.7 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Do not permit use of fixtures before final acceptance.

3.8 SCHEDULES

- A. Fixture Rough-In:

| Fixture | Hot inches | Cold inches | Waste inches | Vent inches |
|-----------------------------|------------|-------------|--------------|-------------|
| Water Closet (Flush Valve): | | 1 | 4 | 2 |
| Urinal (Flush Valve): | | 3/4 | 2 | 1-1/2 |
| Lavatory: | 1/2 | 1/2 | 1-1/2 | 1-1/2 |

END OF SECTION 224000

SECTION 260519 - BUILDING WIRE AND CABLE

PART 1 GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections with DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.

- B. Refer to Division 01 for General Conditions required for this section.

1.2 SUMMARY

- A. Section includes building wire and cable; metal clad cable; and wiring connectors and connections.

- B. Related Sections:
 - 1. Section 26 0553 - Identification for Electrical Systems: Product requirements for wire identification.
 - 2. Section 31 2317 - Trenching: Execution requirements for trenching required by this section.
 - 3. Section 31 2323 - Fill: Requirements for backfill to be placed by this section.

1.3 REFERENCES

- A. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

- B. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.
 - 2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.

1.4 SYSTEM DESCRIPTION

- A. Product Requirements: Provide products as follows:
 - 1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
 - 2. Stranded conductors for control circuits.
 - 3. Conductor not smaller than 12 AWG for power and lighting circuits.
 - 4. Conductor not smaller than 16 AWG for control circuits.

5. Minimum 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 150 feet.
 6. Minimum 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 250 feet.
- B. Wiring Methods: Provide the following wiring methods:
1. Concealed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway, or metal clad cable.
 2. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
 3. Above Accessible Ceilings: Use only building wire, Type THHN/THWN insulation, in raceway, or metal-clad cable.
 4. Wet or Damp Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
 5. Exterior Locations: Use only building wire, Type XHHW insulation, in raceway.
 6. Underground Locations: Use only building wire, Type XHHW insulation in raceway.

1.5 SUBMITTALS

- A. Section 01 3300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit for building wire and each cable assembly type.
- C. Test Reports: Indicate procedures and values obtained.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 7300 - Execution and Section 01 7700 - Closeout Procedures: Requirements for submittals.
- B. Project Record Documents: Record actual locations of components and circuits.

1.7 QUALITY ASSURANCE

- A. Provide wiring materials located in plenums with peak optical density not greater than 0.5, average optical density not greater than 0.15, and flame spread not greater than 5 feet (1.5 m) when tested in accordance with NFPA 262.
- B. Perform Work in accordance with the current issue of the associated State Building and Fire Safety code.
- C. Maintain one copy of each document on site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.9 FIELD MEASUREMENTS

- A. Verify field measurements are as indicated on Drawings.

1.10 COORDINATION

- A. Section 01 4000 - Quality Requirements: Requirements for coordination.
- B. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.
- C. Wire and cable routing indicated is approximate unless dimensioned. Include wire and cable lengths within 10 ft of length shown.

PART 2 PRODUCTS

2.1 BUILDING WIRE

- A. Manufacturers:
 - 1. Southwire/Essex Group Inc.
 - 2. General Cable Co.
 - 3. Cerrowire.
 - 4. Substitutions: Division 1 – Substitution Procedures.
- B. Product Description: Single conductor insulated wire.
- C. Conductor: All branch circuits shall be copper. All panel feeders shall be copper unless otherwise noted on drawings.
- D. Insulation: NFPA 70; Type THHN/THWN insulation for feeders and branch circuits, rated 75 degrees C.

2.2 METAL CLAD CABLE

- A. Manufacturers:
 - 1. AFC Cable Systems
 - 2. Southwire/Essex Group Inc.
 - 3. General Cable Co.
 - 4. Substitutions: Division 1 – Substitution Procedures
- B. Conductor: All MC cabling shall be copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation Temperature Rating: 90 degrees C.
- E. Insulation Material: Thermoplastic.

- F. Armor Material: Steel.
- G. Jacket: Where required.
- H. Provide separate ground conductor within cable do not use armor material for ground path.

2.3 WIRING CONNECTORS

- A. Solderless Pressure Connectors:
 - 1. IlSCO.
 - 2. OZ Gedney.
 - 3. Erico.
 - 4. Substitutions: Division 1 – Substitution Procedures
- B. Spring Wire Connectors:
 - 1. IlSCO.
 - 2. OZ Gedney.
 - 3. Erico.
 - 4. Substitutions: Division 1 – Substitution Procedures
- C. Compression Connectors:
 - 1. IlSCO.
 - 2. OZ Gedney.
 - 3. Erico.
 - 4. Substitutions: Division 1 – Substitution Procedures

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 4000 - Quality Requirements: Coordination and project conditions.
- B. Verify interior of building has been protected from weather.
- C. Verify mechanical work likely to damage wire and cable has been completed.
- D. Verify raceway installation is complete and supported.

3.2 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.3 INSTALLATION

- A. Route wire and cable to meet Project conditions.
- B. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- C. Identify and color code wire and cable under provisions of Section 26 0553. Identify each conductor with its circuit number or other designation indicated.
- D. Special Techniques--Building Wire in Raceway:

1. Pull conductors into raceway at same time.
 2. Install building wire 4 AWG and larger with pulling equipment.
- E. Special Techniques - Cable:
1. Protect exposed cable from damage.
 2. Support cables above accessible ceiling, using spring metal clips or metal cable ties to support cables from structure or ceiling suspension system. Do not rest cable on ceiling panels.
 3. Use suitable cable fittings and connectors.
- F. Special Techniques - Wiring Connections:
1. Clean conductor surfaces before installing lugs and connectors.
 2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
 3. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
 4. Install split bolt connectors for copper conductor splices and taps, 6 AWG and larger.
 5. Install solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
 6. Install insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
- G. Install solid conductor for feeders and branch circuits 10 AWG and smaller.
- H. Install stranded conductors for branch circuits 10 AWG and smaller. However, when stranded conductors are used in lieu of solid, then install crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under screws.

3.4 WIRE COLOR

- A. General:
1. For wire sizes 10 AWG and smaller, install wire colors in accordance with the following:
 - a. Black, red, and blue for circuits at 120/208 volts single or three phase.
 - b. Orange, brown, and yellow for circuits at 277/480 volts single or three phase.
 2. For wire sizes 8 AWG and larger, identify wire with colored tape at terminals, splices and boxes. Colors are as follows:
 - a. Black, red, and blue for circuits at 120/208 volts single or three phase.
 - b. Orange, brown, and yellow for circuits at 277/480 volts single or three phase.
- B. Neutral Conductors: White. When two or more neutrals are located in one conduit, individually identify each with proper circuit number.
- C. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.
- D. Feeder Circuit Conductors: Uniquely color code each phase.

- E. Ground Conductors:
 - 1. For 6 AWG and smaller: Green.
 - 2. For 4 AWG and larger: Identify with green tape at both ends and visible points including junction boxes.

3.5 FIELD QUALITY CONTROL

- A. Section 01 7300 - Execution and Section 01 7700 - Closeout Procedures: Field inspecting, testing, adjusting, and balancing.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.3.1.

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections with DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Refer to Division 01 for General Conditions required for this section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Wire.
 - 2. Grounding well components.
 - 3. Mechanical connectors.
 - 4. Exothermic connections.

1.3 REFERENCES

- A. Institute of Electrical and Electronics Engineers:
 - 1. IEEE 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems.
 - 2. IEEE 1100 - Recommended Practice for Powering and Grounding Electronic Equipment.
- B. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- C. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

- A. Section 01 3300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data on grounding electrodes and connections.
- C. Test Reports: Indicate overall resistance to ground and resistance of each electrode.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 7300 - Execution and Section 01 7700 - Closeout Procedures: Requirements for submittals.
- B. Project Record Documents: Record actual locations of components and grounding electrodes.

1.6 QUALITY ASSURANCE

- A. Provide grounding materials conforming to requirements of NEC, IEEE 142, and UL labeled.
- B. Perform Work in accordance with State Codes and Standards.
- C. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing work of this section with minimum 3 years experience.

1.8 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 6000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.
- D. Do not deliver items to project before time of installation. Limit shipment of bulk and multiple-use materials to quantities needed for immediate installation.

1.10 COORDINATION

- A. Section 01 4000 - Quality Requirements: Requirements for coordination.
- B. Complete grounding and bonding of building reinforcing steel prior concrete placement.

PART 2 PRODUCTS

2.1 WIRE

- A. Material: Stranded copper.
- B. Foundation Electrodes: 4 AWG or as indicated on drawings.

- C. Grounding Electrode Conductor: Copper conductor insulated as per plans.
- D. Bonding Conductor: Copper conductor bare or insulated #6 AWG minimum.

2.2 MECHANICAL CONNECTORS

- A. Manufacturers:
 - 1. Copperweld, Inc.
 - 2. Erico, Inc.
 - 3. ILSCO Corporation
 - 4. O-Z Gedney Co.
 - 5. Thomas & Betts, Electrical.
 - 6. Substitutions: Section 01 2500 – Substitution Procedures
- B. Description: Bronze connectors, suitable for grounding and bonding applications, in configurations required for particular installation.

2.3 EXOTHERMIC CONNECTIONS

- A. Manufacturers:
 - 1. Cadweld, Erico, Inc.
 - 2. Copperweld, Inc.
 - 3. ILSCO Corporation.
 - 4. O-Z Gedney Co.
 - 5. Thomas & Betts, Electrical.
 - 6. Substitutions: Section 01 2500 – Substitution Procedures
- B. Product Description: Exothermic materials, accessories, and tools for preparing and making permanent field connections between grounding system components.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 4000 - Quality Requirements: Verification of existing conditions before starting work.
- B. Verify final backfill and compaction has been completed before driving rod electrodes.

3.2 PREPARATION

- A. Remove paint, rust, mill oils, surface contaminants at connection points.

3.3 INSTALLATION

- A. Install in accordance with IEEE Standards.
- B. Install rod electrodes at locations as indicated on Drawings. Install additional rod electrodes to achieve specified resistance to ground.
- C. Install grounding electrode conductor and connect to reinforcing steel in foundation footing per NEC.

- D. Bond together metal siding not attached to grounded structure; bond to ground.
- E. Install grounding and bonding in patient care areas to meet requirements of NFPA 99.
- F. Equipment Grounding Conductor: Install separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.
- G. Install continuous grounding using underground cold water system, driven rods, foundation electrode and building steel as grounding electrode.
- H. Permanently ground entire light and power system in accordance with NEC, including service equipment, distribution panels, lighting panelboards, switch and starter enclosures, motor frames, grounding type receptacles, and other exposed non-current carrying metal parts of electrical equipment.
- I. Install branch circuits feeding isolated ground receptacles with separate insulated grounding conductor, connected only at isolated ground receptacle, ground terminals, and at ground bus of serving panel.
- J. Accomplish grounding of electrical system by using insulated grounding conductor installed with feeders and branch circuit conductors in conduits. Size grounding conductors in accordance with NEC. Install from grounding bus of serving panel to ground bus of served panel, grounding screw of receptacles, lighting fixture housing, light switch outlet boxes or metal enclosures of service equipment. Ground conduits by means of grounding bushings on terminations at panelboards with installed number 12 conductor to grounding bus.
- K. Grounding electrical system using continuous metal raceway system enclosing circuit conductors in accordance with NEC.
- L. Permanently attach equipment and grounding conductors prior to energizing equipment.

3.4 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Grounding and Bonding: Perform inspections and tests listed in NETA ATS, Section 7.13.
- C. Perform ground resistance testing in accordance with IEEE 142.
- D. Perform leakage current tests in accordance with NFPA 99.
- E. Perform continuity testing in accordance with IEEE 142.
- F. When improper grounding is found on receptacles, check receptacles in entire project and correct. Perform retest.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections with DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Refer to Division 01 for General Conditions required for this section.

1.2 SUMMARY

- A. This section includes basic materials and methods for fastening and supporting electrical products and equipment. Products include the following:
 - 1. Conduit supports.
 - 2. Formed steel channel.
 - 3. Spring steel clips.
 - 4. Sleeves.
 - 5. Mechanical sleeve seals.
 - 6. Equipment Bases and Supports

1.3 REFERENCES

- A. ASTM International:
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
 - 3. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
 - 4. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.
- B. FM Global:
 - 1. FM - Approval Guide, A Guide to Equipment, Materials & Services Approved By Factory Mutual Research For Property Conservation.
- C. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.
- D. Underwriters Laboratories Inc.:
 - 1. UL 263 - Fire Tests of Building Construction and Materials.
 - 2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

3. UL 1479 - Fire Tests of Through-Penetration Firestops.
4. UL 2079 - Tests for Fire Resistance of Building Joint Systems.
5. UL - Fire Resistance Directory.

1.4 SUBMITTALS

- A. Section 01 33 00 - **Submittal Procedures** Requirements for submittals.
- B. Shop Drawings: Indicate system layout with location and detail of trapeze hangers.
- C. Product Data:
 1. Hangers and Supports: Submit manufacturers catalog data including load capacity.
- D. Design Data: Indicate load carrying capacity of trapeze hangers and hangers and supports.
- E. Manufacturer's Installation Instructions:
 1. Hangers and Supports: Submit special procedures and assembly of components.
- F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- G. Engineering Judgements: For conditions not covered by UL listed designs, submit judgements by licensed professional engineer suitable for presentation to authority having jurisdiction for acceptance as meeting code fire protection requirements.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing work of this section with minimum three years experience, approved by manufacturer.

1.6 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - **Administrative Requirements** Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - **Product Requirements**: Requirements for transporting, handling, storing, and protecting products.
- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.

PART 2 PRODUCTS

2.1 CONDUIT SUPPORTS

- A. Manufacturers:
1. Allied Tube & Conduit Corp.
 2. Electroline Manufacturing Company.
 3. O-Z Gedney Co.
 4. Thomas and Betts
 5. Substitutions: Section 01 2500 – Substitution Procedures.
- B. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.
- C. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.
- D. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.
- E. Conduit clamps - general purpose: One hole malleable iron for surface mounted conduits.
- F. Cable Ties: High strength nylon temperature rated to 185 degrees F. Self locking.

2.2 FORMED STEEL CHANNEL

- A. Manufacturers:
1. Allied Tube & Conduit Corp.
 2. B-Line Systems.
 3. Midland Ross Corporation, Electrical Products Division.
 4. Unistrut Corp.
 5. Substitutions: Section 01 2500 – Substitution Procedures
- B. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

2.3 SPRING STEEL CLIPS

- A. Manufacturers:
1. Allied Tube & Conduit Corp.
 2. B-Line Systems
 3. Midland Ross Corporation, Electrical Products Division.
 4. Unistrut Corp.
 5. Substitutions: Section 01 2500 – Substitution Procedures
- B. Product Description: Mounting hole and screw closure.

2.4 SLEEVES

- A. Sleeves for conduit, raceway, cable tray, or cable through Non-fire Rated Floors: 18 gage thick galvanized steel.
- B. Sleeves for conduit, raceway, cable tray, or cable through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
- C. Sleeves for conduit, raceway, cable tray, or cable through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Prefabricated fire rated sleeves including seals, UL listed.

2.5 MECHANICAL SLEEVE SEALS

- A. Manufacturers:
 - 1. Thunderline Link-Seal, Inc.
 - 2. NMP Corporation.
 - 3. PSI Link-Seal.
 - 4. Substitutions: Section 01 2500 – Substitution Procedures
- B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 4000 – Quality Requirements: Verification of existing conditions before starting work.
- B. Verify openings are ready to receive sleeves.
- C. Verify openings are ready to receive firestopping.

3.2 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.
- B. Remove incompatible materials affecting bond.
- C. Install backing materials to arrest liquid material leakage.
- D. Obtain permission from Architect/Engineer before using powder-actuated anchors.
- E. Obtain permission from Architect/Engineer before drilling or cutting structural members.

3.3 INSTALLATION - HANGERS AND SUPPORTS

- A. Anchors and Fasteners:
 - 1. Concrete Structural Elements: Provide precast inserts, expansion anchors.
 - 2. Steel Structural Elements: Provide beam clamps, spring steel clips, steel ramset fasteners.
 - 3. Concrete Surfaces: Provide self-drilling anchors and expansion anchors.
 - 4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Provide toggle bolts and hollow wall fasteners.
 - 5. Solid Masonry Walls: Provide expansion anchors and preset inserts.
 - 6. Sheet Metal: Provide sheet metal screws.
 - 7. Wood Elements: Provide wood screws.

- B. Inserts:
 - 1. Install inserts for placement in concrete forms.
 - 2. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
 - 3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
 - 4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
 - 5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above flush with top of recessed into and grouted flush with slab.

- C. Install conduit and raceway support and spacing in accordance with NEC.

- D. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.

- E. Install multiple conduit runs on common hangers.

- F. Supports:
 - 1. Fabricate supports from structural steel or formed steel channel. Install hexagon head bolts to present neat appearance with adequate strength and rigidity. Install spring lock washers under nuts.
 - 2. Install surface mounted cabinets and panelboards with minimum of four anchors.
 - 3. In wet and damp locations install steel channel supports to stand cabinets and panelboards 1 inch off wall.
 - 4. Support vertical conduit at every floor.

3.4 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with adjustable interlocking rubber links.

- B. Conduit penetrations not required to be watertight: Sleeve and fill with silicon foam.

- C. Set sleeves in position in forms. Provide reinforcing around sleeves.

- D. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

- E. Extend sleeves through floors 6 inch above finished floor level. Caulk sleeves.

- F. Where conduit or raceway penetrates floor, ceiling, or wall, close off space between conduit or raceway and adjacent work with stuffing fire stopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

3.5 FIELD QUALITY CONTROL

- A. Section 01 4000 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

3.6 PROTECTION OF FINISHED WORK

- A. Section 01 7300 - Execution and Section 01 7700 - Closeout Procedures: Requirements for protecting finished Work.
- B. Protect adjacent surfaces from damage by material installation.

END OF SECTION 260529

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections with DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Refer to Division 01 for General Conditions required for this section.

1.2 SUMMARY

- A. Section includes conduit and tubing, surface raceways, wireways, outlet boxes, pull and junction boxes.
- B. Related Sections:
 - 1. Section 26 0526 - Grounding and Bonding for Electrical Systems.
 - 2. Section 26 0529 - Hangers and Supports for Electrical Systems.
 - 3. Section 26 0536 - Cable Trays for Electrical Systems.
 - 4. Section 26 0553 - Identification for Electrical Systems.
 - 5. Section 26 2726 - Wiring Devices.

1.3 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
 - 2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.
- B. National Electrical Manufacturers Association:
 - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
 - 2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
 - 3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
 - 4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
 - 5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
 - 6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
 - 7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.4 SYSTEM DESCRIPTION

- A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.
- B. Underground More than 5feet outside Foundation Wall: Provide PVC Conduit.
- C. Underground Within 5 feet from Foundation Wall: Provide rigid steel conduit.

- D. In or Under Slab on Grade: Provide PVC conduit with PVC coated rigid sweeps.
- E. Outdoor Locations, Above Grade: Provide rigid steel conduit. Provide cast metal outlet, pull, and junction boxes.
- F. Wet and Damp Locations: Provide cast metal outlet, junction, and pull boxes. Provide flush mounting outlet box in finished areas. Provide building wire within rigid steel conduit
- G. Concealed Dry Locations: Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes. Provide building wire within EMT conduit from panelboard to first device or junction box above accessible ceiling. Branch circuits located above accessible ceilings and concealed within walls may be MC cable after first device.
- H. Exposed Dry Locations: Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.
- I. Exposed Unfinished Dry Locations: Provide building wire within EMT conduit.
- J. Exposed Finished Dry Locations: Provide building wire within steel surface mounted raceway such as manufactured by wiremold. For areas where data and power devices are located on same wall, provide divided raceway (wiremold 4000 or equivalent)

1.5 DESIGN REQUIREMENTS

- A. Minimum Raceway Size: 3/4 inch unless otherwise specified.

1.6 SUBMITTALS

- A. Section 01 3300 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit for the following:
 - 1. Flexible metal conduit.
 - 2. Liquidtight flexible metal conduit.
 - 3. PVC conduit.
 - 4. Flexible nonmetallic conduit.
 - 5. Nonmetallic tubing.
 - 6. Raceway fittings.
 - 7. Conduit bodies.
 - 8. Surface raceway.
 - 9. Wireway.
 - 10. Pull and junction boxes.
- C. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.7 CLOSEOUT SUBMITTALS

- A. Section 01 7000 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents:
 - 1. Record actual routing of conduits larger than 2 inch.
 - 2. Record actual locations and mounting heights of outlet, pull, and junction boxes.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 6000 - Product Requirements: Product storage and handling requirements.
- B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- C. Protect PVC conduit from sunlight.

1.9 COORDINATION

- A. Section 01 4000 - Quality Requirements: Coordination and project conditions.
- B. Coordinate installation of outlet boxes for equipment connected under Section 26 0503.
- C. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.
- D. Electrical contractor is responsible to fully coordinate with the site and concrete contractors and all other trades when routing conduit underslab. See Part 3 of this Section for additional backfilling requirements.

PART 2 PRODUCTS

2.1 METAL CONDUIT

- A. Manufacturers:
 - 1. Allied Tube and Conduit.
 - 2. Western Tube and Conduit.
 - 3. Wheatland Tube Company.
 - 4. Substitutions: Section 01 2500 – Substitution Procedures.
- B. Rigid Steel Conduit: ANSI C80.1.
- C. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

2.2 FLEXIBLE METAL CONDUIT

- A. Manufacturers:
 - 1. Allied Tube and Conduit
 - 2. Western Tube and Conduit.
 - 3. Wheatland Tube Company.
 - 4. Substitutions: Section 01 2500 – Substitution Procedures.
- B. Fittings: NEMA FB 1.

2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Anamet Electrical.
 - 3. Allied Tube and Conduit.
 - 4. Substitutions: Section 01 2500 – Substitution Procedures

- B. Product Description: Interlocked steel construction with PVC jacket.
- C. Fittings: NEMA FB 1.

2.4 ELECTRICAL METALLIC TUBING (EMT)

- A. Manufacturers:
 - 1. Allied Tube and Conduit.
 - 2. Western Tube and Conduit.
 - 3. Wheatland Tube Company.
 - 4. Substitutions: Section 01 2500 – Substitution Procedures
- B. Fittings and Conduit Bodies: NEMA FB 1; steel type. Set screw fittings are acceptable in concealed dry locations. Compression fittings shall be used in all other locations.

2.5 NONMETALLIC CONDUIT

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Thomas & Betts Corp.
 - 3. Allied Tube and Conduit.
 - 4. Substitutions: Section 01 2500 – Substitution Procedures
- B. Product Description: NEMA TC 2; Schedule 40 or 80 PVC, as noted on drawings. Where not specifically indicated, provide Schedule 40.
- C. Fittings and Conduit Bodies: NEMA TC 3.

2.6 NONMETALLIC TUBING

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Thomas & Betts Corp.
 - 3. Allied Tube and Conduit.
 - 4. Substitutions: Section 01 2500 – Substitution Procedures.
- B. Product Description: NEMA TC 2.
- C. Fittings and Conduit Bodies: NEMA TC 3.

2.7 SURFACE METAL RACEWAY

- A. Manufacturers:
 - 1. Hubbell Wiring Devices.
 - 2. Thomas & Betts Corp.
 - 3. Legrand/Wiremold.
 - 4. Substitutions: Section 01 2500 – Substitution Procedures
- B. Product Description: Sheet metal channel with fitted cover, suitable for use as surface metal raceway. Provide separated channels for power and telecommunications wiring where combined runs are required.

2.8 WIREWAY

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Thomas & Betts Corp.
 - 3. Hoffman.
 - 4. Legrand
 - 5. Substitutions: Section 01 2500 – Substitution Procedures
- B. Product Requirements. Knockouts: Manufacturer's standard.
- C. Cover: Screw cover.
- D. Finish: Rust inhibiting primer coating with gray enamel finish.

2.9 OUTLET BOXES

- A. Manufacturers:
 - 1. Erico Products.
 - 2. Raco.
 - 3. Thomas & Betts Corp.
 - 4. Substitutions: Section 01 2500 – Substitution Procedures.
- B. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch male fixture studs where required.
 - 2. Concrete Ceiling Boxes: Concrete type.
- C. Nonmetallic Outlet Boxes: NEMA OS 2.
- D. Cast Boxes: NEMA FB 1, Type FD, aluminum. Furnish gasketed cover by box manufacturer.
- E. Wall Plates for Finished Areas: As specified in Section 26 2726.
- F. Wall Plates for Unfinished Areas: Furnish gasketed cover.

2.10 PULL AND JUNCTION BOXES

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices.
 - 3. Thomas & Betts Corp.
- B. Substitutions: Section 01 2500 – Substitution Procedures.
- C. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- D. Surface Mounted Cast Metal Box: NEMA 250, flat-flanged, surface mounted junction box:
 - 1. Material: Cast aluminum.
 - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 4000 - Quality Requirements: Coordination and project conditions.
- B. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

3.2 INSTALLATION

- A. Ground and bond raceway and boxes in accordance with Section 26 0526.
- B. Fasten raceway and box supports to structure and finishes in accordance with Section 26 0529.
- C. Identify raceway and boxes in accordance with Section 26 0553.
- D. Arrange raceway and boxes to maintain headroom and present neat appearance.

3.3 INSTALLATION - RACEWAY

- A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.
- B. Arrange raceway supports to prevent misalignment during wiring installation.
- C. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- D. Group related raceway; support using conduit rack. Construct rack using steel channel specified in Section 26 05 29; provide space on each for 25 percent additional raceways.
- E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports
- F. Do not attach raceway to ceiling support wires or other piping systems.
- G. Construct wireway supports from steel channel specified in Section 26 05 29.
- H. Route exposed raceway parallel and perpendicular to walls.
- I. Route raceway installed above accessible ceilings parallel and perpendicular to walls.
- J. Route conduit in and under slab from point-to-point.
- K. Maximum Size Conduit in Slab Above Grade: 3/4 inch. Do not cross conduits in slab.
- L. Maintain clearance between raceway and piping for maintenance purposes.
- M. Maintain 12 inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.
- N. Cut conduit square using saw or pipe cutter; de-burr cut ends.

- O. Bring conduit to shoulder of fittings; fasten securely.
- P. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.
- Q. Install conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
- R. Install no more than equivalent of three 90 degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Install factory elbows for bends in metal conduit larger than 2 inch size.
- S. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.
- T. Install fittings to accommodate expansion and deflection where raceway crosses seismic, control, and expansion joints.
- U. Install suitable pull string or cord in each empty raceway except sleeves and nipples.
- V. Install suitable caps to protect installed conduit against entrance of dirt and moisture.
- W. Surface Raceway: Install flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Install insulating bushings and inserts at connections to outlets and corner fittings.
- X. Close ends and unused openings in wireway.
- Y. Electrical contractor is responsible to fully coordinate with the site and concrete contractors and all other trades when routing conduit underslab. Routing of conduit underslab may be acceptable, provided spacing of conduits is adequate for proper backfilling of area surrounding conduits. Adequate spacing shall mean a minimum of 3-inches for backfilling with flowable fill or 3 times the pipe diameter for backfilling with a structural fill. Proposed conduit routing, installation and methods and backfilling procedures shall be submitted to the Engineer for review.

