



Volume 1 of 1 Project Manual

**Bathroom Renovations and ADA Upgrades
410 Capitol Avenue
Hartford, CT
Project No.: BI-2B-400**

**Prepared By:
OakPark Architects, LLC
312 Park Road
West Hartford, CT
06119**

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: 9/14/2018

Project Title:	Bathroom Renovations and ADA Upgrades 9/14/2018
Project Location:	410 Capitol Avenue, Hartford, CT
Project Number:	BI-2B-400
Architect/Engineer:	OakPark Architects, 312 Park Road, West Hartford, CT 06119

SEALS, SIGNATURES, AND DATES OF DESIGN PROFESSIONALS OF RECORD

 <p>(Seal and Signature)</p>	<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>Mark A. Welch (Print Consultant Name) ARI.0004137 License No.</p> <p>Expiration Date</p>	 <p>(Seal and Signature)</p>	<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>(Print Consultant Name)</p> <p>License No.</p> <p>Expiration Date</p>
 <p>(Seal and Signature)</p>	<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)</p> <p>License No.</p> <p>Expiration Date</p>	 <p>(Seal and Signature)</p>	<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>(Print Consultant Name)</p> <p>License No.</p> <p>Expiration Date</p>
 <p>(Seal and Signature)</p>	<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>Richard DiLullo (Print Consultant Name) PEN.0020918 License No. 1/31/2019 Expiration Date</p>	 <p>(Seal and Signature)</p>	<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)</p> <p>License No.</p> <p>Expiration Date</p>

End of Section
00 01 07 Seals Page

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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	7	<input type="checkbox"/>
00 01 15	List of Drawing Sheets	1	<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	3	<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 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 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	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	35	<input type="checkbox"/>
00 73 63	CT DOC Security Requirements	3	<input 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"/>

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DIVISION 01 GENERAL REQUIREMENTS

Section No.	Title	Page Count	Not Used
01 11 00	Summary of Work	7	<input type="checkbox"/>
01 20 00	Contract Considerations	4	<input type="checkbox"/>
01 23 13	Supplemental Bids		<input checked="" 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	11	<input type="checkbox"/>
01 42 20	Reference Standards & Definitions	3	<input type="checkbox"/>
01 45 00	Quality Control	5	<input type="checkbox"/>
01 45 23.13	Testing for Indoor Air Quality, Baseline Indoor Air Quality, and Materials	4	<input type="checkbox"/>
01 50 00	Temporary Facilities & Controls	8	<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		<input checked="" type="checkbox"/>
01 73 29	Cutting and Patching	4	<input type="checkbox"/>
01 74 19	Construction Waste Management & Disposal		<input checked="" type="checkbox"/>
01 75 00	Starting & Adjusting	2	<input 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"/>

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TECHNICAL SPECIFICATIONS

DIVISION 02 **EXISTING CONDITIONS** Not Used

Section No.	Title	Page Count
02 41 19	Selective Demolition	4
02 82 13	Asbestos Abatement	20

DIVISION 03 **CONCRETE** Not Used

DIVISION 04 **MASONRY** Not Used

DIVISION 05 **METALS** Not Used

Section No.	Title	Page Count
05 50 00	Metal Fabrication	5

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

Section No.	Title	Page Count
06 10 00	Carpentry	8

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

Section No.	Title	Page Count
07 21 00	Thermal Insulation	3
07 84 00	Firestopping	7
07 90 00	Joint Protection	4

DIVISION 08 **OPENINGS** Not Used

Section No.	Title	Page Count
08 13 16	Custom Hollow Metal Doors and Frames	5
08 14 00	Wood Doors	3
08 31 16	Access Panels and Frames	2
08 71 00	Door Hardware	14

DIVISION 09 **FINISHES** Not Used

Section No.	Title	Page Count
09 21 16	Gypsum Board Assemblies	8
09 30 00	Tiling	5
09 65 00	Resilient Base and Accessories	4
09 65 10	Self Leveling Underlayment	2
09 72 16	Vinyl Wallcovering	6
09 90 00	Painting and Coating	7

DIVISION 10	SPECIALTIES	Not Used <input type="checkbox"/>
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Section No.	Title	Page Count
10 14 00	Signage	2
10 21 13	Toilet Compartments	4
10 28 00	Toilet Accessories	5

DIVISION 11	EQUIPMENT	Not Used <input checked="" type="checkbox"/>
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DIVISION 12	FURNISHINGS	Not Used <input checked="" type="checkbox"/>
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DIVISION 13	SPECIAL CONSTRUCTION	Not Used <input checked="" type="checkbox"/>
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DIVISION 14	CONVEYING SYSTEMS	Not Used <input checked="" type="checkbox"/>
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DIVISION 15	RESERVED	
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DIVISION 16	RESERVED	
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DIVISION 17	RESERVED	
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DIVISION 18	RESERVED	
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DIVISION 19	RESERVED	
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DIVISION 20	RESERVED	
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DIVISION 21	FIRE SUPPRESSION	Not Used <input type="checkbox"/>
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Section No.	Title	Page Count
21 10 00	Wet Pipe Sprinkler System	8

DIVISION 22	PLUMBING	Not Used <input type="checkbox"/>
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Section No.	Title	Page Count
22 01 00	Plumbing General Provisions	8
22 05 23	General Duty Valves for Plumbing Piping	5
22 05 29	Hangers and Supports for Plumbing Piping and Equipment	4
22 07 19	Plumbing Piping insulation	3
22 11 16	Domestic Water Piping	9
22 13 16	Sanitary Waste and Vent Piping	8
22 33 33	Commercial Electric Water Heater	4
22 42 00	Commercial Plumbing Fixtures	5

DIVISION 23	HEATING, VENTILATING AND AIR CONDITIONING	Not Used <input type="checkbox"/>
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Section No.	Title	Page Count
23 01 00	Mechanical General Provisions	10
23 05 93	Testing Adjusting Balancing for HVAC	7
23 07 13	HVAC Duct Insulation	3
23 31 13	Metal Ducts	6
23 33 00	Air Duct Accessories	5
23 34 00	HVAC Fans	4
23 37 00	Air outlets and Inlets	5

DIVISION 24	RESERVED	
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DIVISION 25	INTEGRATED AUTOMATION	Not Used <input checked="" type="checkbox"/>
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DIVISION 26	ELECTRICAL	Not Used <input type="checkbox"/>
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Section No.	Title	Page Count
26 01 00	Basic Electrical Requirements	12
26 01 10	Submittals	8
26 01 12	Reference Standards and Regulatory Requirements	4
26 01 17	Demonstration of Completed Electrical Systems	1
26 01 16	Test and Performance Verification	1
26 01 18	Operation and Maintenance Manual	7
26 05 10	Conduit	15
26 05 14	Building Wire and Cable	6
26 05 15	Outlet Boxes	7
26 05 17	Pull and Junction Boxes	3
26 05 18	Wiring Devices	8
26 05 22	Electrical Identification	5
26 05 24	Enclosed Disconnect Switches	3
26 05 26	Grounding and Bonding	5
26 05 29	Supporting Devices	5
26 20 10	Panelboards	7
26 20 13	Overcurrent Protective Devices	4
26 50 00	Interior / Exterior Luminaries	7

DIVISION 27	COMMUNICATIONS	Not Used <input checked="" type="checkbox"/>
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DIVISION 28	ELECTRONIC SAFETY AND SECURITY	Not Used <input checked="" type="checkbox"/>
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DIVISION 29	RESERVED	
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DIVISION 30	RESERVED	
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DIVISION 31	EARTHWORK	Not Used <input type="checkbox"/>
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DIVISION 32	EXTERIOR IMPROVEMENTS	Not Used <input checked="" type="checkbox"/>
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DIVISION 33	UTILITIES	Not Used <input checked="" type="checkbox"/>
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DIVISION 34	TRANSPORTATION	Not Used <input checked="" type="checkbox"/>
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DIVISION 35	WATERWAYS AND MARINE	Not Used <input checked="" type="checkbox"/>
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DIVISION 36	RESERVED	
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DIVISION 37	RESERVED	
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DIVISION 38	RESERVED	
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DIVISION 39	RESERVED	
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DIVISION 40	PROCESS INTEGRATION	Not Used <input checked="" type="checkbox"/>
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DIVISION 41	MATERIAL PROCESSING	Not Used <input checked="" type="checkbox"/>
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DIVISION 42	PROCESS HEATING, COOLING, AND DRYING	Not Used <input checked="" type="checkbox"/>
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DIVISION 43	PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT	Not Used <input checked="" type="checkbox"/>
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DIVISION 44	POLLUTION CONTROL EQUIPMENT	Not Used <input checked="" type="checkbox"/>
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DIVISION 45	INDUSTRY SPECIFIC MANUFACTURING EQUIPMENT	Not Used <input checked="" type="checkbox"/>
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DIVISION 46	RESERVED	
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DIVISION 47	RESERVED	
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DIVISION 48	RESERVED
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DIVISION 49	RESERVED
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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	1 (of 185)	<input type="checkbox"/>
50 40 00	Subsurface Geotechnical Report		<input checked="" type="checkbox"/>
50 50 00	Elevator Agreement		<input checked="" 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:	184 (of 185)	<input type="checkbox"/>
	50 80 00.1 ATC 2016 – Restrooms 410 Capitol Ave ACM Inspection Report	36 (of 185)	<input type="checkbox"/>
	50 80 00.2 TRC 2009 – Compliance Report for Abatement of ACM – 410 Capitol Ave	45 (of 185)	<input type="checkbox"/>
	50 80 00.3 EnviroScience Consultants, Inc. 1999 – 410-474 Capitol Ave ACM LBP Report	103 (of 185)	<input type="checkbox"/>

00 01 10 Table Of Contents

List of Drawing Sheets	
Sheet No.	Title
	COVER SHEET
A0.01	CODE, GENERAL NOTES AND SYMBOLS
A0.02	PHASING PLAN, WORK AREA
A1.00	DEMOLITION PLANS AND NOTES
A1.01	TYPICAL FLOOR PLANS & REFLECTED CEILING PLAN
A2.01	INTERIOR ELEVATIONS AND WALL TYPES
A3.01	SCHEDULES AND DETAILS
FP1.01	FIRE PROTECTION PLANS
P0.01	PLUMBING SCHEDULE AND SPECIFICATIONS
P0.02	PLUMBING DETAILS
P1.01	PLUMBING DEMOLITION PLANS
P2.02	PLUMBING WATER PIPING PLANS
P2.02	PLUMBING DRAIN, WASTE AND VENT PLANS
P3.01	PLUMBING RISER DIAGRAMS
M1.01	MECHANICAL DEMOLITION PLANS
M2.01	MECHANICAL PLANS
E1.01	ELECTRICAL DEMOLITION PLANS
E2.01	ELECTRICAL PLANS

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

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Advertisement No.:	19-03	Advertisement Date:	November 30, 2018
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<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>
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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 .
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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.
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Date and Time of Bid Opening:	<table border="1"> <tr> <td style="padding: 2px 10px;">January <i>(Month)</i></td> <td style="padding: 2px 10px;">16 <i>(Day)</i></td> <td style="padding: 2px 10px;">2019 <i>(Year)</i></td> </tr> </table>	January <i>(Month)</i>	16 <i>(Day)</i>	2019 <i>(Year)</i>	Time:	<table border="1"> <tr> <td style="padding: 2px 10px;">1:00 <i>(ET)</i></td> <td style="padding: 2px 10px;">PM</td> </tr> </table>	1:00 <i>(ET)</i>	PM
January <i>(Month)</i>	16 <i>(Day)</i>	2019 <i>(Year)</i>						
1:00 <i>(ET)</i>	PM							

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:	Bathroom Renovations and ADA Upgrades		
Project Location:	410 Capitol Avenue Hartford, CT		
Project Number:	BI-2B-400		
Project Description:	Renovation of a total of 8 bathrooms, on 4 floors of 410 Capitol Avenue, Approximately 5,000 gross square feet. The building and bathrooms are existing and shall be completely renovated to like new condition and shall meet present accessibility requirements		
Work Includes But Is Not Limited To The Following:	Asbestos Abatement, Miscellaneous Metals, Rough Carpentry, Insulation, Firestopping and Joint Sealants, Doors and Frames, Hardware, Drywall, Floor and Wall Coverings, Ceramic Tile and Painting, Demolition of existing and installation of new Plumbing Fixtures and Toilet Partitions and Accessories, Plumbing, HVAC, Sprinkler Demolition and Renovation		
Date DAS Began Planning Project:	3/31/2016		
Special Requirements:	N/A		
Cost Estimate Range:	\$ 1,552,677.	To	\$ 1,716,115.
Date Plans & Specs Ready:	December 5, 2018		
Plans and Specs Download:	Plans and Specs are available for electronic download on the DAS State Contracting Portal.		



Advertisement No.:	19-03	Advertisement Date:	November 30, 2018
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Invitation to Bid (continued)

Contract Time Allowed:	Calendar Days:	180
Liquidated Damages:	\$ 1,189.00	Per Calendar Day Beyond Substantial Completion.
	\$ 1,129.00	Per Calendar Day Beyond 90 days After Substantial Completion
Pre-Bid Meeting Date:	December 10, 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:	410 Capitol Avenue, Hartford, CT – Meet in the Lobby Security	
Pre-Bid Meeting Contact:	DAS/CS Project Manager:	Ashour Gevargisnia
	Phone No.:	860.713.5639
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.:	19-03	Advertisement Date:	November 30, 2018
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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>
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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:	Mark A. Welch, AIA	Email:	markw@oakparkarchitects.com
Construction Administrator:	Construction Solutions Group, LLC	Email:	jimg@csgroup-llc.com
DAS/CS Project Manager:	Ashour Gevargisnia	Email:	Ashour.gevargisnia@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
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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:
.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:
.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 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 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	<p>.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.</p> <p>.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></p>
3.1.5 Nondiscrimination Certification – Form A, B, C, D, or E: All Bidders	<p>.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.</p> <p>.2 Once uploaded, an updated Nondiscrimination Certification shall be uploaded within 30 days of any changes to the submitted information.</p> <p>.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.</p>
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	<p>.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.</p> <p>.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.</p> <p>.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.</p> <p>.4 Return of Certified Check: All checks submitted by unsuccessful Bidders shall be returned to them <i>after</i> the contract has been awarded.</p> <p>.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.</p> <p>.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.</p>
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 Construction Administrator, Construction Solutions Group, LLC, 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 strongly encouraged . 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.
1.2.2	Subcontractors:	Attendance at the Pre-Bid Meeting is recommended.
1.2.3	Pre-Bid Meeting Sign-in Sheet:	It is strongly encouraged 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: OakPark Architects, LLC |
| 2.1.2 | CA: Construction Solutions Group, LLC |
| 2.1.3 | DAS Representative: Ashour Gevargisnia, DCS Project Manager |
| 2.1.4 | Agency Representative: Richard Terrell, RA, DAS Architect |

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 **Construction Administrator** 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 type="checkbox"/>

00 30 10 GENERAL STATEMENT FOR EXISTING CONDITIONS SURVEY Not Used

00 30 20 GENERAL STATEMENT FOR ENVIRONMENTAL ASSESSMENT INFORMATION Not Used

00 30 30 GENERAL STATEMENT FOR HAZARDOUS BUILDING MATERIALS INSPECTION AND INVENTORY Not Used

A. Related Documents:

- Section 01 11 00 Summary of Work
- Section 01 20 00 Contract Considerations
- Section 01 35 16 Alteration Project Procedures
- Section 02 41 13 Selective Demolition
- Section 02 82 13 Asbestos Abatement

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. **See Section 50 80 00.1 Appendix B. Drawings** for plans showing sample locations in the project area.
- 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 **not** been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair.
- 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 **not** been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair.