3.4 INSTALLATION - BOXES

- A. Install wall mounted boxes at elevations to accommodate mounting heights as indicated on Drawings.
- B. Adjust box location prior to rough-in to accommodate intended purpose.
- C. Orient boxes to accommodate wiring devices oriented as specified in Section 26 2726.
- D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- E. In Accessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- F. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

- G. Do not install flush mounting box back-to-back in walls; install with minimum 6 inches separation. Install with minimum 24 inches separation in acoustic rated walls.
- H. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- I. Install stamped steel bridges to fasten flush mounting outlet box between studs.
- J. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- K. Install adjustable steel channel fasteners for hung ceiling outlet box.
- L. Do not fasten boxes to ceiling support wires or other piping systems.
- M. Support boxes independently of conduit.
- N. Install gang box where more than one device is mounted together. Do not use sectional box.
- O. Install gang box with plaster ring for single device outlets.

3.5 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation.
- C. Locate outlet boxes to allow luminaires positioned as indicated on Electrical Lighting Drawings.
- D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.6 ADJUSTING

- A. Section 01 7300 - Execution and Section 01 7700 - Closeout Procedures: Testing, adjusting, and balancing.
- B. Adjust flush-mounting outlets to make front flush with finished wall material.
- C. Install knockout closures in unused openings in boxes.

3.7 CLEANING

- A. Section 01 7300 - Execution and Section 01 7700 - Closeout Procedures: Final cleaning.
- B. Clean interior of boxes to remove dust, debris, and other material.
- C. Clean exposed surfaces and restore finish.

END OF SECTION 260533

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections with DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Refer to Division 01 for General Conditions required for this section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Nameplates.
 - 2. Labels.
 - 3. Wire markers.
 - 4. Conduit markers.
 - 5. Stencils.
- B. Related Sections:
 - 1. Section 09 0007 - Painting: Execution requirements for painting specified by this section.

1.3 SUBMITTALS

- A. Section 01 3300 - Submittal Procedures: Submittal procedures.
- B. Product Data:
 - 1. Submit manufacturer's catalog literature for each product required.
 - 2. Submit electrical identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function.
- C. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 7300 - Execution and Section 01 7700 - Closeout Procedures: Requirements for submittals.
- B. Project Record Documents: Record actual locations of tagged devices; include tag numbers.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with State of Connecticut Public Work's standard.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 6000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept identification products on site in original containers. Inspect for damage.
- C. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- D. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 6000 - Product Requirements: Environmental conditions affecting products on site.
- B. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

1.9 EXTRA MATERIALS

- A. Section 01 7300 - Execution and Section 01 7700 - Closeout Procedures: Requirements for extra materials.
- B. Furnish two containers of spray-on adhesive.

PART 2 PRODUCTS

2.1 NAMEPLATES

- A. Manufacturers:
 - 1. Seton
 - 2. Brady
 - 3. Ideal Industries
 - 4. Substitutions: Section 01 2500 – Substitution Procedures
- B. Product Description: Laminated three-layer plastic with engraved black letters on white contrasting background color.
- C. Letter Size:
 - 1. 1/8 inch high letters for identifying individual equipment and loads.
 - 2. 1/4 inch high letters for identifying grouped equipment and loads.
- D. Minimum nameplate thickness: 1/8 inch.

2.2 LABELS

- A. Manufacturers:
 - 1. Seton
 - 2. Brady

3. Ideal Industries
4. Substitutions: Section 01 2500 – Substitution Procedures

B. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background.

2.3 WIRE MARKERS

A. Manufacturers:

1. Seton
2. Brady
3. Ideal Industries
4. Substitutions: Section 01 2500 – Substitution Procedures

B. Legend:

1. Power and Lighting Circuits: Branch circuit or feeder number as indicated on Drawings.
2. Control Circuits: Control wire number as indicated on Drawings.

2.4 CONDUIT AND RACEWAY MARKERS

A. Manufacturers:

1. Seton
2. Brady
3. Ideal Industries
4. Substitutions: Section 01 2500 – Substitution Procedures

B. Color:

1. Medium Voltage System: Black lettering on white background.
2. 480 Volt System: Black lettering on white background.
3. 208 Volt System: Black lettering on white background.

C. Legend:

1. Medium Voltage System: HIGH VOLTAGE.
2. 480 Volt System: 480 VOLTS. HIGH VOLTAGE.
3. 208 Volt System: 208 VOLTS.
4. Emergency Power Systems: Emergency (with voltage following "Emergency")
5. Telephone System: Telephone
6. Voice/Data Systems: Voice/Data
7. Security System: Security

2.5 STENCILS

A. Stencils: With clean cut symbols and letters of following size:

1. Up to 2 inches Outside Diameter of Raceway: 1/2 inch high letters.
2. 2-1/2 to 6 inches Outside Diameter of Raceway: 1 inch high letters.

2.6 DEVICE IDENTIFICATION

A. Service Equipment:

1. Labeling:
 - a. Indicate the maximum available fault current at the equipment, including the date the fault current calculation was performed. Label shall include warning for "Arc Flash Hazard" and requirement for "PPE protection".
 - b. Indicate Equipment designation.

- B. Panelboards:
 - 1. Labeling:
 - a. Indicate power supply origin (panelboard or transformer) of source feeding the panelboard.
 - b. Indicate Panelboard designation.
- C. Roof Top HVAC Equipment Disconnects:
 - 1. Labeling:
 - a. Indicate equipment name.
 - b. Indicate source panel and circuit number.
- D. Receptacles:
 - 1. Labeling:
 - a. Indicate source panel and circuit number at each cover plate.
 - b. Cover plates shall be labeled with information indicated above using a permanent label.

PART 3 EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.
- B. Prepare surfaces in accordance with Section 09 0007 for stencil painting.

3.2 INSTALLATION

- A. Install identifying devices after completion of painting.
- B. Nameplate Installation:
 - 1. Install nameplate parallel to equipment lines.
 - 2. Install nameplate for each electrical distribution and control equipment enclosure with corrosive-resistant mechanical fasteners, or adhesive.
 - 3. Install nameplates for each control panel and major control components located outside panel with corrosive-resistant mechanical fasteners, or adhesive.
 - 4. Secure nameplate to equipment front using rivets.
 - 5. Secure nameplate to inside surface of door on recessed panelboard in finished locations.
 - 6. Install nameplates for the following:
 - a. Panelboards.
 - b. Disconnects.
 - c. Other locations indicated on drawings.
- C. Label Installation:
 - 1. Install label parallel to equipment lines.
 - 2. Install label for identification of individual control device stations.
 - 3. Install labels for permanent adhesion and seal with clear lacquer.
- D. Wire Marker Installation:
 - 1. Install wire marker for each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.
 - 2. Mark data cabling at each end. Install additional marking at accessible locations along the cable run.

- E. Conduit Marker Installation:
 - 1. Install conduit marker for each conduit longer than 6 feet.
 - 2. Spacing: 20 feet on center.
 - 3. Raceway Painting: Identify conduit using field painting.
 - a. Paint colored band on raceway greater than 6 feet in length.
 - b. 20 feet on center.
 - c. Color:
 - 1) 480 Volt System: Blue.
 - 2) 208 Volt System: Yellow.

- F. Stencil Installation:
 - 1. Apply stencil painting in accordance with Section 09 90 00

- G. Underground Warning Tape Installation:
 - 1. Install underground warning tape along length of each underground conduit, raceway, or cable 6 to 8 inches below finished grade (or as noted on drawings), directly above buried conduit, raceway, or cable.

END OF SECTION 260553

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 262416 - PANELBOARDS**PART 1 GENERAL****1.1 GENERAL PROVISIONS**

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections with DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Refer to Division 01 for General Conditions required for this section.

1.2 SUMMARY

- A. Section includes distribution and branch circuit panelboards, electronic grade branch circuit panelboards, and load centers.
- B. Related Sections:
 - 1. Section 26 0526 - Grounding and Bonding for Electrical Systems.
 - 2. Section 26 0553 - Identification for Electrical Systems.
 - 3. Section 26 2813 - Fuses.

1.3 REFERENCES

- A. Institute of Electrical and Electronics Engineers:
 - 1. IEEE C62.41 - Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
- B. National Electrical Manufacturers Association:
 - 1. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches.
 - 2. NEMA FU 1 - Low Voltage Cartridge Fuses.
 - 3. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC.
 - 4. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices.
 - 5. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
 - 6. NEMA PB 1 - Panelboards.
 - 7. NEMA PB 1.1 - General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less.
- C. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- D. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.
- E. Underwriters Laboratories Inc.:
 - 1. UL 67 - Safety for Panelboards.
 - 2. UL 1283 - Electromagnetic Interference Filters.
 - 3. UL 1449 - Transient Voltage Surge Suppressors.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.
- C. Product Data: Submit catalog data showing specified features of standard products.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of panelboards and record actual circuiting arrangements.
- C. Operation and Maintenance Data: Submit spare parts listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years of experience.

1.7 MAINTENANCE MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance products.
- B. Furnish two of each panelboard key.

1.8 WARRANTY

- A. General: See Division 1 – Closeout Procedures.
- B. Special Warranty: Submit a written warranty executed by the manufacturer, the Installer, and the Contractor, agreeing to repair or replace panelboards with branch metering that fail in materials or workmanship within the specified warranty period.
 - 1. Warranty Period: Warranty period shall be one year from the date of installation or 18 months from date of purchase.

PART 2 PRODUCTS

2.1 LOAD CENTERS

- A. Manufacturers:
 - 1. General Electric.
 - 2. Square D.
 - 3. Siemens.
 - 4. Eaton/Cutler Hammer
 - 5. Substitutions: Section 01 60 00 - Product Requirements

- B. Product Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.
- C. Panelboard Bus: Copper current carrying components, ratings as indicated on Drawings. Furnish copper ground bus in each panelboard.
- D. Minimum Integrated Short Circuit Rating: 22,000 amperes rms symmetrical for 208 volt panelboards. Series rating with the branch device located in the three phase upstream distribution panel will be allowed.
- E. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles, visible trip indicator for all poles, listed as Type SWD for lighting circuits, Type HACR for air conditioning equipment circuits, circuit breakers as indicated on Drawings. Do not use tandem circuit breakers.
- F. Cabinet Box: 4 inches deep, 20 inches wide for 240 volt and less, single phase panelboards (for apartments only).
- G. Cabinet Front: Flush cabinet front with concealed trim clamps, concealed hinge, metal directory frame, and flush lock keyed alike. Finish in manufacturer's standard gray enamel.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install panelboards and load centers in accordance with NEMA PB 1.1.
- B. Install panelboards and load centers plumb.
- C. Install recessed panelboards and load centers flush with wall finishes.
- D. Height: 6 feet to top of panelboard and load center; install panelboards taller than 6 feet with bottom no more than 4 inches above floor.
- E. Install filler plates for unused spaces in panelboards.
- F. Provide typed or neatly handwritten circuit directory for each branch circuit panelboard and load center. Revise directory to reflect circuiting changes to balance phase loads.
- G. Install engraved plastic nameplates in accordance with Section 26 05 53.
- H. Ground and bond panelboard enclosure according to Section 26 05 26. Connect equipment ground bars of panels in accordance with NFPA 70.

3.2 FIELD QUALITY CONTROL

- A. Section 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform circuit breaker inspections and tests listed in NETA ATS, Section 7.6.
- D. Perform switch inspections and tests listed in NETA ATS, Section 7.5.

3.3 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for starting and adjusting.
- B. Measure steady state load currents at each panelboard feeder; rearrange circuits in panelboard to balance phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.

END OF SECTION 262416

SECTION 262726 - WIRING DEVICES

PART 1 GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections with DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Refer to Division 01 for General Conditions required for this section.

1.2 SUMMARY

- A. Section includes wall switches; wall dimmers; receptacles; cord reels; and device plates and decorative box covers.
- B. Related Sections:
 - 1. Section 26 0533 - Raceway and Boxes for Electrical Systems: Outlet boxes for wiring devices.
 - 2. Section 26 0534 - Floor Boxes for Electrical Systems: Service fittings for receptacles installed on floor boxes.
 - 3. Section 26 0534 - Floor Boxes for Electrical Systems: Poke-through receptacles.
- C. Allowances: Refer to Division 01 Section "Allowances" for lump-sum allowance for additional electrical devices.
- D. Unit Prices: Administrative and procedural requirement for unit prices for electrical devices are specified in Division 1 Section "Unit Prices".

1.3 REFERENCES

- A. National Electrical Manufacturers Association:
 - 1. NEMA WD 1 - General Requirements for Wiring Devices.
 - 2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.4 SUBMITTALS

- A. Section 01 3300 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit manufacturer's catalog information showing dimensions, colors, and configurations.
- C. Samples: Submit two samples of each wiring device and wall plate illustrating materials, construction, color, and finish.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.6 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish five of each style, size, and finish wall plate.

PART 2 PRODUCTS

2.1 WALL SWITCHES

- A. Manufacturers:
 - 1. Hubbell Wiring Products.
 - 2. Leviton.
 - 3. Bryant.
 - 4. Legrand
 - 5. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: NEMA WD1, AC only general-use toggle switch.
- C. Body and Handle: Plastic with toggle handle. Color to be determined by architect.
- D. Ratings:
 - 1. Voltage: 120-277 volts, AC.
 - 2. Amperage: 20A.
 - 3. Maximum Wattage: At least 1000W.
- E. Match branch circuit and load characteristics.

2.2 RECEPTACLES

- A. Manufacturers:
 - 1. Hubbell Wiring Products.
 - 2. Leviton.
 - 3. Bryant.
 - 4. Legrand/Pass and Seymour.
 - 5. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: Heavy-duty general use receptacle.
- C. Device Body: Plastic construction. Color to be determined by architect.
- D. Configuration: NEMA WD 6, type as indicated on Drawings.
- E. Convenience Receptacle: Type 5-20R.
- F. GFCI Receptacle: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.

2.3 WALL PLATES

- A. Manufacturers:
 - 1. Hubbell Wiring Products.
 - 2. Leviton.
 - 3. Bryant.
 - 4. Legrand
 - 5. Substitutions: Section 01 60 00 - Product Requirements.
- B. Decorative Cover Plate: stainless steel natural brushed finish.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify outlet boxes are installed at proper height.
- C. Verify wall openings are neatly cut and completely covered by wall plates.
- D. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

- A. Clean debris from outlet boxes.

3.3 INSTALLATION

- A. Install devices plumb and level.
- B. Install switches with OFF position down.
- C. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.
- D. Do not share neutral conductor on load side of dimmers.
- E. Install receptacles with grounding pole on top.
- F. Connect wiring device grounding terminal to outlet box with bonding jumper and branch circuit equipment grounding conductor.
- G. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
- H. Connect wiring devices by wrapping solid conductor around screw terminal. Install stranded conductor for branch circuits 10 AWG and smaller. When stranded conductors are used in lieu of solid, use crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under device screws.

- I. Use jumbo size plates for outlets installed in masonry walls.
- J. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3.4 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations of outlet boxes provided under Section 26 05 33 to obtain mounting heights as specified and as indicated on drawings.
- B. Install wall switches 48 inches above finished floor.
- C. Install convenience receptacle 18 inches above finished floor.
- D. Install "above-counter" receptacle 6 inches above back splash of counter.
- E. Install dimmer 48 inches above finished floor.

3.5 FIELD QUALITY CONTROL

- A. Section 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect each wiring device for defects.
- C. Operate each wall switch with circuit energized and verify proper operation.
- D. Verify each receptacle device is energized.
- E. Test each receptacle device for proper polarity.
- F. Test each GFCI and tamper resistant receptacle device for proper operation.

3.6 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust devices and wall plates to be flush and level.

3.7 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION 262726

SECTION 262813 - FUSES

PART 1 GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections with DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Refer to Division 01 for General Conditions required for this section.

1.2 SUMMARY

- A. Section includes fuses.

1.3 REFERENCES

- A. National Electrical Manufacturers Association:
 - 1. NEMA FU 1 - Low Voltage Cartridge Fuses.

1.4 DESIGN REQUIREMENTS

- A. Select fuses to provide appropriate levels of short circuit and overcurrent protection for the following components: wire, cable, bus structures, and other equipment. Design system to maintain component damage within acceptable levels during faults.
- B. Select fuses to coordinate with time current characteristics of other overcurrent protective elements, including other fuses, circuit breakers, and protective relays. Design system to maintain operation of device closest to fault operates.

1.5 FUSE PERFORMANCE REQUIREMENTS

- A. General Purpose Branch Circuits: Class RK1 (time delay).
- B. Motor Branch Circuits: Class RK1 (time delay).
- C. Life Safety lighting feeder switches: Class RK1 (time delay). See riser diagram for locations.

1.6 SUBMITTALS

- A. Section 01 3300 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data sheets showing electrical characteristics, including time-current curves.

1.7 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Record actual sizes, ratings, and locations of fuses.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.9 MAINTENANCE MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish two fuse pullers.

1.10 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for extra materials.
- B. Furnish three spare fuses of each Class, size, and rating installed.

PART 2 PRODUCTS

2.1 FUSES

- A. Manufacturers:
 - 1. Bussman.
 - 2. Gould Shawmut.
 - 3. Little Fuse.
 - 4. Substitutions: Section 01 60 00 - Product Requirements.
- B. Dimensions and Performance: NEMA FU 1, Class as specified or as indicated on Drawings.
- C. Voltage: Rating suitable for circuit phase-to-phase voltage.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install fuse with label oriented so manufacturer, type, and size are easily read.

END OF SECTION 262813

SECTION 262819 - ENCLOSED SWITCHES

PART 1 GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections with DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.
- B. Refer to Division 01 for General Conditions required for this section.

1.2 SUMMARY

- A. Section includes fusible and nonfusible switches.
- B. Related Sections:
 - 1. Section 26 2813 - Fuses.

1.3 REFERENCES

- A. National Electrical Manufacturers Association:
 - 1. NEMA FU 1 - Low Voltage Cartridge Fuses.
 - 2. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
- B. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

1.4 SUBMITTALS

- A. Section 01 3300 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit switch ratings and enclosure dimensions.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 7000 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Record actual locations of enclosed switches and ratings of installed fuses.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

PART 2 PRODUCTS

2.1 FUSIBLE SWITCH ASSEMBLIES

- A. Manufacturers:
 - 1. General Electric.
 - 2. Square D.
 - 3. Siemens.
 - 4. Eaton/Cutler Hammer.
 - 5. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: NEMA KS 1, Type HD enclosed load interrupter knife switch. Handle lockable in OFF position.
- C. Fuse clips: Designed to accommodate NEMA RK1 fuses.
- D. Enclosure: NEMA KS 1, to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard gray.
 - 1. Interior Dry Locations: Type 1.
 - 2. Exterior Locations: Type 3R.
- E. Service Entrance: Switches identified for use as service equipment are to be labeled for this application. Furnish solid neutral assembly and equipment ground bar.
- F. Furnish switches with entirely copper current carrying parts.

2.2 NONFUSIBLE SWITCH ASSEMBLIES

- A. Manufacturers:
 - 1. General Electric.
 - 2. Square D.
 - 3. Siemens.
 - 4. Eaton/Cutler Hammer.
 - 5. Substitutions: Section 01 60 00 - Product Requirements. Product Description: NEMA KS 1, enclosed load interrupter knife switch. Handle lockable in OFF position.
- B. Enclosure: NEMA KS 1, to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard gray.
 - 1. Interior Dry Locations: Type 1.
 - 2. Exterior Locations: Type 3R.
- C. Service Entrance: Switches identified for use as service equipment are to be labeled for this application. Furnish solid neutral assembly and equipment ground bar.
- D. Furnish switches with entirely copper current carrying parts.

2.3 SWITCH RATINGS

- A. Switch Rating: As indicated on drawings.
- B. Switch Rating: Horsepower rated for AC or DC as indicated on Drawings.

- C. Short Circuit Current Rating: UL listed for 10,000 rms symmetrical amperes when used with or protected by Class H or K fuses (30-600 ampere), 200,000 rms symmetrical amperes when used with or protected by Class R or Class J fuses (30-600 ampere switches employing appropriate fuse rejection schemes). 200,000 rms symmetrical amperes when used with or protected by Class L fuses (800-1200 ampere).

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install enclosed switches plumb. Provide supports in accordance with Section 26 05 29.
- B. Height: 5 feet to operating handle.
- C. Install fuses for fusible disconnect switches. Refer to Section 26 28 13 for product requirements.
- D. Install engraved plastic nameplates in accordance with Section 26 05 53.
- E. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.
- F. For switches feeding mechanical equipment, install switch within sight of the equipment.

3.2 COORDINATION WITH OTHER TRADES

- A. It is the responsibility of the electrical contractor to furnish and install a safety switch for each electrical connection to mechanical equipment in the project, unless otherwise noted in the drawings.
- B. It is the responsibility of the electrical contractor to install all safety switches furnished under DIVISION 23 – MECHANICAL WORK, DIVISION 22 – PLUMBING WORK, AND DIVISION 21 – FIRE PROTECTION. Items with loose switches furnished by other trades are notated in drawings.
- C. Coordination between electrical and mechanical trades shall be anticipated.

3.3 FIELD QUALITY CONTROL

- A. Section 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.5.

END OF SECTION 262819

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes the following:

- 1. Topsoil and subsoil stripping and stockpiling.
- 2. Temporary erosion and sedimentation control.

- B. **Related Sections:** The following Sections contain requirements that relate to this Section:

- 1. Division 01 Section "Execution".
- 2. Division 01 Section "Temporary Facilities and Controls".
- 3. Division 31 Section "Earth Moving".
- 4. Division 32 Section "Turf and Grasses".

1.3 DEFINITIONS

- A. **Topsoil:** Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2-inches in diameter; and free of weeds, roots, toxic materials, or other non-soil materials.
- B. **Subsoil:** Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- C. **Form 817:** "Standard Specifications for Roads, Bridges, and Incidental Construction", State of Connecticut, Department of Transportation, Form 817", with latest edition and supplement.
- D. **Surface Soil:** Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.
- E. **Vegetation:** Trees, shrubs, groundcovers, grass, and other plants.

1.4 PREINSTALLATION MEETINGS

- A. **Pre-installation Conference:** Conduct conference at Project site.

1.5 SUBMITTALS

- A. Product data for erosion and sedimentation control measures and devices.

1.6 QUALITY ASSURANCE

- A. **Preconstruction Conference:** Conduct conference at Project site to comply with requirements in Division 01, Section "Project Management and Coordination". Coordinate meeting with project sediment and erosion control requirements.
- B. All work shall comply with all codes, rules, regulations, laws and ordinances for the Department of Veterans Affairs, and all other authorities having jurisdiction.

1.7 PROJECT CONDITIONS

- A. **Traffic:** Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

- B. Improvements on Adjoining Property: Authority for performing indicated removal and alteration work on property adjoining Owner's property will be obtained by Owner before award of Contract.
 - 1. Peripheral areas outside the Contract limit line shall not be disturbed or used for storing materials.
- C. Notify utility locator service or Call Before You Dig for area where Project is located before site clearing.
- D. Review and verify all limits or improvements to be removed prior to commencing demolition operations.
- E. Do not commence site clearing operations until temporary erosion- and sedimentation-control measures are in place.
- F. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

1.08 REFERENCES

- A. "2002 Connecticut Guidelines for Soil Erosion and Sediment Control" by The Connecticut Council on Soil and Water Conservation in cooperation with the Connecticut Department of Environmental Protection
- B. State of Connecticut Department of Transportation "Standard Specifications for Roads, Bridges and Incidental Construction", Form 817, as amended and including current supplemental specifications.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Top Soil: Evaluate soil for use as topsoil according to ASTM D5268. From 5 to 10 percent organic matter as determined by topsoil composition tests of Organic Carbon, 6A, Chemical Analysis Method described in USDA DOA SSIR 42. Maximum particle size, 19 mm (3/4 inch), with maximum 3 percent retained on 6 mm (1/4 inch) screen. Mix topsoil with following soil amendments and fertilizers as recommended by soils analysis.
 - 1. Existing Planting Soil: Existing, native surface topsoil formed under natural conditions retained during excavation process and stockpiled on-site. Verify suitability of native surface topsoil to produce viable planting soil. Clean soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
 - a. Supplement with another specified planting soil when quantities are insufficient.
 - b. Mix existing, native surface topsoil with soil amendments and fertilizers as recommended by soils analysis.
 - 2. Imported Planting Soil: Imported topsoil or manufactured topsoil from off-site sources are acceptable if sufficient topsoil is not available on site to meet specified depth. At least 10 days before topsoil delivery, notify Contracting Officer's Representative of topsoil sources. Obtain imported topsoil displaced from naturally well-drained construction or mining sites where topsoil is at least 100 mm (4 inches) deep. Topsoil from agricultural land, bogs, or marshes will be rejected.
- B. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or Groups A-1, A-2-4, A-2-5, and A-3 according to AASHTO M 145 or a combination of these groups.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
 - 2. All soils conforming to polluted soil in accordance with the CT DEEP RSR definitions.

2.2 SOIL EROSION AND SEDIMENTATION CONTROL

- A. This item shall consist of temporary erosion control measures as shown on the Plans, or as ordered by the Construction Manager or Architect, during the life of the contract to control water pollution, soil erosion, and siltation through the use of common erosion control methods including siltation fences, silt sacks, construction entrances / anti-tracking pads and silt booms. The temporary erosion control measures contained herein and as shown on the contract drawings shall be installed and coordinated to assure economical, effective, and continuous erosion control throughout the construction period. The Contractor shall install and maintain the devices during construction. The maintenance shall be performed a twice week or after storm events of 0.5 inches or greater. Contractor shall have a log of the erosion control inspections

1. Siltation Fence:

Synthetic filter fabric should be a pervious sheet of polypropylene, nylon, polyester, ethylene or similar filaments and shall be certified by the manufacturer or supplier as conforming to the requirements in Table 1 below.

TABLE 1 – GEOTEXTILE SILT FENCING MINIMUM REQUIREMENTS

| Physical Property | Test Method | Minimum Requirement |
|-----------------------------------|-------------|---|
| Filtering Efficiency | ASTM 5141 | 75% (min) |
| Grab tensile strength (lbs.) | ASTM D4632 | 100 lbs |
| Elongation at failure | ASTM D4632 | 15% |
| Mullen burst strength | ASTM D3786 | 250 psi |
| Puncture strength | ASTM 4833 | 50 lbs |
| Apparent opening size | ASTM D4751 | No less than 0.90mm and no greater than 0.60 mm |
| Flow rate | ASTM D4491 | 0.2 gal/ft ² /min |
| Permittivity | ASTM D4491 | 0.05 sec. -1 (min.) |
| Ultraviolet radiation stability % | ASTM D4355 | 70% after 500 hours of exposure (min) |

The geotextile shall be non-rotting, acid and alkali resistant and have sufficient strength and permeability for the purpose intended, including handling and backfill operations. Filaments in the geotextile shall be resistant to absorption. The filament network must be dimensionally stable and resistant to de-lamination. The geotextile shall be free of any chemical treatment or coating that will reduce its permeability. The geotextile shall also be free of any flaws or defects which will alter its physical properties. Torn or punctured geotextiles shall not be used. The geotextile shall be on the Connecticut Department of Transportation's "Qualified Product List".