- 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 **not** been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair.
- 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 <input checked="" type="checkbox"/>
00 30 50	GENERAL STATEMENT FOR ELEVATOR AGREEMENT	Not Used <input checked="" type="checkbox"/>
00 30 60	GENERAL STATEMENT FOR FM GLOBAL CHECKLIST FOR ROOFING SYSTEMS	Not Used <input checked="" type="checkbox"/>
00 30 70	GENERAL STATEMENT FOR "STATEMENT OF SPECIAL INSPECTIONS"	Not Used <input checked="" type="checkbox"/>
00 30 80	GENERAL STATEMENT FOR ADDITIONAL INFORMATION	Not Used <input type="checkbox"/>

- A. Additional Information for this project is located in **Division 50 00 00 Project-Specific Available Information, Section 50 80 00 Additional Information** at the end of the Technical Specification Sections.
- B. Additional Information includes the following:
1. **Subsection 50 80 00.1:** ATC 2016 September 20 - Restrooms 410 Capitol Ave ACM Inspection Report
 2. **Subsection 50 80 00.2:** TRC 2009 November 11 - Compliance Report For Abatement of ACM - 410 Capitol Ave
 3. **Subsection 50 80 00.3:** EnviroScience Consultants, Inc. 1999 December 29 - 410-474 Capitol Ave ACM LBP Report

End of Section
00 30 00 General Statements for Available Information

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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@state.ct.us
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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
	

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:	Bathroom Renovations and ADA Upgrades
Project Location:	410 Capitol Avenue Hartford, CT
Project Number:	BI-2B-400
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:	OakPark Architects, LLC., 312 Park Road, West Hartford, CT 06119

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

180
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 \$

1,189.00

 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 \$

1,129.00

 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: 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. 2: 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. 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 checked="" type="checkbox"/>	Hazardous Materials Abatement: Enter information in blue boxes below: 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 <i>prior</i> 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 <i>prior</i> 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 style="width: 100%; border-collapse: collapse;"> <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
<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"/>	<i>NEW:</i> 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, [Redacted],
 [Redacted], hereinafter called the Principal,
 of [Redacted], as Principal,
 and [Redacted], hereinafter
 called the Surety, a corporation organized and existing under the laws of the
 State of [Redacted], 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, [Redacted]
 [Redacted],
 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.: [Redacted]

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 [Redacted] day of [Redacted], 20 [Redacted]

[Redacted] <i>(Principal's Signature)</i>	[Redacted] Surety
[Redacted] <i>(Print Name)</i>	[Redacted] Its attorney in fact Signature
[Redacted] Company Name	[Redacted] <i>(Print Name)</i>

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

<input style="width: 100%; height: 100%;" type="text"/>	<input style="width: 100%; height: 100%;" type="text"/>
Years	Months

6.2

<input style="width: 100%; height: 100%;" type="text"/>	<input style="width: 100%; height: 100%;" type="text"/>
Years	Months

6.3

<input style="width: 100%; height: 100%;" type="text"/>	<input style="width: 100%; height: 100%;" type="text"/>
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: 25px;" type="text"/>	<input style="width: 40px; height: 25px;" type="text"/>
		<i>Years</i>	<i>Months</i>
7.2	<input style="width: 95%; height: 40px;" type="text"/>	<input style="width: 40px; height: 25px;" type="text"/>	<input style="width: 40px; height: 25px;" type="text"/>
		<i>Years</i>	<i>Months</i>
7.3	<input style="width: 95%; height: 40px;" type="text"/>	<input style="width: 40px; height: 25px;" type="text"/>	<input style="width: 40px; height: 25px;" 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	<input style="width: 100%; height: 25px;" type="text"/>	<input style="width: 100%; height: 25px;" type="text"/>	<input style="width: 100%; height: 25px;" type="text"/>
10.2	<input style="width: 100%; height: 25px;" type="text"/>	<input style="width: 100%; height: 25px;" type="text"/>	<input style="width: 100%; height: 25px;" type="text"/>
10.3	<input style="width: 100%; height: 25px;" type="text"/>	<input style="width: 100%; height: 25px;" type="text"/>	<input style="width: 100%; height: 25px;" type="text"/>
10.4	<input style="width: 100%; height: 25px;" type="text"/>	<input style="width: 100%; height: 25px;" type="text"/>	<input style="width: 100%; height: 25px;" type="text"/>
10.5	<input style="width: 100%; height: 25px;" type="text"/>	<input style="width: 100%; height: 25px;" type="text"/>	<input style="width: 100%; height: 25px;" type="text"/>

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.		
	*Attach a separate sheet if more space is required.	
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> <p style="text-align: center;">SEAL</p>
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.

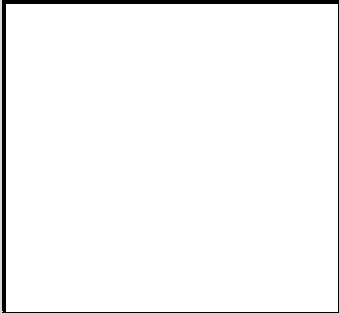
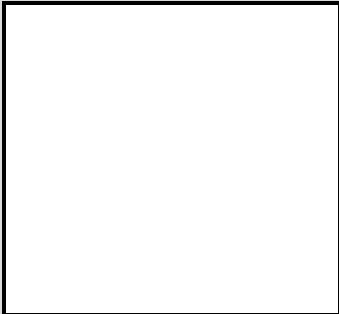
2. The Contractor agrees to begin, prosecute and complete the entire work specified by the Awarding Authority in an orderly manner so that the Subcontractor will be able to begin, prosecute and complete the work described in this subcontract; and, in consideration thereof, upon notice from the Contractor, 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 Contractor's Legal Name and Address	CONTACT NAME: _____ PHONE (A.C. No. Ext): _____ FAX (A.C. No.): _____ E-MAIL ADDRESS: _____ <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">INSURER(S) AFFORDING COVERAGE</td> <td style="width: 20%;">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>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A:		INSURER B:		INSURER C:		INSURER D:		INSURER E:		INSURER F:	
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	ADD. SUBR. 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 - CCM/POP 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"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED. \$ _____ RETENTION \$ _____					EACH OCCURRENCE \$ _____ AGGREGATE \$ _____
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> 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 <input type="checkbox"/> OTHER 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
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ACORD 25 (2010/05)

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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
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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



7048
General Contractor
Retainage Reduction Request
(SAMPLE)

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">1.1.1 The Connecticut General Statutes (C.G.S.) § 4a-60 and 4a-60a;1.1.2 C.G.S. § 46a-71(d) and 46a-81i (d) when the awarding agency is the State; and1.1.3 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">1.2.1 who are active in the daily affairs of the enterprise;1.2.2 who have the power to direct the management and policies of the enterprise; and1.2.3 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">1.3.1 Black Americans, including all persons having origins in any of the Black African racial groups not of Hispanic origin;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;1.3.3 Persons who have origins in the Iberian Peninsula, including Portugal, regardless of race;1.3.4 Women;1.3.5 Asian Pacific Americans and Pacific Islanders; or1.3.6 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.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">1.4.1 the bidder’s success in implementing an affirmative action plan;1.4.2 the bidder’s success in developing an apprenticeship program complying with RSCA §46a-68-1 to 46a-68-17, inclusive;1.4.3 the bidder’s promise to develop and implement a successful affirmative action plan;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; and1.4.5 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:
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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:
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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:
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- 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:
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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-2B-400	Project Town:	Hartford, CT
Project: Bathroom Renovations and ADA Upgrades			
410 Capitol Avenue			
Hartford, 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
Informational Bulletin - Occupational Classifications	6 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: November 30, 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: Bathroom Renovations And ADA Upgrades At 410 Capitol Avenue

**Minimum Rates and Classifications
for Building Construction**

ID# : B 25431

**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: Bi-2B-400

Project Town: Hartford

State#:

FAP#:

Project: Bathroom Renovations And ADA Upgrades At 410 Capitol Avenue

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: Friday, November 30, 2018

Project: Bathroom Renovations And ADA Upgrades At 410 Capitol Avenue

2) Boilermaker	38.34	26.01
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3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons	33.48	32.06 + a
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3b) Tile Setter	34.90	25.87
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3c) Terrazzo Mechanics and Marble Setters	31.69	22.35
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3d) Tile, Marble & Terrazzo Finishers	26.70	21.75
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3e) Plasterer	33.48	32.06
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As of: Friday, November 30, 2018

Project: Bathroom Renovations And ADA Upgrades At 410 Capitol Avenue

-----LABORERS-----

4) Group 1: Laborers (common or general), acetylene burners, carpenter tenders, concrete specialists, wrecking laborers, fire watchers.	30.05	20.10
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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
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4b) Group 3: Jackhammer operators/pavement breaker, mason tender (brick), mason tender (cement/concrete), forklift operators and forklift operators (masonry).	30.55	20.10
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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
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4d) Group 5: Air track operator, sand blaster and hydraulic drills.	30.55	20.10
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As of: Friday, November 30, 2018

Project: Bathroom Renovations And ADA Upgrades At 410 Capitol Avenue

4e) Group 6: Blasters, nuclear and toxic waste removal.	31.80	20.10
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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
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4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew.	28.38	20.10
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4h) Group 9: Top men on open air caisson, cylindrical work and boring crew.	27.86	20.10
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4i) Group 10: Traffic Control Signalman	16.00	20.10
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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
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As of: Friday, November 30, 2018

Project: Bathroom Renovations And ADA Upgrades At 410 Capitol Avenue

5a) Millwrights	33.14	25.74
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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
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7a) Elevator Mechanic (Trade License required: R-1,2,5,6)	51.71	32.645+a+b
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-----LINE CONSTRUCTION-----

Groundman	26.50	6.5% + 9.00
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Linemen/Cable Splicer	48.19	6.5% + 22.00
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As of: Friday, November 30, 2018

Project: Bathroom Renovations And ADA Upgrades At 410 Capitol Avenue

8) Glazier (Trade License required: FG-1,2)	37.18	21.05 + a
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9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection	35.47	35.14 + a
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----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
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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
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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
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Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper).	38.10	24.05 + a
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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
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Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller; Pile Testing Machine.	37.51	24.05 + a
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Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	37.20	24.05 + a
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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
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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
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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
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Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc.	33.99	24.05 + a
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Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	33.99	24.05 + a
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Group 12: Wellpoint operator.	33.93	24.05 + a
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Group 13: Compressor battery operator.	33.35	24.05 + a
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Group 14: Elevator operator; tow motor operator (solid tire no rough terrain).	32.21	24.05 + a
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Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	31.80	24.05 + a
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Group 16: Maintenance Engineer/Oiler.	31.15	24.05 + a
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Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	35.46	24.05 + a
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Group 18: Power safety boat; vacuum truck; zim mixer; sweeper; (Minimum for any job requiring a CDL license).	33.04	24.05 + a
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-----PAINTERS (Including Drywall Finishing)-----

10a) Brush and Roller	33.62	21.05
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10b) Taping Only/Drywall Finishing	34.37	21.05
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10c) Paperhanger and Red Label	34.12	21.05
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10e) Blast and Spray	36.62	21.05
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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
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12) Well Digger, Pile Testing Machine	37.26	24.05 + a
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13) Roofer (composition)	36.70	19.85
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Project: Bathroom Renovations And ADA Upgrades At 410 Capitol Avenue

14) Roofer (slate & tile)	37.20	19.85
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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
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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
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-----TRUCK DRIVERS-----

17a) 2 Axle	29.13	23.33 + a
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17b) 3 Axle, 2 Axle Ready Mix	29.23	23.33 + a
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Project: Bathroom Renovations And ADA Upgrades At 410 Capitol Avenue

17c) 3 Axle Ready Mix	29.28	23.33 + a
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17d) 4 Axle, Heavy Duty Trailer up to 40 tons	29.33	23.33 + a
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17e) 4 Axle Ready Mix	29.38	23.33 + a
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17f) Heavy Duty Trailer (40 Tons and Over)	29.58	23.33 + a
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17g) Specialized Earth Moving Equipment (Other Than Conventional Type on-the-Road Trucks and Semi-Trailers, Including Euclids)	29.38	23.33 + a
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18) Sprinkler Fitter (Trade License required: F-1,2,3,4)	43.92	15.84 + a
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As of: Friday, November 30, 2018

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19) Theatrical Stage Journeyman	25.76	7.34
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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: Friday, November 30, 2018

Project: Bathroom Renovations And ADA Upgrades At 410 Capitol Avenue

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: Friday, November 30, 2018

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. PILEDRIVERMEN. 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 required 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.

***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)

Additional Forms to Be Submitted After Bond Commission Funding Approval

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

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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.

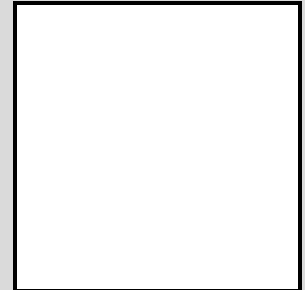
Any alterations which may be made in the terms of the contract, or in the work done or to be done under it, or the giving by the Obligee of any extension of time for the performance of the contract or any other forbearance on the part of either the Obligee or the Principal, one to the other, shall not 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.

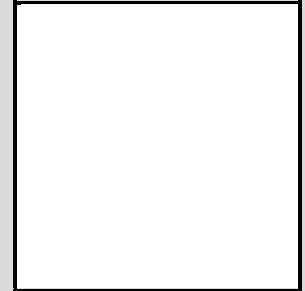
Any alterations which may be made in the terms of the contract, or in the work done or to be done under it, or the giving by the Obligee of any extension of time for the performance of the contract or any other forbearance on the part of either the Obligee or the Principal, one to the other, shall not 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)

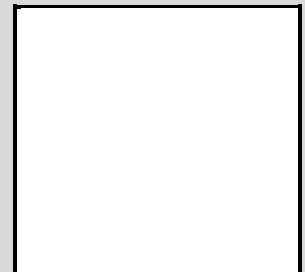
, Its

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-2B-400.

C. Project Title: Bathroom Renovations and ADA Upgrades.

D. Project Location: The Building at 410 Capitol Avenue, located in Hartford, Connecticut.

E. The Project Description:

- 1. Interior Renovation including demolition and asbestos abatement work for an area of approximately **5,250** gross square feet consisting of the bathroom core at each of the four floors of the building. The newly renovated core shall provide new, reconfigured Men's and Women's Rooms, new Lactation Rooms and Drinking Fountain areas, renovated Janitors Rooms and refinished corridor walls around the core.
- 2. The building is existing and the area to be renovated shall be completely renovated to like-new condition and shall meet present accessibility requirements. Materials that shall be used include but are not limited to the following: Interior wall construction consists of metal studs and gypsum board. Interior finishes include ceramic tile, vinyl wall covering and corner guards, rubber base, and painted gypsum board. Floor coverings include ceramic tile. Ceilings shall be suspended grid with gypsum board. Toilet compartments are solid plastic. Millwork finish is plastic laminate and solid surface counters.
- 3. 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: Ashour Gevargisnia.**
 - 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: 860-713-5639;**
 - c. **Fax: 860-622-2947;**
 - d. **Email(s): Ashour.Gevargisnia@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 the **Department of Administrative Services.**
 2. **Agency Representative Name and Title: Richard Terrell, RA.** The Agency Representative's Title is **DAS Architect.**
 - a. **Agency Representative Location:** The Agency Representative is located at **450 Columbus Boulevard, Suite 1403, Hartford, CT 06103**
 - b. **Phone:** 860-713-5717;
 - c. **Fax:** 959-200-4782;
 - d. **Email(s):** richard.terrell@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 **Mark A. Welch, AIA.**
 - a. **Architect's Location:** The Architect is located at 312, Park Road, West Hartford, CT 06119.
 - b. **Phone:** 860-232-6664 ext 112;
 - c. **Fax:** 860-232-6121;
 - d. **Email(s):** markw@oakparkarchitects.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: Construction Solutions Group, LLC; James P. Giuliano President.**
 - a. **Construction Administrator Location:** The Construction Administrator is located at P.O. Box 271860, West Hartford, CT 06127.
 - b. **Phone:** 860-878-0337;
 - c. **Fax:** TBD;
 - d. **Email(s):** karend@csgroup-llc.com (Karen DePersia); jimg@csgroup-llc.com (James Giuliano)
 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.
- J. **Work:** The Work Includes but is not limited to the following:
 - 1 **Selective Demolition;**
 - 2 **Miscellaneous Metals;**
 - 3 **Asbestos Abatement;**
 - 4 **Rough Carpentry, Architectural Woodwork, Laminate Clad Casework and Solid Surface countertops;**
 - 5 **Waterproofing, Insulation, Sprayed-on Fireproofing, Firestopping, Roof patching, Sheet metal, and Joint Sealants;**
 - 6 **Doors and Frames, Hardware;**
 - 7 **Drywall, Wall Coverings and Guards, Gypsum Board Ceilings, Ceramic Tile and Painting;**
 - 8 **Toilet Compartments, Louvers and Vents, Signage, and Toilet Accessories; Visual Display Hanging Systems; Tempered Glass Panel;**
 - 9 **Plumbing, Fire Protection, HVAC, and Controls;**
 - 10 **Electrical;**
- K. 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.
- L. 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.
- M. The Work will be constructed under the Contractor's **DBB** Contract as applicable to this Project.

1.4 WORK UNDER OTHER CONTRACTS

- A. **Separate Contract:** None.

1.5 WORK SEQUENCE (PHASES)

- A. **Related Documents:** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Site Phasing Plan is shown on Drawing Sheet No. A0.02.
- C. The entire Project shall be constructed in 2 Phases. Work of both these Phases shall be substantially complete, ready for occupancy within 180 Calendar Days of commencement of the Work (the “**Contract Time**”).
- D. **Phase 1** shall include the following portions of work, including all labor and material, shown on the drawings and/or as specified hereinafter. Work of this Phase shall be substantially complete, ready for occupancy prior to Phase 2. **The intent of Phase 1 is to renovate one Women’s and one Men’s Room per floor (the West rooms stack) while preserving the functionality of one Men’s and one Women’s Room per floor (the East rooms stack),** and includes but is not limited to the following:
 1. **All work shown and specified for area delineated as Phase 1 in 2/A0.02.**
 2. **All Division 02 to 49 work associated with this area.**
 3. **All Architectural, Fire Protection, Plumbing, Mechanical and Electrical Work, materials and labor, as specified and/or as shown on the drawings as follows: Demolition, including Asbestos Abatement, and Renovation of West Bathrooms, Lactation Rooms, West Janitor’s Rooms,**

Drinking Fountain nooks and West Core Corridors at all floors. The extent of work on the Core Corridors may vary on the different floors.

- E. **Phase 2** shall include all work that is remaining in order to fully complete the entire project, including all labor and material, as shown on the drawings and/or as specified hereinafter. Work of this Phase shall be substantially complete, ready for occupancy within 180 Calendar Days of commencement of the Work. The intent of Phase 2 is to **renovate one Women's and one Men's Room per floor (the East rooms stack) while preserving the functionality of one Men's and one Women's Room per floor (the West rooms stack)**, and includes but is not limited to the following:
1. **All work shown and specified for area delineated as Phase 2 in 2/A0.02.**
 2. **All Division 02 to 49 work associated with this area.**
 3. **All Architectural, Fire Protection, Plumbing, Mechanical and Electrical Work, materials and labor, as specified and/or as shown on the drawings as follows: Demolition, including Asbestos Abatement, and Renovation of East Bathrooms, Baby Changing Room and Storage Rooms, East Janitor's Rooms, Drinking Fountain nooks and remaining Core Corridors at all floors.**

1.6 CONTRACTOR'S USE OF PREMISES

- A. **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 or by the CA.
 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 **410 Capitol Avenue** property from the parking lot unless otherwise specified by the CA. The Contractor shall check all roadways and paths 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. The Contractor shall comply with local working hours restrictions, unless specifically approved otherwise in writing by the Owner.
 7. No signs, other than those approved by the Construction Administrator, will be visible on the premises.
- B. **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.

1.7 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. Upon occupancy, the Agency will assume responsibility for maintenance and custodial service for occupied portions of the building.
8. **Work after Partial Agency Occupancy:**
 - 8.1 For all work to complete the area occupied, warranty work, the balancing and testing of systems, repair of latent defects and adjustments after partial occupancy, the Contractor is responsible for all costs associated with working in occupied buildings.

1.8 PRODUCTS ORDERED IN ADVANCE N/A

1.9 OWNER-FURNISHED PRODUCTS - N/A

1.10 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. Tests have been done for Asbestos Containing Material (ACM) and Lead-Based Paint (LBP) Containing Material, and 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.

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:** See Phasing Plan 2/A0.02. and 1.5 above. The Site Logistics Plan(s) 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;**
 - 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 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 **ten (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. Allowances.
 - 2. Unit Prices.
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
 - 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 41 19 Selective Demolition
 - Section 02 82 13 Asbestos Abatement
 - Section 23 07 13 HVAC Duct Insulation
 - Section 23 33 00 Duct Accessories

1.3 ALLOWANCES – Not Used

- A. This Section includes administrative and procedural requirements for Allowances.
- 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.
- C. **Cash Allowances:**
 - 1. The Contractor's costs for unloading and handling, labor, installation costs, storage, insurance, overhead and profit and other expense related to the Allowance item shall be included in the Lump Sum Bid Amount and not in the Allowance unless stated otherwise in the Allowance Schedule of this section.
 - 2. **Architect/Engineer Responsibilities:**
 - a. Consult with Contractor for consideration of Products, suppliers and installers.
 - b. Select Products in consultation with the DAS/CS Project Manager and Agency Representatives and transmit decision to Construction Administrator.
 - c. Prepare Change Order.
 - 3. **Construction Administrator Responsibilities:**
 - a. Consult with Architect/Engineer, Contractor, DAS/CS Project Manager and Agency Representatives for consideration of Products, suppliers and installers.
 - b. Select Products in consultation with Architect/Engineer, DAS/CS Project Manager and Agency Representatives and transmit decision to Contractor.
 - c. Prepare Change Order.
 - 4. **Contractor Responsibilities:**
 - a. Assist Architect/Engineer and Construction Administrator in selection of Products and Suppliers.
 - b. Obtain proposals from Suppliers and offer recommendations.
 - c. On notification of selection by Construction Administrator execute purchase agreement with designated supplier.
 - d. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.

- e. If the actual cost of an Allowance item is more or less than the given amount, the Contract Sum will be adjusted by Change Order.

5. Allowance Schedule: Not Used

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 – Not Used

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

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

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:

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 requirement 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

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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.
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 **three (3)** copies. For Final Payment, **four (4)** 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

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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 77 00 "Closeout Procedures" for coordinating contract closeout.

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.

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-Builts - 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; 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 and fencing; and all specific provisions to satisfy requirements of Division 01 Sections, including but not limited to Temporary Facilities and Controls. The Site Logistics Plan shall coincide with and complement the general staging 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. 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

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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 or CPM 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

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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 **one (1)** set 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. Photographs to be clear, in focus and showing legible detail.
- B. The CA retains the right to request the adjustment of photographs to meet criteria above.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC COPIES

- A. On the date the work is begun and at no less than every **thirty (30) days** thereafter (until the work is at least 95 percent complete). Additional photographs to be taken at every major construction step.
- 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), Room Name, and 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 45 23.13 "Testing for Indoor Air Quality (IAQ), Baseline IAQ, and Materials" specifies requirements for submittal of documentation required to support LEED or Green Globes certification.
10. Division 01 Section 01 77 00 "Closeout Procedures" specifies requirements for submittal of Project Record Documents and warranties at project closeout.
11. 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 **three (3)** 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 and Construction Manager reserve** 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.
1. 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 (digital copy), and **two (2)** prints or 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 **two (2)** 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. A full-size print of the final reviewed Shop Drawings shall be available at the 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 **three (3)** 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, hazardous building material reports, 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 02 Section 02 41 19 "Selective Demolition" for demolition of selected portions of the building for alterations.
 - 5. Division 50 00 00 "Project-Specific Available Information" for information that is referenced in Section 00 30 00 "General Statements for Available Information".
 - 6. Refer to other Sections for specific requirements and limitations applicable to performing alteration Work with individual parts of the Work.
 - 7. Requirements of this Section apply to mechanical and electrical installations. Refer to Division 21, 22, 23 and 26 Sections for other requirements and limitations applicable to renovation Work by mechanical and electrical installations.

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/REUSABLE MATERIALS

- A. The **Owner** shall be responsible for removing the following salvageable items from project area and transporting said items to a safe storage in the building:
 - 1. **Wall mounted display fixtures and related accessories.**
 - 2. **Art and wall mounted decoration and framed visuals.**

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**.
- 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**.
 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**.
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. 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.

E. Project Procedures for Work Involving Mold:

1. The **Contractor** is responsible for abating all Mold (any form of fungi, including mold or mildew, and myotoxins, spores, scents or by-products produced or released by fungi) 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 **Section 01 35 16 Alteration Project Procedures** and **Section 02 85 00 Mold and Other Hazardous Materials Remediation Specifications**.
3. If the Owner has tested the facility scheduled for renovation, demolition, reconstruction alteration, remodeling or repair for Mold, 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. Under no circumstance shall this information be the sole means used by the Contractor for determining the extent of Mold. It is the Contractor's responsibility to verify all materials and field conditions prior to renovation, demolition, reconstruction, alteration, remodeling, or repair that may affect the performance of their Work.
4. If the Contractor should encounter any material suspected or known to contain **Mold that was not previously identified and assigned as the Contractor's responsibility**, 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 Mold 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 Mold**, 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. Disposal of all hazardous materials shall be in accordance with but not limited to applicable provisions of 40 CFR Parts 761 Subpart K, 761, and 761.65 and the Connecticut General Hazardous Waste Statute Sec. 22a-454.

F. Project Procedures for Work Involving Hazardous Materials, Wastes, and Items and Universal Wastes (Including Products Containing Persistent Bioaccumulative Toxic Chemicals" (PBTs) such as Polychlorinated Biphenols (PCBs), Di-2-ethylhexyl Phthalate (DEHP), and Mercury):

2. The **Contractor** is responsible for abating all **Hazardous Materials, Wastes, and Items and Universal Wastes** including products containing Persistent Bioaccumulative Toxic Chemicals" (PBTs) such as Polychlorinated Biphenols (PCBs), Di-2-ethylhexyl Phthalate (DEHP), and Mercury 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. If a **Hazardous Materials, Wastes, and Items and Universal Wastes Inventory** has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair, then the 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. Under no circumstance shall this information be the sole means used by the Contractor for determining the extent of Hazardous Materials, Wastes, and Items and Universal Wastes. The Contractor shall be responsible for verification of all field conditions affecting performance of the Work.
3. If the Contractor should encounter any Hazardous Materials, Wastes, and Items and Universal Wastes **that were 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 Hazardous Materials, Wastes,**

and Items and Universal Wastes within a reasonable time period after the Owner's issuance of a Change Order for the additional abatement work.

4. Exposure Levels for PBTs such as PCBs, DEHP, and mercury in the construction industry are regulated by 29 CFR 1910.1200 and 29 CFR 1926.28 et. al. Demolition and removal work may expose workers in excess of the respective Permissible Exposure Limit (PEL). Conduct demolition and removal work specified in the technical sections of these specifications in conformance with these regulations.
5. 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.
6. For the purposes of this paragraph, **PCB's in building material such as caulk and glazing or any other type of material not listed above is not applicable to this paragraph.**
7. Construction debris/waste may be classified as hazardous waste. Disposal of all hazardous materials shall be in accordance with but not limited to applicable provisions of 40 CFR Parts 761 Subpart K, 761, and 761.65 and the Connecticut General Hazardous Waste Statute Sec. 22a-454.

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";
 - 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. Regulatory Citations and Violations;
 - d. Gas Protection.
 - 3. **Certificates:**
 - a. Hot work permit;
 - b. License Certificates.

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) **can be the SSHO on this project**. Meet the following requirements within the SSHO:

Level 1: Worked on similar projects. 10-hour OSHA construction safety class or equivalent within last **three (3) years**. Competent person training as needed.

F. **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 and quality control** 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.

G. **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. Crane Reports

Submit crane inspection reports on a form approved by the CA and as specified herein with Daily Reports of Inspections.

E. 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, SHAL 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) fifteen 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 – N/A

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

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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) - [2012].
 - 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 - [2015].
 - 3.1 NFPA 1 - [2015].
 4. Occupational Safety and Health Administration (OSHA)
 - 4.1 OSHA 29 CFR Part 1910 Occupational Safety and Health Regulations - [1999].
 - 4.2 OSHA 29 CFR Part 1926 Occupational Safety and Health Regulations for Construction - [1999].
- 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

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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.

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 **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 non-compliance 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 Section 7-6.1.4, NFPA 101//2003 and NFPA 13/2002.
- b. Prior Test Notification: At least **five (5)** working days prior to testing, the Fire Alarm 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 (See NFPA 72/2002 Chapter 7 and Figure 7-5.2.2).
 - 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 Fire Alarm Contractor and Sprinkler Contractor.
- e. **System Documentation:** Every system shall include the following documentation, which shall be delivered to the Department of Construction Services Representatives upon final acceptance of the system. An owner's manual or manufacturer's installation instructions covering all system equipment, including the following:
 - 1) A detailed narrative description of the system inputs, evacuation signaling, ancillary functions, annunciation, intended sequence of operations, expansion capability, application considerations, and limitations.
 - 2) Operator's instructions for basic systems operations including alarm acknowledgment, system reset, interpreting system output (LED's CRT display, and printout), operation of manual evacuation signaling and ancillary function controls, changing printer paper, etc.
 - 3) A detailed description of routine maintenance and testing as required and recommended and as would be provided under a maintenance contract, including testing and maintenance instructions for each type of device installed. This information should include:
 - (a) A listing of individual system components that require periodic testing and maintenance.
 - (b) Step by step instructions detailing the requisite testing and maintenance procedures and the intervals at which those procedures should be performed.
 - (c) A schedule that correlates the testing and maintenance procedures required by paragraph (2) above and with the listing required by paragraph (1) above.
 - 4) Detailed troubleshooting instructions for each type of trouble condition recognized by the system, including opens, grounds, parity errors, "loop failures," etc. These instructions should

include a list of all trouble signals, and step by step instructions describing how to isolate those problems and correct them (or call for service as appropriate).

- 5) A service directory, including a list of names and telephone numbers for those who should be called to service the system.

f. As-Built Drawings:

- 1) The Contractor will produce two (2) sets of as-built drawings and specifications for the fire alarm system, indicating the location (and programmed address, if applicable) of all devices and appliances, the wiring sequences, wiring methods, connection of the components, and sequence of operation of the protective signaling system as installed, shall be given to the Department of Construction Services representatives. 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 and Construction Administrator 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

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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 the following:
1. Requirements of baseline Indoor Air Quality (IAQ) testing for maximum indoor pollutant concentrations for acceptance of the facility.
 2. Requirements for independent materials testing of specific materials anticipated to have major impact on IAQ.
 3. Procedures for testing specific construction materials for IAQ performance to assure compliance with green building rating system credits. Materials have been identified for independent testing based on the following **three (3)** criteria:
 - a. Large volume of material used in occupied spaces.
 - b. The space is occupied during normal working hours.
 - c. Materials are used in an area where there is recirculating air.
- 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.
 2. Division 23 Section 23 05 93 "Testing, Adjusting and Balancing for HVAC" for additional requirements for baseline testing for IAQ.
 3. Division 23 Section 23 05 93 "Testing, Adjusting and Balancing for HVAC" for cleaning of HVAC system including duct work, air intakes and returns, and changing of filters.

1.3 REFERENCES

- A. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE):**
1. ASHRAE 52.2-1999, Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
- 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 Contractors' National Association (SMACNA):**
1. IAQ Guidelines for Occupied Buildings Under Construction, 1995.
- D. United States Environmental Protection Agency (EPA):**
1. Compendium of Methods for the Determination of Air Pollutants in Indoor Air.

1.4 SUBMITTALS

- A. Baseline IAQ Testing:** Submit a report for each test site specified for IAQ baseline testing as prescribed in Section 23 05 93 "Testing, Adjusting and Balancing for HVAC". Report on air concentrations of targeted pollutants as identified in Table 3.1 below.
- B. Product Emissions Test Reports:** Submit a report for each material emissions test performed. Report test results in terms of emission factors that will be used by the Owner to model indoor air concentrations. These reports and the modeling data prepared by the Owner shall be included in the closeout documentation specified in Section 01 77 00 "Closeout Procedures".
- C. Green Building Certification Documentation Submittals:**
1. **Construction Indoor Air Quality (IAQ) Management Plan (During Construction) Credit:**

- a. Construction IAQ management plan.
 - b. Letter confirming if the permanently installed air handling equipment was used during construction.
 - c. Product data for temporary filtration media. Indicate manufacturer, model number, MERV rating, and location of installed media.
 - d. Letter confirming that each filtration media was replaced prior to final occupancy.
 - e. Product data for filtration media to be used during occupancy. Indicate manufacturer, model number, MERV rating, and location of media.
 - f. Construction Documentation: **Six (6)** photographs at **three (3)** different occasions during construction along with a brief description of the SMACNA approach employed, document implementation of the IAQ management measures, such as protection of ducts and on-site stored or installed absorptive materials.
- 2. Construction Indoor Air Quality (IAQ) Management Plan (Before Occupancy) Credit:**
- a. Signed letter confirming the approach taken by the project (pre-occupancy flush-out; flush-out with early occupancy flush-out or IAQ testing).
 - b. A narrative describing the building air flush-out procedures including the dates when flush-out was begun and completed and statement that filtration media was replaced after flush-out.
 - c. Product data for filtration media used during flush-out and during occupancy.
 - d. A narrative describing the building's IAQ testing process and results including the dates when testing was started and completed.
 - e. Report from testing and inspecting agency indicating results of IAQ testing and documentation showing conformance with IAQ testing procedures and requirements.

1.5 QUALITY ASSURANCE

- A. Perform material tests and report results in accordance with ASTM D5116.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 BASELINE IAQ TESTING

- A. **HVAC System Verification:** To assure compliance with recognized standards for indoor air quality including ASHRAE 62-2004, the [Contractor's] [Owner's] independent testing and balancing agency shall verify the performance of each HVAC system including space temperature and space humidity uniformity, outside air quantity, filter installation, drain pan operation, and any obvious contamination sources.
- B. **Indoor Air Quality Testing:** Upon verification of HVAC system operation, the Contractor shall hire an independent contractor, subject to approval by the Architect, with a minimum of five (5) years experience in performing the types of testing specified herein, to test levels of indoor air contaminants for compliance with specified requirements.
 - 1. Submit a test plan for the approval of the Architect. The plan shall specify procedures, times, instrumentation, and sampling methods that will be employed.
 - 2. Perform testing in **16** different locations. Contaminant levels are to be measured on **each floor of each building in an area** agreed upon by the Contractor and the Architect. Areas with very high outside air ventilation rates such as laboratories are excluded from these testing requirements. The Architect is the sole judge of areas exempt from testing.
 - 3. Collect air samples on **three (3) consecutive** days during normal business hours (between the hours of 8:00 AM and 5:00 PM) with building operating at normal HVAC rates. Average the results of each three-day test cycle to determine compliance or non-compliance of indoor air quality for each air handling zone tested.
 - 4. Sample and record outside air levels of formaldehyde and TVOC contaminants at outside air intake of each respective air handling unit simultaneously with indoor tests to establish basis of comparison for these contaminant levels. Indoor testing will be done in the breathing zone; between **four (4) and seven (7) feet** from the floor.

5. Acceptance of respective portions of [the building] [buildings] by the Architect is subject to compliance with specified limits of indoor air quality contaminant levels.
- C. Compliance indoor air quality shall conform to the following standards and limits:**
1. **Carbon Monoxide:** Not to exceed nine (9) ppm.
 2. **Carbon Dioxide:** Not to exceed 800 ppm.
 3. **Airborne Mold and Mildew:** Simultaneous indoor and outdoor readings.
 4. **Maximum Air Concentration Standards:** Indoor room air concentration levels, emission rates, and qualities of the listed contaminants shall not exceed the following limits specified in Table 3.1 below.
- D. Test Reports:** Prepare test reports showing the results and location of each test, a summary of the HVAC operating conditions, a listing of any discrepancies and recommendations for corrective actions, if required.
1. Include certification of test equipment calibration with each test report.
- E.** If any test fails the standard, the Contractor is responsible to ventilate the building with 100 percent outside air until the building passes both air quality tests and duct inspections. Retesting shall be performed at no additional expense to the Owner.

Table 3.1 MAXIMUM INDOOR AIR CONCENTRATION STANDARDS

INDOOR CONTAMINANTS	MAXIMUM AIR CONCENTRATION LEVELS*
Formaldehyde	50 parts per billion
Particulates (PM10)	50 micrograms per cubic meter
Total Volatile Organic Compounds (TVOC)	500 micrograms per cubic meter
4-Phenylcyclohexene (4-PCH)**	6.5 micrograms per cubic meter
Carbon Monoxide (CO)	9 parts per million and no greater than 2 parts per million above outdoor levels

* All levels must be achieved prior to acceptance of the building. The levels do not account for contributions from office furniture, occupants, and occupant activities.

** This test is only required if carpet and fabrics with styrene-butadiene rubber (SBR) latex backing material are installed in the building.

- F. Construction Indoor Air Quality (IAQ) Management Plan (During Construction) Credit:** Comply with SMACNA IAQ Guidelines for Occupied Buildings under Construction.
- G. Construction Indoor Air Quality (IAQ) Management Plan (Before Construction) Credit:**
1. 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.
 2. 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.
 3. Engage an independent testing and inspecting agency to conduct a baseline IAQ testing program according to EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air [and the LEED for New Construction Version 2.2 Reference Guide].