The geotextile silt fence must be staked and the geotextile entrenched to a minimum depth of six inches below the existing surface. The supporting posts shall be at least 42 inches long made of either 1.5 inch square hardwood stakes or steel posts with projections for fastening the geotextile and possessing a minimum strength of 0.5 pound per linear foot. The support posts shall be driven to a depth of at least 12 inches into existing ground and never installed more than 10 feet apart

Siltation fence shall be stored in a manner that will protect it from the elements. If stored outdoors, it shall be elevated and protected with a waterproof cover. Both the geotextile and threads associated with the fence shall be resistant to chemical attack, mildew, and rot. Each roll of fabric shall be labeled or tagged to provide product identification as well as inventory and quality control purposes.

2. Silt Sacks:

Silt sacks are to be installed in those locations as shown on the Plans to protect newly installed drainage structures and existing drainage structures.

3. Construction Entrance:

The construction entrance is a stone stabilized pad located at points of vehicular ingress and egress on a construction site. The location, dimensions and details of the construction entrance are shown on the plans and in accordance with these specifications.

The stone used for this work shall conform to the requirements of the State of Connecticut Department of Transportation "Standard Specifications for Roads, Bridges and Incidental Construction", Form 817, as amended and including current supplemental specifications section M.01.01, Size No. 3, as noted below:

CT DOT Form 817, M.01.01, No.3 Aggregate

| <u>Sieve size</u> | <u>percent passing</u> |
|-------------------|------------------------|
| 2 ½" | 100% |
| 2" | 90%-100% |
| 1 ½" | 35%-70% |
| 1" | 0%-15% |
| ½" | 0%-5% |

The fibers in the geotextile used shall consist of synthetic polymers composed of at least 85% by weight polypropylenes, polyesters, polyamides, polyethylene, polyolefin's or polyvinyl-chlorides. The fibers shall be formed into a stable network of filaments or yarns retaining dimensional stability relative to each other. The geotextile used shall be specifically intended for "road stabilization" applications, shall be consistent with the manufacturer's recommendations for the intended use and shall be on the Connecticut Department of Transportation's "Qualified Product List".

The area of the construction entrance shall be cleared of all vegetation, roots and other organic or unsuitable material. At poorly drained locations install subsurface drainage insuring the outlet to the drains are free flowing. If using geotextile in place of free draining material, unroll the geotextile in a direction parallel to the roadway entrance in a loose manner permitting it to conform to the surface irregularities when the stone is placed. Unless otherwise specified by the manufacturer, the minimum overlap of geotextile panels joined without sewing according to the manufacturer's recommendations. The geotextile may be temporarily secured with pins recommended or provided by the manufacturer but they shall be removed prior to placement of the stone. Place the stone according to the locations, dimensions and depth as shown on the plans.

The construction entrance shall be maintained in a condition that will prevent tracking, flowing and washing of sediment onto paved surfaces. Provide periodic top dressing with additional stone or additional length as conditions demand. Repair any measures used to trap sediment as needed. Immediately remove all sediment spilled, dropped, washed or tracked onto paved surfaces. Roads adjacent to a construction site shall be left clean at the end of each day.

When the construction entrance is no longer needed, or upon project completion, the anti-tracking pad shall be removed in its entirety and the area shall be restored as directed. The pad materials and sediments shall be removed to a location approved by the Construction Manager or Architect.

4. Silt Boom:

Silt booms are to be utilized to act as temporary filters to protect inlets to storm drains and provide perimeter control and sediment migration over impervious surfaces where siltation fences are inappropriate or unable to be installed. They are three-dimensional tubular devices used to trap the physical, chemical, and biological pollutants in stormwater. Once installed they will also create a temporary ponding area behind the boom which facilitates the deposition of suspended solids. Organic matter in filter socks binds phosphorus, metals, and hydrocarbons that may be in stormwater. Silt booms should be placed on a leveled area to ensure good contact between the boom and the ground.

Inspect silt booms periodically and especially after large storm events. Ensure that filter sock is intact, and that the area upstream has not filled with sediment. If the upstream area has filled with sediments, or if the silt boom has been overtopped, install additional silt booms further upstream. Sediment behind the boom should be removed when the depth of the sediment reaches 3.25-inches for an 8-inch boom, 4.75-inches for a 12-inch boom, and 7.25-inches for an 18-inch boom. For booms larger than previously listed, remove sediment behind the boom when the accumulated sediment depth reaches 40% of the design diameter of the boom.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

- D. Locate and clearly flag all limits of clearing, including trees and vegetation to remain or to be relocated. Place flagging every 25' oc. Review with Architect & Owner. Modify limits as required.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 TOPSOIL STRIPPING

- A. Prepare areas of existing loam so as to provide clump free topsoil. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to depth of 6 inches in a manner to prevent intermingling with underlying subsoil or other waste materials.
 - 1. Remove subsoil and non-soil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.
 - 2. Strip surface soil of unsuitable topsoil, including trash, debris, weeds, roots, and other waste materials.
 - 3. Where trees are indicated to remain, hold stripping a sufficient distance away to prevent damage to the root system.
 - 4. No topsoil stripping is required where proposed fills are greater than 12' in height.
- C. Stockpile materials away from edge of excavations without intermixing with other soil materials. Grade and shape stockpiles to drain surface water, in locations approved by the Owner and consistent with sediment and erosion control requirements.
 - 1. Limit height of topsoil stockpiles to 72 inches.
 - 2. Do not stockpile topsoil within drip line of remaining trees.
 - 3. Stockpile surplus topsoil and allow for respreading entire amount of approved-stripped topsoil or haul excess topsoil to locations designated by the Owner. All excess approved topsoil remains the property of the Owner.

END OF SECTION 31 10 01

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 32 31 13 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section Includes:
 - 1. Chain-link fences.
 - 2. Swing gates.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
 - a. Fence and gate posts, rails, and fittings.
 - b. Chain-link fabric, reinforcements, and attachments.
 - c. Gates and hardware.
- B. Shop Drawings: For each type of fence and gate assembly.
 - 1. Include plans, elevations, sections, details, and attachments to other work.
 - 2. Include accessories, hardware, gate operation, and operational clearances.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of chain-link fence and gate.
- B. Product Test Reports: For framework strength according to ASTM F1043, for tests performed by manufacturer and witnessed by a qualified testing agency.
- C. Field quality-control reports.
- D. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For gate operators to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing fence grounding; member company of NETA or an NRTL.
 - 1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.
- B. Mockups: Build mockups to set quality standards for fabrication and installation.
 - 1. Build mockup for typical chain-link fence and gate, including accessories.
 - a. Size: 10-footlength of fence.

1.8 FIELD CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:
 - 1. Fabric Height: As indicated on Drawings for fence height.
 - 2. Steel Wire for Fabric: Wire diameter of 9 gauge.
 - a. Mesh Size: 2 inches
 - b. Zinc-Coated Fabric: ASTM A392, Type II, Class 2, 2.0 oz./sq. ft. with zinc coating applied before weaving.
 - c. Coat selvage ends of metallic-coated fabric before the weaving process with manufacturer's standard clear protective coating.
 - 3. Selvage: Twisted top and knuckled bottom.

2.2 FENCE FRAMEWORK

- A. Posts and Rails: ASTM F1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F1083 based on the following:

1. Fence Height: 36inches indicated on Drawings.
2. Light-Industrial-Strength Material: Group IC-L, round steel pipe, electric-resistance-welded pipe.
 - a. Line Post: 1.9 inches in diameter.
 - b. End, Corner, and Pull Posts: 2.375 inches
3. Horizontal Framework Members: Top and bottom rails according to ASTM F1043.
 - a. Top Rail: 1.66 inches in diameter.
4. Brace Rails: ASTM F1043.
5. Metallic Coating for Steel Framework:
 - a. Type C: Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. coating exterior and interior.
 - b. Coatings: Any coating above.

2.3 TENSION WIRE

- A. Metallic-Coated Steel Wire: 0.177-inch-diameter (7 gauge), marcelled tension wire according to ASTM A824, with the following metallic coating:
 1. Type II: Zinc coated (galvanized) by [hot-dip] [electrolytic] process, with the following minimum coating weight:
 - a. Class 5: Not less than 2 oz./sq. ft. of uncoated wire surface.
 - b. Matching chain-link fabric coating weight.

2.4 SWING GATES

- A. General: ASTM F900 for gate posts and double swing gate types.
 1. Gate Leaf Width: 42 inches.
 2. Framework Member Sizes and Strength: Based on gate fabric height of 36 inches.
- B. Pipe and Tubing:
 1. Zinc-Coated Steel: ASTM F1083; protective coating and finish to match fence framework.
 2. Gate Posts: Round tubular steel.
 3. Gate Frames and Bracing: Round tubular steel.
- C. Frame Corner Construction: Welded.
- D. Hardware:
 1. Hinges: 180-degree outward swing.
 2. Latch: Permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.

2.5 FITTINGS

- A. Provide fittings according to ASTM F626.
- B. Post Caps: Provide for each post.
 - 1. Provide line post caps with loop to receive tension wire or top rail.
- C. Rail and Brace Ends: For each gate, corner, pull, and end post.
- D. Rail Fittings: Provide the following:
 - 1. Top Rail Sleeves: Pressed-steel or round-steel tubing not less than 6 inches long.
 - 2. Rail Clamps: Line and corner boulevard clamps for connecting bottom rails to posts.
- E. Tension and Brace Bands: Pressed steel.
- F. Tie Wires, Clips, and Fasteners: According to ASTM F626.
 - 1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, according to the following:
 - a.
 - b. Aluminum: ASTM B211; Alloy 1350-H19; 9 gauge, mill-finished wire.
- G. Finish:
 - 1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. of zinc.

2.6 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout, recommended in writing by manufacturer, for exterior applications.
- B. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating, and that is recommended in writing by manufacturer for exterior applications.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, and other conditions affecting performance of the Work.
 - 1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 CHAIN-LINK FENCE INSTALLATION

- A. Install chain-link fencing according to ASTM F567 and more stringent requirements specified.
 - 1. Install fencing on established boundary lines inside property line.
- B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- C. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
 - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
 - a. Concealed Concrete: Place top of concrete 2 inches below grade to allow covering with surface material.
- D. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F567.
- E. Line Posts: Space line posts uniformly at 96 inches o.c.
- F. Post Bracing and Intermediate Rails: Install according to ASTM F567, maintaining plumb position and alignment of fence posts. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.
- G. Tension Wire: Install according to ASTM F567, maintaining plumb position and alignment of fence posts. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch-diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric. Provide horizontal tension wire at the following locations:
 - 1. Extended along bottom of fence fabric. Install top tension wire through post cap loops. Install bottom tension wire within 6 inches of bottom of fabric and tie to each post with not less than same diameter and type of wire.
- H. Top Rail: Install according to ASTM F567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.
- I. Bottom Rails: Secure to posts with fittings.

- J. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1-inch bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
- K. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts, with tension bands spaced not more than 15 inches o.c.
- L. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F626. Bend ends of wire to minimize hazard to individuals and clothing.
 - 1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.
- M. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side.

3.4 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation.

3.5 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain chain-link fences and gates.

END OF SECTION 32 31 13

Section 50 30 00 Hazardous Building Materials Inspection and Inventory

Limited Hazardous Building Materials Inspection

August 29-31, 2018

Connecticut Department of Veterans Affairs
Veteran's Home and Hospital - Building 2 – Commissary,
Building 3 – Domicile, Building 4 – Domicile
ADA Improvements DAS/CS Project BI-C-291
287 West Street
Rocky Hill, Connecticut

Friar Architecture, Inc.
Farmington, Connecticut

September 27, 2018



Fuss & O'Neill
146 Hartford Road
Manchester, CT 06040

THIS PAGE INTENTIONALLY LEFT BLANK



FUSS & O'NEILL

September 27, 2018

Mr. Michael A. Sorano
Vice President
Friar Architecture, Inc.
21 Talcott Notch Road, Suite 2
Farmington, Connecticut 06032

**Re: Limited Hazardous Building Materials Inspection
Connecticut Department of Veteran's Affairs (DVA) –
Veteran's Home and Hospital
Building 2 – Commissary, Building 3 – Domicile, Building 4 – Domicile
DVA – ADA Improvements - DAS/CS Project BI-C-291
287 West Street, Rocky Hill Connecticut 06067
Fuss & O'Neill Project No. 20180708.A10**

Dear Mr. Sorano:

Enclosed is the report for the limited hazardous building materials inspection conducted in response to proposed renovations for the Connecticut Department of Veteran's Affairs (DVA) – Veteran's Home and Hospital located at 287 West Street in Rocky Hill, Connecticut. The work was conducted for Friar Architecture, Inc. (the "Client").

The services were performed on August 29-31, 2018 by Fuss & O'Neill licensed inspectors and included a limited asbestos inspection, lead-based paint determination, and an inventory of PCB-containing ballasts and mercury-containing equipment. The information summarized in this report is for the above-mentioned materials only. The work was performed in accordance with our written proposal dated June 28, 2018.

If you should have any questions regarding the contents of this report, please do not hesitate to contact me at (860) 646-2469, extension 5585. Thank you for this opportunity to have served your environmental needs.

Sincerely,

Kathleen C. Pane
Senior Project Manager

KCP/kr

146 Hartford Road
Manchester, CT
06040
t 860.646.2469
800.286.2469
f 860.533.5143

www.fando.com

California
Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

\\private\dfs\ProjectData\P2018\0708\A10\Deliverables\Report\EC_LtdHazardousBldgMaterialsInspection_CTDVA-
ADAImprovements_20180927.docx

THIS PAGE INTENTIONALLY LEFT BLANK

Table of Contents

Limited Hazardous Building Materials Inspection Report Connecticut Department of Veteran's Affairs (DVA) Veteran's Home and Hospital Friar Architecture, Inc.

| | | |
|----------|--|----------|
| 1 | Introduction | 1 |
| 2 | Asbestos Inspection | 1 |
| 2.1 | Methodology | 2 |
| 2.2 | Building and Mechanical System Description..... | 4 |
| 2.3 | Results | 4 |
| 2.4 | Discussion | 4 |
| 2.5 | Conclusions and Recommendations..... | 4 |
| 3 | Lead-Based Paint Determination | 5 |
| 3.1 | Methodology | 5 |
| 3.2 | XRF Determination Results..... | 6 |
| 3.3 | Discussion | 6 |
| 3.4 | Conclusion and Recommendations | 7 |
| 4 | PCB-Containing Fluorescent Light Ballasts and Mercury-Containing Equipment..... | 7 |
| 4.1 | PCB-Containing Fluorescent Ballasts..... | 7 |
| 4.2 | Mercury-Containing Equipment..... | 8 |

Tables

End of Report

1. Summary of Suspect Asbestos-Containing Materials
2. Summary of Asbestos-Containing Materials Inventory

Appendices

End of Report

| | |
|------------|--|
| APPENDIX A | LIMITATIONS |
| APPENDIX B | INSPECTOR LICENSES AND ACCREDITATIONS |
| APPENDIX C | ASBESTOS LABORATORY REPORTS AND CHAIN OF CUSTODY FORMS |
| APPENDIX D | SITE PHOTOGRAPHS |
| APPENDIX E | XRF LEAD DETERMINATION FIELD DATA SHEETS |

THIS PAGE INTENTIONALLY LEFT BLANK

1 Introduction

From August 29 through August 31, 2018, Fuss & O'Neill representatives Eric Cooley and Bruce Gregoire performed a limited hazardous building materials inspection for proposed renovations at the Connecticut Department of Veteran's Affairs (DVA) – Veteran's Home and Hospital - Building 2 – Commissary, Building 3 – Domicile, and Building 4 – Domicile located at 287 West Street in Rocky Hill, Connecticut (the "Site"). The work was conducted for Friar Architecture, Inc. (the "Client") in accordance with our written scope of services dated June 28, 2018 and is subject to the limitations included in *Appendix A*.

The inspection included the following:

- limited asbestos-containing material (ACM) inspection;
- lead-based paint (LBP) determination;

This limited hazardous building materials inspection was performed in response to proposed renovation activities associated with Americans with Disabilities Act (ADA) upgrades and included Building 2, Building 3, and Building 4.

This inspection was limited to non-invasive and discrete sampling techniques. Specific areas that were not inspected include the following:

- Beneath window and door frames;
- Within mechanical equipment;
- Spaces above fixed ceilings, solid walls and between and beneath floors; and
- Concealed pipe chases.

We have excluded collection and analysis of building materials for PCBs. Sampling for PCBs is presently not mandated by the Environmental Protection Agency (EPA); however, significant liability risk for disposing of PCB-containing wastes exists. Recent knowledge of PCBs within these matrices has become more prevalent, especially with remediation contractors, waste haulers, and disposal facilities. Many property Owners have become subject to large changes in schedule, scope, and costs as a result of failure to identify this possible contaminant prior to renovation or demolition.

2 Asbestos Inspection

A property Owner must ensure that a thorough ACM inspection is performed prior to possible disturbance of suspect ACM during renovation or demolition activities. This is a requirement of the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation located at Title 40 CFR, Part 61, Subpart M.

On August 29-31, 2018, Mr. Eric Cooley and Mr. Bruce Gregoire of EnviroScience conducted the inspection. Mr. Eric Cooley and Mr. Bruce Gregoire are both State of Connecticut Department of Public Health (CTDPH) licensed Asbestos Inspectors. Refer to *Appendix B* for the Asbestos Inspector licenses and accreditations.

2.1 Methodology

The inspection was conducted by visually inspecting for suspect ACM and touching each of the suspect materials. The suspect materials were categorized into three EPA NESHAP groups: friable and non-friable Category I and Category II type ACM.

- A Friable Material is defined as material that contains greater than 1 percent ($> 1\%$) asbestos that when dry **can** be crumbled, pulverized, or reduced to powder by hand pressure.
- A Category I Non-Friable Material refers to material that contains $> 1\%$ asbestos (i.e., packings, gaskets, resilient floor coverings, and asphalt roofing products) that when dry **cannot** be crumbled, pulverized, or reduced to powder by hand pressure.
- A Category II Non-Friable Material refers to any non-friable material excluding Category I materials that contain $> 1\%$ asbestos that when dry, **cannot** be crumbled, pulverized, or reduced to powder by hand pressure.

The suspect ACM were also categorized into their applications including Thermal System Insulation (TSI), Surfacing ACM (S), and Miscellaneous ACM (M). TSI includes those materials used to prevent heat loss/gain or water condensation on mechanical systems. Examples of TSI are pipe insulation, boiler insulation, duct insulation, and mudded pipe fitting insulations. Surfacing ACM includes those ACM that are applied by spray, trowel, or otherwise applied to an existing surface. Surfacing ACM is commonly used for fireproofing, decorative, and acoustical applications. Miscellaneous materials include those ACM not listed as thermal or surfacing, such as linoleum, vinyl asbestos flooring, ceiling tiles, caulking, glues, construction adhesives, etc.

The EPA recommends collecting suspect ACM samples in a manner sufficient to determine asbestos content and to segregate each suspect type of homogenous (similar in color, texture, and date of application) materials. The EPA NESHAP regulation does not specifically identify a minimum number of samples to be collected for each homogeneous material, but the NESHAP regulation does recommend the use of sampling protocols included in Title 40 CFR, Part 763, Subpart E: Asbestos Hazard Emergency Response Act (AHERA).

The EPA AHERA regulation requires a specific number of samples be collected based on the type of material and quantity present. This regulation includes the following protocol:

1. Surfacing Materials (S) (i.e., plasters, spray-applied fireproofings, etc.) must be collected in a randomly distributed manner representing each homogenous area based on the overall quantity represented by the sampling as follows:
 - a. Three (3) samples collected from each homogenous area that is less than or equal to 1,000 square feet.
 - b. Five (5) samples collected from each homogenous area that is greater than 1,000 square feet but less than or equal to 5,000 square feet.
 - c. Seven (7) samples collected from each homogenous area that is greater than 5,000 square feet.

2. Thermal System Insulation (TSI) (i.e., pipe insulations, tank insulations, etc.) must be collected in a randomly distributed manner representing each homogenous area. Three (3) samples must be collected from each material. Also, a minimum of one (1) sample of any patching materials applied to TSI presuming the patched area is less than 6 linear or square feet should be collected.
3. Miscellaneous materials (M) (i.e., floor tile, gaskets, construction mastics, etc.) should have a minimum of two (2) samples collected for each type of homogenous material. Sample collection was conducted in a manner sufficient to determine asbestos content of the homogenous material as determined by the inspector.

Inspectors collected samples of those suspect ACM anticipated to be disturbed by proposed renovation activities, and prepared proper chain of custody forms for transmission of the samples to EMSL Analytical Inc. for analysis. EMSL is a State of Connecticut-licensed and American Industrial Hygiene Association (AIHA)-accredited asbestos laboratory. The sample locations, material type, sample identification, and asbestos content are identified by bulk sample analysis in **Table 1** attached hereto. Suspect ACM not listed in the table that may be identified at a later date at the Site, should be assumed to be ACM until sample collection and analysis indicate otherwise. Initial asbestos sample analysis was conducted using the EPA Interim Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116) via Polarized Light Microscopy with Dispersion Staining (PLM/DS).

If samples of suspect materials could not be collected or were inaccessible but observed elsewhere, these materials were assumed to contain asbestos and the inspectors approximated quantities. The exterior and roof were not included in the scope of work for this inspection. Also, intrusive or destructive investigative techniques were not performed at the Site to access and observe concealed areas that may have had suspect ACMs that were hidden or obstructed from normal view. Hard enclosures or obstructed areas typically include, but are not limited to, the following:

- wall cavities;
- concealed pipe chases;
- spaces above fixed ceilings;
- foundation walls;
- spaces behind the brick façade;
- areas behind equipment (including freezers and refrigeration units);
- behind mirrors, blackboards and signage; and
- vapor/moisture barrier under floors or on concrete foundations.

Subsurface investigations including, but not limited to, concrete foundations were not performed. Also, Fuss & O'Neill did not conduct subsurface investigations to identify suspect cementitious pipe throughout the Site.

2.2 Building and Mechanical System Description

Building 2 includes three stories with a full basement and contains approximately 40,518 square feet (SF) of total floor area. Building 3 includes two stories with a full basement and contains approximately 59,704 square feet (SF) of total floor area. Building 4 includes two stories with a full basement and contains approximately 60,684 square feet (SF) of total floor area. The building structures were reportedly constructed in 1942. The buildings are heated by oil-fired steam heat.

2.3 Results

Utilizing the EPA protocol and criteria, the following materials were determined to contain asbestos:

Building 2

- Pipe and Pipe Fitting Insulation; and
- 12" x 12" Tan Floor tile

Refer to **Table 1** for a complete list of ACM and non-ACM sampled as part of this inspection. Refer to **Table 2** attached hereto for the ACM inventory. Refer to *Appendix C* for the asbestos laboratory report and chain of custody forms. Refer to *Appendix D* for site photographs.

2.4 Discussion

The EPA, the Occupational Safety and Health Administration (OSHA), and the CTDPH, define a material that contains greater than one percent (> 1%) asbestos, utilizing PLM/DS, as being an ACM. Materials that are identified as "none detected" are specified as not containing asbestos.

Suspect ACM not identified during this inspection should be presumed to contain asbestos until sample collection and laboratory analysis indicate otherwise.

Additionally, the EPA has suggested that materials that are non-friable organically bound (NOB) materials (e.g., asphaltic-based materials, adhesives, etc.) are recommended for further confirmatory analysis utilizing Transmission Electron Microscopy (TEM). Seven of the collected samples were recommended to be analyzed by TEM. The results of TEM analysis are denoted in **Table 1**.

2.5 Conclusions and Recommendations

Based on visual observations, sample collection, and laboratory analysis, asbestos was present at the Site.

Prior to disturbance, ACM that would likely be impacted by the proposed renovation/demolition activities must first be abated by a state-licensed Asbestos Abatement Contractor. This is a requirement of CTDPH and EPA NESHAP regulations governing asbestos abatement.

Due to the inability to effectively separate some types of multi-layered ACM (e.g., floor tile/mastic, gypsum board/joint compound, mastic/plywood, etc.) from non-ACM, these materials are considered asbestos-contaminated and must be managed as ACM for the purposes of removal and disposal.

Suspect materials encountered during renovation/demolition that are not identified in this report as being non-ACM should be presumed to be ACM until sample collection and laboratory analysis indicate otherwise. Prior to renovation/demolition that may disturb hidden/inaccessible areas, we recommend conducting a supplemental asbestos inspection of these areas and spaces.

Materials are present in Building 2 where concentrations of asbestos are less than 1% (< 1%). While the EPA and the CTDPH identify materials containing < 1% as a non-asbestos containing material, Occupation Safety and Health Administration (OSHA) worker protection regulations apply to materials containing any amount of asbestos.

Utilizing the EPA protocol and criteria, the following materials were determined to contain concentrations of less than 1% (< 1%) asbestos:

Building 2

- Yellow adhesive associated with wood grain laminate flooring over 12" x 12" tan floor tile; and
 - Black adhesive associated with 12" x 12" tan floor tile
- Please note that the 12"x12" floor tile associated with these materials is ACM (<1% Asbestos)

Fuss & O'Neill recommends that if any ACMs are to remain in the building following renovation activities, the ACM should be managed in-place under a written Operations and Maintenance Program in accordance with OSHA regulations.

This report is not intended to be utilized as a bidding document or as a project specification document. The report is designed to aid the building owner, architect, construction manager, general contractors, and asbestos abatement contractors in locating identified ACM.

3 Lead-Based Paint Determination

From August 29 through August 31, 2018, Mr. Eric Cooley of Fuss & O'Neill performed a lead-based paint (LBP) determination associated with coated building components at the Site that may be disturbed during renovation/demolition activities. An X-ray fluorescence (XRF) analyzer was used to perform the LBP determination. The determination was conducted in accordance with generally-accepted industry standards for non-residential (i.e., not child-occupied) buildings.

3.1 Methodology

A Radiation Monitoring Device Model LPA-1, serial number 3126, was utilized for the LBP determination. The instrument was checked for proper calibration prior to use as detailed by the manufacturer and the Performance Characteristic Sheet (PCS) developed for the instruments.

For the purpose of this LBP determination, representative building components were tested as part of this pre-renovation study. Individual repainting efforts are not discoverable in such a limited program. LBP issues involving properties that are not residential are regulated to a limited degree for worker protection relating to paint-disturbing work activities and waste disposal.

Worker protection is regulated by OSHA regulations, as well as CTDPH regulations. These regulations involve air monitoring of workers to determine exposure levels when disturbing lead-containing paint. An LBP determination cannot determine a safe level of lead, but is intended to provide guidance for implementing industry standards for lead in paint at identified locations. Contractors may then better determine exposure of workers to airborne lead by understanding the different concentrations of LBP activities that disturb paint on representative surfaces.

The EPA Resource Conservation and Recovery Act (RCRA) regulates disposal of lead-containing waste. Lead-containing materials that will be impacted during renovation or demolition activities, and result in waste for disposal must either be analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) analysis if lead is determined to be present in non-residential buildings, or be presumed as a hazardous waste. A TCLP sample is a representative sample of the intended waste stream. The results are compared to a threshold value of 5.0 milligrams per liter (mg/L); a result exceeding this value is considered hazardous lead waste. If the result is below the established level, the material is not considered hazardous and may be disposed as general construction debris.

A level of LBP exceeding 1.0 milligrams of lead per square centimeter (mg/cm^2) is considered toxic or dangerous for compliance with residential standards. For purpose of this LBP determination the level of 1.0 mg/cm^2 has been utilized as a threshold for areas where possible worker exposures may occur.