3.2 INDEPENDENT MATERIALS TESTING

- A. Materials That Must Be Tested:** Test materials listed below that are proposed for use on this project for permanent, in-place Indoor Air Quality performance in accordance with requirements of these specifications. Results shall be furnished to the Architect. Materials meeting the criteria for independent testing are as follows:

1. Field applied paint systems on appropriate substrate. Paint primers and intermediate coats (if used) should be applied with a typical drying time allowed between coats (not to exceed seven (7) days).
 2. Carpet including manufacturer's recommended adhesive. The carpet will be applied to the appropriate concrete flooring per manufacturer's instructions so that the testing is of the "carpet assembly."
 3. Acoustical ceiling tile.
 4. Fireproofing material applied to appropriate substrate.
- B. Materials for Testing:** Only test representative samples of actual products selected for use on this project. Tests of products generically and/or technically similar but produced by a manufacturer other than that of the product selected for use on this project is invalid.
- C. Materials Testing Parameters:**
1. Wrap each material to be tested in air tight covering for shipment direct from the factory to the testing laboratory to avoid contamination in transit. Unwrap material or apply material to substrate if material is wet-applied, such as paint or adhesive materials) in the testing lab.
 2. **Emissions Testing:** Perform all testing in accordance with ASTM D5116. Report results in accordance with Section ii of referenced ASTM Standard. Report in terms of emission rates at a minimum of three (3) distinct time intervals (e.g., one (1) hour, 24 hours, 72 hours) that will be modeled by the Architect to predict maximum indoor air concentrations and to assist the Contractor in determining suitability of products or materials. Assumptions that will be used for the Architect's model are given below for information.
 3. Table 3.2 summarizes required product testing.

Table 3.2 PRODUCT EMISSION TESTING

PRODUCT ASSEMBLY TO BE TESTED	TVOC (per ASTM)	PM (per NIOSH)
Wall paint on appropriate substrate, including any primer coat	Yes	No
Carpet including adhesive and concrete flooring	Yes	No
Acoustical Ceiling Tile	No	Yes
Fireproofing material on appropriate substrate	No	Yes

- D. Model Assumptions Used for Predicting Indoor Air Concentrations:** The model will assume the standard room enclosure as 10' long x 10' wide x 9' high. Each product tested will be modeled separately to provide information on the particular product. The model will assume a ventilation rate of one (1) air change per hour.
1. **Field Applied Paint Systems:** Test fully cured samples of each complete paint system including primers, intermediate coats (if used), and finish coats. The model assumes application to all four (4) walls and one-half of ceiling of model standard room enclosure.
 2. **Carpet and Adhesive Assembly:** Assumes application to entire 10 x 10 ft floor surface of model standard room enclosure.
 3. **Acoustical Ceiling Tile:** Assumes application to entire 10 x 10 ft ceiling surface of model standard room enclosure.
 4. **Fireproofing:** Assumes application to entire 10 x 10 ft area above the ceiling surface of model standard room enclosure.
- E. Materials Test Reports:** Submit test reports to the Architect. The report shall include the information outlined in Section 11 of ASTM D5116.
- F. Product/Material Evaluation:** All products/materials shown by testing to comply with emissions limits and other criteria specified in this section will be approved for use on this project subject to compliance with all other specified requirements of the Project Manual. Products/materials shown by model to exceed specified emission limits shall be discussed, test results interpreted, and a determination made as to alternative product uses or selections.

END OF SECTION 01 45 23.13

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 water service and distribution.**
 - 2. **Temporary electric power and lighting services.**
 - 3. **Temporary heating, cooling and ventilation**
- C. Support facilities include, but are not limited to, the following:
 - 1. **Field office.**
 - 2. **Storage and fabrication sheds.**
 - 3. **Temporary enclosures.**
 - 4. **Collection and disposal of waste and cleaning.**
 - 5. **Temporary Environmental Controls.**
 - 6. **Stairs and elevators.**
- D. Security and protection facilities include, but are not limited to, the following:
 - 1. **Temporary fire protection.**
 - 2. **Permanent fire protection.**
 - 3. **Security for site and Agency.**
 - 4. **Barricades, warning signs, and lights.**
 - 5. **Security enclosure and lockup.**
 - 6. **Protection.**
 - 7. **Environmental protection.**
 - 8. **Traffic ways.**
 - 9. **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.
- B. **Implementation and Termination Schedule:** Within **twenty-one (21)** days of the date established for commencement of the Work, submit a schedule indicating implementation and termination of each temporary utility.

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, Grade A-B Fir plywood.
 2. **Vision Barriers:** Provide minimum 1/2-inch thick 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 90 00 "Painting and Coating."
- 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.

2.2 EQUIPMENT

- A. General:** Provide new equipment. 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. Temporary Field Offices:** None
- G. Temporary Toilet Units:** The Agency will allow the toilets located in 410 Capitol Ave building for Contractor use. If others are needed, 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.
- H. 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. Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.
 - a. **Sterilization:** Sterilize temporary water piping prior to use.
2. 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. **Power Distribution System:** Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, ac 20 Ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.
2. **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. The Contractor may use the existing heating system with temporary extensions, radiators or unit heaters, but such use is subject to the Owner's approval. Coordinate use of existing facilities with Owner. Provide additional, temporary extensions and units to satisfy the criteria given in the preceding paragraph. Owner will pay cost of energy used. Take measures to conserve energy. At the termination of construction, return the facilities to their original condition. Before operation of permanent facilities, verify that installation is approved for operation and that filters are in place.
2. 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.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General:** Locate field offices, storage sheds, and other temporary construction and support facilities in designated area as shown on the Contract Documents. The location of the trailers on the Drawings is diagrammatic in nature. 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.

B. Field Offices:

1. **State User Agency Provided Field Offices:** The State User Agency will furnish, without charge, **one (1)** room or area for the Contractor's use as an office in an existing building. The Owner and Construction Administrator will share space with the Contractor. The Contractor shall provide and install a 5-lb ABC fire extinguisher and an approved first aid kit. The Contractor shall be responsible for furniture and shall keep this area clean and return it to its original condition after use. The Contractor shall provide the following furniture and Equipment, which will remain his property. The furniture may be used but shall be in good condition as judged by the Owner and Construction Administrator. The Contractor shall provide a method to contact them by e-mail and telephone at any point and time.
2. **Field Office Computer System – not required.**

- C. 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.
- 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.
 4. Where temporary enclosure exceeds 100-sq ft in area, use UL-labeled, fire-retardant-treated material for framing and main sheathing.
- E. Temporary Project Identification Signs:** not required.
- F. 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.
- G. 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.
 6. Traffic Control.
- H. Stairs and Elevators:** Cover stairs and elevator surfaces with a protective covering of plywood or similar material so finishes will not be damaged during construction. Confirm and coordinate with CA use of elevators.

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.
 - 6. If an EPDM or other single-ply roof is included in the work that requires cleaning of mating surfaces of laps with gasoline, limit amount of gasoline on roof to two (2) gallons which shall be in UL listed containers. Also provide one 30 B:C fire extinguisher within 75 feet of any point on the roof.
- 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. 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.

G. 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".

- H. 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.

I. 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.
4. Access to the premises at 410 Capitol Avenue will be set by and is subject to change at the discretion of the Construction Administrator to coincide with the building use schedule.

J. 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

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.
 - 2. Division 01 Section 01 45 23.13 "Testing for IAQ, Baseline IAQ, & Materials."
 - 3. Division 01 Section 01 57 30 "Indoor Environmental Control."
 - 4. Division 01 Section 23 05 93 "Testing, Adjusting and Balancing for HVAC" for additional requirements for baseline testing for IAQ.
 - 5. Division 01 Section 23 05 93 "Testing, Adjusting and Balancing for HVAC" for cleaning of HVAC system including ductwork, air intakes and returns, and changing of filters.

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. Where specified, provide the colors 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

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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 Structure Demolition"** for demolition of selected portions of the building for alterations.
 4. Division 02 Section **02 82 13 "Asbestos Abatement"** for demolition of selected portions of the building containing asbestos.
 5. 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 effects to integrity of weather exposed or moisture resistant element.
 4. Describe effects to efficiency, maintenance, or safety of any operational element.
 5. Describe effects 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. **Bearing walls.**
 - b. **Structural concrete.**
 - c. **Structural steel.**
 - d. **Lintels.**
 - e. **Structural decking.**
 - f. **Miscellaneous structural metals.**
 - g. **Equipment supports.**
 - h. **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. **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 administrative and procedural requirements for handling requests for building system start up and system demonstration and includes the following:
 - 1. Starting Systems.
 - 2. Demonstration and instructions.
 - 3. Testing, adjusting, and balancing.
- B. **Related Sections:** The following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section 01 45 00 "Quality Control" specifies quality assurance and inspecting services.
 - 2. Division 01 Section 01 77 00 "Closeout Procedures" specifies requirements for contract close out requirements for system operation and maintenance data and extra materials.

1.3 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Provide written notification to the Construction Administrator **30 days** prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, and control sequence for other conditions that may cause damage.
- D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components are complete and tested.
- F. Execute the start-up under supervision of manufacturer's representative, in accordance with manufacturer's instructions.
- G. When referenced in individual specification sections, require manufacturer to provide an authorized representative to be present at the site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with Division 01 Section 01 45 00 "Quality Control" that the equipment or system has been properly installed and is functioning properly.

1.4 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner and Agency Personnel **fourteen (14)** days prior to substantial completion.
- B. Demonstrate Project equipment and instruct in a classroom environment at location designated by the Construction Administrator and instructed by a qualified manufacturer's representative who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation perform demonstration for season within **six (6)** months.
- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner and Agency Personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, and maintenance, and shutdown of each item at agreed upon scheduled time and at equipment or designated location.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during demonstration.
- G. Starting and adjusting equipment does not constitute acceptance by the owner since commissioning is a requirement of this contract. Additionally, the warrantee does not begin until substantial completion has been granted for that specific item.

1.5 TESTING, ADJUSTING, AND BALANCING

- A.** The Contractor will employ and pay for the testing services of an independent consultant to verify the testing, adjusting, and balancing.
 - 1. Comply with the requirements of Division 01 Section 01 91 00 "Commissioning" as they relate to the Work of this Section.
- B.** Reports will be submitted by the independent testing consultant to the Construction Administrator indicating observations and results of tests and indicating compliance or non-compliance with the requirements of the Contract Documents.
- C.** The Owner may employ and pay for the services of an independent consultant to verify testing, adjusting, and balancing which was performed by the Contractor.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 75 00

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, **1.5-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

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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. 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 **two (2)** draft copies of each manual to the Owner's Representative, 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 **three (3)** 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 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 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 **two (2)** 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 **two (2)** 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. **Required sequences for electric or electronic systems.**
 - h. **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.
- 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 Construction Manager 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

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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.	07	90 00	Exterior - Interior Caulking and Sealants: 5 year, material and workmanship.
2.	08	13 16	Custom fabricated non-rated steel door frames 5 year material and workmanship.
3.	08	14 00	Wood Doors: Lifetime for interior doors.
4.	08	71 00	Closers, Locksets, Exit Bolts: Longest term offered by manufacturer for grade/class of particular item, material and workmanship.
5.	08	71 00	Mortise locks and latches: 10 years for Material defects
6.	08	71 00	Manual surface door closer bodies: 25 years for material defects.
7.	09	21 16	Gypsum Board Construction: 5 years product and installation, including weather tightness.
8.	10	21 16	Toilet Compartments 25 years for material breakage, corrosion, delamination
9.	10	28 00	Mirrors: 15 years against silver spoilage.
10.	22	33 33	Electric Water Heater 5 years for material, and installation.
11.	26	05 00	Dimming Controls: 8 years, material and installation,
12.	26	20 10	Panelboards: 5 years, material and installation,
13.	26	50 00	Emergency Lighting Batteries: 10 years, material and installation,
14.	26	50 00	Lighting Ballasts: 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: Melody A. Currey Department of Administrative Services DAS Commissioner's Office 450 Columbus Boulevard, Suite 1501 Hartford, CT 06103			
Project Number: BI-2B-400 Project Title: BATHROOM RENOVATIONS AND ADA UPGRADES			
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

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-I Specification sections, apply to work of this section.

1.01 SUMMARY

A. The work of this section includes, but is not limited to, the demolition and removal from the site of existing construction, materials and systems as indicated on Drawings. General items to be demolished include the following:

1. Removal of existing Plumbing and HVAC equipment, ductwork, supports and/or alterations to existing mechanical, electrical, sprinkler and plumbing equipment as required to facilitate new construction.
2. Removal of partitions as indicated.
3. Removal of floor finishes as indicated on drawings down to bare, broom cleaned subfloors. Concrete floors shall be prepared for new floor finishes as indicated in technical specification sections.
4. Removal of wall finishes and preparation of walls for new finish.
5. Removal of existing walls, ceilings and all support structures.
6. Removal of loose and attached furnishings, fixtures, equipment, systems, debris, junk and everything else, except things indicated to remain.
7. Coring and cutting of existing floor system.
8. Temporary protection work of the portion of the existing, operable building during demolition and asbestos abatement work and for phasing.
9. Disconnecting and capping of utilities.
10. Removal of Doors and Door Frames.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all of the Contract Documents for requirements which affect the work of this section. Certain construction, systems, or equipment identified in the Contract Documents or by the Architect in the field shall remain in-place or be removed and stored by others for future service and shall be protected.
- B. Other specification sections which directly relate to the work of this section include, but are not necessarily limited to, the following:

1. Section 01 11 00 – Summary of Work
2. Section 01 73 29 – Cutting and Patching
3. Section 02 82 13 – Asbestos Abatement
4. Mechanical, Fire Protection, Plumbing and Electrical Division Sections

1.04 PROJECT CONDITIONS

- A. Occupancy: Areas to be demolished in a specified phase will be unoccupied prior to start of work, while the remaining areas are to be fully functional. The building outside of the project area will be fully occupied, See Section 01 11 00 Summary of Work - Project Description; Work Sequence; occupancy requirements.
- B. Condition of Structures: Owner assumes no responsibility nor makes any claim as to the actual condition or structural adequacy of any existing construction to be demolished. The Contractor shall investigate and assure himself of the condition of the work to be demolished and shall take all precautions to ensure safety of persons and property.
- C. Salvage: Items of value which are not indicated to be returned to the Owner or reused on this project shall become the property of the Contractor. Storage or sale of items on the project site is prohibited.
 1. Items indicated to be salvaged shall be removed with extreme care to prevent damage. All components and parts of salvaged items shall be saved and packaged. Store salvaged items as directed by Owner or Architect. Items to be salvaged and returned to the Owner or reused on this project include, but are not limited to, the following:
 - a. Owner shall advise through Owner's Representative of any items to be salvaged.
- D. Traffic: Conduct operations and removal of debris to ensure minimum interference with the normal use of public passages and other adjacent facilities. Do not close or obstruct traffic ways, corridors, streets, walks or other used facilities without the written permission of the Owner and authorities having jurisdiction.
- E. Protection: Ensure the safe passage of persons in and around the building during demolition. Prevent injury to persons and damage to property. Protect items to remain. Maintain fire protection systems in operation throughout the work of this project. Secure work areas and to prevent unauthorized entry into the work site.
- F. Dust and Noise Control: Take special care to control dust and noise to avoid creating a nuisance. Obtain Architect's and Owner's approval of means, methods and techniques use to control dust and noise.
- G. Utilities: Maintain all utilities except those requiring removal or relocation. Keep utilities in service and protect from damage. Do not interrupt utility serving used areas without first obtaining permission from the Building Owner. Provide temporary services as set forth in "General Requirements".

1.05 SUBMITTALS

- A. Submit detailed schedule indicating proposed methods and operations to be used in demolition. Include information for disconnecting utilities including for Phasing of project work as indicated on Drawings. Include information on the legal disposal of refuse.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 DEMOLITION

- A. Demolish areas as noted on demolition plan and as indicated herein, completely and legally remove debris from site. Use demolition methods within limitations of governing regulations.
- B. Proceed with demolition systematically from top to bottom. Demolish in small sections and avoid overloading. Remove all associated adhesives, clips, hangers and other attachment devices with removal of finishes.
 - 1. Interior walls: Remove interior walls and partitions as indicated and as needed to accommodate new work.
 - 2. Ceilings: Where ceilings are indicated to be removed, also remove ceiling mounted systems and equipment leaving only bare structure free from hangers.
 - 3. Floors: Remove floor finishes and construction down to bare, cleaned subfloors free of traces of adhesives and debris that could interfere with new work.
 - 4. Doors and Frames: Where doors and frames are indicated to be removed from walls or partitions which are to remain, remove doors and frames carefully so as to minimize damage to wall. Repair and patch wall as necessary to accommodate new doorframe or other new work.
- C. Create subfloors and substrates suitable for installation of new work.
- D. Upon completion of demolition work, all spaces and surfaces shall be broom clean and all nails, wires, hangers, and other items shall be removed down to bare substrates.
- E. Remove all debris from site and dispose of legally. Burning on site is not permitted.
- F. Pollutants:
 - 1. Definitions:

- a. Pollutants: means any solid, liquid, gaseous or thermal irritant or contaminant, including gas, alkalis, and chemicals, "waste" and any of the following: heat, smoke, vapor, soot or fumes.
 - b. Waste: includes, but is not limited to, materials to be recycled, reconditioned or reclaimed.
2. In the event any "pollutants" are encountered, discharged, dispersed, released, or escaped in the performance of the work, the Contractor shall immediately notify the Owner.