3.2 XRF Determination Results

The LBP determination indicated consistent painting trends associated with representative building components that may be impacted by potential renovation work. The following building components were determined to contain levels of lead (greater than 1.0 mg/cm^2):

- Metal Stairwell Handrails, Post, and Railings; and
- Glazed Ceramic Wall Tile;

Refer to *Appendix E* for the XRF lead determination field data sheets.

3.3 Discussion

OSHA published a Lead in Construction Standard (OSHA Lead Standard) Title 29 CFR, Part 1926.62 in May 1993. The OSHA Lead Standard has no set limit for the content of lead in paint below which the standards do not apply. The OSHA Lead Standards are task-based, and derived from airborne exposure and blood lead levels.

The results of this LBP determination are intended to provide guidance to contractors for occupational lead exposure controls. Building components coated with lead levels above industry standards may

cause exposures to lead above OSHA standards during proposed demolition and renovation activities. The results of this determination are also intended to provide insight into waste disposal requirements, in accordance with EPA RCRA regulations. The results of this determination are also intended to provide insight into waste disposal requirements, in accordance with EPA RCRA regulations. Due to the destructive nature, TCLP sampling was not conducted.

3.4 Conclusion and Recommendations

Based on our LBP determination results, LBP or lead glaze is present on building components located on or in the building.

Contractors must be made aware that OSHA has not established a level of lead in a material below which Title 29 CFR, Part 1926.62 does not apply. Contractors shall comply with exposure assessment criteria, interim worker protection, and other requirements of the regulation as necessary to protect workers during any renovation work that will impact lead paint.

If disturbed by renovation or demolition activities, LBP-coated building components should be segregated from the general waste stream for sample collection and analysis by TCLP to determine proper off-site waste disposal. If disturbed and managed off-site, non-porous LBP-coated building materials (i.e., metals) may be segregated and recycled as scrap metal. Metal LBP-coated building components cannot be subject to grinding, sawing, drilling, sanding, or torch cutting.

Note that future work involving surface preparation of identified painted surface(s) must be performed in accordance with OSHA worker protection requirements

The building is not considered a “child-occupied facility” and therefore, it is not subject to lead safe renovation requirements.

Those surfaces which do not contain LBP are not subject to the RRP requirements. If a specific component or surface is not identified as having been tested it should be presumed to contain lead paint unless tested. Contractor's should be aware that the threshold limit of 1.0 mg/cm² for purposes of RRP requirements is not recognized by OSHA and workers exposures are still subject to lead in construction regulation 29 CFR 1926.62 regardless of paint testing results.

4 PCB-Containing Fluorescent Light Ballasts and Mercury-Containing Equipment

4.1 PCB-Containing Fluorescent Ballasts

Fluorescent light ballasts manufactured prior to 1979 may contain capacitors that contain PCBs. Light ballasts installed as late as 1985 may also contain PCB capacitors. Fluorescent light ballasts that are not

labeled as "No-PCBs" must be assumed to contain PCBs, unless proven otherwise by quantitative analysis. Capacitors in fluorescent light ballasts labeled as non-PCB-containing may contain diethylhexyl phthalate (DEHP). DEHP was the primary substitute to replace PCBs for small capacitors in fluorescent light ballasts in use until 1991. DEHP is a toxic substance, a suspected carcinogen, and is listed under EPA RCRA and the Superfund law as a hazardous waste. Therefore, EPA Superfund liability exists for landfilling both PCB and DEHP-containing light ballasts. These listed materials are considered hazardous waste under EPA RCRA, and require special handling and disposal considerations.

From August 29 through August 31, 2018, Fuss & O'Neill representatives Mr. Eric Cooley and Mr. Bruce Gregoire performed a visual inspection of representative fluorescent light fixtures to identify possible PCB-containing light ballasts that would be disturbed during the renovation. The inspection involved reviewing architectural drawings to determine if any lamps would be impacted by proposed renovations to the building.

4.2 Mercury-Containing Equipment

Fluorescent lamps/tubes are presumed to contain mercury vapor, which is a hazardous substance to both human health and the environment. Thermostatic controls and electrical switch gear may contain a vial or bulb of mercury associated with the control. Mercury-containing equipment is regulated for proper disposal by the EPA RCRA hazardous waste regulations. According to the EPA, mercury lamps are characterized as a Universal Waste. Therefore, fluorescent lamps must be either recycled, or disposed as hazardous waste.

On August 29-31, 2018, Fuss & O'Neill representatives, Mr. Eric Cooley and Mr. Bruce Gregoire, performed an inventory of mercury equipment that was observed to be impacted by proposed renovations as indicated on the architectural drawings provided.



Based on the provided architectural renovation drawings available and the visual inspection of the related areas to be potentially impacted, it was determined that no PCB-Containing Fluorescent Light Ballasts and Mercury-Containing Equipment would be impacted by the ADA upgrade renovations.

Report prepared by Environmental Technician, Bruce Gregoire.

Reviewed by:

A handwritten signature in blue ink, appearing to read 'Kathleen C. Pane'.

Kathleen C. Pane
Senior Project Manager

THIS PAGE INTENTIONALLY LEFT BLANK

Tables

Table 1
Summary of Suspect Asbestos-Containing Materials

| Sample No. | Sample Location | NESHAP Category | Material Type | Asbestos Content | PLM/TEM |
|--------------|--|-----------------|--|------------------|---------|
| 083118EC-1A | Bldg 2 – 2nd Floor Men’s bathroom, Adj Stair A- | | 2-component wall plaster over CMU – Grey rough coat | ND | PLM |
| 083118EC-1B | Bldg 2 – 2nd Floor Women’s bathroom, Adj Stair A- | | 2-component wall plaster over glazed brick – Grey rough coat | ND | PLM |
| 083118EC-1C | Bldg 2 – 2nd Floor Men’s bathroom, West wall | | 2-component wall plaster over CMU – Grey rough coat | ND | PLM |
| 083118EC-2A | Bldg 2 – 2nd Floor Men’s bathroom, Adj Stair A- | | 2-component wall plaster over CMU – White skim coat | ND | PLM |
| 083118EC-2B | Bldg 2 – 2nd Floor Women’s bathroom, Adj Stair A- | | 2-component wall plaster over glazed brick – White skim coat | ND | PLM |
| 083118EC-2C | Bldg 2 – 2nd Floor Men’s bathroom, West wall | | 2-component wall plaster over CMU – White skim coat | ND | PLM |
| 083118EC-3A | Bldg 2 – Basement Corridor Adj Men’s bathroom door | | 2-component wall plaster – Grey rough coat | ND | PLM |
| 083118EC-3B | Bldg 3- 1st Floor basement stairwell south | | 2-component wall plaster – Grey rough coat | ND | PLM |
| 083118EC-3C | Bldg 4 – 2nd Floor Common corridor Adj Elevator C | | 2-component wall plaster over brick– Grey rough coat | ND | PLM |
| 083118EC-3D | Bldg 4 – 2nd Floor Elevator E Foyer | | 2-component wall plaster – Grey rough coat | ND | PLM |
| 083118EC-3E | Bldg 4 – Basement stairwell west | | 2-component wall plaster – Grey rough coat | ND | PLM |
| 083118EC-3F | Bldg 4 – 2nd Floor Elevator E Foyer | | 2-component ceiling plaster – Grey rough coat | ND | PLM |
| 083118EC-4A | Bldg 2 – Basement Corridor Adj Men’s bathroom door | | 2-component wall plaster – White skim coat | ND | PLM |
| 083118EC-4B | Bldg 3- 1st Floor basement stairwell south | | 2-component wall plaster – White skim coat | ND | PLM |
| 083118EC-4C | Bldg 4 – 2nd Floor Common corridor Adj Elevator C | | 2-component wall plaster over brick– White skim coat | ND | PLM |
| 083118EC-4D | Bldg 4 – 2nd Floor Elevator E Foyer | | 2-component wall plaster – White skim coat | ND | PLM |
| 083118EC-4E | Bldg 4 – Basement stairwell west | | 2-component wall plaster – White skim coat | ND | PLM |
| 083118EC-4F | Bldg 4 – 2nd Floor Elevator E Foyer | | 2-component ceiling plaster – White skim coat | ND | PLM |
| 083118EC- 5A | Bldg 4 – 2nd Floor C-wing Corridor | | White textured ceiling paint | ND | PLM |
| 083118EC- 5B | Bldg 4 – 2nd Floor C-wing Corridor | | White textured ceiling paint | ND | PLM |

| Sample No. | Sample Location | NESHAP Category | Material Type | Asbestos Content | PLM/TEM |
|--------------|--|-----------------|--|------------------|---------|
| 083118EC- 6A | Bldg 3 – 2nd Floor G-wing Men's bathroom | | White textured ceiling paint | ND | PLM |
| 083118EC- 6B | Bldg 3 – 2nd Floor G-wing Men's bathroom | | White textured ceiling paint | ND | PLM |
| 083118EC-7A | Bldg 4 – 2nd Floor C-wing Corridor- | | Grey Single-component ceiling plaster | ND | PLM |
| 083118EC-7B | Bldg 3 – 2nd Floor G-wing Men's bathroom | | Grey Single-component ceiling plaster | ND | PLM |
| 083118EC-7C | Bldg 2 – Basement Women's bathroom, | | Grey Single-component ceiling plaster | ND | PLM |
| 083118EC-8A | Bldg 4 – 1st Floor B-wing Men's bathroom C wall- | | Lt. Yellow textured paint on concrete - wall | ND | PLM |
| 083118EC-8B | Bldg 3 – 1st Floor F-wing bathroom | | Lt. Yellow textured paint on concrete - wall | ND | PLM |
| 083118EC-8C | Bldg 4 – 2nd Floor C-wing Men's bathroom, | | Lt. Yellow textured paint on concrete - wall | ND | PLM |
| 083118EC-9A | Bldg 2 – 1st Floor Kitchen Staff bathroom West wall- | | Grey concrete - Wall | ND | PLM |
| 083118EC-9B | Bldg 2 – Basement Woman's bathroom adj door | | Grey concrete - Wall | ND | PLM |
| 083118EC-9C | Bldg 3 – 1st Floor F-wing bathroom, | | Grey concrete - Wall | ND | PLM |
| 083118EC-9D | Bldg 4 – 2nd Floor C-wing Men's bathroom - | | Grey concrete over brick - Wall | ND | PLM |
| 083118EC-9E | Bldg 4 – 1st Floor B-wing bathroom C-wall | | Grey concrete - Wall | ND | PLM |
| 083118EC-10A | Bldg 3 – 1st Floor F-wing at Bathroom door | | Grey CMU bathroom wall door infill | ND | PLM |
| 083118EC-10B | Bldg 4 – 2nd Floor C-wing at Men's Bathroom door | | Grey CMU bathroom wall door infill | ND | PLM |
| 083118EC-11A | Bldg 3 – 1st Floor F-wing at Bathroom door | | Lt Grey CMU mortar bathroom wall door infill | ND | PLM |
| 083118EC-11B | Bldg 4 – 2nd Floor C-wing at Men's Bathroom door | | Lt Grey CMU mortar bathroom wall door infill | ND | PLM |
| 083118EC-12A | Bldg 2 – 1st Floor staff Bathroom adj elevator | | Dk Grey CMU wall block | ND | PLM |
| 083118EC-12B | Bldg 2 – 1st Floor staff Bathroom adj elevator | | Dk Grey CMU wall block | ND | PLM |
| 083118EC-13A | Bldg 2 – 1st Floor staff Bathroom adj elevator | | Lt Grey CMU wall block mortar | ND | PLM |
| 083118EC-13B | Bldg 2 – 1st Floor staff Bathroom adj elevator | | Lt Grey CMU wall block mortar | ND | PLM |

| Sample No. | Sample Location | NESHAP Category | Material Type | Asbestos Content | PLM/TEM |
|--------------|---|-----------------|--|------------------|---------|
| 083118EC-14A | Bldg 2 – Basement Woman's bathroom foyer | | Tan glazed brick - Wall | ND | PLM |
| 083118EC-14B | Bldg 3 – 1st Floor F-wing corridor | | Tan glazed brick - Wall | ND | PLM |
| 083118EC-14C | Bldg 4 – 2nd Floor C-wing corridor at Men's bathroom | | Tan glazed brick - Wall | ND | PLM |
| 083118EC-15A | Bldg 2 – Basement Woman's bathroom foyer | | Grey Tan glazed brick mortar-Wall | ND | PLM |
| 083118EC-15B | Bldg 3 – 1st Floor F-wing corridor | | Grey Tan glazed brick mortar-Wall | ND | PLM |
| 083118EC-15C | Bldg 4 – 2nd Floor C-wing corridor at Men's bathroom | | Grey Tan glazed brick mortar-Wall | ND | PLM |
| 083118EC-16A | Bldg 2 – Exterior Front Entry porch/deck off of Dining Hall | | Red brick - Wall | ND | PLM |
| 083118EC-16B | Bldg 3 – Exterior 1st Floor East entry column | | Red brick - Wall | ND | PLM |
| 083118EC-16C | Bldg 4 –Exterior 1st Floor A-wing west exit at stairs | | Red brick - Wall | ND | PLM |
| 083118EC-17A | Bldg 2 – Exterior Front Entry porch/deck off of Dining Hall | | Reddish grey Red brick mortar - Wall | ND | PLM |
| 083118EC-17B | Bldg 3 – Exterior 1st Floor East entry column | | Reddish grey Red brick mortar - Wall | ND | PLM |
| 083118EC-17C | Bldg 4 –Exterior 1st Floor A-wing west exit at stairs | | Reddish grey Red brick mortar - Wall | ND | PLM |
| 083118EC-18A | Bldg 2 – Exterior Front Entry porch/deck off of Dining Hall | | Grey concrete floor | ND | PLM |
| 083118EC-18B | Bldg 2 – Exterior Front Entry porch/deck off of Dining Hall | | Grey concrete floor | ND | PLM |
| 083118EC-19A | Bldg 3- F-wing corridor ceiling | | Gypsum wallboard ceiling | ND | PLM |
| 083118EC-19B | Bldg 3- H-wing corridor ceiling | | Gypsum wallboard ceiling | ND | PLM |
| 083118EC-19C | Bldg 3- H-wing corridor ceiling | | Gypsum wallboard ceiling | ND | PLM |
| 083118EC-20A | Bldg 3- F-wing corridor ceiling | | Gypsum wallboard ceiling: Tape and White joint compound | ND | PLM |
| 083118EC-20B | Bldg 3- H-wing corridor ceiling | | Gypsum wallboard ceiling: Tape and White joint compound | ND | PLM |
| 083118EC-20C | Bldg 3- H-wing corridor ceiling | | Gypsum wallboard ceiling: Tape and White joint compound | ND | PLM |
| 083118EC-21A | Bldg 3- F-wing corridor ceiling | | Composite Gypsum wallboard ceiling/Tape and White joint compound | ND | PLM |

| Sample No. | Sample Location | NESHAP Category | Material Type | Asbestos Content | PLM/TEM |
|--------------|---|-----------------|---|------------------|---------|
| 083118EC-21B | Bldg 3- H-wing corridor ceiling | | Composite Gypsum wallboard ceiling/Tape and White joint compound | ND | PLM |
| 083118EC-21C | Bldg 3- H-wing corridor ceiling | | Composite Gypsum wallboard ceiling/Tape and White joint compound | ND | PLM |
| 083118EC-22A | Bldg 2 – 1st Floor Woman's Bathroom ceiling | | 2'x4' suspended ceiling tile – White with perforations and fissures | ND | PLM |
| 083118EC-22B | Bldg 2 – 1st Floor Woman's Bathroom ceiling | | 2'x4' suspended ceiling tile – White with perforations and fissures | ND | PLM |
| 083118EC-22C | Bldg 2 – 2nd Floor Staff Bathroom ceiling adj to elevator | | 2'x4' suspended ceiling tile – White with perforations and fissures | ND | PLM |
| 083118EC-23A | Bldg 2 – 1st floor Kitchen staff bathroom | | Brown wood grain laminate on bathroom divider walls | ND | PLM |
| 083118EC-23B | Bldg 2 – Basement Men's bathroom | | Brown wood grain laminate on bathroom divider walls | ND | PLM |
| 083118EC-23C | Bldg 2 – Basement Men's bathroom | | Brown wood grain laminate on bathroom divider walls | ND | PLM |
| 083118EC-24A | Bldg 2 – 1st floor Kitchen staff bathroom | | Yellow adhesive associated with Brown wood grain laminate on bathroom divider walls | ND | PLM/TEM |
| 083118EC-24B | Bldg 2 – Basement Men's bathroom | | Yellow adhesive associated with Brown wood grain laminate on bathroom divider walls | ND | PLM |
| 083118EC-24C | Bldg 2 – Basement Men's bathroom | | Yellow adhesive associated with Brown wood grain laminate on bathroom divider walls | ND | PLM |
| 083118EC-25A | Bldg 2 – 1st floor B-wing Men's bathroom | | 4"x4" cream glazed wall tile | ND | PLM |
| 083118EC-25B | Bldg 3 – 1st floor F-wing Men's bathroom | | 4"x4" cream glazed wall tile | ND | PLM |
| 083118EC-25C | Bldg 4 – 2nd floor C-wing Men's bathroom | | 4"x4" cream glazed wall tile | ND | PLM |
| 083118EC-26A | Bldg 2 – 1st floor B-wing Men's bathroom | | Tan grout associated with 4"x4" cream glazed wall tile | ND | PLM |
| 083118EC-26B | Bldg 3 – 1st floor F-wing Men's bathroom | | Tan grout associated with 4"x4" cream glazed wall tile | ND | PLM |
| 083118EC-26C | Bldg 4 – 2nd floor C-wing Men's bathroom | | Tan grout associated with 4"x4" cream glazed wall tile | ND | PLM |

| Sample No. | Sample Location | NESHAP Category | Material Type | Asbestos Content | PLM/TEM |
|--------------|--|-----------------|---|------------------|---------|
| 083118EC-27A | Bldg 2 – 1st floor B-wing Men's bathroom | | Grey thin set associated with 4"x4" cream glazed wall tile | ND | PLM |
| 083118EC-27B | Bldg 3 – 1st floor F-wing Men's bathroom | | Grey thin set associated with 4"x4" cream glazed wall tile | ND | PLM |
| 083118EC-27C | Bldg 4 – 2nd floor C-wing Men's bathroom | | Grey thin set associated with 4"x4" cream glazed wall tile | ND | PLM |
| 083118EC-28A | Bldg 2 – 1st floor Kitchen staff bathroom | | 4"x4" Tan speckled glazed wall tile - Old | ND | PLM |
| 083118EC-28B | Bldg 3 – 1st floor E-wing bathroom | | 4"x4" Tan speckled glazed wall tile - Old | ND | PLM |
| 083118EC-28C | Bldg 2 – Basement Women's Bathroom | | 4"x4" Tan speckled glazed wall tile - Old | ND | PLM |
| 083118EC-29A | Bldg 2 – 1st floor Kitchen staff bathroom | | White grout associated with 4"x4" Tan speckled glazed wall tile - Old | ND | PLM |
| 083118EC-29B | Bldg 3 – 1st floor E-wing bathroom | | White grout associated with 4"x4" Tan speckled glazed wall tile - Old | ND | PLM |
| 083118EC-29C | Bldg 2 – Basement Women's Bathroom | | White grout associated with 4"x4" Tan speckled glazed wall tile - Old | ND | PLM |
| 083118EC-30A | Bldg 2 – 1st floor Kitchen staff bathroom | | Grey thin set associated with 4"x4" Tan speckled glazed wall tile - Old | ND | PLM |
| 083118EC-30B | Bldg 3 – 1st floor E-wing bathroom | | Grey thin set associated with 4"x4" Tan speckled glazed wall tile - Old | ND | PLM |
| 083118EC-30C | Bldg 2 – Basement Women's Bathroom | | Grey thin set associated with 4"x4" Tan speckled glazed wall tile - Old | ND | PLM |
| 083118EC-31A | Bldg 2 – 1st floor staff bathroom adj to elevator | | 4"x4" Tan speckled glazed wall tile - Newer | ND | PLM |
| 083118EC-31B | Bldg 2 – 1st floor staff bathroom adj to elevator | | 4"x4" Tan speckled glazed wall tile - Newer | ND | PLM |
| 083118EC-31C | Bldg 2 – 1st floor staff bathroom adj to elevator | | 4"x4" Tan speckled glazed wall tile - Newer | ND | PLM |
| 083118EC-32A | Bldg 2 – 1st floor staff bathroom adj to elevator | | White grout associated with 4"x4" Tan speckled glazed wall tile | ND | PLM |
| 083118EC-32B | Bldg 2 – 1st floor staff bathroom adj to elevator | | White grout associated with 4"x4" Tan speckled glazed wall tile | ND | PLM |

| Sample No. | Sample Location | NESHAP Category | Material Type | Asbestos Content | PLM/TEM |
|---------------------|---|-----------------|---|-------------------------|------------|
| 083118EC-32C | Bldg 2 – 1st floor staff bathroom adj to elevator | | White grout associated with 4"x4" Tan speckled glazed wall tile | ND | PLM |
| 083118EC-33A | Bldg 2 – 1st floor staff bathroom adj to elevator | | Yellow adhesive associated with 4"x4" Tan speckled glazed wall tile | ND | PLM/TEM |
| 083118EC-33B | Bldg 2 – 1st floor staff bathroom adj to elevator | | Yellow adhesive associated with 4"x4" Tan speckled glazed wall tile | ND | PLM |
| 083118EC-33C | Bldg 2 – 1st floor staff bathroom adj to elevator | | Yellow adhesive associated with 4"x4" Tan speckled glazed wall tile | ND | PLM |
| 083118EC-34A | Bldg 2 – 2nd floor Men's bathroom | | 4" Black vinyl cove base | ND | PLM/TEM |
| 083118EC-34B | Bldg 2 – 2nd floor Women's bathroom adj to elevator | | 4" Black vinyl cove base | ND | PLM |
| 083118EC-34C | Bldg 2 – 2nd floor Women's bathroom adj to elevator | | 4" Black vinyl cove base | ND | PLM |
| 083118EC-35A | Bldg 2 – 2nd floor Men's bathroom | | Tan adhesive associated with 4" Black cove base | ND | PLM/TEM |
| 083118EC-35B | Bldg 2 – 2nd floor Women's bathroom adj to elevator | | Tan adhesive associated with 4" Black cove base | ND | PLM |
| 083118EC-35C | Bldg 2 – 2nd floor Women's bathroom adj to elevator | | Tan adhesive associated with 4" Black cove base | ND | PLM |
| 083118EC-36A | Bldg 2 – 2nd Floor Men's Bathroom | | Woodgrain laminate flooring over 12"x12" Tan floor tile | ND | PLM/TEM |
| 083118EC-36B | Bldg 2 – 2nd Floor Men's Bathroom | | Woodgrain laminate flooring over 12"x12" Tan floor tile | ND | PLM |
| 083118EC-36C | Bldg 2 – 2nd Floor Women's Bathroom | | Woodgrain laminate flooring over 12"x12" Tan floor tile | ND | PLM |
| 083118EC-37A | Bldg 2 – 2nd Floor Men's Bathroom | | Yellow adhesive associated with Woodgrain laminate flooring | 0.14% Chrysotile | PLM/TEM |
| 083118EC-37B | Bldg 2 – 2nd Floor Men's Bathroom | | Yellow adhesive associated with Woodgrain laminate flooring | ND | PLM |
| 083118EC-37C | Bldg 2 – 2nd Floor Women's Bathroom | | Yellow adhesive associated with Woodgrain laminate flooring | ND | PLM |
| 083118EC-38A | Bldg 2 – 2nd Floor Men's Bathroom | Cat 1 NF | 12"x12" Tan floor tile over concrete | 5% Chrysotile | PLM |
| 083118EC-38B | Bldg 2 – 2nd Floor Men's Bathroom | Cat 1 NF | 12"x12" Tan floor tile over concrete | NA/Pos Stop | PLM |
| 083118EC-38C | Bldg 2 – 2nd Floor Women's Bathroom | Cat 1 NF | 12"x12" Tan floor tile over concrete | NA/Pos Stop | PLM |

| Sample No. | Sample Location | NESHAP Category | Material Type | Asbestos Content | PLM/TEM |
|--------------|---|-----------------|--|------------------|---------|
| 083118EC-39A | Bldg 2 – 2nd Floor Men's Bathroom | | Black adhesive associated with 12"x12" Tan floor tile | 0.11% Chrysotile | PLM/TEM |
| 083118EC-39B | Bldg 2 – 2nd Floor Men's Bathroom | | Black adhesive associated with 12"x12" Tan floor tile | ND | PLM |
| 083118EC-39C | Bldg 2 – 2nd Floor Women's Bathroom | | Black adhesive associated with 12"x12" Tan floor tile | ND | PLM |
| 083118EC-40A | Building 2 – 3rd floor Bathroom Pipe chase | Friable | Grey pipe insulation with cloth wrap | 15% Chrysotile | PLM |
| 083118EC-40B | Building 2 – Basement Women's Bathroom Pipe chase | Friable | Grey pipe insulation with cloth wrap | NA/Pos Stop | PLM |
| 083118EC-40C | Building 2 – Basement Women's Bathroom Pipe chase | Friable | Grey pipe insulation with cloth wrap | NA/Pos Stop | PLM |
| 083118EC-41A | Building 2 – 3rd floor Bathroom Pipe chase | Friable | Cloth wrap associated with Grey pipe insulation | 20% Chrysotile | PLM |
| 083118EC-41B | Building 2 – Basement Women's Bathroom Pipe chase | Friable | Cloth wrap associated with Grey pipe insulation | NA/Pos Stop | PLM |
| 083118EC-41C | Building 2 – Basement Women's Bathroom Pipe chase | Friable | Cloth wrap associated with Grey pipe insulation | NA/Pos Stop | PLM |
| 083118EC-42A | Bldg 2 – 2nd Floor Women's Bathroom overhead | Friable | Mudded fitting insulation | 60% Chrysotile | PLM |
| 083118EC-42B | Bldg 2 – 2nd Floor Women's Bathroom overhead | Friable | Mudded fitting insulation | NA/Pos Stop | PLM |
| 083118EC-42C | Bldg 2 – 2nd Floor Women's Bathroom overhead | Friable | Mudded fitting insulation | NA/Pos Stop | PLM |
| 083118EC-43A | Bldg 2 – 2nd Floor Women's Bathroom overhead | Friable | White pipe fitting insulation with cloth wrap | 60% Chrysotile | PLM |
| 083118EC-43B | Bldg 2 – 2nd Floor Women's Bathroom overhead | Friable | White pipe fitting insulation with cloth wrap | NA/Pos Stop | PLM |
| 083118EC-43C | Bldg 2 – 2nd Floor Women's Bathroom overhead | Friable | White pipe fitting insulation with cloth wrap | NA/Pos Stop | PLM |
| 083118EC-44A | Bldg 2 – 2nd Floor Women's Bathroom overhead | | Cloth wrap associated with White pipe fitting insulation | <1% Chrysotile | PLM |
| 083118EC-44B | Bldg 2 – 2nd Floor Women's Bathroom overhead | | Cloth wrap associated with White pipe fitting insulation | <1% Chrysotile | PLM |
| 083118EC-44C | Bldg 2 – 2nd Floor Women's Bathroom overhead | | Cloth wrap associated with White pipe fitting insulation | <1% Chrysotile | PLM |

ND = None Detected

Table 2
Summary of Asbestos-Containing Materials Inventory

| Location | Material Type | Asbestos Content | Estimated Total Quantity | Comments |
|---|--|--------------------|--------------------------|--|
| Building 2: 2nd Floor Men's and Woman's Bathrooms | 12" x 12" Tan Floor Tile, Below Wood Grain Laminate Flooring | 5% Chrysotile | 350 SF | Black Adhesive associated with 12"x12" Tan Floor Tile - 0.11% Chrysotile and Yellow Adhesive associated with Wood Grain Laminate Flooring - 0.14% Chrysotile |
| Building 2: Basement and 3rd Floor Bathroom Pipe Chases | Grey Pipe Insulation with Cloth Wrap | 15%-20% Chrysotile | 50 LF | |
| Building 2: 2nd Floor Woman's Bathroom Overhead | Mudded Fitting Insulation | 60% Chrysotile | | |
| Building 2: 2nd Floor Woman's Bathroom Overhead | White Mudded Pipe Fitting Insulation with Cloth Wrap | 60% Chrysotile | 2 EA | |

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix A

Limitations

APPENDIX A

287 West Street

Rocky Hill, Connecticut

1. This inspection report has been prepared for the exclusive use of the Friar Architecture, Inc., (the "Client") and is subject to, and is issued in connection with the terms and conditions of the original Agreement and all of its provisions. Any use or reliance upon information provided in this report, without the specific written authorization of the Client and Fuss & O'Neill shall be at the User's individual risk. This report should not be used as an abatement specification. All quantities of materials identified during this inspection are approximate.
2. Fuss & O'Neill has obtained and relied upon information from multiple sources to form certain conclusions regarding likely environmental issues at and in the vicinity of the subject property in conducting this inspection. Except as otherwise noted, no attempt has been made to verify the accuracy or completeness of such information or verify compliance by any party with federal, state or local laws or regulations.
3. Fuss & O'Neill has obtained and relied upon laboratory analytical results in conducting the inspection. This information was used to form conclusions regarding the types and quantities of ACM that must be managed prior to renovation or demolition activities that may disturb these materials at the Site. Fuss & O'Neill has not performed an independent review of the reliability of this laboratory data.
4. Unless otherwise noted, only suspect hazardous materials associated within or located on the building (aboveground) were included in this inspection. Suspect hazardous materials may exist below the ground surface that were not included in the scope of work of this inspection. EnviroScience cannot guarantee all asbestos or suspect hazardous materials were identified within the areas included in the scope of work. Only visible and accessible areas were included in the scope of work for this inspection.
5. The findings, observations and conclusions presented in this report are limited by the scope of services outlined in our original Agreement (June 29, 2018), which reflects schedule and budgetary constraints imposed by Client. Furthermore, the assessment has been conducted in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made.
6. The conclusions presented in this report are based solely upon information gathered by Fuss & O'Neill to date. Should further environmental or other relevant information be discovered at a later date, the Client should immediately bring the information to the Fuss & O'Neill's attention. Based upon an evaluation and assessment of relevant information, Fuss & O'Neill may modify the letter report and its conclusions.

Appendix B

Fuss & O' Neill Inspector Licenses and Accreditations

1000481 01 AB 0.400 **AUTO T1 0 0564 06040-599246 -C01-P00483-1



ERIC W. COOLEY
FUSS & O'NEIL ENVIRO SCIENCE, LLC
146 HARTFORD ROAD
MANCHESTER CT 06040-5992



Dear ERIC W. COOLEY,

Attached you will find your validated certificate for the coming year. Should you have any questions about your certificate renewal, please do not hesitate to write or call:

Department of Public Health
P.O. Box 340308
M.S.#12MQA
Hartford, CT 06134-0308

(860) 509-7603
oplc.dph@ct.gov
www.ct.gov/dph/license

Sincerely,

RAUL PINO, MD, MPH, COMMISSIONER
DEPARTMENT OF PUBLIC HEALTH

EMPLOYER'S COPY
STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
ERIC W. COOLEY

VALIDATION NO. 03-649218 CERTIFICATE NO. 000279 CURRENT THROUGH 01/31/19

PROFESSION
ASBESTOS CONSULTANT-INSP/MGMT PLANNER

SIGNATURE COMMISSIONER

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

PURSUANT TO THE PROVISIONS OF THE GENERAL STATUTES OF CONNECTICUT

THE INDIVIDUAL NAMED BELOW IS CERTIFIED
BY THIS DEPARTMENT AS A
ASBESTOS CONSULTANT-INSP/MGMT PLANNER

ERIC W. COOLEY

CERTIFICATE NO. 000279
CURRENT THROUGH 01/31/19
VALIDATION NO. 03-649218

SIGNATURE COMMISSIONER

INSTRUCTIONS:

1. Detach and sign each of the cards on this form
2. Display the large card in a prominent place in your office or place of business.
3. The wallet card is for you to carry on your person. If you do not wish to carry the wallet card, place it in a secure place.
4. The employer's copy is for persons who must demonstrate current licensure/certification in order to retain employment or privileges. The employer's card is to be presented to the employer and kept by them as a part of your personnel file. Only one copy of this card can be supplied to you.

WALLET CARD
STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
ERIC W. COOLEY

VALIDATION NO. 03-649218 CERTIFICATE NO. 000279 CURRENT THROUGH 01/31/19

PROFESSION
ASBESTOS CONSULTANT-INSP/MGMT PLANNER

SIGNATURE COMMISSIONER

1000481-00000485-0000001 of 0000001-C01-at1d00101-0564-00483

Certificate of Training

Awarded to

ERIC COOLEY

*For successful completion of an 8 Hour, 1 Day
Asbestos Inspector & Management Planner
Annual Refresher Training
AUGUST 28 & 30, 2018*

This training was approved and given in accordance with
Regulations for Connecticut State Agencies
RCSA 20-440 - 1-9 and RCSA 20-441 and meets the
requirements of the EPA Revised MAP under TSCA Title II of 4/4/94

Presented by

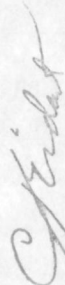
**Mystic Air Quality Consultants, Inc.
1204 North Road, Groton, CT 06340 (800) 247-7746**

Certificate Number: IMPR26958

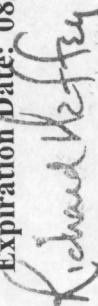
Expiration Date: 08/30/2019

Exam Date: 08/30/2018

Exam Grade: 100



Christopher J. Eident, CIH, CSP, RS



George Williamson, Training Director

Richard Haffey, Training Director

1000482 01 AB 0.400 **AUTO T1 0 0564 06040-599246 -C01-P00484-I



ERIC W COOLEY
FUSS & O'NEIL ENVIRO SCIENCE, LLC
146 HARTFORD ROAD
MANCHESTER CT 06040-5992



Dear ERIC W COOLEY,

Attached you will find your validated certificate for the coming year. Should you have any questions about your certificate renewal, please do not hesitate to write or call:

Department of Public Health
P.O. Box 340308
M.S.#12MQA
Hartford, CT 06134-0308

(860) 509-7603
oplc.dph@ct.gov
www.ct.gov/dph/license

Sincerely,

RAUL PINO, MD, MPH, COMMISSIONER
DEPARTMENT OF PUBLIC HEALTH

EMPLOYER'S COPY

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
ERIC W COOLEY

VALIDATION NO. 03-649219 CERTIFICATE NO. 002195 CURRENT THROUGH 01/31/19

PROFESSION
LEAD INSPECTOR

SIGNATURE COMMISSIONER

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

PURSUANT TO THE PROVISIONS OF THE GENERAL STATUTES OF CONNECTICUT

THE INDIVIDUAL NAMED BELOW IS CERTIFIED
BY THIS DEPARTMENT AS A
LEAD INSPECTOR

ERIC W COOLEY

CERTIFICATE NO.
002195

CURRENT THROUGH
01/31/19

VALIDATION NO.
03-649219

SIGNATURE COMMISSIONER

INSTRUCTIONS:

1. Detach and sign each of the cards on this form
2. Display the large card in a prominent place in your office or place of business.
3. The wallet card is for you to carry on your person. If you do not wish to carry the wallet card, place it in a secure place.
4. The employer's copy is for persons who must demonstrate current licensure/certification in order to retain employment or privileges. The employer's card is to be presented to the employer and kept by them as a part of your personnel file. Only one copy of this card can be supplied to you.

WALLET CARD

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
ERIC W COOLEY

VALIDATION NO. 03-649219 CERTIFICATE NO. 002195 CURRENT THROUGH 01/31/19

PROFESSION
LEAD INSPECTOR

SIGNATURE COMMISSIONER

1000482-00000486-00000001 of 0000001-C01-a1d00101-0564-00484

CERT#: L-500-227

**CHEMSCOPE TRAINING DIVISION
LEAD INSPECTOR REFRESHER
8 HOUR TRAINING CERTIFICATE**

Eric Cooley

146 Hartford Road, Manchester CT

Has attended an 8 hour course on the subject discipline in English on
2/7/2018 & 2/8/2018 and has passed a written examination.

The above individual has successfully completed the above training course approved in accordance with the Department of Public Health Standards established pursuant to Section 20-477 of the Connecticut General Statutes.

Course syllabus includes all required topics of State of Connecticut DPH and EPA.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (U.S.C. 1001 and 15 U.S.C. 2615), I certify that this training complies with all applicable requirements of Title IV of TSCA, 40 CFR part 745 and any other applicable Federal, State or local requirements.

Examination Score: 90%
Exam Date: 2/8/2018
Expiration Date: 2/8/2019


Ronald D. Arena
Training Manager

Chem Scope, Inc.
15 Moulthrop Street
North Haven CT 06473
Phone: 203.865.5605
www.chem-scope.com

1001720 01 AB 0.405 **AUTO T4 0 1264 06238-325726 -C01-P01723-I



BRUCE G GREGOIRE
326 BUNKER HILL RD
COVENTRY CT 06238-3257



Dear BRUCE G GREGOIRE,

Attached you will find your validated certificate for the coming year. Should you have any questions about your certificate renewal, please do not hesitate to write or call:

Department of Public Health
P.O. Box 340308
M.S.#12MQA
Hartford, CT 06134-0308

(860) 509-7603
oplc.dph@ct.gov
www.ct.gov/dph/license

Sincerely,

RAUL PINO, MD, MPH, COMMISSIONER
DEPARTMENT OF PUBLIC HEALTH

EMPLOYER'S COPY

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
BRUCE G GREGOIRE

| | | |
|-----------------------------|---------------------------|-----------------------------|
| VALIDATION NO. 03-690558 | CERTIFICATE NO. 000882 | CURRENT THROUGH 07/31/19 |
|-----------------------------|---------------------------|-----------------------------|

PROFESSION
ASBESTOS CONSULTANT-INSPECTOR

SIGNATURE

COMMISSIONER

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

PURSUANT TO THE PROVISIONS OF THE GENERAL STATUTES OF CONNECTICUT
THE INDIVIDUAL NAMED BELOW IS CERTIFIED
BY THIS DEPARTMENT AS A
ASBESTOS CONSULTANT-INSPECTOR

| | |
|------------------|-----------------------------|
| BRUCE G GREGOIRE | CERTIFICATE NO. 000882 |
| | CURRENT THROUGH 07/31/19 |
| | VALIDATION NO. 03-690558 |

SIGNATURE

COMMISSIONER

INSTRUCTIONS:

1. Detach and sign each of the cards on this form
2. Display the large card in a prominent place in your office or place of business.
3. The wallet card is for you to carry on your person. If you do not wish to carry the wallet card, place it in a secure place.
4. The employer's copy is for persons who must demonstrate current licensure/certification in order to retain employment or privileges. The employer's card is to be presented to the employer and kept by them as a part of your personnel file. Only one copy of this card can be supplied to you.

WALLET CARD

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
BRUCE G GREGOIRE

| | | |
|-----------------------------|---------------------------|-----------------------------|
| VALIDATION NO. 03-690558 | CERTIFICATE NO. 000882 | CURRENT THROUGH 07/31/19 |
|-----------------------------|---------------------------|-----------------------------|

PROFESSION
ASBESTOS CONSULTANT-INSPECTOR

SIGNATURE

COMMISSIONER

1001720-0001727-00000001 of 00000001-C01-a1d00101-1264-01723

Certificate of Training

Awarded to

BRUCE GREGOIRE

*For successful completion of a 4 Hour, 1/2 Day
Asbestos Building Inspector
Annual Refresher Training
AUGUST 23, 2018*

This training was approved and given in accordance with the
Regulations for Connecticut State Agencies
RCSA 20 - 440 - 1-9 and RCSA 20 - 441 and meets the
requirements of the EPA Revised MAP under TSCA Title II of 4/4/94.

Presented by


Mystic Air Quality Consultants, Inc.

1204 North Road, Groton, CT 06340 (800) 247-7746

Certificate Number: ABIRF26926

Exam Grade: 100

Expiration Date: 08/23/2019



Christopher J. Eident, CIH, CSP, RS



George Williamson, Training Director

Richard Haffey, Training Director



BRUCE G GREGOIRE
326 BUNKER HILL RD
COVENTRY CT 06238-3257



Dear BRUCE G GREGOIRE,

Attached you will find your validated certificate for the coming year. Should you have any questions about your certificate renewal, please do not hesitate to write or call:

Department of Public Health
P.O. Box 340308
M.S.#12MQA
Hartford, CT 06134-0308

(860) 509-7603
opl.c.dph@ct.gov
www.ct.gov/dph/license

Sincerely,

RAUL PINO, MD, MPH, COMMISSIONER
DEPARTMENT OF PUBLIC HEALTH

EMPLOYER'S COPY

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
BRUCE G GREGOIRE

| | | |
|------------------------------|---------------------------|-----------------------------|
| VALIDATION NO. 03-691489 | CERTIFICATE NO. 002229 | CURRENT THROUGH 07/31/19 |
| PROFESSION LEAD INSPECTOR | | |

SIGNATURE COMMISSIONER

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

PURSUANT TO THE PROVISIONS OF THE GENERAL STATUTES OF CONNECTICUT

THE INDIVIDUAL NAMED BELOW IS CERTIFIED
BY THIS DEPARTMENT AS A
LEAD INSPECTOR

| | |
|------------------|-----------------------------|
| BRUCE G GREGOIRE | CERTIFICATE NO. 002229 |
| | CURRENT THROUGH 07/31/19 |
| | VALIDATION NO. 03-691489 |

SIGNATURE COMMISSIONER

INSTRUCTIONS:

1. Detach and sign each of the cards on this form
2. Display the large card in a prominent place in your office or place of business.
3. The wallet card is for you to carry on your person. If you do not wish to carry the wallet card, place it in a secure place.
4. The employer's copy is for persons who must demonstrate current licensure/certification in order to retain employment or privileges. The employer's card is to be presented to the employer and kept by them as a part of your personnel file. Only one copy of this card can be supplied to you.

WALLET CARD

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
BRUCE G GREGOIRE

| | | |
|------------------------------|---------------------------|-----------------------------|
| VALIDATION NO. 03-691489 | CERTIFICATE NO. 002229 | CURRENT THROUGH 07/31/19 |
| PROFESSION LEAD INSPECTOR | | |

SIGNATURE COMMISSIONER

1001723-0001730-00000001 of 00000001-C01-aid00101-1264-01726

CERTIFICATE OF ACHIEVEMENT

This certifies that

Bruce Gregoire

326 Bunker Hill Road, Coventry, CT 06238

has successfully completed the
EPA Model Lead Inspector Technician Refresher Training
745.225

conducted by
ATC Group Services LLC
73 William Franks Drive
West Springfield, MA 01089
(413) 781-0070



Gregory Morsch

Regional Training Director: Gregory Morsch
ELIR-385

Certificate Number

Neal S. Freuden

Principal Instructor: Neal Freuden
June 5, 2018

Date of Course

June 5, 2018

Exam Date

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix C

Asbestos Laboratory Report and Chain of Custody Form



FUSS & O'NEILL

041826855

Fuss & O'Neill EMSL Customer No. ENVI54

www.fando.com

146 Hartford Road, Manchester, CT 06040

Phone (860) 646-2469

Page 1 of 6

ASBESTOS BULK SAMPLE CHAIN OF CUSTODY FORM

Project Name: Connecticut Department of Veteran Affairs Project No. 20180708.A10 Date: 09/04/2018
 Site Address: 287 West Street, Rocky Hill, CT Location: Bldgs 2, 3, & 4 Project Manager: K. Pane

| Sample ID | Sample Location | Type of Material |
|--------------|---|--|
| 083118EC-1A | Bldg 2 – 2 nd Floor Men's bathroom, Adj Stair A- | 2-component wall plaster over CMU – Grey rough coat |
| 083118EC-1B | Bldg 2 – 2 nd Floor Women's bathroom, Adj Stair A- | 2-component wall plaster over glazed brick – Grey rough coat |
| 083118EC-1C | Bldg 2 – 2 nd Floor Men's bathroom, West wall | 2-component wall plaster over CMU – Grey rough coat |
| 083118EC-2A | Bldg 2 – 2 nd Floor Men's bathroom, Adj Stair A- | 2-component wall plaster over CMU – White skim coat |
| 083118EC-2B | Bldg 2 – 2 nd Floor Women's bathroom, Adj Stair A- | 2-component wall plaster over glazed brick – White skim coat |
| 083118EC-2C | Bldg 2 – 2 nd Floor Men's bathroom, West wall | 2-component wall plaster over CMU – White skim coat |
| 083118EC-3A | Bldg 2 – Basement Corridor Adj Men's bathroom door | 2-component wall plaster – Grey rough coat |
| 083118EC-3B | Bldg 3- 1 st Floor basement stairwell south | 2-component wall plaster – Grey rough coat |
| 083118EC-3C | Bldg 4 – 2 nd Floor Common corridor Adj Elevator C | 2-component wall plaster over brick – Grey rough coat |
| 083118EC-3D | Bldg 4 – 2 nd Floor Elevator E Foyer | 2-component wall plaster – Grey rough coat |
| 083118EC-3E | Bldg 4 – Basement stairwell west | 2-component wall plaster – Grey rough coat |
| 083118EC-3F | Bldg 4 – 2 nd Floor Elevator E Foyer | 2-component ceiling plaster – Grey rough coat |
| 083118EC-4A | Bldg 2 – Basement Corridor Adj Men's bathroom door | 2-component wall plaster – White skim coat |
| 083118EC-4B | Bldg 3- 1 st Floor basement stairwell south | 2-component wall plaster – White skim coat |
| 083118EC-4C | Bldg 4 – 2 nd Floor Common corridor Adj Elevator C | 2-component wall plaster over brick – White skim coat |
| 083118EC-4D | Bldg 4 – 2 nd Floor Elevator E Foyer | 2-component wall plaster – White skim coat |
| 083118EC-4E | Bldg 4 – Basement stairwell west | 2-component wall plaster – White skim coat |
| 083118EC-4F | Bldg 4 – 2 nd Floor Elevator E Foyer | 2-component ceiling plaster – White skim coat |
| 083118EC- 5A | Bldg 4 – 2 nd Floor C-wing Corridor | White textured ceiling paint |
| 083118EC- 5B | Bldg 4 – 2 nd Floor C-wing Corridor | White textured ceiling paint |
| 083118EC- 6A | Bldg 3 – 2 nd Floor G-wing Men's bathroom | White textured ceiling paint |
| 083118EC- 6B | Bldg 3 – 2 nd Floor G-wing Men's bathroom | White textured ceiling paint |
| 083118EC-7A | Bldg 4 – 2 nd Floor C-wing Corridor- | Grey Single-component ceiling plaster |
| 083118EC-7B | Bldg 3 – 2 nd Floor G-wing Men's bathroom | Grey Single-component ceiling plaster |

RECEIVED
 EMSL
 CHAMBERS, N.J.
 2018 SEP 15 AM 11:38


FUSS & O'NEILL

041826855

Fuss & O'Neill EMSL Customer No. ENV154

www.fando.com

146 Hartford Road, Manchester, CT 06040

Phone (860) 646-2469

Page 2 of 6

| Sample ID | Sample Location | Type of Material |
|--------------|--|--|
| 083118EC-7C | Bldg 2 – Basement Women's bathroom, | Grey Single-component ceiling plaster |
| 083118EC-8A | Bldg 4 – 1st Floor B-wing Men's bathroom C wall- | Lt. Yellow textured paint on concrete - wall |
| 083118EC-8B | Bldg 3 – 1st Floor F-wing bathroom | Lt. Yellow textured paint on concrete - wall |
| 083118EC-8C | Bldg 4 – 2nd Floor C-wing Men's bathroom, | Lt. Yellow textured paint on concrete - wall |
| 083118EC-9A | Bldg 2 – 1st Floor Kitchen Staff bathroom West wall- | Grey concrete - Wall |
| 083118EC-9B | Bldg 2 – Basement Woman's bathroom adj door | Grey concrete - Wall |
| 083118EC-9C | Bldg 3 – 1st Floor F-wing bathroom, | Grey concrete - Wall |
| 083118EC-9D | Bldg 4 – 2nd Floor C-wing Men's bathroom | Grey concrete over brick - Wall |
| 083118EC-9E | Bldg 4 – 1st Floor B-wing bathroom C-wall | Grey concrete - Wall |
| 083118EC-10A | Bldg 3 – 1st Floor F-wing at Bathroom door | Grey CMU bathroom wall door infill |
| 083118EC-10B | Bldg 4 – 2nd Floor C-wing at Men's Bathroom door | Grey CMU bathroom wall door infill |
| 083118EC-11A | Bldg 3 – 1st Floor F-wing at Bathroom door | Lt Grey CMU mortar bathroom wall door infill |
| 083118EC-11B | Bldg 4 – 2nd Floor C-wing at Men's Bathroom door | Lt Grey CMU mortar bathroom wall door infill |
| 083118EC-12A | Bldg 2 – 1st Floor staff Bathroom adj elevator | Dk Grey CMU wall block |
| 083118EC-12B | Bldg 2 – 1st Floor staff Bathroom adj elevator | Dk Grey CMU wall block |
| 083118EC-13A | Bldg 2 – 1st Floor staff Bathroom adj elevator | Lt Grey CMU wall block mortar |
| 083118EC-13B | Bldg 2 – 1st Floor staff Bathroom adj elevator | Lt Grey CMU wall block mortar |
| 083118EC-14A | Bldg 2 – Basement Woman's bathroom foyer | Tan glazed brick - Wall |
| 083118EC-14B | Bldg 3 – 1st Floor F-wing corridor | Tan glazed brick - Wall |
| 083118EC-14C | Bldg 4 – 2nd Floor C-wing corridor at Men's bathroom | Tan glazed brick - Wall |
| 083118EC-15A | Bldg 2 – Basement Woman's bathroom foyer | Grey Tan glazed brick mortar- Wall |
| 083118EC-15B | Bldg 3 – 1st Floor F-wing corridor | Grey Tan glazed brick mortar- Wall |
| 083118EC-15C | Bldg 4 – 2nd Floor C-wing corridor at Men's bathroom | Grey Tan glazed brick mortar- Wall |
| 083118EC-16A | Bldg 2 – Exterior Front Entry porch/deck off of Dining Hall | Red brick - Wall |

 RECEIVED
 EMSL
 CINCINNATI, OH, N.J.
 2018 SEP 15 AM 11:39



FUSS & O'NEILL

041826855

Fuss & O'Neill EMSL Customer No. ENVI54

www.fando.com

146 Hartford Road, Manchester, CT 06040

Phone (860) 646-2469

Page 3 of 6

| Sample ID | Sample Location | Type of Material |
|---|---|---|
| 083118EC-16B | Bldg 3 – Exterior 1 st Floor East entry column | Red brick - Wall |
| 083118EC-16C | Bldg 4 –Exterior 1 st Floor A-wing west exit at stairs | Red brick - Wall |
| 083118EC-17A | Bldg 2 – Exterior Front Entry porch/deck off of Dining Hall | Reddish grey Red brick mortar - Wall |
| 083118EC-17B | Bldg 3 – Exterior 1 st Floor East entry column | Reddish grey Red brick mortar - Wall |
| 083118EC-17C | Bldg 4 –Exterior 1 st Floor A-wing west exit at stairs | Reddish grey Red brick mortar - Wall |
| 083118EC-18A | Bldg 2 – Exterior Front Entry porch/deck off of Dining Hall | Grey concrete floor |
| 083118EC-18B | Bldg 2 – Exterior Front Entry porch/deck off of Dining Hall | Grey concrete floor |
| 083118EC-19A | Bldg 3- F-wing corridor ceiling | Gypsum wallboard ceiling |
| 083118EC-19B | Bldg 3- H-wing corridor ceiling | Gypsum wallboard ceiling |
| 083118EC-19C | Bldg 3- H-wing corridor ceiling | Gypsum wallboard ceiling |
| 083118EC-20A | Bldg 3- F-wing corridor ceiling | Gypsum wallboard ceiling: Tape and White joint compound |
| 083118EC-20B | Bldg 3- H-wing corridor ceiling | Gypsum wallboard ceiling: Tape and White joint compound |
| 083118EC-20C | Bldg 3- H-wing corridor ceiling | Gypsum wallboard ceiling: Tape and White joint compound |
| Note 1: If sample 083118EC- 20A are \geq1% Asbestos, Do Not Analyze sample 083118EC-21A | | |
| 083118EC-21A (Note 1) | Bldg 3- F-wing corridor ceiling | Composite Gypsum wallboard ceiling/Tape and White joint compound |
| Note 2: If sample 083118EC- 20B are \geq1% Asbestos, Do Not Analyze sample 083118EC-21B | | |
| 083118EC-21B (Note 2) | Bldg 3- H-wing corridor ceiling | Composite Gypsum wallboard ceiling/Tape and White joint compound |
| Note 3: If sample 083118EC- 20C are \geq1% Asbestos, Do Not Analyze sample 083118EC-21C | | |
| 083118EC-21C (Note 3) | Bldg 3- H-wing corridor ceiling | Composite Gypsum wallboard ceiling/Tape and White joint compound |
| 083118EC-22A | Bldg 2 – 1 st Floor Woman's Bathroom ceiling | 2'x4' suspended ceiling tile – White with perforations and fissures |
| 083118EC-22B | Bldg 2 – 1 st Floor Woman's Bathroom ceiling | 2'x4' suspended ceiling tile – White with perforations and fissures |
| 083118EC-22C | Bldg 2 – 2nd Floor Staff Bathroom ceiling adj to elevator | 2'x4' suspended ceiling tile – White with perforations and fissures |
| 083118EC-23A | Bldg 2 – 1 st floor Kirchen staff bathroom | Brown wood grain laminate on bathroom divider walls |
| 083118EC-23B | Bldg 2 – Basement Men's bathroom | Brown wood grain laminate on bathroom divider walls |