END OF SECTION

PART 1 - GENERAL

1.1 SCOPE

- A. The work specified herein shall include the abatement of asbestos-containing materials by persons who are knowledgeable, qualified, and trained in the removal, treatment, handling, and disposal of asbestos-containing material, and the subsequent cleaning of the affected environment. The Contractor shall have a Competent Person in control on the job site at all times and an Asbestos Abatement Site Supervisor during asbestos abatement work. This person must comply with applicable Federal, State and Local regulations that mandate work practices, and be capable of performing the work of this contract.
- B. The Asbestos Contractor shall be licensed by the State of Connecticut in accordance with State of Connecticut Regulations, Sections 20-440-1 through 9 and 20-441. Should any portion of the work be subcontracted, the subcontractor must also be licensed in accordance with these regulations. Site supervisors and workers shall be certified in accordance with Sections 20-437 and 20-438 of the Connecticut General Statutes and Section 20-440-5 of the Regulations of Connecticut State Agencies. The licensing and certification requirements are available from the Environmental Health Services Division, Department of Public Health, 410 Capitol Avenue, P.O. Box 340308, Hartford, CT 06134-0308.
- C. The Owner will retain the services of a Project Monitor for protection of its interests and those using the building. Abatement monitoring will be conducted as deemed necessary.
- D. The Contractor shall be responsible for the following general requirements:
 - 1. Obtain all approvals and permits, and submit all notifications required.
 - 2. Provide, erect, and maintain all planking, bracing, shoring, barricades, and warning signs.
 - 3. Unless otherwise specified, all equipment, fixtures, piping and debris resulting from demolition shall become the property of the Contractor and shall be removed from the premises.
 - 4. Materials to be reused shall be removed with the utmost care to prevent damage of any kind. All material to be reused shall be stored as directed. The Contractor shall coordinate with the State as to the storage location.
 - 5. Materials not scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable Federal, State and Local requirements.
 - 6. Provide OSHA required personal monitoring to ensure adequate respiratory protection for each worker.
- E. Protect and preserve in operating condition, all utilities traversing the building and site. Damage to any utility due to work under this Contract shall be repaired to the satisfaction of the Owner at no cost to the Owner.

1.2 DESCRIPTION OF WORK

- A. The Contractor shall supply all labor, materials, equipment, services, insurance (with specific coverage for work on asbestos), and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations and these specifications.
- B. The results of laboratory analysis indicate asbestos-containing material (ACM) is present in the areas of the building to be renovated in this project. A complete listing of all suspect materials sampled, results of testing is documented in attached asbestos inspection reports. **See also Floor Plans included in Section 05 80 00.1 2016 ATC Report Appendix B Drawings.** Specifically the following materials have been determined to be ACM:
 - 1. Joint Compound in gypsum board walls and ceilings.
 - 2. 12"x12" Gray Floor Tile and Associated Mastic.
 - 3. Mirror Adhesive (Presumed).
- C. The scope of work includes the removal of ACM as part of building renovation. Coordinate locations and identity of building components or materials to be removed under this section with other sections of the Project Manual and contract drawings A0.02, A1.00, A1.01, P1.01, M1.01, and E1.01. **Coordinate with Project Phasing as specified in section 01 11 00 Summary of Work, 1.5 Work Sequence.**
- D. The scope of work in this section includes but is not limited to the removal of the following ACM:
 - 1. Gypsum Board Systems – Throughout. See A.1.00 for extent of Gypsum Board Demolition.
 - 2. 12"x12" Gray Floor Tile and Associated Mastic – Janitors Closets West at all four floors, Janitor Closet East at 3rd floor.
 - 3. Mirror Adhesive (Presumed) at all locations.

1.3 DEFINITIONS

- A. Accessible - A space easily accessed, and which can be entered or seen without demolition.
- B. Agency - The authoritative force, usually at the state level, or their representative.
- C. ASHERA - Asbestos School Hazard Emergency Response Act - U. S. EPA regulation 40 CFR Part 763 under Section 203 of Title II of the Toxic Substances Control Act (TSCA), 15 U.S.C. 2643. This rule mandates inspections, accreditation of persons involved with asbestos, and final air clearances following abatement in public and private schools, and public and commercial buildings.
- D. Alternative Work Practice (AWP) - State of Connecticut Department of Public Health approved deviation from Asbestos Standards (Sections 19a-332a-1 to 19a-332a-16 inclusive)
- E. Asbestos Abatement Site Supervisor – Any individual who is employed or engaged by an asbestos contractor to supervise an asbestos abatement project.

- F. Asbestos-Containing Waste Materials - Mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. As applied to demolition and renovations operations, this term also includes regulated asbestos-containing material waste and materials contaminated with asbestos including disposable equipment and clothing.
- G. Asbestos Control Area - An area where asbestos abatement operations are performed which is isolated by physical boundaries, which assist in the prevention of the uncontrolled release of asbestos dust, fibers, or debris. Two examples of an Asbestos Control Area are a "full containment" and a "glove-bag."
- H. Authorized Asbestos Disposal Facility - A location approved by the Connecticut Department of Energy and Environmental Protection for handling and disposing of asbestos waste or by an equivalent regulatory agency if the material is disposed of outside the State of Connecticut.
- I. Category I Non-Friable Asbestos-Containing Material (ACM) - Asbestos-containing packing, gaskets, resilient floor coverings and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy.
- J. Category II Non-Friable ACM - Any material, excluding Category I non-friable ACM, containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
- K. Class I Asbestos Work - Activities involving the removal of TSI and surfacing ACM and PACM.
- L. Class II Asbestos Work - Activities involving the removal of ACM, which is not thermal system insulation or surfacing material. This includes, but is not limited to the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic.
- M. Class III Asbestos Work - Repair and maintenance operations, where ACM, including thermal system and surfacing material, is likely to be disturbed.
- N. Class IV Asbestos Work - Maintenance and custodial activities during which employees contact ACM and PACM and activities to clean up waste and debris containing ACM and PACM.
- O. Competent Person - In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the work place and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f): in addition for Class I and Class II work who is specially trained in a training course which meet the criteria of 40 CFR 763 (Appendix C to Subpart E - Asbestos Model Accreditation Plan).

- P. Concealed Space - Space, which is out of sight. Examples of a concealed space include area above hard ceilings; below floors; between double walls; furred-in areas; pipe and duct shafts; and similar spaces which cannot be examined without invasive removal of building components or disturbance of finishes.
- Q. Critical Barrier - A layer of six (6) mil polyethylene sheeting taped securely over windows, doorways, diffusers, grilles and any other openings between the Work Area and uncontaminated areas outside of the Work Area, including the outside of the building.
- R. Demolition - The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.
- S. DEEP - The Connecticut Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT 06106.
- T. DPH - The Connecticut Department of Public Health, 410 Capitol Avenue, P.O. Box 340308, Hartford, CT 06134-0308.
- U. Differential Pressure - A difference in the static air pressure between the Work Area and occupied areas, and is developed by the use of HEPA filtered exhaust fans. This differential is generally in the range of 0.02 to 0.04 inches of water column.
- V. Encapsulation - The treatment of asbestos-containing materials to prevent the release of fibers as the encapsulant creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant).
- W. Engineering Controls - Controls to include, but not be limited to, pressure differential equipment, decontamination enclosures, critical barriers and related procedures.
- X. Equipment Decontamination Enclosure System - The portion of a Decontamination Enclosure System designed for controlled transfer of materials and equipment into or out of the Work Area, typically consisting of a Washroom and a Holding Area.
- Y. Exposed - Open to view.
- Z. Fiber - A particulate form of asbestos five microns or longer, with a length-to-diameter ratio of at least 3 to 1.
- AA. Finished Space - Space used for habitation or occupancy where rough surfaces are plastered, paneled or otherwise treated to provide a pleasing appearance.
- BB. Fixed Critical Barrier - Barrier constructed of 2" x 4" wood or metal framing 16" O.C., with 1/2" plywood on the occupied side and two layers of six (6) mil polyethylene sheeting on the Work Area side to prevent unauthorized access or air flow.
- CC. Fixed Object - A piece of equipment or furniture in the Work Area, which cannot be removed from the Work Area, as, determined by the State.

- DD. Friable Asbestos-Containing Material (ACM) - Material containing more than one percent asbestos which has been applied on ceilings, walls, structural members, piping, duct work, or any other part of a building, which when dry may be crumbled, pulverized or reduced to powder by hand pressure. The term includes non-friable asbestos-containing material after such previously non-friable material becomes damaged to the extent that when dry it may be crumbled, pulverized or reduced to powder by hand pressure.
- EE. Friable Asbestos-Containing Building Material (ACBM) - Any friable ACM that is in or on interior structural members or other parts of a school or public or commercial building.
- FF. Glove-Bag Technique - A method with limited applications for removing small amounts of friable asbestos-containing material from HVAC ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces in a non-contaminated work area. Information on glove-bag installation, equipment and supplies, and work practices is contained in 29 CFR 1926.1101. The glove-bag assembly is a manufactured or fabricated device consisting of a glove-bag (typically constructed of six (6) mil polyethylene or polyvinyl chloride plastic), two inward projecting long sleeves, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glove-bag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. This technique requires AWP application and may only be used if pre-approved by DPH or with the approval of the Design Consultant, State's Project Monitor and DPH when not pre-approved.
- GG. HEPA Filter Equipment - High-efficiency particulate air (HEPA) filtered vacuum and/or exhaust ventilation equipment with a filter system capable of trapping and retaining asbestos fibers. Filters shall be of 99.97 percent efficiency for retaining fibers of 0.3 microns in diameter or larger.
- HH. Inaccessible - A space not accessible, and which cannot be entered or seen without demolition.
- II. Inspection - An activity undertaken in a school building, or a public or commercial building, to determine the presence or location, or to assess the condition of, friable or non-friable ACBM or suspected ACBM, whether by visual or physical examination, or by collecting samples of such materials.
- JJ. Lock-down - The procedure of spraying polyethylene sheeting and building materials with an encapsulant type sealant to seal in non-visible asbestos-containing residue.
- KK. Major Fiber Release Episode - Any uncontrolled or unintentional disturbance of ACBM, resulting in a visible emission, which involves the falling or dislodging of more than 3 square or 3 linear feet of friable ACBM.
- LL. Mini-Containment - A procedure using a single layer of polyethylene sheeting to contain the Work Area. Access to the mini-containment is controlled by an air lock, which also serves as a Holding Area. This procedure requires AWP application and may only be used if pre-approved by DPH or with the approval of the Design Consultant, State's Project Monitor and DPH when not pre-approved.

- MM. Minor Fiber Release Episode - Any uncontrolled or unintentional disturbance of ACBM, resulting in a visible emission, which involves the falling or dislodging of 3 square or linear feet or less of friable ACBM.
- NN. Movable Object - A piece of equipment or furniture in the Work Area, which can be removed from the Work Area, as, determined by the State.
- OO. Negative Initial Exposure Assessment - A demonstration by the employer which complies with the criteria in 29 CFR 1926.1101(f)(2)(iii) that employee exposure during an operation is expected to be consistently below the PEL.
- PP. Non-Friable Asbestos-Containing Material - Material containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR Part 763, section 1, Polarized Light Microscopy that when dry cannot be crumbled, pulverized or reduced to powder by hand pressure.
- QQ. Owner or Operator of a Demolition or Renovation Activity - Any person who owns, leases, operates, controls or supervises the facility being demolished or renovated or any person who owns, leases, operates, controls or supervises the demolition or renovation, or both.
- RR. Permissible Exposure Limits (PELS) - (1) Time-weighted Average Limit (TWA). The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter (f/cc) of air as an eight (8) hour time-weighted average (TWA). (2) Excursion Limit. The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of thirty (30) minutes.
- SS. Pre-Clean - The process of cleaning an area before asbestos abatement activities begin to ensure all dust and debris in the area considered asbestos containing are properly contained and disposed of. This increases the likelihood the area will pass aggressive air sampling clearance requirements after asbestos-containing materials have been removed.
- TT. Presumed Asbestos-Containing Material - Thermal system insulation and surfacing material found in buildings constructed no later than 1980. The designation of PACM may be rebutted pursuant to 29 CFR 1926.1101 paragraph (k)(5).
- UU. Project Monitor - The certified and licensed individual contracted or employed by the building owner or contractor to supervise and/or conduct air monitoring and analysis schemes. This individual is responsible for recognition of technical deficiencies in procedures during both planning and on-site phases of an abatement project. Requirements for Project Monitor are defined in the Connecticut Department of Public Health Regulations (Sections 20-440-1 to 20-440-9 and 20-441). In addition to these requirements, this person shall be listed in the American Industrial Hygiene Association's Asbestos Analysts Registry.
- VV. Regulated Area - Area established by the employer to demarcate areas where Class I, II and III work is conducted, and any adjoining area where debris and waste from such

asbestos work accumulate; a work area within which airborne concentrations of asbestos exceed or there is a reasonable possibility they may exceed the PEL.

- WW. Regulated Asbestos-Containing Material (RACM) - (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.
- XX. Renovation - Altering a facility or one or more facility components in any way, including the stripping or removal of RACM from a facility component. Operations in which load-supporting members are wrecked or taken out are demolition.
- YY. Repair - Overhauling, rebuilding, reconstructing or reconditioning of structures or substrates where asbestos, Tremolite, Anthophyllite or Actinolite is present.
- ZZ. Response Action - A method including removal, encapsulation, enclosure, repair and operation and maintenance that protect human health and the environment from friable ACBM.
- AAA. Small-Scale, Short Duration (SSSD) - Tasks such as but not limited to:
1. Removal of asbestos containing insulation on pipes.
 2. Removal of small quantities of asbestos-containing insulation on beams or above ceilings.
 3. Replacement of an asbestos-containing gasket on a valve.
 4. Installation or removal of a small section of drywall.
 5. Installation of electrical conduits through or proximate to asbestos-containing materials.
 6. Removal of small quantities of ACM only if required in the performance of another maintenance activity not intended as asbestos abatement.
 7. Removal of asbestos containing thermal system insulation not to exceed amounts greater than those which can be contained in a single glove-bag.
 8. Minor repairs to damaged thermal system insulation, which do not require removal.
 9. Repairs to a piece of asbestos-containing wallboard.
 10. Repairs involving encapsulation, enclosure, or removal, to small amounts of friable ACM only if required in the performance of emergency or routine maintenance activity and not intended solely as asbestos abatement. Such work may not exceed amounts greater than those may, which can be contained in a single prefabricated mini-enclosure. Such an enclosure shall conform spatially and geometrically to the localized work area, in order to perform its intended containment function.
- BBB. Spot Repair – Any asbestos abatement performed within a facility involving not more than three (3) linear feet or three (3) square feet of asbestos-containing material.
- CCC. Unfinished Space - Space used for storage, utilities or work area where appearance is not a factor. Examples of an unfinished space include crawlspace; pipe tunnel and similar spaces.

- DDD. Visible Emissions - Any emissions, which are visually detectable without the aid of instruments, coming from RACM or asbestos-containing waste material or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed, uncombined water vapor.
- EEE. Visible Residue - Any debris or dust on surfaces in areas within the Work Area where asbestos abatement has taken place and which is visible to the unaided eye. All visible residue is assumed to contain asbestos.
- FFF. Waste Generator - Any owner or operator of a source whose act or process produces asbestos-containing waste material.
- GGG. Waste Shipment Record - The shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material.
- HHH. Wet Cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools, which have been dampened with water, and afterwards thoroughly decontaminated or disposed of, as asbestos-contaminated waste.
- III. Work Area - Specific area or location where the actual work is being performed or such other area of a facility, which the Commissioner determines, may be hazardous to public health because of such asbestos abatement.
- JJJ. Worker Decontamination Enclosure System - The portion of a Decontamination Enclosure System designed for controlled passage of workers and authorized visitors, typically consisting of a Clean Room, a Shower Room and an Equipment Room.

1.4 REFERENCES

- A. The current issue of each document shall govern. Where conflict among requirements or with these specifications exists, the more stringent requirements shall apply.
1. Occupational Safety and Health Administration (OSHA)
 - 29 CFR 1910.1001 - Asbestos, Tremolite, Anthophyllite, and Actinolite.
 - 29 CFR 1926.21 - Safety Training and Education.
 - 29 CFR 1926.32 - Definitions.
 - 29 CFR 1926.51 - Sanitation.
 - 29 CFR 1926.55 - Gases, vapors, fumes, dusts, and mists.
 - 29 CFR 1926.59 - Hazard Communication.
 - 29 CFR 1926.62 - Lead Exposure in Construction.
 - 29 CFR 1926.200 - Accident Prevention Signs and Tags.
 - 29 CFR 1926.417 - Lockout and Tagging of Circuits.
 - 29 CFR 1926.1101 - Asbestos.
 2. Environmental Protection Agency (EPA)
 - 40 CFR 61, Subpart M - National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision; Final Rule.
 - 40 CFR 763, Subpart E - Asbestos School Hazard Emergency Response Act (ASHERA).

- 40 CFR 763, Subpart G - Worker Protection Rule.
- 40 CFR 763, Appendix C to Subpart E - Asbestos Model Accreditation Plan (MAP).
- 3. State of Connecticut, Department of Public Health (DPH)
 - Section 19a-332a-1 through 19a-332a-16 - Standards for Asbestos Abatement.
 - Section 19a-332e-1 through 19a-332a-8 – Civil Penalties for Violation of Asbestos Abatement Laws.
 - Section 20-440-1 through 20-440-9 - Licensure and Training Requirements for Persons Engaged in Asbestos Abatement and Asbestos Consultation Services.
 - Section 20-441 – Refresher Training.
- 4. American National Standards Institute (ANSI)
 - ANSI Z9.2 - Fundamentals Governing the Design and Operation of Local Exhaust Systems.
 - ANSI Z88.2 - Respiratory Protection.
- 5. American Society of Testing and Materials (ASTM)
 - ASTM E 84 - Surface Burning Characteristics of Building Materials.
 - ASTM E 96 - Water Vapor Transmission of Materials.
 - ASTM E 119 - Fire Tests of Building and Construction Materials.
 - ASTM E 736 - Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members.
 - ASTM E 1368 - Visual Inspection of Asbestos Abatement Projects.
 - ASTM E 1494 - Encapsulants for Spray- or Trowel- Applied Friable Asbestos-Containing Building Materials.
- 6. Underwriters Laboratories, Inc. (UL)
 - UL 586 - High-Efficiency, Particulate, Air Filter Units.