**FUSS & O'NEILL**

041826855

Fuss & O'Neill EMSL Customer No. ENV154

www.fando.com

146 Hartford Road, Manchester, CT 06040

Phone (860) 646-2469

Page 4 of 6

| Sample ID | Sample Location | Type of Material |
|--------------|---|---|
| 083118EC-23C | Bldg 2 – Basement Men's bathroom | Brown wood grain laminate on bathroom divider walls |
| 083118EC-24A | Bldg 2 – 1 st floor Kitchen staff bathroom | Yellow adhesive associated w/ Brown wood grain laminate on bathroom divider walls |
| 083118EC-24B | Bldg 2 – Basement Men's bathroom | Yellow adhesive associated w/ Brown wood grain laminate on bathroom divider walls |
| 083118EC-24C | Bldg 2 – Basement Men's bathroom | Yellow adhesive associated w/ Brown wood grain laminate on bathroom divider walls |
| 083118EC-25A | Bldg 2 – 1 st floor B-wing Men's bathroom | 4"x4" cream glazed wall tile |
| 083118EC-25B | Bldg 3 – 1 st floor F-wing Men's bathroom | 4"x4" cream glazed wall tile |
| 083118EC-25C | Bldg 4 – 2 nd floor C-wing Men's bathroom | 4"x4" cream glazed wall tile |
| 083118EC-26A | Bldg 2 – 1 st floor B-wing Men's bathroom | Tan grout associated w/ 4"x4" cream glazed wall tile |
| 083118EC-26B | Bldg 3 – 1 st floor F-wing Men's bathroom | Tan grout associated w/ 4"x4" cream glazed wall tile |
| 083118EC-26C | Bldg 4 – 2 nd floor C-wing Men's bathroom | Tan grout associated w/ 4"x4" cream glazed wall tile |
| 083118EC-27A | Bldg 2 – 1 st floor B-wing Men's bathroom | Grey thin set associated w/ 4"x4" cream glazed wall tile |
| 083118EC-27B | Bldg 3 – 1 st floor F-wing Men's bathroom | Grey thin set associated w/ 4"x4" cream glazed wall tile |
| 083118EC-27C | Bldg 4 – 2 nd floor C-wing Men's bathroom | Grey thin set associated w/ 4"x4" cream glazed wall tile |
| 083118EC-28A | Bldg 2 – 1 st floor Kitchen staff bathroom | 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-28B | Bldg 3 – 1 st floor E-wing bathroom | 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-28C | Bldg 2 – Basement Women's Bathroom | 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-29A | Bldg 2 – 1 st floor Kitchen staff bathroom | White grout associated w/ 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-29B | Bldg 3 – 1 st floor E-wing bathroom | White grout associated w/ 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-29C | Bldg 2 – Basement Women's Bathroom | White grout associated w/ 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-30A | Bldg 2 – 1 st floor Kitchen staff bathroom | Grey thin set associated w/ 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-30B | Bldg 3 – 1 st floor E-wing bathroom | Grey thin set associated w/ 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-30C | Bldg 2 – Basement Women's Bathroom | Grey thin set associated w/ 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-31A | Bldg 2 – 1 st floor staff bathroom adj to elevator | 4"x4" Tan speckled glazed wall tile - Newer |
| 083118EC-31B | Bldg 2 – 1 st floor staff bathroom adj to elevator | 4"x4" Tan speckled glazed wall tile - Newer |
| 083118EC-31C | Bldg 2 – 1 st floor staff bathroom adj to elevator | 4"x4" Tan speckled glazed wall tile - Newer |
| 083118EC-32A | Bldg 2 – 1 st floor staff bathroom adj to elevator | White grout associated w/ 4"x4" Tan speckled glazed wall tile |
| 083118EC-32B | Bldg 2 – 1 st floor staff bathroom adj to elevator | White grout associated w/ 4"x4" Tan speckled glazed wall tile |


FUSS & O'NEILL

Fuss & O'Neill EMSL Customer No. ENVI54

www.fando.com

041826855

146 Hartford Road, Manchester, CT 06040

Phone (860) 646-2469

Page 5 of 6

| Sample ID | Sample Location | Type of Material |
|----------------|---|---|
| 083118EC-32C | Bldg 2 – 1 st floor staff bathroom adj to elevator | White grout associated w/ 4"x4" Tan speckled glazed wall tile |
| 083118EC-33A | Bldg 2 – 1 st floor staff bathroom adj to elevator | Yellow adhesive associated w/ 4"x4" Tan speckled glazed wall tile |
| 083118EC-33B | Bldg 2 – 1 st floor staff bathroom adj to elevator | Yellow adhesive associated w/ 4"x4" Tan speckled glazed wall tile |
| 083118EC-33C | Bldg 2 – 1 st floor staff bathroom adj to elevator | Yellow adhesive associated w/ 4"x4" Tan speckled glazed wall tile |
| 083118EC-34A | Bldg 2 – 2 nd floor Men's bathroom | 4" Black vinyl cove base |
| 083118EC-34B | Bldg 2 – 2 nd floor Women's bathroom adj to elevator | 4" Black vinyl cove base |
| 083118EC-34C | Bldg 2 – 2 nd floor Women's bathroom adj to elevator | 4" Black vinyl cove base |
| 083118EC-35A | Bldg 2 – 2 nd floor Men's bathroom | Tan adhesive associated w/ 4" Black cove base |
| 083118EC-35B | Bldg 2 – 2 nd floor Women's bathroom adj to elevator | Tan adhesive associated w/ 4" Black cove base |
| 083118EC-35C | Bldg 2 – 2 nd floor Women's bathroom adj to elevator | Tan adhesive associated w/ 4" Black cove base |
| 083118EC-36A | Bldg 2 – 2 nd Floor Men's Bathroom | Woodgrain laminate flooring over 12"x12" Tan floor tile |
| 083118EC-36B | Bldg 2 – 2 nd Floor Men's Bathroom | Woodgrain laminate flooring over 12"x12" Tan floor tile |
| 083118EC-36C | Bldg 2 – 2 nd Floor Women's Bathroom | Woodgrain laminate flooring over 12"x12" Tan floor tile |
| 083118EC-37A | Bldg 2 – 2 nd Floor Men's Bathroom | Yellow adhesive associated w/Woodgrain laminate flooring |
| 083118EC-37B | Bldg 2 – 2 nd Floor Men's Bathroom | Yellow adhesive associated w/Woodgrain laminate flooring |
| 083118EC-37C | Bldg 2 – 2 nd Floor Women's Bathroom | Yellow adhesive associated w/Woodgrain laminate flooring |
| 083118EC-38A | Bldg 2 – 2 nd Floor Men's Bathroom | 12"x12" Tan floor tile over concrete |
| 083118EC-38B | Bldg 2 – 2 nd Floor Men's Bathroom | 12"x12" Tan floor tile over concrete |
| 083118EC-38C | Bldg 2 – 2 nd Floor Women's Bathroom | 12"x12" Tan floor tile over concrete |
| 083118EC-39A | Bldg 2 – 2 nd Floor Men's Bathroom | Black adhesive associated w/12"x12" Tan floor tile |
| 083118EC-39B | Bldg 2 – 2 nd Floor Men's Bathroom | Black adhesive associated w/12"x12" Tan floor tile |
| 083118EC-39C | Bldg 2 – 2 nd Floor Women's Bathroom | Black adhesive associated w/12"x12" Tan floor tile |
| 083118EC-40A | Building 2 – 3 rd floor Bathroom Pipe chase | Grey pipe insulation w/ cloth wrap |
| 083118EC-40B | Building 2 – Basement Women's Bathroom Pipe chase | Grey pipe insulation w/ cloth wrap |
| 083118EC-40C | Building 2 – Basement Women's Bathroom Pipe chase | Grey pipe insulation w/ cloth wrap |
| 083118EC-41A * | Building 2 – 3 rd floor Bathroom Pipe chase | Cloth wrap associated w/Grey pipe insulation |
| 083118EC-41B * | Building 2 – Basement Women's Bathroom Pipe chase | Cloth wrap associated w/Grey pipe insulation |



FUSS & O'NEILL

041826855

Fuss & O'Neill EMSL Customer No. ENVI54

www.fando.com

146 Hartford Road, Manchester, CT 06040

Phone (860) 646-2469

Page 6 of 6

| Sample ID | Sample Location | Type of Material |
|--|---|--|
| 083118EC-41C * | Building 2 - Basement Women's Bathroom Pipe chase | Cloth wrap associated w/Grey pipe insulation |
| Do not analyze samples -41 A-C if -40 A-C contain >1% Asbestos | | |
| 083118EC-42A | Bldg 2 - 2 nd Floor Women's Bathroom overhead | Mudded fitting insulation |
| 083118EC-42B | Bldg 2 - 2 nd Floor Women's Bathroom overhead | Mudded fitting insulation |
| 083118EC-42C | Bldg 2 - 2 nd Floor Women's Bathroom overhead | Mudded fitting insulation |
| 083118EC-43A | Bldg 2 - 2 nd Floor Women's Bathroom overhead | White pipe fitting insulation w/ cloth wrap |
| 083118EC-43B | Bldg 2 - 2 nd Floor Women's Bathroom overhead | White pipe fitting insulation w/ cloth wrap |
| 083118EC-43C | Bldg 2 - 2 nd Floor Women's Bathroom overhead | White pipe fitting insulation w/ cloth wrap |
| 083118EC-44A | Bldg 2 - 2 nd Floor Women's Bathroom overhead | Cloth wrap associated w/ White pipe fitting insulation |
| 083118EC-44B | Bldg 2 - 2 nd Floor Women's Bathroom overhead | Cloth wrap associated w/ White pipe fitting insulation |
| 083118EC-44C | Bldg 2 - 2 nd Floor Women's Bathroom overhead | Cloth wrap associated w/ White pipe fitting insulation |

RECEIVED
EMSL
DINH AMHSON, M.D.
ANALYSIS UNIT
SEP 5 2018

Analysis Method: PLM TEM Other _____ Turnaround Time: _____ 72 hrs

Based on the turnaround time indicated above, analyses are due to Fuss & O'Neill on or before this date: 9/10/18 Please call Fuss & O'Neill if analyses will not be completed for requested t/a/t at (860) 646-2469.

FAX Results to: 888-838-1160 Email Results to: K. Pane @fando.com **Do Not Mail Hard Copy Report**
Total # of Samples: 133

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do Not Point Count. If NOB group sample results are 0% - < 1% by PLM, analyze only "A" group sample above by TEM NOB, per group, unless you are told otherwise.

Samples collected by: ECoolley/BGgreoire Date: 8/31/18 Time: _____

Samples Sent by: BGgreoire Date: 9/4/18 Time: 1600

Samples Received by: [Signature] Date: 9/5/18 Time: 9:30am

Shipped To: EMSL Other _____

Method of Shipment: FedEx Lab Drop Off Other _____

133RH



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Attn: Kathleen Pane Phone: (860) 646-2469
 Fuss & O'Neill EnviroScience, LLC Fax: (888) 838-1160
 146 Hartford Road Collected: 8/31/2018
 Manchester, CT 06040 Received: 9/05/2018
 Analyzed: 9/12/2018

Proj: Connecticut Department of Veteran Affairs / 20180708.A10 / 287 West Street, Rocky Hill, CT / Bldgs 2,3 & 4

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

| | | | | | | |
|----------------------------|--|--------------|---------------------|--------------------|-----------------------|----------------|
| Client Sample ID: | 083118EC-1A | | | | Lab Sample ID: | 041826855-0001 |
| Sample Description: | Bldg 2 - 2nd Floor Men's Bathroom adj, Stair A/2-component Wall Plaster over CMU - Grey Rough Coat | | | | | |
| | Analyzed | | Non-Asbestos | | | |
| TEST | Date | Color | Fibrous | Non-Fibrous | Asbestos | Comment |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |
| Client Sample ID: | 083118EC-1B | | | | Lab Sample ID: | 041826855-0002 |
| Sample Description: | Bldg 2 - 2nd Floor Women's Bathroom adj, Stair A/2-component Wall Plaster over Glazed Brick - Grey Rough Coat | | | | | |
| | Analyzed | | Non-Asbestos | | | |
| TEST | Date | Color | Fibrous | Non-Fibrous | Asbestos | Comment |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |
| Client Sample ID: | 083118EC-1C | | | | Lab Sample ID: | 041826855-0003 |
| Sample Description: | Bldg 2 - 2nd Floor Men's Bathroom, West Wall/2-component Wall Plaster over CMU - Grey Rough Coat | | | | | |
| | Analyzed | | Non-Asbestos | | | |
| TEST | Date | Color | Fibrous | Non-Fibrous | Asbestos | Comment |
| PLM | 9/08/2018 | Gray | 3% | 97% | None Detected | |
| Client Sample ID: | 083118EC-2A | | | | Lab Sample ID: | 041826855-0004 |
| Sample Description: | Bldg 2 - 2nd Floor Men's Bathroom, adj. Stair A/2-component Wall Plaster over CMU - White Skim Coat | | | | | |
| | Analyzed | | Non-Asbestos | | | |
| TEST | Date | Color | Fibrous | Non-Fibrous | Asbestos | Comment |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |
| Client Sample ID: | 083118EC-2B | | | | Lab Sample ID: | 041826855-0005 |
| Sample Description: | Bldg 2 - 2nd Floor Women's Bathroom, adj. Stair A/2-component Wall Plaster over Glazed Brick - White Skim Coat | | | | | |
| | Analyzed | | Non-Asbestos | | | |
| TEST | Date | Color | Fibrous | Non-Fibrous | Asbestos | Comment |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |
| Client Sample ID: | 083118EC-2C | | | | Lab Sample ID: | 041826855-0006 |
| Sample Description: | Bldg 2 - 2nd Floor Women's Bathroom, West Wall/2-component Wall Plaster over CMU - White Skim Coat | | | | | |
| | Analyzed | | Non-Asbestos | | | |
| TEST | Date | Color | Fibrous | Non-Fibrous | Asbestos | Comment |
| PLM | 9/08/2018 | White | 0% | 100% | None Detected | |
| Client Sample ID: | 083118EC-3A | | | | Lab Sample ID: | 041826855-0007 |
| Sample Description: | Bldg 2 - Basement Corridor adj. Men's Bathroom Door/2-component Wall Plaster - Grey Rough Coat | | | | | |
| | Analyzed | | Non-Asbestos | | | |
| TEST | Date | Color | Fibrous | Non-Fibrous | Asbestos | Comment |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-3B **Lab Sample ID:** 041826855-0008

Sample Description: Bldg 3 - 1st Floor Basement Stairwell South/2-component Wall Plaster - Grey Rough Coat

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-3C **Lab Sample ID:** 041826855-0009

Sample Description: Bldg 4 - 2nd Floor Common Corridor Adj. Elevator C/2-component Wall Plaster over Brick - Grey Rough Coat

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-3D **Lab Sample ID:** 041826855-0010

Sample Description: Bldg 4 - 2nd Floor Elevator E Foyer/2-component Wall Plaster - Grey Rough Coat

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-3E **Lab Sample ID:** 041826855-0011

Sample Description: Bldg 4 - Basement Stairwell West/2-component Wall Plaster - Grey Rough Coat

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-3F **Lab Sample ID:** 041826855-0012

Sample Description: Bldg 4 - 2nd Floor Elevator E Foyer/2-component Ceiling Plaster - Grey Rough Coat

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Brown | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-4A **Lab Sample ID:** 041826855-0013

Sample Description: Bldg 2 - Basement Corridor adj. Men's Bathroom Door/2-component Wall Plaster - White Skim Coat

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-4B **Lab Sample ID:** 041826855-0014

Sample Description: Bldg 3 - 1st Floor Basement Stairwell South/2-component Wall Plaster - White Skim Coat

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-4C **Lab Sample ID:** 041826855-0015

Sample Description: Bldg 4 - 2nd Floor Common Corridor adj. Elevator C/2-component Wall Plaster over Brick - White Skim Coat

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | White | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-4D **Lab Sample ID:** 041826855-0016

Sample Description: Bldg 4 - 2nd Floor Elevator E Foyer/2-component Wall Plaster - White Skim Coat

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-4E **Lab Sample ID:** 041826855-0017

Sample Description: Bldg 4 - Basement Stairwell West/2-component Wall Plaster - White Skim Coat

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-4F **Lab Sample ID:** 041826855-0018

Sample Description: Bldg 4 - 2nd Floor Elevator E Foyer/2-component Ceiling Plaster - White Skim Coat

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-5A **Lab Sample ID:** 041826855-0019

Sample Description: Bldg 4 - 2nd Floor C-Wing Corridor/White Textured Ceiling Paint

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-5B **Lab Sample ID:** 041826855-0020

Sample Description: Bldg 4 - 2nd Floor C-Wing Corridor/White Textured Ceiling Paint

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-6A **Lab Sample ID:** 041826855-0021

Sample Description: Bldg 3 - 2nd Floor G-Wing Men's Bathroom/White Textured Ceiling Paint

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-6B **Lab Sample ID:** 041826855-0022

Sample Description: Bldg 3 - 2nd Floor G-Wing Men's Bathroom/White Textured Ceiling Paint

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-7A **Lab Sample ID:** 041826855-0023

Sample Description: Bldg 4 - 2nd Floor C-Wing Corridor/Grey Single Component Ceiling Plaster

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-7B **Lab Sample ID:** 041826855-0024

Sample Description: Bldg 3 - 2nd Floor G-Wing Men's Bathroom/Grey Single Component Ceiling Plaster

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-7C **Lab Sample ID:** 041826855-0025

Sample Description: Bldg 2 - Basement Women's Bathroom/Grey Single Component Ceiling Plaster

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-8A **Lab Sample ID:** 041826855-0026

Sample Description: Bldg 4 - 1st Floor B-Wing Men's Bathroom C Wall/Lt. Yellow Textured Paint on Concrete - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|--------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Yellow | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-8B **Lab Sample ID:** 041826855-0027

Sample Description: Bldg 3 - 1st Floor F-Wing Bathroom/Lt. Yellow Textured Paint on Concrete - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|--------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Yellow | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-8C **Lab Sample ID:** 041826855-0028

Sample Description: Bldg 4 - 2nd Floor C-Wing Men's Bathroom/Lt. Yellow Textured Paint on Concrete - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|--------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Yellow | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-9A **Lab Sample ID:** 041826855-0029

Sample Description: Bldg 2 - 1st Floor Kitchen Staff Bathroom West Wall/Grey Concrete - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-9B **Lab Sample ID:** 041826855-0030

Sample Description: Bldg 2 - Basement Woman's Bathroom adj. Door/Grey Concrete - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-9C **Lab Sample ID:** 041826855-0031

Sample Description: Bldg 3 - 1st Floor F-Wing Bathroom/Grey Concrete - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-9D **Lab Sample ID:** 041826855-0032

Sample Description: Bldg 4 - 2nd Floor C-Wing Men's Bathroom/Grey Concrete over Brick - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-9E **Lab Sample ID:** 041826855-0033

Sample Description: Bldg 4 - 1st Floor B-Wing Bathroom C-Wall/Grey Concrete - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-10A **Lab Sample ID:** 041826855-0034

Sample Description: Bldg 3 - 1st Floor F-Wing at Bathroom Door/Grey CMU Bathroom Wall Door Infill

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-10B **Lab Sample ID:** 041826855-0035

Sample Description: Bldg 4 - 2nd Floor C-Wing at Men's Bathroom Door/Grey CMU Bathroom Wall Door Infill

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-11A **Lab Sample ID:** 041826855-0036

Sample Description: Bldg 3 - 1st Floor F-Wing at Bathroom Door/Lt. Grey CMU Mortar Bathroom Wall Door Infill

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-11B **Lab Sample ID:** 041826855-0037

Sample Description: Bldg 4 - 2nd Floor C-Wing at Men's Bathroom Door/Lt. Grey CMU Mortar Bathroom Wall Door Infill

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-12A **Lab Sample ID:** 041826855-0038

Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. Elevator/Dk. Grey CMU Wall Block

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-12B **Lab Sample ID:** 041826855-0039

Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. Elevator/Dk. Grey CMU Wall Block

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-13A **Lab Sample ID:** 041826855-0040

Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. Elevator/Lt. Grey CMU Wall Block Mortar

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-13B **Lab Sample ID:** 041826855-0041

Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. Elevator/Lt. Grey CMU Wall Block Mortar

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-14A **Lab Sample ID:** 041826855-0042

Sample Description: Bldg 2 - Basement Women's Bathroom Foyer/Tan Glazed Brick - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Tan | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-14B **Lab Sample ID:** 041826855-0043

Sample Description: Bldg 3 - 1st Floor F-Wing Corridor/Tan Glazed Brick - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Tan | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-14C **Lab Sample ID:** 041826855-0044

Sample Description: Bldg 4 - 2nd Floor C-Wing Corridor at Men's Bathroom/Tan Glazed Brick - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Tan | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-15A **Lab Sample ID:** 041826855-0045

Sample Description: Bldg 2 - Basement Woman's Bathroom Foyer/Grey Tan Glazed Brick Mortar - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|----------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray/Tan | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-15B **Lab Sample ID:** 041826855-0046

Sample Description: Bldg 3 - 1st Floor F-Wing Corridor/Grey Tan Glazed Brick Mortar - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|----------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray/Tan | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-15C **Lab Sample ID:** 041826855-0047

Sample Description: Bldg 4 - 2nd Floor C-Wing Corridor at Men's Bathroom/Grey Tan Glazed Brick Mortar - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|----------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray/Tan | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-16A **Lab Sample ID:** 041826855-0048

Sample Description: Bldg 2 - Exterior Front Entry Porch/ Deck off of Dining Hall/Red Brick - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Red | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-16B **Lab Sample ID:** 041826855-0049

Sample Description: Bldg 3 - Exterior 1st Floor East Entry Column/Red Brick - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Red | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-16C **Lab Sample ID:** 041826855-0050

Sample Description: Bldg 4 - Exterior 1st Floor A-Wing West Exit at Stairs/Red Brick - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Red | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-17A **Lab Sample ID:** 041826855-0051

Sample Description: Bldg 2 - Exterior Front Entry Porch/ Deck off of Dining Hall/Reddish Grey Red Brick Mortar - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|----------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray/Red | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-17B **Lab Sample ID:** 041826855-0052

Sample Description: Bldg 3 - Exterior 1st Floor East Entry Column/Reddish Grey Red Brick Mortar - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|----------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray/Red | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-17C **Lab Sample ID:** 041826855-0053

Sample Description: Bldg 4 - Exterior 1st Floor A-Wing West Exit at Stairs/Reddish Grey Red Brick Mortar - Wall

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|----------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray/Tan | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-18A **Lab Sample ID:** 041826855-0054

Sample Description: Bldg 2 - Exterior Front Entry Porch/ Deck off of Dining Hall/Grey Concrete Floor

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-18B **Lab Sample ID:** 041826855-0055

Sample Description: Bldg 2 - Exterior Front Entry Porch/ Deck off of Dining Hall/Grey Concrete Floor

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-19A **Lab Sample ID:** 041826855-0056

Sample Description: Bldg 3 - F-Wing Corridor Ceiling/Gypsum Wallboard Ceiling

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-----------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Tan/White | 18% | 82% | None Detected | |

Client Sample ID: 083118EC-19B **Lab Sample ID:** 041826855-0057

Sample Description: Bldg 3 - H-Wing Corridor Ceiling/Gypsum Wallboard Ceiling

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 18% | 82% | None Detected | |

Client Sample ID: 083118EC-19C **Lab Sample ID:** 041826855-0058

Sample Description: Bldg 3 - H-Wing Corridor Ceiling/Gypsum Wallboard Ceiling

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-----------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Tan/White | 18% | 82% | None Detected | |

Client Sample ID: 083118EC-20A-Tape **Lab Sample ID:** 041826855-0059

Sample Description: Bldg 3 - F-Wing Corridor Ceiling/Gypsum Wall Ceiling: Tape & White Joint Compound

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 55% | 45% | None Detected | |

Client Sample ID: 083118EC-20A-Joint Compound **Lab Sample ID:** 041826855-0059A

Sample Description: Bldg 3 - F-Wing Corridor Ceiling/Gypsum Wall Ceiling: Tape & White Joint Compound

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-20B-Tape **Lab Sample ID:** 041826855-0060

Sample Description: Bldg 3 - H-Wing Corridor Ceiling/Gypsum Wall Ceiling: Tape & White Joint Compound

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 55% | 45% | None Detected | |

Client Sample ID: 083118EC-20B-Joint Compound **Lab Sample ID:** 041826855-0060A

Sample Description: Bldg 3 - H-Wing Corridor Ceiling/Gypsum Wall Ceiling: Tape & White Joint Compound

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-20C-Tape **Lab Sample ID:** 041826855-0061

Sample Description: Bldg 3 - H-Wing Corridor Ceiling/Gypsum Wall Ceiling: Tape & White Joint Compound

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | White | 70% | 30% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

| | |
|----------------|--------------|
| EMSL Order ID: | 041826855 |
| Customer ID: | ENVI54 |
| Customer PO: | 20180708.A10 |
| Project ID: | |

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-20C-Joint Compound **Lab Sample ID:** 041826855-0061A

Sample Description: Bldg 3 - H-Wing Corridor Ceiling/Gypsum Wall Ceiling: Tape & White Joint Compound

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-21A-Composite **Lab Sample ID:** 041826855-0062

Sample Description: Bldg 3 - F-Wing Corridor Ceiling/Gypsum Wallboard Ceiling/ Tape & White Joint Compound

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-----------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Tan/White | 14% | 86% | None Detected | |

Client Sample ID: 083118EC-21B-Composite **Lab Sample ID:** 041826855-0063

Sample Description: Bldg 3 - H-Wing Corridor Ceiling/Gypsum Wallboard Ceiling/ Tape & White Joint Compound

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-----------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Tan/White | 14% | 86% | None Detected | |

Client Sample ID: 083118EC-21C-Composite **Lab Sample ID:** 041826855-0064

Sample Description: Bldg 3 - H-Wing Corridor Ceiling/Gypsum Wallboard Ceiling/ Tape & White Joint Compound

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | White | 11% | 89% | None Detected | |

Client Sample ID: 083118EC-22A **Lab Sample ID:** 041826855-0065

Sample Description: Bldg 2 - 1st Floor Woman's Bathroom Ceiling/2'x4' Suspended Ceiling Tile - White with Perforations & Fissures

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-----------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Tan/White | 45% | 55% | None Detected | |

Client Sample ID: 083118EC-22B **Lab Sample ID:** 041826855-0066

Sample Description: Bldg 2 - 1st Floor Woman's Bathroom Ceiling/2'x4' Suspended Ceiling Tile - White with Perforations & Fissures

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-----------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Tan/White | 45% | 55% | None Detected | |

Client Sample ID: 083118EC-22C **Lab Sample ID:** 041826855-0067

Sample Description: Bldg 2 - 2nd Floor Staff Bathroom Ceiling adj. to Elevator/2'x4' Suspended Ceiling Tile - White with Perforations & Fissures

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-----------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Tan/White | 80% | 20% | None Detected | |

Client Sample ID: 083118EC-23A **Lab Sample ID:** 041826855-0068

Sample Description: Bldg 2 - 1st Floor Kitchen Staff Bathroom/Brown Wood Grain Laminate on Bathroom Divider Walls