1.5 DOCUMENTATION

- A. Submit two copies of the following documentation to the Owner to ensure compliance with the applicable regulations. An up to date copy shall be retained at the job site at all times.
- B. Manufacturer's Catalog Data:
 - 1. Local Exhaust Equipment
 - 2. Vacuum Equipment
 - 3. Respirators
 - 4. Surfactant
 - 5. Chemical Encapsulant
 - 6. Polyethylene Sheeting
 - 7. Airless Sprayers
 - 8. Portable Shower Units
 - 9. MSDS for All Materials Delivered to the Site
- C. Statements:
 - 1. State and Federal Notification
 - 2. Worker Medical Certification
 - 3. Worker Training Certification
 - 4. Worker Respirator Fit Testing
 - 5. OSHA Laboratory Certification
 - 6. Contractor's Project Monitor Certification
 - 7. Landfill Approval

8. Safety Plan
9. Respirator Protection Plan
 - a. Initial Exposure Assessment
 - b. Copies of all required notifications, approvals and permits for the removal, disposal and transport asbestos-containing or contaminated materials.
 - c. Documentation from a physician certifying that all employees who may be exposed to airborne asbestos in excess of the background level have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. In addition, document that personnel have received medical monitoring required in 29 CFR 1926.1101. They shall also be informed of the specific types of respirators the employee shall be required to wear and the work he/she will be required to perform as well as special work place conditions such as high temperature, high humidity and chemical contaminants which to which he/she may be exposed
 - d. Documentation certifying that all employees have received training in the proper handling of materials that contain asbestos; understand the health implications and risks involved, including the illnesses possible from exposure to airborne asbestos fibers; understands the use and limits of respiratory equipment to be used; and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment as indicated in 29 CFR 1926.1101 on an initial and annual basis.
 - e. Documentation of respiratory fit testing for all employees who must enter the Work Area. This fit testing shall be in accordance with qualitative procedures as detailed in 29 CFR 1926.1101.
 - f. Qualifications of the person proposed for air sampling to assure workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.1101. The Project Monitor shall be licensed by Connecticut DPH. Include the name and address of the testing laboratory proposed to perform air monitoring on behalf of the Contractor, along with their NIOSH PAT Program I.D. number.
 - g. Establish and supervise in accordance with 29 CFR 1926.21, a program for the education and training of workers in the recognition, avoidance and prevention of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury. Include any site-specific information to address health and safety procedures unique to this project.
 - h. Establish a written Respiratory Protection Plan in accordance with 29 CFR 1910.134. This plan shall establish procedures governing the selection and use of respirators and shall include such information as training in the proper use of respirators; medical examination of workers to determine whether or not they may be assigned an activity where respiratory protection is required; training in proper use and limitations of respirators; respirator fit testing; regular inspection and evaluation of the continued effectiveness of the program; and other elements included in the standard.
 - i. Establish a written Hazard Communication Plan in accordance with 29 CFR 1910.1200(e) and 29 CFR 1926.59(e). This plan shall establish procedures describing how the facility will comply with the standard; describe how MSDS's will be obtained and made available for each hazardous chemical

used in the work area; describe how information and training will be provided to employees; include a list of all toxic chemicals known to be present in the work place, cross-referenced to the MSDS file; explain how workers will be informed of hazards connected with non-routine tasks such as dealing with accidental spills and leaks; explain how workers will be informed of hazards associated with chemicals contained in unlabeled pipes; and, contain information on how other contract employees will be informed about hazards their employees may encounter while working in the facility.

- j. Demonstrate that employee's exposure will be below the PEL's. For Class I asbestos work until the employer conducts exposure monitoring and documents that employees on that job will not be exposed in excess of the PEL's, or otherwise makes a negative exposure assessment, the employer shall presume that employees are exposed in excess of the TWA and excursion limit.

D. Records:

- 1. Sign-in/out Logs
- 2. Personal Air Sampling Results
- 3. Waste Shipment Records
- 4. Pressure Differential Recording Data
- 5. NPE Inspection and Smoke Test Logs
- 6. Rental Equipment Statements
 - a. When rental equipment is to be used in removal areas or to transport waste materials, submit a copy of written notification provided to the rental company informing them of the nature of use of the rented equipment

1.6 PERSONNEL PROTECTION

- A. Respiratory protection shall meet the requirements of OSHA as required in 29 CFR 1910.134 and 29 CFR 1926.1101. Provide appropriate respiratory protection for each worker and ensure usage during potential asbestos exposure. Select respirators from among those jointly approved as being acceptable for protection by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part 11. Provide an adequate supply of filter elements for respirators in use.

- B. Minimum respiratory protection shall be as follows:

Airborne concentration of asbestos, or conditions of use.	Required Respirator
Not in excess of 10 f/cc (100 x PEL)	Any powered air purifying respirator equipped with high efficiency filters or any supplied-air respirator operated in continuous flow mode.
Not in excess of 100 f/cc	Full face piece supplied

(1000 x PEL)

air respirator operated
in pressure demand mode.

Greater than 100 f/cc
(>1000 x PEL) or
unknown concentration

Full face piece supplied
air respirator operated in
pressure demand mode,
equipped with an auxiliary
positive pressure self-
contained breathing
apparatus.

- a. Respirators assigned for higher airborne fiber concentrations may be used at lower concentrations, or when required respirator use is independent of concentration.
 - b. A high-efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 microns in diameter or larger.
- C. Provide and require all workers to wear protective clothing in Work Areas where asbestos fiber concentrations exceed permissible limits established by OSHA. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings. Ensure all contaminated protective clothing remains in the Equipment Room for reuse or disposal of as contaminated waste.
- D. Ensure that all workers and authorized persons enter and leave the Asbestos Control Area through the Worker Decontamination Enclosure System.

1.7 EQUIPMENT REMOVAL PROCEDURE

- A. Clean surfaces of contaminated containers and equipment thoroughly by vacuuming with HEPA filtered equipment and wet wiping before moving such items into the Equipment Decontamination Enclosure System for final cleaning and removal to uncontaminated areas. Ensure that personnel do not leave the Asbestos Control Area through the Equipment Decontamination Enclosure System.

1.8 SEQUENCE OF WORK

- A. Proceed in accordance with the sequence of work as mutually agreed upon with the Owner. Work shall be divided into convenient Work Areas, each of which is to be completed as a separate unit. The following sequence of work shall be used for the asbestos abatement work:
1. A visual inspection of the Work Area to determine pre-existing damage to facility components.
 2. Release of Work Area (Phase) to the Contractor.
 3. All temporary utilities required for the project shall be on site and operational prior to the initiation of asbestos work.
 4. Removal of all movable objects from the Work Area undergoing abatement by the Contractor.
 5. Abatement of all asbestos-containing materials by the Contractor.
 6. Air sampling by the Owner's Project Monitor for re-occupancy.
 7. Rework activities as specified in other sections of this specification.

1.9 DELIVERY, STORAGE AND HANDLING

- 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. Do not use damaged or deteriorating materials. Material that becomes contaminated with asbestos shall be decontaminated or disposed of as asbestos waste.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Fire retardant polyethylene sheet in roll size to minimize the frequency of joints shall be delivered to job site with factory label indicating four (4) or six (6) mil.
- B. Polyethylene disposable bags shall be six (6) mil with pre-printed label. Disposable bags shall be opaque.
- C. Tape shall be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finish or unfinished surfaces. Tape must be capable of adhering under both dry and wet conditions.
- D. Surfactant (wetting agent) shall consist of fifty (50) percent polyoxyethylene ether and fifty (50) percent polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration one (1) ounce surfactant to five (5) gallons of water or as directed by the manufacturer.
- E. Containers must be impermeable and shall be both air and watertight. Containers shall be labeled in accordance with OSHA Standard 29 CFR 1926.1101 and EPA 40 CFR Part 61.152 as appropriate.
- F. Labels and signs shall conform to OSHA Standard 29 CFR 1926.1101.
- G. Encapsulant shall be lockdown type which has been approved by the Design Consultant. Usage shall be in accordance with manufacturer's printed technical data. Encapsulant must be compatible with new materials being installed. Encapsulant may be clear or white.

2.2 TOOLS AND EQUIPMENT

- A. Tools and equipment shall be suitable for asbestos removal.
- B. Protective clothing, respirators, filter cartridges, air filters and sample filter cassettes shall be provided in sufficient quantities for the project.
- C. Electrical equipment, protective devices, emergency generators and power cables shall conform to all applicable codes.
- D. Shower stalls and plumbing shall include sufficient hose length and drain system or an acceptable alternate. Showers shall be equipped with hot and cold or warm running water. One shower stall shall be provided for each eight workers.

- E. Exhaust air filtration units shall be equipped with HEPA filters capable of providing sufficient air exhaust to create a minimum pressure differential of 0.02 inches of water column, and to allow a sufficient flow of air through the area. An automatic warning system shall be incorporated into the equipment to indicate pressure drop or unit failure. No air movement system or air filtering equipment shall discharge unfiltered air outside the Asbestos Control Area.
- F. Pressure differential automatic recording instrument shall be provided to ensure exhaust air filtration devices provide the minimum pressure differential required between the Work Area and occupied areas of the facility.
- G. Spray equipment shall be capable of mixing wetting agent with water and capable of generating sufficient pressure and volume. Hose length shall be sufficient to reach all of the Asbestos Control Area.
- H. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 microns in diameter or larger.
- I. Mechanical mastic removal equipment shall be suitable for the application.
- J. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule.
- K. Other materials such as lumber, nails and hardware necessary to construct and dismantle the decontamination enclosures and the barriers that isolate the Work Area shall be provided as appropriate for the work.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS FOR ASBESTOS ABATEMENT

- A. A Competent Person and Asbestos Abatement Site Supervisor shall be on the job at all times to ensure the establishment and maintenance of the NPE and proper work practices are followed through completion of the project.
- B. Containerize asbestos-containing waste material removed daily. Do not allow ACM to remain on the floor overnight, allowing it to dry out. Fill disposal containers (six (6) mil polyethylene bags or fiber drums) as removal proceeds, seal filled containers, and apply caution labels and clean containers before removal to wash area. Bags shall be securely sealed to prevent accidental opening and leakage by taping in gooseneck fashion. Bags may be placed in drums for staging and transportation to the disposal site. Bags shall be decontaminated by wet cleaning and HEPA vacuuming before being placed in clean drums and sealed with locking ring tops. Vinyl asbestos tile removed shall be bagged and placed in clean drums and sealed with locking ring tops. Wet clean each container thoroughly before moving to a holding area or to the waste storage container.

- C. If at any time during asbestos removal, should the Project Monitor suspect contamination of areas outside the Work Area, the Contractor shall stop all abatement work and take steps to decontaminate these areas and eliminate causes of such contamination. Unprotected individuals shall be prohibited from entering contaminated areas until air sampling and visual inspections determine decontamination.

3.2 PREPARATION OF WORK AREA ENCLOSURE SYSTEM

- A. Prior to beginning work, the Owner, Construction Administrator, Consultant and Contractor shall perform a visual survey of each Work Area and list all pre-existing damage to building components. The Contractor shall submit to the Construction Administrator a list, of pre-existing damaged areas.
- B. Post warning signs meeting the specifications of OSHA 29 CFR 1910.1001 and 29 CFR 1926.1101 at each Regulated Area. In addition, signs shall be posted at all approaches to Regulated Areas so that an employee may read the sign and take the necessary protective steps before entering the area. Additional signs may require posting following construction of work place enclosure barriers.
- C. Utilize engineering controls and personnel protective equipment while installing enclosures and supports when asbestos-containing materials may be disturbed.
- D. When feasible, shut down and lock out electrical power, including all receptacles and light fixtures. Protect receptacles and light fixtures remaining in the Work Area with six - (6) mil polyethylene and seal with tape. Remove or protect fire alarm system components remaining in the area with six- (6) mil polyethylene and seal with tape. Coordinate all power and fire alarm isolation with the Owner.
- E. Provide temporary power and lighting and ensure safe installation, including ground fault protection, of temporary power sources and equipment in compliance with applicable electrical code and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring. Coordinate electrical connection to existing building service with building operations.
- F. Shut down and isolate heating, cooling, and ventilating air systems to prevent contamination and fiber dispersal to other areas of the building. Coordinate shut down and isolation of heating, cooling, and ventilating air systems with building operations. Seal all vents.
- G. Pre-clean movable objects within the proposed Work Areas using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate and remove such objects from Work Areas to a temporary location.
- H. Pre-clean fixed objects within the proposed Work Areas, using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate, and enclose with six (6) mil polyethylene sheeting sealed with tape. Objects which must remain in the Work Area and which require special ventilation or enclosure include electrical equipment, pumps, compressors, control panels, meter equipment.

- I. Clean the proposed Work Areas using HEPA filtered vacuum equipment and/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.
- J. Seal off all windows, doorways, skylights, ducts, grilles, diffusers, and any other openings between the Work Area and the uncontaminated areas outside of the Work Area with critical barriers. Doorways and corridors, which will not be used for passage during work, must be sealed with fixed critical barriers.
- K. Conspicuously label and maintain emergency and fire exits from the Asbestos Work Area satisfactory to the Owner.

3.3 WORKER DECONTAMINATION ENCLOSURE SYSTEM

- A. Establish contiguous to the Work Area, a Worker Decontamination Enclosure System consisting of Equipment Room, Shower Room and Clean Room in series. Access to the Work Area shall only be through this enclosure.
- B. Access between rooms in the Worker Decontamination Enclosure System shall be through double flap-curtained openings (air locks). Other effective designs are permissible. The Clean Room, Shower Room and Equipment Room located within the Worker Decontamination Enclosure, shall be completely sealed ensuring sole source of airflow into the Asbestos Control Area originates from the outside-uncontaminated areas.
- C. The Clean Room shall be adequately sized to accommodate workers and shall be equipped with a suitable number of hooks, lockers, shelves, etc., for workers to store personal articles and clothing. Changing areas of the Clean Room shall be suitably screened from areas occupied by the public.
- D. The Shower Room shall be of sufficient capacity to accommodate the number of workers. Supply warm water to showers. Provide one shower for each eight workers. No worker or other person shall leave an Asbestos Control Area without showering.

3.4 EQUIPMENT DECONTAMINATION ENCLOSURE SYSTEM

- A. Establish contiguous to the Work Area, an Equipment Decontamination Enclosure System consisting of two (2) totally enclosed chambers divided by a double flap curtained opening. Other effective designs are permissible. This enclosure must be constructed to ensure that no personnel enter or exit through this unit.

3.5 SEPARATION OF WORK AREAS FROM OCCUPIED AREAS

- A. Occupied areas and/or building space not within the Asbestos Control Area shall be separated from asbestos abatement Work Areas by means of airtight barriers.
- B. Do not impair required building exits from any occupied building area. Where normal exits have been blocked by the asbestos work, provide temporary exit signs directing building occupants to the nearest available exit location.

- C. Create a pressure differential in the range of 0.02 to 0.04 inches of water column between the Work Area and occupied areas by the use of acceptable pressure differential equipment. Provide a sufficient quantity of units to exhaust the volume of air within the Asbestos Control Area a minimum of four times per hour. Continuously monitor the pressure differential between the Work Area and occupied areas utilizing recording type equipment to ensure exhaust air filtration equipment maintains a minimum pressure differential of 0.02 inches of water column.

3.6 REMOVAL OF FRIABLE ASBESTOS MATERIAL

- A. Cover floor and wall surfaces with polyethylene sheeting sealed with tape. Polyethylene shall be applied alternately to floors and walls. Cover floors first, with a layer of six- (6) mil polyethylene sheeting, so that polyethylene extends at least twelve (12) inches up on walls. Cover walls with a layer of four- (4) mil polyethylene sheeting to twelve (12) inches beyond the wall floor intersection, thus overlapping the floor material by a minimum of twenty-four (24) inches. Repeat the process for the second layer of polyethylene. There shall be no seams in the plastic sheet at wall-to-floor joints.
- B. Where non-ACM thermal systems insulation exists within the Work Area and is to remain, protect from asbestos contamination.
- C. Spray friable materials with amended water, using airless spray equipment capable of providing a "mist" application to reduce the release of fibers during the removal operation. In order to maintain indoor asbestos concentrations at a minimum, remove the wet asbestos in manageable sections. Materials shall not be allowed to dry out. Material drop shall not exceed 8 feet. For heights up to 15 feet, provide inclined chutes or scaffolding to intercept drop. For heights, exceeding 15 feet provide enclosed dust-proof chutes.
- D. After completion of stripping work, all surfaces from which asbestos has been removed shall be wet brushed, using a nylon brush, wet wiped and sponged or cleaned by an equivalent method to remove all visible material (wire brushes are not permitted). During this work, the surfaces being cleaned shall be kept wet.

3.7 REMOVAL OF NON-FRIABLE RESILIENT FLOORING AND ASSOCIATED MASTIC

- A. Resilient flooring shall be removed by approved methods, which minimize the release of asbestos fibers. Mastic shall be removed by mechanical means. Precaution shall be taken to prevent the leakage of contaminated liquids to other areas of the building. Take immediate steps to clean up leaks and prevent future occurrences of the leak. Ensure surfaces have been adequately wetted to prevent dust emissions prior to operation of mechanical mastic removal equipment.

3.8 REMOVAL OF NON-FRIABLE MISCELLANEOUS MATERIAL

- A. Non-friable miscellaneous materials shall be removed by approved methods, which minimize the release of asbestos fibers. Materials shall be wetted with amended water prior to removal. Double wrap ACM in 6-mil polyethylene sheeting and remove for disposal.