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Brown | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

| Client Sample ID: 083118EC-23B | | Lab Sample ID: 041826855-0069 | | | | |
|--|-----------|--------------------------------------|--------------|-------------|---------------|---------|
| Sample Description: Bldg 2 - Basement Men's Bathroom/Brown Wood Grain Laminate on Bathroom Divider Walls | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Brown | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-23C | | Lab Sample ID: 041826855-0070 | | | | |
| Sample Description: Bldg 2 - Basement Men's Bathroom/Brown Wood Grain Laminate on Bathroom Divider Walls | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Brown | 10% | 90% | None Detected | |
| Client Sample ID: 083118EC-24A | | Lab Sample ID: 041826855-0071 | | | | |
| Sample Description: Bldg 2 - 1st Floor Kitchen Staff Bathroom/Yellow Adhesive associated with Brown Wood Grain Laminate on Bathroom Divider Walls | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Yellow | 0% | 100% | None Detected | |
| TEM Grav. Reduction | 9/12/2018 | Yellow | 0.0% | 100% | None Detected | |
| Client Sample ID: 083118EC-24B | | Lab Sample ID: 041826855-0072 | | | | |
| Sample Description: Bldg 2 - Basement Men's Bathroom/Yellow Adhesive associated with Brown Wood Grain Laminate on Bathroom Divider Walls | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Yellow | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-24C | | Lab Sample ID: 041826855-0073 | | | | |
| Sample Description: Bldg 2 - Basement Men's Bathroom/Yellow Adhesive associated with Brown Wood Grain Laminate on Bathroom Divider Walls | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Yellow | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-25A | | Lab Sample ID: 041826855-0074 | | | | |
| Sample Description: Bldg 2 - 1st Floor B-Wing Men's Bathroom/4"x4" Cream Glazed Wall Tile | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-25B | | Lab Sample ID: 041826855-0075 | | | | |
| Sample Description: Bldg 3 - 1st Floor F-Wing Men's Bathroom/4"x4" Cream Glazed Wall Tile | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-25C | | Lab Sample ID: 041826855-0076 | | | | |
| Sample Description: Bldg 4 - 2nd Floor C-Wing Men's Bathroom/4"x4" Cream Glazed Wall Tile | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Beige | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-26A **Lab Sample ID:** 041826855-0077

Sample Description: Bldg 2 - 1st Floor B-Wing Men's Bathroom/Tan Grout associated with 4"x4" Cream Glazed Wall Tile

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Tan | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-26B **Lab Sample ID:** 041826855-0078

Sample Description: Bldg 3 - 1st Floor F-Wing Men's Bathroom/Tan Grout associated with 4"x4" Cream Glazed Wall Tile

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Tan | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-26C **Lab Sample ID:** 041826855-0079

Sample Description: Bldg 4 - 2nd Floor C-Wing Men's Bathroom/Tan Grout associated with 4"x4" Cream Glazed Wall Tile

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-27A **Lab Sample ID:** 041826855-0080

Sample Description: Bldg 2 - 1st Floor B-Wing Men's Bathroom/Grey Thin Set associated with 4"x4" Cream Glazed Wall Tile

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-27B **Lab Sample ID:** 041826855-0081

Sample Description: Bldg 3 - 1st Floor F-Wing Men's Bathroom/Grey Thin Set associated with 4"x4" Cream Glazed Wall Tile

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-27C **Lab Sample ID:** 041826855-0082

Sample Description: Bldg 4 - 2nd Floor C-Wing Men's Bathroom/Grey Thin Set associated with 4"x4" Cream Glazed Wall Tile

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-28A **Lab Sample ID:** 041826855-0083

Sample Description: Bldg 2 - 1st Floor Kitchen Staff Bathroom/4"x4" Tan Speckled Glazed Wall Tile - Old

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Tan | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-28B **Lab Sample ID:** 041826855-0084

Sample Description: Bldg 3 - 1st Floor E-Wing Bathroom/4"x4" Tan Speckled Glazed Wall Tile - Old

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Tan | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-28C **Lab Sample ID:** 041826855-0085

Sample Description: Bldg 2 - Basement Women's Bathroom/4"x4" Tan Speckled Glazed Wall Tile - Old

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Tan | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-29A **Lab Sample ID:** 041826855-0086

Sample Description: Bldg 2 - 1st Floor Kitchen Staff Bathroom/White Grout associated with 4"x4" Tan Speckled Glazed Wall Tile - Old

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-29B **Lab Sample ID:** 041826855-0087

Sample Description: Bldg 3 - 1st Floor E-Wing Bathroom/White Grout associated with 4"x4" Tan Speckled Glazed Wall Tile - Old

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-29C **Lab Sample ID:** 041826855-0088

Sample Description: Bldg 2 - Basement Women's Bathroom/White Grout associated with 4"x4" Tan Speckled Glazed Wall Tile - Old

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | White | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-30A **Lab Sample ID:** 041826855-0089

Sample Description: Bldg 2 - 1st Floor Kitchen Staff Bathroom/Grey Thin Set associated with 4"x4" Tan Speckled Glazed Wall Tile - Old

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-30B **Lab Sample ID:** 041826855-0090

Sample Description: Bldg 3 - 1st Floor E-Wing Bathroom/Grey Thin Set associated with 4"x4" Tan Speckled Glazed Wall Tile - Old

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-30C **Lab Sample ID:** 041826855-0091

Sample Description: Bldg 2 - Basement Women's Bathroom/Grey Thin Set associated with 4"x4" Tan Speckled Glazed Wall Tile - Old

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-31A **Lab Sample ID:** 041826855-0092

Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. to Elevator/4"x4" Tan Speckled Glazed Wall Tile - Newer

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Tan | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

| Client Sample ID: 083118EC-31B | | Lab Sample ID: 041826855-0093 | | | | |
|---|-----------|--------------------------------------|--------------|-------------|---------------|---------|
| Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. to Elevator/4"X4" Tan Speckled Glazed Wall Tile - Newer | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-31C | | Lab Sample ID: 041826855-0094 | | | | |
| Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. to Elevator/4"X4" Tan Speckled Glazed Wall Tile - Newer | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Tan/White | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-32A | | Lab Sample ID: 041826855-0095 | | | | |
| Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. to Elevator/White Grout associated with 4"X4" Tan Speckled Glazed Wall Tile | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-32B | | Lab Sample ID: 041826855-0096 | | | | |
| Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. to Elevator/White Grout associated with 4"X4" Tan Speckled Glazed Wall Tile | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | White | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-32C | | Lab Sample ID: 041826855-0097 | | | | |
| Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. to Elevator/White Grout associated with 4"X4" Tan Speckled Glazed Wall Tile | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | White | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-33A | | Lab Sample ID: 041826855-0098 | | | | |
| Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. to Elevator/Yellow Adhesive associated with 4"X4" Tan Speckled Glazed Wall Tile | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Yellow | 0% | 100% | None Detected | |
| TEM Grav. Reduction | 9/12/2018 | Yellow | 0.0% | 100% | None Detected | |
| Client Sample ID: 083118EC-33B | | Lab Sample ID: 041826855-0099 | | | | |
| Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. to Elevator/Yellow Adhesive associated with 4"X4" Tan Speckled Glazed Wall Tile | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/07/2018 | Yellow | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-33C | | Lab Sample ID: 041826855-0100 | | | | |
| Sample Description: Bldg 2 - 1st Floor Staff Bathroom adj. to Elevator/Yellow Adhesive associated with 4"X4" Tan Speckled Glazed Wall Tile | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Yellow | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-34A **Lab Sample ID:** 041826855-0101

Sample Description: Bldg 2 - 2nd Floor Men's Bathroom/4" Black Vinyl Cove Base

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|---------------------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Black | 0% | 100% | None Detected | |
| TEM Grav. Reduction | 9/12/2018 | Black | 0.0% | 100% | None Detected | |

Client Sample ID: 083118EC-34B **Lab Sample ID:** 041826855-0102

Sample Description: Bldg 2 - 2nd Floor Women's Bathroom adj. to Elevator/4" Black Vinyl Cove Base

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Black | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-34C **Lab Sample ID:** 041826855-0103

Sample Description: Bldg 2 - 2nd Floor Women's Bathroom adj. to Elevator/4" Black Vinyl Cove Base

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/09/2018 | Black | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-35A **Lab Sample ID:** 041826855-0104

Sample Description: Bldg 2 - 2nd Floor Men's Bathroom/Tan Adhesive associated with 4' Black Cove Base

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|---------------------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Tan | 0% | 100% | None Detected | |
| TEM Grav. Reduction | 9/12/2018 | Tan | 0.0% | 100% | None Detected | |

Client Sample ID: 083118EC-35B **Lab Sample ID:** 041826855-0105

Sample Description: Bldg 2 - 2nd Floor Women's Bathroom adj. to Elevator/Tan Adhesive associated with 4' Black Cove Base

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-----------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Brown/Tan | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-35C **Lab Sample ID:** 041826855-0106

Sample Description: Bldg 2 - 2nd Floor Women's Bathroom adj. to Elevator/Tan Adhesive associated with 4' Black Cove Base

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-----------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/09/2018 | Brown/Tan | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-36A **Lab Sample ID:** 041826855-0107

Sample Description: Bldg 2 - 2nd Floor Men's Bathroom/Wood Grain Laminate Flooring over 12"x12" Tan Floor Tile

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|---------------------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Tan | 0% | 100% | None Detected | |
| TEM Grav. Reduction | 9/12/2018 | Tan | 0.0% | 100% | None Detected | |

Client Sample ID: 083118EC-36B **Lab Sample ID:** 041826855-0108

Sample Description: Bldg 2 - 2nd Floor Men's Bathroom/Wood Grain Laminate Flooring over 12"x12" Tan Floor Tile

| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
|------|-----------|-------|--------------|-------------|---------------|---------|
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Tan | 0% | 100% | None Detected | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

| Client Sample ID: 083118EC-36C | | Lab Sample ID: 041826855-0109 | | | | |
|---|-----------|--------------------------------------|--------------|-------------|------------------------------|---------|
| Sample Description: Bldg 2 - 2nd Floor Women's Bathroom/Wood Grain Laminate Flooring over 12"x12" Tan Floor Tile | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/09/2018 | Tan | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-37A | | Lab Sample ID: 041826855-0110 | | | | |
| Sample Description: Bldg 2 - 2nd Floor Men's Bathroom/Yellow Adhesive associated with Wood Grain Laminate Flooring | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Yellow | 0% | 100% | None Detected | |
| TEM Grav. Reduction | 9/12/2018 | Yellow | 0.0% | 99.9% | 0.14% Chrysotile | |
| Client Sample ID: 083118EC-37B | | Lab Sample ID: 041826855-0111 | | | | |
| Sample Description: Bldg 2 - 2nd Floor Men's Bathroom/Yellow Adhesive associated with Wood Grain Laminate Flooring | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Yellow | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-37C | | Lab Sample ID: 041826855-0112 | | | | |
| Sample Description: Bldg 2 - 2nd Floor Women's Bathroom/Yellow Adhesive associated with Wood Grain Laminate Flooring | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/09/2018 | Yellow | 0% | 100% | None Detected | |
| Client Sample ID: 083118EC-38A | | Lab Sample ID: 041826855-0113 | | | | |
| Sample Description: Bldg 2 - 2nd Floor Men's Bathroom/12"x12" Tan Floor Tile over Concrete | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Tan | 0% | 95% | 5% Chrysotile | |
| Client Sample ID: 083118EC-38B | | Lab Sample ID: 041826855-0114 | | | | |
| Sample Description: Bldg 2 - 2nd Floor Men's Bathroom/12"x12" Tan Floor Tile over Concrete | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | | | | Positive Stop (Not Analyzed) | |
| Client Sample ID: 083118EC-38C | | Lab Sample ID: 041826855-0115 | | | | |
| Sample Description: Bldg 2 - 2nd Floor Women's Bathroom/12"x12" Tan Floor Tile over Concrete | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | | | | Positive Stop (Not Analyzed) | |
| Client Sample ID: 083118EC-39A | | Lab Sample ID: 041826855-0116 | | | | |
| Sample Description: Bldg 2 - 2nd Floor Men's Bathroom/Black Adhesive associated with 12"x12" Tan Floor Tile | | | | | | |
| TEST | Analyzed | | Non-Asbestos | | Asbestos | Comment |
| | Date | Color | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Black | 0% | 100% | None Detected | |
| TEM Grav. Reduction | 9/12/2018 | Black | 0.0% | 99.9% | 0.11% Chrysotile | |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-39B **Lab Sample ID:** 041826855-0117

Sample Description: Bldg 2 - 2nd Floor Men's Bathroom/Black Adhesive associated with 12"x12" Tan Floor Tile

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Black | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-39C **Lab Sample ID:** 041826855-0118

Sample Description: Bldg 2 - 2nd Floor Women's Bathroom/Black Adhesive associated with 12"x12" Tan Floor Tile

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|---------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/09/2018 | Black | 0% | 100% | None Detected | |

Client Sample ID: 083118EC-40A **Lab Sample ID:** 041826855-0119

Sample Description: Bldg 2 - 3rd Floor Bathroom Pipe Chase/Grey Pipe Insulation w/ Cloth Wrap

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|----------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 85% | 15% Chrysotile | |

Client Sample ID: 083118EC-40B **Lab Sample ID:** 041826855-0120

Sample Description: Bldg 2 - Basement Women's Bathroom Pipe Chase/Grey Pipe Insulation w/ Cloth Wrap

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|----------|------------------------------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | | | | | Positive Stop (Not Analyzed) |

Client Sample ID: 083118EC-40C **Lab Sample ID:** 041826855-0121

Sample Description: Bldg 2 - Basement Women's Bathroom Pipe Chase/Grey Pipe Insulation w/ Cloth Wrap

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|----------|------------------------------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | | | | | Positive Stop (Not Analyzed) |

Client Sample ID: 083118EC-41A **Lab Sample ID:** 041826855-0122

Sample Description: Bldg 2 - 3rd Floor Bathroom Pipe Chase/Cloth Wrap associated with Grey Pipe Insulation

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|----------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | White | 40% | 40% | 20% Chrysotile | |

Client Sample ID: 083118EC-41B **Lab Sample ID:** 041826855-0123

Sample Description: Bldg 2 - Basement Women's Bathroom Pipe Chase/Cloth Wrap associated with Grey Pipe Insulation

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|----------|------------------------------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | | | | | Positive Stop (Not Analyzed) |

Client Sample ID: 083118EC-41C **Lab Sample ID:** 041826855-0124

Sample Description: Bldg 2 - Basement Women's Bathroom Pipe Chase/Cloth Wrap associated with Grey Pipe Insulation

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|----------|------------------------------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | | | | | Positive Stop (Not Analyzed) |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnaslab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-42A **Lab Sample ID:** 041826855-0125
Sample Description: Bldg 2 - 2nd Floor Women's Bathroom Overhead/Mudded Fitting Insulation

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|----------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Gray | 0% | 40% | 60% Chrysotile | |

Client Sample ID: 083118EC-42B **Lab Sample ID:** 041826855-0126
Sample Description: Bldg 2 - 2nd Floor Women's Bathroom Overhead/Mudded Fitting Insulation

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|------------------------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | | | | Positive Stop (Not Analyzed) | |

Client Sample ID: 083118EC-42C **Lab Sample ID:** 041826855-0127
Sample Description: Bldg 2 - 2nd Floor Women's Bathroom Overhead/Mudded Fitting Insulation

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|------------------------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | | | | Positive Stop (Not Analyzed) | |

Client Sample ID: 083118EC-43A **Lab Sample ID:** 041826855-0128
Sample Description: Bldg 2 - 2nd Floor Women's Bathroom Overhead/White Pipe Fitting Insulation w/Cloth Wrap

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|----------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | White | 0% | 40% | 60% Chrysotile | |

Client Sample ID: 083118EC-43B **Lab Sample ID:** 041826855-0129
Sample Description: Bldg 2 - 2nd Floor Women's Bathroom Overhead/White Pipe Fitting Insulation w/Cloth Wrap

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|------------------------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | | | | Positive Stop (Not Analyzed) | |

Client Sample ID: 083118EC-43C **Lab Sample ID:** 041826855-0130
Sample Description: Bldg 2 - 2nd Floor Women's Bathroom Overhead/White Pipe Fitting Insulation w/Cloth Wrap

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|------------------------------|---------|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | | | | Positive Stop (Not Analyzed) | |

Client Sample ID: 083118EC-44A **Lab Sample ID:** 041826855-0131
Sample Description: Bldg 2 - 2nd Floor Women's Bathroom Overhead/Cloth Wrap associated with White Pipe Fitting Insulation

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|----------------|---|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Brown | 95% | 5% | <1% Chrysotile | Result includes a small amount of inseparable attached material |

Client Sample ID: 083118EC-44B **Lab Sample ID:** 041826855-0132
Sample Description: Bldg 2 - 2nd Floor Women's Bathroom Overhead/Cloth Wrap associated with White Pipe Fitting Insulation

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|----------------|---|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/08/2018 | Brown | 95% | 5% | <1% Chrysotile | Result includes a small amount of inseparable attached material |



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order ID: 041826855
 Customer ID: ENVI54
 Customer PO: 20180708.A10
 Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: 083118EC-44C **Lab Sample ID:** 041826855-0133

Sample Description: Bldg 2 - 2nd Floor Women's Bathroom Overhead/Cloth Wrap associated with White Pipe Fitting Insulation

| TEST | Analyzed Date | Color | Non-Asbestos | | Asbestos | Comment |
|------|---------------|-------|--------------|-------------|----------------|---|
| | | | Fibrous | Non-Fibrous | | |
| PLM | 9/09/2018 | Brown | 95% | 5% | <1% Chrysotile | Result includes a small amount of inseparable attached material |

Analyst(s):

- Andrew Burke PLM (29)
- Christina Maiorana PLM (6)
- Debbie Little TEM Grav. Reduction (7)
- Gregory Barry PLM (18)
- Jonathan Blanford PLM (27)
- Laura Kantor PLM (46)

Reviewed and approved by:

Benjamin Ellis, Laboratory Manager
 or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. This test report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. EMSL bears no responsibility for sample collection activities or analytical method limitations. The laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. PLM alone is not consistently reliable in detecting asbestos in floor coverings and similar NOBs

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036

Initial report from: 09/07/2018 14:45:21

ASBESTOS BULK SAMPLE CHAIN OF CUSTODY FORM

 Project Name: Connecticut Department of Veteran Affairs Project No. 20180708.A10 Date: 09/04/2018

 Site Address: 287 West Street, Rocky Hill, CT Location: Bldgs 2, 3, &4 Project Manager: K. Pane

| Sample ID | Sample Location | Type of Material |
|--------------|---|--|
| 083118EC-1A | Bldg 2 – 2 nd Floor Men's bathroom, Adj Stair A- | 2-component wall plaster over CMU – Grey rough coat |
| 083118EC-1B | Bldg 2 – 2 nd Floor Women's bathroom, Adj Stair A- | 2-component wall plaster over glazed brick – Grey rough coat |
| 083118EC-1C | Bldg 2 – 2 nd Floor Men's bathroom, West wall | 2-component wall plaster over CMU – Grey rough coat |
| 083118EC-2A | Bldg 2 – 2 nd Floor Men's bathroom, Adj Stair A- | 2-component wall plaster over CMU – White skim coat |
| 083118EC-2B | Bldg 2 – 2 nd Floor Women's bathroom, Adj Stair A- | 2-component wall plaster over glazed brick – White skim coat |
| 083118EC-2C | Bldg 2 – 2 nd Floor Men's bathroom, West wall | 2-component wall plaster over CMU – White skim coat |
| 083118EC-3A | Bldg 2 – Basement Corridor Adj Men's bathroom door | 2-component wall plaster – Grey rough coat |
| 083118EC-3B | Bldg 3- 1 st Floor basement stairwell south | 2-component wall plaster – Grey rough coat |
| 083118EC-3C | Bldg 4 – 2 nd Floor Common corridor Adj Elevator C | 2-component wall plaster over brick– Grey rough coat |
| 083118EC-3D | Bldg 4 – 2 nd Floor Elevator E Foyer | 2-component wall plaster – Grey rough coat |
| 083118EC-3E | Bldg 4 – Basement stairwell west | 2-component wall plaster – Grey rough coat |
| 083118EC-3F | Bldg 4 – 2 nd Floor Elevator E Foyer | 2-component ceiling plaster – Grey rough coat |
| 083118EC-4A | Bldg 2 – Basement Corridor Adj Men's bathroom door | 2-component wall plaster – White skim coat |
| 083118EC-4B | Bldg 3- 1 st Floor basement stairwell south | 2-component wall plaster – White skim coat |
| 083118EC-4C | Bldg 4 – 2 nd Floor Common corridor Adj Elevator C | 2-component wall plaster over brick– White skim coat |
| 083118EC-4D | Bldg 4 – 2 nd Floor Elevator E Foyer | 2-component wall plaster – White skim coat |
| 083118EC-4E | Bldg 4 – Basement stairwell west | 2-component wall plaster – White skim coat |
| 083118EC-4F | Bldg 4 – 2 nd Floor Elevator E Foyer | 2-component ceiling plaster – White skim coat |
| 083118EC- 5A | Bldg 4 – 2 nd Floor C-wing Corridor | White textured ceiling paint |
| 083118EC- 5B | Bldg 4 – 2 nd Floor C-wing Corridor | White textured ceiling paint |
| 083118EC- 6A | Bldg 3 – 2 nd Floor G-wing Men's bathroom | White textured ceiling paint |
| 083118EC- 6B | Bldg 3 – 2 nd Floor G-wing Men's bathroom | White textured ceiling paint |
| 083118EC-7A | Bldg 4 – 2 nd Floor C-wing Corridor- | Grey Single-component ceiling plaster |
| 083118EC-7B | Bldg 3 – 2 nd Floor G-wing Men's bathroom | Grey Single-component ceiling plaster |

| Sample ID | Sample Location | Type of Material |
|--------------|--|--|
| 083118EC-7C | Bldg 2 – Basement Women's bathroom, | Grey Single-component ceiling plaster |
| 083118EC-8A | Bldg 4 – 1st Floor B-wing Men's bathroom C wall- | Lt. Yellow textured paint on concrete - wall |
| 083118EC-8B | Bldg 3 – 1st Floor F-wing bathroom | Lt. Yellow textured paint on concrete - wall |
| 083118EC-8C | Bldg 4 – 2nd Floor C-wing Men's bathroom, | Lt. Yellow textured paint on concrete - wall |
| 083118EC-9A | Bldg 2 – 1st Floor Kitchen Staff bathroom West wall- | Grey concrete - Wall |
| 083118EC-9B | Bldg 2 – Basement Woman's bathroom adj door | Grey concrete - Wall |
| 083118EC-9C | Bldg 3 – 1st Floor F-wing bathroom, | Grey concrete - Wall |
| 083118EC-9D | Bldg 4 – 2nd Floor C-wing Men's bathroom - | Grey concrete over brick - Wall |
| 083118EC-9E | Bldg 4 – 1st Floor B-wing bathroom C-wall | Grey concrete - Wall |
| 083118EC-10A | Bldg 3 – 1st Floor F-wing at Bathroom door | Grey CMU bathroom wall door infill |
| 083118EC-10B | Bldg 4 – 2nd Floor C-wing at Men's Bathroom door | Grey CMU bathroom wall door infill |
| 083118EC-11A | Bldg 3 – 1st Floor F-wing at Bathroom door | Lt Grey CMU mortar bathroom wall door infill |
| 083118EC-11B | Bldg 4 – 2nd Floor C-wing at Men's Bathroom door | Lt Grey CMU mortar bathroom wall door infill |
| 083118EC-12A | Bldg 2 – 1st Floor staff Bathroom adj elevator | Dk Grey CMU wall block |
| 083118EC-12B | Bldg 2 – 1st Floor staff Bathroom adj elevator | Dk Grey CMU wall block |
| 083118EC-13A | Bldg 2 – 1st Floor staff Bathroom adj elevator | Lt Grey CMU wall block mortar |
| 083118EC-13B | Bldg 2 – 1st Floor staff Bathroom adj elevator | Lt Grey CMU wall block mortar |
| 083118EC-14A | Bldg 2 – Basement Woman's bathroom foyer | Tan glazed brick - Wall |
| 083118EC-14B | Bldg 3 – 1st Floor F-wing corridor | Tan glazed brick - Wall |
| 083118EC-14C | Bldg 4 – 2nd Floor C-wing corridor at Men's bathroom | Tan glazed brick - Wall |
| 083118EC-15A | Bldg 2 – Basement Woman's bathroom foyer | Grey Tan glazed brick mortar- Wall |
| 083118EC-15B | Bldg 3 – 1st Floor F-wing corridor | Grey Tan glazed brick mortar- Wall |
| 083118EC-15C | Bldg 4 – 2nd Floor C-wing corridor at Men's bathroom | Grey Tan glazed brick mortar- Wall |
| 083118EC-16A | Bldg 2 – Exterior Front Entry porch/deck off of Dining Hall | Red brick - Wall |

| Sample ID | Sample Location | Type of Material |
|---|---|---|
| 083118EC-16B | Bldg 3 – Exterior 1 st Floor East entry column | Red brick - Wall |
| 083118EC-16C | Bldg 4 –Exterior 1 st Floor A-wing west exit at stairs | Red brick - Wall |
| 083118EC-17A | Bldg 2 – Exterior Front Entry porch/deck off of Dining Hall | Reddish grey Red brick mortar - Wall |
| 083118EC-17B | Bldg 3 – Exterior 1 st Floor East entry column | Reddish grey Red brick mortar - Wall |
| 083118EC-17C | Bldg 4 –Exterior 1 st Floor A-wing west exit at stairs | Reddish grey Red brick mortar - Wall |
| 083118EC-18A | Bldg 2 – Exterior Front Entry porch/deck off of Dining Hall | Grey concrete floor |
| 083118EC-18B | Bldg 2 – Exterior Front Entry porch/deck off of Dining Hall | Grey concrete floor |
| 083118EC-19A | Bldg 3- F-wing corridor ceiling | Gypsum wallboard ceiling |
| 083118EC-19B | Bldg 3- H-wing corridor ceiling | Gypsum wallboard ceiling |
| 083118EC-19C | Bldg 3- H-wing corridor ceiling | Gypsum wallboard ceiling |
| 083118EC-20A | Bldg 3- F-wing corridor ceiling | Gypsum wallboard ceiling: Tape and White joint compound |
| 083118EC-20B | Bldg 3- H-wing corridor ceiling | Gypsum wallboard ceiling: Tape and White joint compound |
| 083118EC-20C | Bldg 3- H-wing corridor ceiling | Gypsum wallboard ceiling: Tape and White joint compound |
| Note 1: If sample 083118EC- 20A are \geq1% Asbestos, Do Not Analyze sample 083118EC-21A | | |
| 083118EC-21A (Note 1) | Bldg 3- F-wing corridor ceiling | Composite Gypsum wallboard ceiling/Tape and White joint compound |
| Note 2: If sample 083118EC- 20B are \geq1% Asbestos, Do Not Analyze sample 083118EC-21B | | |
| 083118EC-21B (Note 2) | Bldg 3- H-wing corridor ceiling | Composite Gypsum wallboard ceiling/Tape and White joint compound |
| Note 3: If sample 083118EC- 20C are \geq1% Asbestos, Do Not Analyze sample 083118EC-21C | | |
| 083118EC-21C (Note 3) | Bldg 3- H-wing corridor ceiling | Composite Gypsum wallboard ceiling/Tape and White joint compound |
| 083118EC-22A | Bldg 2 – 1 st Floor Woman's Bathroom ceiling | 2'x4' suspended ceiling tile – White with perforations and fissures |
| 083118EC-22B | Bldg 2 – 1 st Floor Woman's Bathroom ceiling | 2'x4' suspended ceiling tile – White with perforations and fissures |
| 083118EC-22C | Bldg 2 – 2nd Floor Staff Bathroom ceiling adj to elevator | 2'x4' suspended ceiling tile – White with perforations and fissures |
| 083118EC-23A | Bldg 2 – 1 st floor Kitchen staff bathroom | Brown wood grain laminate on bathroom divider walls |
| 083118EC-23B | Bldg 2 – Basement Men's bathroom | Brown wood grain laminate on bathroom divider walls |