3.8 CLEAN-UP PROCEDURE

- A. Remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris which may have splattered or collected on the polyethylene wall covering. Carefully remove the cleaned outer layer of polyethylene from the walls, fold inward as material is being removed, and place in disposal containers. Any debris, which may have leaked behind the outer layer, shall be removed by HEPA vacuuming and/or wet cleaning.
- B. Remove contamination from the exteriors of the negative air machines, scaffolding, ladders, extension cords, hoses and other equipment inside the Work Area. Cleaning may be accomplished by brushing, HEPA vacuuming and/or wet cleaning.
- C. The Owner's Project Monitor shall conduct a thorough visual inspection utilizing a high-intensity flashlight, with the containment barriers in place, to detect visible accumulations of dust or bulk asbestos-containing materials remaining in the Work Area. Should dust, debris or residue be detected, the Contractor shall repeat the cleaning, at the Contractor's expense, until the area is in compliance. The visual inspection will detect incomplete work, damage caused by the abatement activity, and inadequate clean-up of the work site.
- D. Once the area has been re-cleaned, any equipment, tools or materials not required for completion of the work, shall be removed from the Work Area. Negative air filtration devices shall remain in place and operating for the remainder of the clean-up operation.
- E. Wet wipe the walls beginning at the point farthest away from the negative air filtration units using cotton rags or lint free paper towels. Rags and towels shall be disposed of after each use. Workers should avoid the use of dirty rags to insure proper cleaning of surfaces. Mop the entire floor with a clean mop head and amended water. Water shall be changed frequently. Waste water shall be filtered using best available technology and dumped down an approved drain.
- F. A visual inspection of the Work Area by the licensed Project Monitor shall be conducted. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified. The area shall be re-cleaned at the Contractors expense until the Standard of Cleanliness is achieved.
- G. Upon successful completion of the visual inspection, the Contractor shall encapsulate all abated surfaces.
- H. Once the lock-down encapsulant has sufficiently dried, air sampling for re-occupancy clearance shall be undertaken using aggressive sampling techniques.
- I. During breakdown of containment carefully remove the polyethylene barriers. Fold inward as the material is being removed, and place in leak-tight containers. Any debris which may have fallen behind the polyethylene sheeting shall be removed by HEPA vacuuming and/or wet cleaning. Remove all remaining polyethylene, including critical barriers, and Decontamination Enclosure Systems leaving negative air filtration devices

in operation. HEPA vacuum and/or wet wipe any visible residue, which is uncovered during this process.

3.9 REOCCUPANCY CLEARANCE AIR SAMPLING

- A. Re-occupancy clearance air sampling will be conducted by the Project Monitor in accordance with the re-occupancy clearance criteria as set forth in the Regulations of Connecticut State Agencies, Section 19a-332a-12. Areas, which do not comply, shall continue to be cleaned by and at the Contractors expense, until the specified Standard of Cleaning is achieved as evidenced by results of air testing. When the Work Area passes the re-occupancy clearance, controls established by this specification may be removed.
- B. Post-abatement clearance air monitoring requirements are as follows:
1. Air sampling will not begin until at least 12 hours after wet cleaning has been completed and no visible water or condensation remain.
 2. Sampling equipment will be placed at random around the Work Area. If the Work Area contains the number of rooms equivalent to the number of required samples based on floor area, a sampler shall be placed in each room. When the number of rooms is greater than the number of samples, a representative number of rooms will be selected.
 3. The representative samplers placed outside the Work Area but within the building will be located to avoid any air that might escape through the isolation barriers and will be approximately 50 feet from the entrance to the Work Area, and 25 feet from the isolation barriers.
 4. The following aggressive air sampling procedures will be used within the Work Area during all air clearance monitoring:
 - a. Before starting the sampling pumps, direct the exhaust from forced air equipment (such as a 1 horsepower leaf blower) against all walls, ceilings, floors, ledges and other surfaces in the Work Area. This should take at least 5 minutes per 1000 SF of floor area.
 - b. Place a 20-inch fan in the center of the room. (Use one fan per 10,000 cubic feet of room space.) Place the fan on slow speed and point it toward the ceiling.
 - c. Start the sampling pumps and sample for the required time.
 - d. Turn off the pump and then the fan(s) when sampling is complete.
 5. Air volumes taken for clearance sampling shall be sufficient to accurately determine (to a 95 percent probability) fiber concentrations to 0.010 f/cc of air.
 6. Each homogeneous Work Area, which does not meet the clearance criteria, shall be thoroughly re-cleaned using HEPA vacuuming and/or wet cleaning, with the negative pressure ventilation system in operation. New samples shall be collected in the Work Area as described above. The process shall be repeated until the Work Area passes the test, with the cost of repeat sampling being borne entirely by the Contractor.
 7. For an asbestos abatement project with more than one homogeneous Work Area, the release criterion shall be applied independently to each Work Area.
- C. Continuous air sampling during construction will be conducted by the State's Project Monitor. Reoccupancy clearance testing will be in accordance with State of Connecticut DPH requirements. For window removal, a final visual inspection is to be

performed to determine successful completion of all work associated with removal of windows.

3.10 CONTRACTOR RESPONSIBILITY

- A. Conduct air sampling, as necessary, to assure that workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.1101. Perform monitoring to determine accurately the airborne concentrations of asbestos to which employees may be exposed. Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee. Documentation of air sampling results must be recorded at the work site within twenty-four (24) hours of receipt of results, and shall be available for review until the job is complete.

3.11 DISPOSAL OF ASBESTOS

- A. Disposal of asbestos-containing and/or asbestos contaminated material shall occur at an authorized site and must be in compliance with the requirements of, and authorized by the Office of Solid Waste Management, Department of Energy and Environmental Protection, State of Connecticut, or other designated agency having jurisdiction over solid waste disposal.
- B. Disposal approval shall be obtained prior to commencement of asbestos removal.
- C. Warning signs must be attached to vehicles used to transport asbestos-containing waste. Warning signs shall be posted during loading and unloading of disposal containers. The signs must be posted so that they are plainly visible.
- D. Waste removal dumpsters and cargo areas of transport vehicles shall be lined with a layer of six (6) mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first, and shall be extended up sidewalls 12-inches. Wall sheeting shall overlap floor sheeting 24-inches and tape into place.
- E. A copy of the completed Waste Shipment Record shall be provided to the Owner.

3.12 ACTION CRITERIA

- A. If air samples collected outside of the Work Area during abatement activities indicate airborne fiber concentrations greater than original background levels or greater than 0.010 f/cc, as determined by Phase Contrast Microscopy, whichever is larger, an examination of the Work Area perimeter shall be conducted and the integrity of barriers shall be restored. Cleanup of surfaces outside the Work Area using HEPA vacuum equipment or wet cleaning techniques shall be done prior to resuming abatement activities.

END OF SECTION

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the miscellaneous metal work as indicated on the drawings and/or specified herein, including, but not limited to, the following:
1. Rough hardware.
 2. Light steel framing and supports, not included as part of work of other trades.
 3. Miscellaneous angles, plates, channels, and tubes for supports of various construction.
 4. Miscellaneous hangers, brackets and supports.
 5. Aluminum railing for Gallery wall hanging system.
 6. Corner guards.
 7. Aluminum extrusions and closure pieces to aid in completion of privacy screen assemblies.
 8. Stainless steel wall panels and brackets at Drinking Fountains walls and 1st floor guard glass panel.
 9. Steel framing, bracing, supports, anchors, bolts, shims, fastenings, and all other supplementary parts indicated on drawings or as required to complete each item of work of this Section.
 10. Prime painting, touch-up painting, galvanizing and separation of dissimilar metals for work of this Section.
 11. Cutting, fitting, drilling and tapping work of this Section to accommodate work of other Sections and of materials as required for attaching and installing work of this Section.

1.02 RELATED SECTIONS

- A. Section 06 10 00: Carpentry

- B. Section 09 90 00: Painting and Coating
- C. Section 10 21 13: Solid Plastic Toilet Compartments
- D. Plumbing Division Sections
- E. Mechanical Division Sections

1.03 QUALITY ASSURANCE

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible. Do not delay job progress: allow for trimming and fitting where taking field measurements before fabrication may delay work.

1.04 SUBMITTALS

- A. Submit product information provisions of General Conditions and Supplemental General Conditions.
- B. Prepare shop drawings of railing and guard panel after taking field measurements of the built condition. Indicate on the shop drawings any deviations from the design drawings. Any deviations will require Architect's review.
- C. Prepare plans in 1/2" scale.
- D. Prepare elevations in 1-1/2" scale minimum.
- E. Submit certification of galvanized material.

PART 2 - PRODUCTS

2.01 MATERIALS- steel angles, plates and other steel products

- A. Commercial Quality Low Carbon Steel.
- B. Galvanized steel: DeVoe, Mirrolac galvanized metal primer #13201 or equal.
- C. Shop Prime: DeVoe, Mirrolac modified epoxy #13101 or equal.

2.02 MATERIALS- other

- A. Aluminum Plate and Sheet: Alloy and temper recommended by aluminum producer or finisher for type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B 209, alloy 6061-T6.
- B. Aluminum extrusions: ASTM B221, 643-T5 alloy and temper, clear anodized.
- C. Stainless Steel:
 - a. Sheet panel at drinking fountains,
 - b. U-shaped shoe/support brackets at Drinking Fountain tempered 3/4" thick glass panel guard (1st Floor East Corridor CE-1).
 - c. 1.5" angle at solid surface shelf (Lactation Rooms).

D. Stainless steel hardware at Stainless Steel and at Aluminum items.

2.03 ART HANGING SYSTEM

- A. Gallery wall-mounted rod hanging system, Basis of design: Classic Gallery System by AS Hanging, or Equal or similar products by Gallery System Art Displays or Systematic Art.
- B. Components to be selected from manufacturer's line, to include wall track, end caps, rods, hooks, rod-end hangers, safety caps.

2.03 FABRICATION

- A. Welding shall conform to the requirements of the AWS. Grind exposed welds smooth.
- B. After Work is fabricated, peen or upset bolt threads to prevent loosening.
- C. Grind rough edges smooth.
- D. Hot dip galvanize all products for exterior location including items built into exterior construction, including structural steel lintels and angles, after fabrication. Conform to the requirements of ASTM A386, 2.0 oz. per square foot.
- E. Prepare galvanized metals for priming as follows:
 - 1. Remove obvious deposits of grease and oil first.
 - 2. Flood with white vinegar, wet entire surface; let stand for five minutes, repeat three times.
 - 3. Remove vinegar residue with clean rags and clear water.
 - 4. Dry surfaces with clean rags.
 - 5. Clean entire surface by flooding with clean mineral spirits and wiping dry with clean cloths. Repeat once.
- F. Prepare ferrous items for priming as follows:
 - 1. Remove obvious deposits of grease and oil first.
 - 2. Remove loose mill scale, loose black oxide, all rust, all welding flux and spatter and other contaminants by grinding and wire brushing. Do not roughen or burnish metal.
 - 3. Clean entire surface by flooding with clean mineral spirits and wiping dry with clean cloths.

- G. Apply primer in thickness recommended by manufacturer. Do not over thin. Avoid runs, sags, and holidays. Brush primer into cracks and joints.
- H. Note that specified primer is slow drying. Allow primer to dry 72 hours before handling or shipping.
- I. Protective coatings: Whenever dissimilar metals will be in contact, separate contact surfaces by coating each contact surface prior to assembly or installation with one coat of specified bituminous paint, which shall be in addition to the specified shop prime paint. Mask off those surfaces not required to receive protective coating.

PART 3 - EXECUTION

3.01 INSPECTION

Examine the areas and conditions where miscellaneous metal is to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.01 SCHEDULE

- A. Angle Framing:
 - 1. Miscellaneous brackets, supports, anchors, and frames for mechanical and electrical equipment are specified in Division 23 and 24, including for roof penetrations of vent pipes and ducts.
 - 2. Provide miscellaneous brackets, supports, anchors, and lintels other than for mechanical and electrical equipment.
- B. Provide miscellaneous angles and plates for support of construction such as masonry opening and roof penetrations and other construction shown on drawings. Welds shall be continuous. Ground weld joints smooth. Exterior application and those within and above the toilet/shower areas shall be hot dip galvanized after fabrication.
- C. Provide miscellaneous anchors and supports as required to complete the project.
- D. Install Art hanging system as per manufacturer's instruction. Provide hanging rods and hooks (2 per foot).

3.02 INSTALLATION

- A. Install items firmly attached to supporting construction as detailed on drawings.
- B. If primer becomes damaged, prepare and prime damaged spots as specified above under FABRICATION.
- C. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; including threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.
- D. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry, or similar construction.
- E. Fitting Connections: Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed joints smooth and touch up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot dip galvanized after fabrication, and are intended for bolted or screwed field connections.
- F. Follow manufacturer's instructions for installation of prefabricated kits and systems.

3.03 PROTECTION

- A. Protect all completed work from damage.

END OF SECTION

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Miscellaneous wood framing.
- B. Furring and blocking.
- C. Millwork – Solid Surface lavatory counters w/ Plastic laminate support. Shelving.

1.02 RELATED WORK

- A. Section 09 21 16 - Gypsum Board Assemblies
- B. Plumbing Division Sections
- C. Section 05 50 00 - Miscellaneous Metals

1.03 QUALITY ASSURANCE

- A. Lumber grading rules and wood species to be in conformance with PS 20.
- B. Grading rules of the following associations apply to materials furnished under this Section:
 - 1. Northeastern Lumber Manufacturer's Association, Inc. (NELMA).
 - 2. West Coast Lumber Inspection Bureau (WCLIB).
 - 3. Western Wood Products Association (WWPA).
 - 4. Northern Hardwood and Pine Manufacturer's Association (NHPMA).
- C. Grade Marks
 - 1. Identify lumber and plywood by official grade mark.
 - 2. Lumber

- a. Grade stamp to contain symbol of grading agency certified by Board of Review, American Lumber Standards Committee, mill number or name, grade of lumber, species or species grouping or combination designation, rules under which graded where applicable, and condition of seasoning at time of manufacturer.
- b. S-GRN: Unseasoned.
- c. S-DRY: Maximum 19% moisture content.
- d. MC-15: Maximum of 15% moisture content.

D. Testing:

1. ASTM E84, maximum 25 flame spread rating.

E. Requirements of Regulatory Agencies:

1. Fire hazard classification: Underwriters Laboratories, Inc. for treated lumber.

F. Reference Standards:

1. American Society of Testing and Materials (ASTM)
 - a. ASTM E84-77a, Surface Burning Characteristics of Building and Materials.
2. AWPA C1- All Timber Products-
AWPA C2- Lumber, Timber, Bridge Ties and Mine Ties
AWPC C4- Poles
AWPA C15- Wood for Commercial-Residential Construction
Preservative Treatment by Pressure Processes; American Wood-Preservers' Association.
3. AWPA P5- Waterborne Preservative; American Wood-Preservers Association.

1.04 SUBMITTALS

A. Certification

1. Fire-retardant treatment: Submit certification by treating plant that the fire retardant treatment materials comply with governing ordinances and that treatment will not bleed through finished surfaces. For any lumber used in a structural application certification is required stating that the lumber will not degrade under normal conditions of heat and humidity.

2. Preservative treatment: Submit certification by treating plant of compliance with specified standards, process employed, and preservative retention values.

B. Product Data:

1. Submit product data, for each type of lumber use, in accordance with Contract Conditions identified with quality grade, type of finish and species of wood.
2. Submit product data for solid surface and plastic laminate.

C. Samples:

1. Submit 2 samples, 12" x 12", including a section of outside corner of plastic laminate panel.

D. Shop Drawings:

1. Submit millwork shop drawings. Prepare shop drawings after field measuring the spaces where the millwork will be located. Adjust final dimensions accordingly.
2. Clearly indicate on the shop drawings any deviations from the design drawings. Such deviations will require Architect's review.
3. Show on the shop drawings plans and elevations of every piece of millwork. Show all elevations that are exposed to view. Show plans and elevations at 1/2" scale.
4. Show sections/details of the millwork at 3" scale minimum. Indicate all materials and the joints between the different materials. Show construction joint details. Show locations and types of all hardware.

1.05 DELIVERY

- A. Deliver, store and handle wood counters and cabinets in manner to prevent damage and deterioration.
- B. Defer delivery to the job until the installation and storage areas are complete and dry of all wet type construction.
- C. Maintain relative humidity in storage areas not to exceed 55%.
- D. Immediately upon delivery to job site, place materials in area protected from weather.

- E. Store materials a minimum of 6 inches above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation or ventilation.
- F. Do not store seasoned materials in wet or damp portions of building.
- G. Protect fire retardant materials against high humidity and moisture during storage and erection.
- H. Architectural woodwork shall be allowed to come to equilibrium on site for 7 days prior to installation.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Lumber - for rough carpentry
 - 1. Dimensions
 - a. Specified lumber dimensions are nominal.
 - b. Actual dimensions to conform to PS-20.
 - 2. Surfacing: Surface four sides (S&S) unless specified otherwise.
 - 3. Framing lumber, any commercial soft wood species.
 - a. Light framing.
 - 1. Plates, blockings, bracings, furring, and nailers: utility grade.
- B. Lumber for exterior trim application: Western Red cedar, A clear.
- C. Lumber for interior trim: Poplar- painting by contractor.
- D. Miscellaneous Materials:
 - 1. Construction Adhesive: Plasticon-400 by B.F. Goodrich
 - 2. Fasteners and Anchorage: provide size and type as indicated and as recommend by applicable standards. All fasteners and Anchorage for application to exterior systems to be galvanized or stainless steel. Comply

with IBC Section 2304.9.5 for use in preservative-treated and fire-retardant-treated wood.