| Sample ID | Sample Location | Type of Material |
|--------------|---|---|
| 083118EC-23C | Bldg 2 – Basement Men's bathroom | Brown wood grain laminate on bathroom divider walls |
| 083118EC-24A | Bldg 2 – 1 st floor Kitchen staff bathroom | Yellow adhesive associated w/ Brown wood grain laminate on bathroom divider walls |
| 083118EC-24B | Bldg 2 – Basement Men's bathroom | Yellow adhesive associated w/ Brown wood grain laminate on bathroom divider walls |
| 083118EC-24C | Bldg 2 – Basement Men's bathroom | Yellow adhesive associated w/ Brown wood grain laminate on bathroom divider walls |
| 083118EC-25A | Bldg 2 – 1 st floor B-wing Men's bathroom | 4"x4" cream glazed wall tile |
| 083118EC-25B | Bldg 3 – 1 st floor F-wing Men's bathroom | 4"x4" cream glazed wall tile |
| 083118EC-25C | Bldg 4 – 2 nd floor C-wing Men's bathroom | 4"x4" cream glazed wall tile |
| 083118EC-26A | Bldg 2 – 1 st floor B-wing Men's bathroom | Tan grout associated w/ 4"x4" cream glazed wall tile |
| 083118EC-26B | Bldg 3 – 1 st floor F-wing Men's bathroom | Tan grout associated w/ 4"x4" cream glazed wall tile |
| 083118EC-26C | Bldg 4 – 2 nd floor C-wing Men's bathroom | Tan grout associated w/ 4"x4" cream glazed wall tile |
| 083118EC-27A | Bldg 2 – 1 st floor B-wing Men's bathroom | Grey thin set associated w/ 4"x4" cream glazed wall tile |
| 083118EC-27B | Bldg 3 – 1 st floor F-wing Men's bathroom | Grey thin set associated w/ 4"x4" cream glazed wall tile |
| 083118EC-27C | Bldg 4 – 2 nd floor C-wing Men's bathroom | Grey thin set associated w/ 4"x4" cream glazed wall tile |
| 083118EC-28A | Bldg 2 – 1 st floor Kitchen staff bathroom | 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-28B | Bldg 3 – 1 st floor E-wing bathroom | 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-28C | Bldg 2 – Basement Women's Bathroom | 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-29A | Bldg 2 – 1 st floor Kitchen staff bathroom | White grout associated w/ 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-29B | Bldg 3 – 1 st floor E-wing bathroom | White grout associated w/ 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-29C | Bldg 2 – Basement Women's Bathroom | White grout associated w/ 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-30A | Bldg 2 – 1 st floor Kitchen staff bathroom | Grey thin set associated w/ 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-30B | Bldg 3 – 1 st floor E-wing bathroom | Grey thin set associated w/ 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-30C | Bldg 2 – Basement Women's Bathroom | Grey thin set associated w/ 4"x4" Tan speckled glazed wall tile - Old |
| 083118EC-31A | Bldg 2 – 1 st floor staff bathroom adj to elevator | 4"x4" Tan speckled glazed wall tile - Newer |
| 083118EC-31B | Bldg 2 – 1 st floor staff bathroom adj to elevator | 4"x4" Tan speckled glazed wall tile - Newer |
| 083118EC-31C | Bldg 2 – 1 st floor staff bathroom adj to elevator | 4"x4" Tan speckled glazed wall tile - Newer |
| 083118EC-32A | Bldg 2 – 1 st floor staff bathroom adj to elevator | White grout associated w/ 4"x4" Tan speckled glazed wall tile |
| 083118EC-32B | Bldg 2 – 1 st floor staff bathroom adj to elevator | White grout associated w/ 4"x4" Tan speckled glazed wall tile |

| Sample ID | Sample Location | Type of Material |
|----------------|---|---|
| 083118EC-32C | Bldg 2 – 1 st floor staff bathroom adj to elevator | White grout associated w/ 4"x4" Tan speckled glazed wall tile |
| 083118EC-33A | Bldg 2 – 1 st floor staff bathroom adj to elevator | Yellow adhesive associated w/ 4"x4" Tan speckled glazed wall tile |
| 083118EC-33B | Bldg 2 – 1 st floor staff bathroom adj to elevator | Yellow adhesive associated w/ 4"x4" Tan speckled glazed wall tile |
| 083118EC-33C | Bldg 2 – 1 st floor staff bathroom adj to elevator | Yellow adhesive associated w/ 4"x4" Tan speckled glazed wall tile |
| 083118EC-34A | Bldg 2 – 2 nd floor Men's bathroom | 4" Black vinyl cove base |
| 083118EC-34B | Bldg 2 – 2 nd floor Women's bathroom adj to elevator | 4" Black vinyl cove base |
| 083118EC-34C | Bldg 2 – 2 nd floor Women's bathroom adj to elevator | 4" Black vinyl cove base |
| 083118EC-35A | Bldg 2 – 2 nd floor Men's bathroom | Tan adhesive associated w/ 4" Black cove base |
| 083118EC-35B | Bldg 2 – 2 nd floor Women's bathroom adj to elevator | Tan adhesive associated w/ 4" Black cove base |
| 083118EC-35C | Bldg 2 – 2 nd floor Women's bathroom adj to elevator | Tan adhesive associated w/ 4" Black cove base |
| 083118EC-36A | Bldg 2 – 2 nd Floor Men's Bathroom | Woodgrain laminate flooring over 12"x12" Tan floor tile |
| 083118EC-36B | Bldg 2 – 2 nd Floor Men's Bathroom | Woodgrain laminate flooring over 12"x12" Tan floor tile |
| 083118EC-36C | Bldg 2 – 2 nd Floor Women's Bathroom | Woodgrain laminate flooring over 12"x12" Tan floor tile |
| 083118EC-37A | Bldg 2 – 2 nd Floor Men's Bathroom | Yellow adhesive associated w/Woodgrain laminate flooring |
| 083118EC-37B | Bldg 2 – 2 nd Floor Men's Bathroom | Yellow adhesive associated w/Woodgrain laminate flooring |
| 083118EC-37C | Bldg 2 – 2 nd Floor Women's Bathroom | Yellow adhesive associated w/Woodgrain laminate flooring |
| 083118EC-38A | Bldg 2 – 2 nd Floor Men's Bathroom | 12"x12" Tan floor tile over concrete |
| 083118EC-38B | Bldg 2 – 2 nd Floor Men's Bathroom | 12"x12" Tan floor tile over concrete |
| 083118EC-38C | Bldg 2 – 2 nd Floor Women's Bathroom | 12"x12" Tan floor tile over concrete |
| 083118EC-39A | Bldg 2 – 2 nd Floor Men's Bathroom | Black adhesive associated w/12"x12" Tan floor tile |
| 083118EC-39B | Bldg 2 – 2 nd Floor Men's Bathroom | Black adhesive associated w/12"x12" Tan floor tile |
| 083118EC-39C | Bldg 2 – 2 nd Floor Women's Bathroom | Black adhesive associated w/12"x12" Tan floor tile |
| 083118EC-40A | Building 2 – 3 rd floor Bathroom Pipe chase | Grey pipe insulation w/ cloth wrap |
| 083118EC-40B | Building 2 – Basement Women's Bathroom Pipe chase | Grey pipe insulation w/ cloth wrap |
| 083118EC-40C | Building 2 – Basement Women's Bathroom Pipe chase | Grey pipe insulation w/ cloth wrap |
| 083118EC-41A * | Building 2 – 3 rd floor Bathroom Pipe chase | Cloth wrap associated w/Grey pipe insulation |
| 083118EC-41B * | Building 2 – Basement Women's Bathroom Pipe chase | Cloth wrap associated w/Grey pipe insulation |

| Sample ID | Sample Location | Type of Material |
|--|---|--|
| 083118EC-41C * | Building 2 – Basement Women's Bathroom Pipe chase | Cloth wrap associated w/Grey pipe insulation |
| Do not analyze samples -41 A-C if -40 A-C contain >1% Asbestos | | |
| 083118EC-42A | Bldg 2 – 2 nd Floor Women's Bathroom overhead | Mudded fitting insulation |
| 083118EC-42B | Bldg 2 – 2 nd Floor Women's Bathroom overhead | Mudded fitting insulation |
| 083118EC-42C | Bldg 2 – 2 nd Floor Women's Bathroom overhead | Mudded fitting insulation |
| 083118EC-43A | Bldg 2 – 2 nd Floor Women's Bathroom overhead | White pipe fitting insulation w/ cloth wrap |
| 083118EC-43B | Bldg 2 – 2 nd Floor Women's Bathroom overhead | White pipe fitting insulation w/ cloth wrap |
| 083118EC-43C | Bldg 2 – 2 nd Floor Women's Bathroom overhead | White pipe fitting insulation w/ cloth wrap |
| 083118EC-44A | Bldg 2 – 2 nd Floor Women's Bathroom overhead | Cloth wrap associated w/ White pipe fitting insulation |
| 083118EC-44B | Bldg 2 – 2 nd Floor Women's Bathroom overhead | Cloth wrap associated w/ White pipe fitting insulation |
| 083118EC-44C | Bldg 2 – 2 nd Floor Women's Bathroom overhead | Cloth wrap associated w/ White pipe fitting insulation |

 Analysis Method: PLM TEM Other _____ Turnaround Time: _____ 72 hrs

 Based on the turnaround time indicated above, analyses are due to Fuss & O'Neill on or before this date: 9/10/18 Please call Fuss & O'Neill if analyses will not be completed for requested t/a/t at (860) 646-2469.

 FAX Results to: 888-838-1160 Email Results to: K. Pane @fando.com **Do Not Mail Hard Copy Report**
 Total # of Samples: 133
Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted. Do not layer samples unless indicated. Do Not Point Count. **If NOB group sample results are 0% - < 1% by PLM, analyze only "A" group sample above by TEM NOB, per group, unless you are told otherwise.**

 Samples collected by: ECooley/BGregoire Date: 8/31/18 Time: _____

 Samples Sent by: BGregoire Date: 9/4/18 Time: 1600

Samples Received by: _____ Date: _____ Time: _____

 Shipped To: EMSL Other _____

 Method of Shipment: FedEx Lab Drop Off Other _____

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix D

Site Photographs



Building 2 - 2nd floor men's bathroom with wood grain laminate flooring over 12" x12" tan ACM floor tile



Building 2 - 2nd floor woman's bathroom with wood grain laminate flooring over 12" x12" tan ACM floor tile



Building 2 - 2nd floor woman's bathroom overhead ACM pipe and fitting insulation



Building 2 – Basement woman's bathroom pipe chase with ACM pipe insulation

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix E

XRF Lead Determination Field Data Sheets



XRF LEAD DETERMINATION FIELD DATA SHEET

Inspector Name: Eric Cooley Inspector License #: 002195
 Date: 08-29-2018 XRF Model: LPA 1B Serial: 3126 R
 Project Name: Dept of Veterans Affairs Project Number: 20180708 A10
 Address: 287 West St. Rocky Hill, CT Project PM: KP

XRF Calibration Check-RMD (0.7 to 1.3 mg/cm² inclusive)

| | Hour | First Reading | Second Reading | Third Reading | Average |
|--------------|------|---------------|----------------|---------------|---------|
| First Check | 1415 | 1.3 | 1.3 | 1.1 | 1.2 |
| Second Check | 1700 | | | | |
| Third Check | | | | | |
| Fourth Check | 1700 | 1.1 | 1.2 | 1.2 | 1.2 |

| Side | Surface/Component | Substrate/Color | XRF Reading | Positive (✓) | Comments/Notes |
|------|------------------------|----------------------------------|-------------|--------------|----------------------|
| 4-B | Glazed brick wall | Tan | 0.2 | | Corridor at men's Rm |
| 2A-B | CMU wall in wall | Tan | 0.3 | | men's Rm Door Ind |
| | Ceiling - Plaster | White ^{texture} ceiling | 0.1 | | Corridor |
| D | Wall - Concrete | Yellow ^{texture} | 0.3 | | men's Room |
| D | Wall - 4" glazed tile | Cream Color | 0.4 | | men's Room |
| | Ceiling - Plaster | White ^{texture} | 0.1 | | men's Room |
| D | Door - wood like | Tan | 0.7 | | men's Room |
| D | Door Jamb - metal | Yellow | 0.1 | | men's Room |
| A | Door - wood | Clear | 0.1 | | Corridor Center |
| A | Door Frame metal | Tan | 0.3 | | Corridor center |
| C | Door Frame - metal | Yellow | 0.1 | | to Common Corridor |
| 4-2 | <u>Common Corridor</u> | | | | |
| C | Door Frame - metal | Tan | 0.3 | | elevator Lobby |
| C | Door - metal | Tan | 0.1 | | ↓ |
| A | Wall - Plaster | Blue | 0.1 | | |
| | Ceiling - plaster | Blue | 0.4 | | |

* Substrate Type: Metal = M, Wood = W, Plaster = P, Sheetrock = S, Concrete = C, Brick = B
 N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR - Vinyl Replacement



XRF LEAD DETERMINATION FIELD DATA SHEET

Inspector Name: Eric Cooley Inspector License #: 002195
 Date: 08-30-18 XRF Model: LPA 1B Serial: 3126R
 Project Name: DVA Project Number: 20180708.A10
 Address: 287 West St. Rocky Hill, CT Project PM: KP

XRF Calibration Check-RMD (0.7 to 1.3 mg/cm² inclusive)

| | Hour | First Reading | Second Reading | Third Reading | Average |
|--------------|------|---------------|----------------|---------------|---------|
| First Check | 1030 | 1.0 | 1.1 | 1.1 | 1.1 |
| Second Check | 1325 | 1.0 | 1.0 | 1.0 | 1.0 |
| Third Check | | | | | |
| Fourth Check | | | | | |

| Side | Surface/Component | Substrate/Color | XRF Reading | Positive (✓) | Comments/Notes |
|------|----------------------------------|-----------------|-------------|--------------|----------------------|
| | <u>Building 1st Floor A wing</u> | | | | |
| B | rail post-steel | Black | 1.8 | ✓ | East Basement Stairs |
| D | Handrail-steel | Black | 1.8 | ✓ | " " " |
| C | Handrail-steel | Black | 1.1 | ✓ | exterior stairs |
| | <u>Bldg 2 2nd wing</u> | | | | |
| D | Door Frame-metal | Yellow | 0.1 | | Center Corridor Door |
| D | Door-wood | Clear | 0.0 | | " |
| B | wall-glazed brick | tan | 0.3 | | |
| B | wall-CMU | cream | 0.1 | | adj men's Door |
| B | Door Frame-metal | Yellow | 0.2 | | men's Rm |
| B | Door-wood | Tan | 0.0 | | men's Rm |
| A | Wall-4" ceramic | cream | 0.0 | | men's Rm |
| | Ceiling-concrete | white | 0.2 | | Corridor |
| | Ceiling-concrete | white | 0.5 | | men's Room |
| A | Hand rail post | steel-Black | 4.1 | ✓ | to stairwell |
| B | Door-metal | Tan | 0.1 | | to stairwell |

* Substrate Type: Metal = M, Wood = W, Plaster = P, Sheetrock = S, Concrete = C, Brick = B
 N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR - Vinyl Replacement



XRF LEAD DETERMINATION DATA SHEET (CONT.)

Page 2 of 3
8-30-18

Project Name: DVA

Project Number: 20180708.410

Address: 287 West Main St. Rocky Hill

Project PM: KP

| Side | Surface/Component | Substrate/Color | XRF Reading | Positive (✓) | Comments/Notes |
|------|--|-----------------|-------------|--------------|----------------------|
| | <u>Bldg 4 Common Corridor</u> | | | | |
| C | Stair rail - metal | Black | 1.5 | ✓ | E exterior |
| A | Front Railing - metal | Black | 1.9 | ✓ | W exterior |
| A | wall - plaster | off white | 0.5 | | adj elevator |
| A | Door - steel | Red | -0.0 | | Basement door |
| A | Door Frame steel | Black | 0.0 | | " |
| A | wall elevator lobby | white plaster | 0.1 | | elevator E |
| C | wall plaster | off white | 0.1 | | adj elevator E |
| | <u>Bldg 4 Basement</u> | | | | |
| D | wall - plaster | off white | 0.1 | | West Basement stairs |
| D | handrail - steel | Brown | 0.2 | | " |
| B | handrail steel | Brown | 0.1 | | " |
| A | wall - CMU | White | 0.8 | | upper - adj elevator |
| A | wall - CMU | lt. green | 0.3 | | lower " " " |
| C | Bulkhead Door - steel | Red | 0.1 | | to E. Courtyard |
| | <u>Bldg 2 - East Connector Ramp</u> | | | | |
| A | wall Brick | White | 0.0 | | landings area |
| A | handrail - steel | Black | 0.1 | | " " |
| B/C | handrail - steel | Black | -5.0 | ✓ | Upper ramp |
| B/C | wall - Brick | White | -0.1 | | " " |
| A | Handrail - steel | Black | 1.1 | ✓ | |
| | <u>Building 2 Basement Landings Room</u> | | | | |
| C | stair wall metal | Blue | -0.1 | | |
| B | upper wall concrete | Blue | 0.3 | | |
| A | ceiling - plaster | White | -0.1 | | |
| A | up concrete wall tile | tan speckle | 29.9 | ✓ | |

* Substrate Type: Metal = M, Wood = W, Plaster = P, Sheetrock = S, Concrete = C, Brick = B
N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR - Vinyl Replacement



XRF LEAD DETERMINATION DATA SHEET (CONT.)

Project Name: DUA

Project Number: 2018 0708-1A10

Address: 287 West mainst Rocky Hill, CT Project PM: KP

Building #2

| Side | Surface/Component | Substrate/Color | XRF Reading | Positive (✓) | Comments/Notes |
|------|-------------------------|------------------|-------------|--------------|-------------------------------------|
| A | Wall - Glazed brick | pink paint | 0.3 | | Foyer |
| A | Door Frame - wood | Clear | 0.3 | | " |
| A | Door Frame - metal | white | 0.1 | | " / Ladies |
| | Floor Concrete | Grey | 0.1 | | Foyer |
| | Floor Ceramic | Browns/Black | 0.1 | | Ladies Rm |
| | Sink - porcelain | white | 0.1 | | " " |
| A | Wall upper concrete | tan | 0.0 | | men Rm - Brnt |
| A | Corridor wall - Plaster | tan | 0.1 | | Brnt Cantin |
| D | Corridor Wall Brick | White paint | 0.2 | | Brnt Ladies Hall out |
| B | Wall Brick - tan | Painted Pink | 0.4 | | Women Rm Ladies Foyer |
| B | Door Frame - inner | white | 0.1 | | Brnt, men Rm |
| A | Door Frame - outer | Brown Steel | 0.1 | | " " " / Corridor |
| A | Front Porch Rail | Black - Steel | 7.1 | ✓ | exterior |
| * | Staff Lav adj | Kitchen elevator | | | |
| A | Wall Concr | tan | 0.1 | | Break Rm |
| D | Wall Concr | tan | 0.1 | | Lav |
| B | Door Frame - metal | tan | 0.10 | | Lav door |
| | Staff Lav adj | Kitchen | | | |
| D | Wall Concrete | Beige | 0.3 | | Foyer |
| C | Door Frame - steel | Beige | 0.2 | | outer |
| C | Door Frame | beige | 0.0 | | inner |
| D | Wall 4x4 Tile | tan speckle | 29.9 | | Ladies G' |
| | Ceiling | Beige | 0.4 | | |

* Substrate Type: Metal = M, Wood = W, Plaster = P, Sheetrock = S, Concrete = C, Brick = B
N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR - Vinyl Replacement



XRF LEAD DETERMINATION FIELD DATA SHEET

Inspector Name: Eric Cooley Inspector License #: 002195

Date: 08-31-18 XRF Model: LPA-1B Serial: 6100R

Project Name: DVA Project Number: 20180708-AID

Address: 287 West St Rocky Hill, CT Project PM: KP

XRF Calibration Check-RMD (0.7 to 1.3 mg/cm² inclusive)

| | Hour | First Reading | Second Reading | Third Reading | Average |
|--------------|-------|---------------|----------------|---------------|---------|
| First Check | 10:25 | 1.1 | 1.1 | 0.8 | 1.0 |
| Second Check | 13:10 | 0.8 | 1.0 | 0.8 | 0.9 |
| Third Check | 15:00 | 0.8 | 1.1 | 1.1 | |
| Fourth Check | | | | | |

Building 2

| Side | Surface/Component | Substrate/Color | XRF Reading | Positive (✓) | Comments/Notes |
|------|-------------------------|-----------------|-------------|--------------|-------------------------|
| C | Handrail - steel | Brown | 3.0 | ✓ | 1st Floor Stair A |
| C | Wall - concrete | white | 0.1 | | " |
| C | wall - plaster | Blue | 0.2 | | 2-2 news R _n |
| A | wall - plaster | Blue | 0.1 | | " |
| | ceiling - concrete | white | 0.1 | | " |
| D | Stair wall - metal | Blue | 0.2 | | " wavy |
| B | Partition wall - wood | Blue | 0.1 | | " " |
| B | wall plaster - | Tan - ad, elev | 0.3 | | 2-2 elevator |
| C | wall plaster | Blue | 0.2 | | 2-3 elevator |
| | External stairs - steel | Black | 0.2 | | Bolt on concrete |
| A | wall - concrete | Tan | 0.0 | | 2-3 Bathroom |
| C | wall - plaster | Tan | 0.3 | | Corridor 2-3 E |
| A | Door Frame - metal | white | 0.0 | | 2-3 Bathroom |
| A | wall Ceramic tile | tan speckle | 79.9 | ✓ | " |
| A | Partition stair wall | white metal | 0.0 | | " |
| B | Handrail - steel | Grey | 3.0 | ✓ | 2-3 E Stairs |
| B | wall - Glazed brick | Tan | 0.1 | | " |

* Substrate Type: Metal = M, Wood = W, Plaster = P, Sheetrock = S, Concrete = C, Brick = B
N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR - Vinyl Replacement



XRF LEAD DETERMINATION DATA SHEET (CONT.)

Project Name: DVA

Project Number: 20180708_1A10

Address: 287 West Street, Rocky Hill, CT

Project PM: KP

Buildings 3

| Side | Surface/Component | Substrate/Color | XRF Reading | Positive (✓) | Comments/Notes |
|------|------------------------|-----------------|-------------|--------------|----------------------|
| B | Wall Concrete | Yellow | 0.3 | | F wing Bath |
| D | Wall CMU | Yellow | 0.1 | | F wing adj Bath Pa |
| D | Door Frame metal | Beige | 0.1 | | ll |
| D | Door - wood | tan | 0.4 | | ll |
| B | Wall 4" Concrete | Cream | 0.2 | | F Bedroom |
| B | Handrail - steel | Black | 2.0 | ✓ | F wing w/ stairs |
| | rail post - steel | Black | 2.5 | ✓ | ll |
| A | Wall plaster | Tan | 0.1 | | 3-1st Fl Connors Cor |
| B | Wall - plaster | white | 0.0 | | 3-1 Bsmt Stairwell |
| B | handrail - steel | Green | 2.5 | ✓ | ll |
| A | Rail Post - steel | Black | 7.3 | ✓ | 3-1 - stairs of S. |
| C | Bulkhead & Doors Steel | Red | 0.2 | | 3-1 West |
| A | Exit only Ramp | Brown-wood | 0.2 | | 3-1 |
| C | Wall - plaster | Tan | 0.2 | | elevators F Lobby |
| B | Door Frame - metal | Tan | 0.1 | | F wing main room |
| B | Door wood | Brown stain | 0.3 | | ll |
| B | Wall - Concrete | tan | 0.1 | | ll |
| B | Wall - Concrete | Tan speckle | 0.2 | | ll |
| | Celling Concrete | White | 0.3 | | E wing |
| C | Wall plaster | White | 0.2 | | adj elevators F |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

* Substrate Type: Metal = M, Wood = W, Plaster = P, Sheetrock = S, Concrete = C, Brick = B
N/A: Not Accessible; N/C: Not Coated; COV: Covered; VR - Vinyl Replacement

THIS PAGE INTENTIONALLY LEFT BLANK

Section 50 50 00 Elevator Agreement

ELEVATOR AGREEMENT

It is hereby agreed on this ____ day of ____, ____ between the State of Connecticut, Department of Administrative Services acting through its Commissioner, _____ and _____ acting through _____ its _____ that:

WHEREAS, the State of Connecticut owns several buildings which contain elevators manufactured by _____;

WHEREAS, _____ Provides a diagnostic device required for the complete service and maintenance of the elevators which diagnostic device has a six (6) month expiration date;

WHEREAS, the State of Connecticut retains several contractors and/or uses its own employees to service the _____ elevators;

WHEREAS, the State of Connecticut finds any expiration period an excessive burden on the service and maintenance of the elevators;

NOW, THEREFORE, for good and sufficient consideration of \$1.00 (one dollar) the parties agree as follows:

1. _____ shall provide the State of Connecticut with the proper diagnostic devices to service all _____, Inc. elevators in all state buildings at no cost to the State of Connecticut.
2. The diagnostic devices shall not contain an expiration date or the use of any proprietary restraint and will be capable of servicing and maintaining the elevators for their life.
3. In the event _____ deems it necessary to update the diagnostic devices it shall exchange such devices at no cost to the State of Connecticut. The updated diagnostic devices shall not contain an expiration date and will be capable of servicing and maintaining the elevators for their life. This upgrade will occur prior to previous tools date of expiration.
4. All employees of the State of Connecticut duly qualified or licensed and any contractors retained by the State of Connecticut to service and/or maintain the _____ elevators shall use the diagnostic devices solely for the purpose of conducting normal service and maintenance activities.
5. All employees of the State of Connecticut duly qualified or licensed and any contractors retained by the State of Connecticut to service and/or maintain the _____ elevators shall not themselves or otherwise give, lend, sell, advertise, transfer or permit access to or the use of the diagnostic devices, in part or whole, in any manner by any means, by any other person.
6. The State of Connecticut understands that the diagnostic devices are capable of programming and/or reprogramming critical equipment, operating performance functions and reprogramming critical equipment functions and parameters including safety and/or test sequences. Improper use may produce unsafe operating conditions.
7. The State of Connecticut agrees that _____ is not responsible for the results of the improper use, either directly or indirectly, of the diagnostic devices, unless the device is defective.
8. The State of Connecticut agrees to make all reasonable efforts necessary or appropriate to maintain and protect the diagnostic devices and shall promptly notify _____ in writing, of any unauthorized use, possession, loss or theft of the diagnostic devices in part or whole.
9. This Agreement shall be interpreted and enforced pursuant to the laws of the State of Connecticut in the Superior Court for the Judicial District of Hartford, at Hartford, Connecticut.

Witness

[insert name of Commissioner]

Commissioner,

Witness

State of Connecticut

Department of Administrative Services

Witness

[insert name of signer and title]

[insert name of Elevator Manufacturer]

Witness

[insert address of Elevator Manufacturer]

End of Section 50 50 00 Elevator Agreement