3. Stainless steel chrome finished screws for exposed hardware at removable millwork panels.
- E. Fire Retardant Treatment Products- All blocking and furring build into the wall construction shall be fire-retardant treated.
1. Lumber: AWPA C20.
 2. Comply with IBC Section 2303.2.
- F. Quality Grade for millwork
1. Materials and Fabrication- Custom grade in accordance with Quality Standards Illustrated of the Architectural Woodwork Institute, latest edition.
 2. Millwork Vendor and Installer is AWI Certified in the AWI QCP Program at bid submission.
- G. LUMBER - for millwork
1. Solid surface counters and cabinetry with plastic laminated finish:
 - a. Furniture grade high density particle board.
 - b. Conceal solid wood: at option of mill.
- H. SOLID SURFACE counters, caps and shelves:
1. ½" thick, cast, filled, acrylic; not coated, laminated or of composite construction, meeting ANSI Z124-1980, Type Six, and ISS FA-2.01 "Classification and Standards Publication of Solid Surfacing Material" as published by the International Solid Surface Fabricators Association (ISSFA). Material shall conform to the published performance characteristics of ISSFA-2-01.
 2. Manufacturer: Corian, or approved equal by Wilsonart or Formica. Color selection shall be from manufactures full line of products. Basis of design: SSC1: Elderberry and SSC2: Silver Birch, see drawings for location.
 3. Fabricator must be approved by the solid surfacing material manufacturer.
 4. Factory fabricate components exactly to sizes and shapes indicated, in accordance with approved shop drawings. Contractor shall verify in the field all installation conditions, prior to fabrication.

5. Form joints between components using manufacturer's standard joint adhesive; without conspicuous joints. No joints or seams will be permitted other than those shown on the approved shop drawings, unless specifically approved by the Architect.
6. Provide factory cutouts for plumbing fittings and accessories as indicated on the drawings.
7. Cut and finish component edges with clean, sharp returns. Route radii and contours to template. Repair or reject defective and inaccurate work.
8. Provide all custom sizes, shapes, curves, configurations, reveals, and edgings as called for and shown on the drawings in the dimension and thicknesses noted.

I. PLASTIC LAMINATE

1. Face Sheets: NEMA Publication LD3, Grade GP50, Type I, 0.05" thick, as manufactured by Formica, Nevamar, WilsonArt. Color, pattern and finish as selected by the Architect.
2. Backing Sheets: Non-decorative, high-pressure plastic laminate, NEMA LD3, Grade BK20, 0.02" thick.
3. Edges: Finish with plastic laminate to match face and applied before face sheets are applied, unless otherwise shown or specified.
4. Manufacturer: Nevamar, Wilsonart, Arborite.
5. Color (basis of design): PLAM 1, all locations: Nevamar Silver Alu Metalx MXT003T textured. Wilsonart Satin Stainless 4830K-18 Linearity Finish. Arborite P-623 MX Brushed Aluminum-Aluminium Brosse.
6. Hardware: use chrome truss head screws at removable panels under sinks and at all locations with visible hardware.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that surfaces to receive rough carpentry materials are prepared to required grades and dimension.

3.02 INSTALLATION

A. General:

1. Carefully select all members; select individual pieces so that knots and obvious defects will not interfere with placing bolts or proper nailing or making proper connections.
2. Cut out and discard all defects which will render a piece unable to serve its intended function; lumber may be rejected by the Architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting fitting.
3. Furnish all rough lumber and all wood blocking, grounds, furring, and nailing strips to be built in by other trades and as required of installation material specified under other sections of the specifications.
4. Set work accurately to required levels and lines, with members plumb and true and accurately cut and fitted. Work not covered in this specification shall be governed by "manual of House Framing" which is incorporated herein by reference.
5. Securely attach carpentry work to substrates by anchoring and fastening as shown and as required by recognized standards. Counter sink nail heads on exposed carpentry work and fill holes.
6. Bolting: Drill holes 1/16 inch larger in diameter than the bolts being used. Drill straight and true from one side only. Bolt threads shall not bear on wood. Use washer under head and nut where both bear on wood; use washers under all nuts.
7. Screws: For lag screws and wood screws, pre-bore holes same diameter as root of thread; enlarge holes to shank diameter for length of shank. Screw, do not drive, all lag screws and wood screws.
8. Wood grounds: Proper size for securing plywood, drywall, base, moldings, and all other miscellaneous trim.
 - a. Attach to substrates securely with anchor bolts and other attachment devices as shown and as required to support applied loading.
 - b. Counter sink bolts and nuts flush with surfaces, unless otherwise shown.
 - c. Provide grounds of dressed, preservative treated, key-beveled lumber not less than 1 1/2" wide and of the thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

9. Furring: 1" x 3" heartwood, spaced 16" on center blocked or shimmed to a true plane.

D. Blocking:

1. Wedge, align, and anchor blocking with countersunk bolts, washers and nuts or nails.
2. Locate blocking to facilitate installation of finishing materials, fixtures, and specialty items.

E. Pressure Treated Wood Products

1. Treat completed units of woodwork, after cutting, machining, sanding, gluing and assembly has been completed to the greatest extent possible. Coat surfaces which have been cut after treatment with a heavy brush coat of same preservative.

F. Finish Carpentry

1. Install components plumb and level, scribed to adjacent finishes, in accordance with approved shop drawings and product installation data.
2. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work. Keep components and hands clean when making joints.
3. All surfaces, other than those surfaces that are the mounting/gluing surfaces, must be fully polished to match the finished face of all components. Unfinished surfaces will be rejected.
4. Final finished surfaces must be fully and evenly polished with manufacturer's recommended finishing products. Unfinished surfaces will be rejected.
5. Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Keep clean until Date of Substantial Completion. Replace stained components.
6. Protect surfaces from damage until Date of Substantial Completion. Repair work or replace damaged work that cannot be repaired to Architect's satisfaction.

END OF SECTION

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Fire safing and fire proofing insulation systems.
- B. Fibrous thermal insulation.
- C. Fibrous acoustic insulation.

1.02 RELATED WORK

- A. Section 06 10 00 – Carpentry
- B. Section 09 21 16 - Gypsum Board Assemblies

1.03 QUALITY ASSURANCE

- A. Provide manufacturer's written certification that products intended for use meet specified requirements.
- B. Testing: Fire Safing Flame Spread: ASTM E84-01, flame spread of 25 or less, fuel contributed 15 or less, and smoke contributed 20 or less.
- C. Testing: Fibrous Thermal Insulation: ASTM #84-01, flame spread of 25 or less, smoke developed 50 or less.
- D. Owner shall undertake thermal scans of roofs and if any re-insulation is required the rescanning costs shall be borne by General Contractor.

1.04 NONCOMBUSTIBLE TEST

- A. ASTM E136.

1.05 SUBMITTALS

- A. Submit manufacturer's product data under provisions of the General Condition and Section 01 33 00.

1.06 PRODUCT DELIVERY AND STORAGE

- A. Deliver materials to the project site in manufacturer's original packaging.

- B. Store off ground, protect against weather and condensation.
- C. Immediately remove damaged material from the site.

1.07 COORDINATION

- A. Coordinate installation with other trades whose work may be affected or have no effect.

PART 2 - PRODUCTS

2.01 SAFING INSULATION AND FIRE PROTECTION SYSTEMS

- A. Safing: ASTM C665, Type 1, HH-I-558B, Classes 1 and 2, noncombustible, ASTM E136. Fire Safing Insulation as manufactured by Owens Corning ThermaFiber Inc., Wabash, IN.
- B. Fire Protection Systems:
 - 1. 1 1/2" to 6" thick Owens Corning Thermafiber, Firespan 90 as specified above. Include all attachments to meet UL system requirements.
 - 2. Hilti CP672 Firestop 1/4" thick coating with 3/4" overlap for UL 1HR floor rating at 1st floor connector columns.

2.02 THERMAL INSULATION

- A. Fiberglas insulation: Owens/Corning Fiberglas Corp., CertainTeed Corp., Manville: Building Insulations Div.
 - 1. Unfaced and foil faced
 - 2. Thickness: 3-5/8" R Value: 11
Thickness: 6" R Value: 19
Thickness: 10" R Value: 30
 - 3. Flame Spread: 25
 - 4. Smoke Developed: 50
 - 5. Perm Rating: .1
 - 6. ASTM C665-84, Type III, Class A
 - 7. ASTM E136

2.03 SOUND ATTENUATION BATT INSULATION

1. Mineral Wool batts: Thermafiber SAFB or Roxul Inc or Johns Manville.
1. Unfaced
3. Thickness: 3"
3. Flame Spread: 10
4. Smoke Developed: 10
5. Perm Rating: .1
6. ASTM C665, C 553

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine areas scheduled to receive insulation to insure protection against inclement weather and other hazards, and to insure work of preceding trades is completed.

3.02 INSTALLATION

- A. Safing Insulation: Install in all openings in new partitions and in existing partitions as noted on drawings and in all fire-rated partitions, and around pipes, conduits, ducts, etc. penetrating walls and floors. Fill voids between partition top and structural deck, and between top of wall construction and underside of desk including around beams, full thickness of wall construction. Install in accordance with manufacturer's recommendations and UL Systems requirements for the specific rated systems.
- B. Thermal and Sound Attenuation Insulation: Install where shown on drawings. Butt edges securely together. Install according to manufacturer's recommendations.
- C. General: The creased Thermafiber SAFB system shall be 1 inch wider than regular blankets. After the blanket is installed in the partition cavity, a 1 inch vertical slit shall be field cut partially through the center of the blanket, allowing it to be creased. Compressing the extra width into the stud cavity buckles the center, exerting pressure against both studs and drywall. This pressure dampens sound vibrations and boosts the partition's STC rating.

3.03 CLEAN UP

- A. Remove and dispose of excess materials, litter and debris, leaving work areas in clean condition.

END OF SECTION

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 DEFINITIONS

- A. Firestopping: Material or combination of materials used to retain integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke, and hot gases through penetrations in fire rated wall and floor assemblies.

1.02 GENERAL DESCRIPTION OF THE WORK OF THIS SECTION

Only tested firestop systems shall be used in specific locations as follows:

- A. Penetrations for the passage of duct, cable, cable tray, conduit, piping, electrical busways and raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor/ceiling assemblies), and vertical service shaft walls and partitions for all construction activities.
- B. Safing slot gaps between edge of floor slabs.
- C. Openings between structurally separate sections of wall or floors.
- D. Gaps between the top of walls and ceilings or roof assemblies.
- E. Expansion joints in walls and floors.
- F. Openings and penetrations in fire-rated partitions or walls containing fire doors.
- G. Openings around structural members which penetrate floors or walls.

1.03 RELATED WORK OF OTHER SECTIONS

- A. Coordinate work of this section with work of other sections as required to properly execute the work and as necessary to maintain satisfactory progress of the work of other sections, including:
 - 1. Section 07 90 00-Joint Protection
 - 2. Section 09 21 16-Gypsum Board Assemblies
 - 3. Division 21 – Fire suppression
 - 4. Division 22 – Plumbing
 - 5. Division 23 – HVAC
 - 6. Division 26 – Electrical

1.04 REFERENCES

- A. Test Requirements: ASTM E-814, "Standard Method of Fire Tests of Through Penetration Fire Stops" (July 1983).
 - B. ASTM E199-07a Standard Test methods for Fire Tests of Building Construction and Materials.
 - C. Underwriters Laboratories (UL) of Northbrook, IL runs ASTM E-814 under their designation of UL 1479 and publishes the results in their "FIRE RESISTANCE DIRECTORY" that is updated annually with a midyear supplement.
 - a. UL Fire Resistance Directory:
 - i. Through-Penetration Firestop Devices (XHCR)
 - ii. Fire Resistance Ratings (BXUV)
 - iii. Through-Penetration Firestop Systems (XHEZ)
 - iv. Fill, Voids, or Cavity Material (XHHW)
 - v. Forming Materials (XHKU)
 - D. Test Requirements: UL 2079, "Tests for Resistance of Building Joint Systems" (November 1994).
 - E. ASTM E-84, Standard Test Method for Surface Burning Characteristics of Building Materials.
 - F. International Building Code 2003 with 2005 Connecticut Supplements and 2009, 2011 and 2013 Supplements.
 - G. Connecticut Fire Safety Code 2005 with 2009 and 2012 Supplements.
 - H. NFPA 70-National Electric Code 2011.
- 1.05 QUALITY ASSURANCE
- A. A manufacturer's direct representative (not distributor or agent) to be on-site during initial installation of firestop systems to train appropriate contractor personnel in proper selection and installation procedures. This will be done per manufacturer's written recommendations published in their literature and drawing details.
 - B. Firestop System installation must meet requirements of ASTM E-814, UL 1479 or UL 2079 tested assemblies that provide a fire rating equal to that of construction being penetrated.
 - C. Proposed firestop materials and methods shall conform to applicable governing codes having local jurisdiction.

- D. Firestop Systems do not reestablish the structural integrity of load bearing partitions/assemblies, or support live loads and traffic. Installer shall consult the structural engineer prior to penetrating any load bearing assembly.
- E. For those firestop applications that exist for which no UL tested system is available through any manufacturer, a manufacturer's engineering judgment derived from similar UL system designs or other tests will be submitted to local authorities having jurisdiction (Office of the State Building Official) for their review and approval prior to installation. Engineer judgment drawings must follow requirements set forth by the International Firestop Council (September 7, 1994).

1.06 SUBMITTALS

- A. Submit Product Data: Manufacturer's specifications and technical data for each material including the composition and limitations, documentation of UL firestop systems to be used and manufacturer's installation instructions to comply with Section 01 33 00.
- B. Manufacturer's engineering judgment identification number and drawing details when no UL system is available for an application. Engineer judgment must include both project name and contractor's name who will install firestop system as described in drawing.
- C. Submit material safety data sheets provided with product delivered to job-site.

1.07 INSTALLER QUALIFICATIONS

- A. Engage an experienced Installer who is certified, licensed, or otherwise qualified by the firestopping manufacturer as having been provided the necessary training to install manufacturer's products per specified requirements. A manufacturer's willingness to sell its firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials undamaged in manufacturer's clearly labeled, unopened containers, identified with brand, type, and UL label where applicable.
- B. Coordinate delivery of materials with scheduled installation to allow minimum storage time at job-site.
- C. Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements.
- D. Comply with recommended procedures, precautions or remedies described in material safety data sheets as applicable.

- E. Do not use damaged or expired materials.

1.09 PROJECT CONDITIONS

- A. Do not use materials that contain flammable solvents.
- B. Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.
- C. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.
- D. Weather conditions: Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation printed on product label and product data sheet.
- E. During installation, provide masking and drop cloths to prevent firestopping materials from contaminating any adjacent surfaces.

PART 2 - PRODUCTS

2.01 FIRESTOPPING, GENERAL

- A. Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.
- B. Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated system.
- C. Firestopping Materials are either "cast-in-place" (integral with concrete placement) or "post-installed." Provide cast-in-place firestop devices prior to concrete placement.
- D. Firestopping for all trades shall be undertaken by one firm and fall under one warranty.

2.02 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with through penetration firestop systems (XHEZ) listed in Volume II of the UL Fire Resistance Directory, provide products of the following manufacturers as identified below:
 - 1. Hilti, Inc., Tulsa, Oklahoma, (918) 252-6901
 - 2. Tremco Sealants & Coatings, Beachwood, Ohio, (216) 292-5000
 - 3. 3M Fire Protection Products, St. Paul, Minnesota, (612) 736-0203

Provide products from one of the three acceptable manufacturers; *no substitutions will be accepted.*

2.03 MATERIALS

- A. Use only firestop products that have been UL 1479, ASTM E-814, or UL 2079 tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.
- B. Cast-in-place firestop devices for use with non-combustible and combustible plastic pipe (closed and open piping systems) penetrating concrete floors, the following products are acceptable:
 - 1. Hilti CP 680 Cast-In-Place Firestop Device
- C. For penetrations by non-combustible items including steel pipe, copper pipe, rigid steel conduit and electrical metallic tubing (EMT), the following materials are acceptable:
 - 1. Hilti FS 601 Elastomeric Firestop Sealant
 - 2. Hilti FS-ONE High Performance Intumescent Firestop Sealant
 - 3. 3M Fire Stop Sealant 2000
 - 4. 3M Fire Barrier CP25 WB
 - 5. Tremco Tremstop Fyre-Sil Sealant
- D. For fire-rated construction joints and other gaps, the following materials are acceptable:
 - 1. Hilti FS 601 Elastomeric Firestop Sealant
 - 2. Hilti CP 601s Elastomeric Firestop Sealant
 - 3. Hilti CP 606 Flexible Firestop Sealant
 - 4. Hilti CP 672 Firestop Joint Spray
 - 5. 3M Firestop Sealant 2000
 - 6. Tremco Tremstop Fyre-Sil Sealant
- E. For penetrations by combustible items (penetrants consumed by high heat and flame) including insulated metal pipe, PVC jacketed, flexible cable or cable bundles and plastic pipe (closed piping systems), the following materials are acceptable:
 - 1. Hilti FS-ONE High Performance Intumescent Firestop Sealant
 - 2. Hilti CP 618 Firestop Putty
 - 3. Hilti CP 642 Firestop Jacket
 - 4. Hilti CP 643 Firestop Jacket
 - 5. 3M Fire Barrier CP25 WB
 - 6. 3M Fire Barrier FS-195 Wrap/Strip
 - 7. Tremco Tremstop WBM Intumescent Firestop Sealant

- F. For penetrations by combustible plastic pipe (open piping systems), the following materials are acceptable:
1. Hilti CP 642 Firestop Jacket
 2. Hilti CP 643 Firestop Jacket
 3. Hilti FS-ONE High Performance Intumescent Firestop Sealant
 4. 3M Fire Barrier PPD Plastic Pipe Device
- G. For large size/complex penetrations made to accommodate cable trays, multiple steel and copper pipes, electrical busways in raceways, the following materials are acceptable:
1. Hilti FS 635 Trowelable Firestop Compound
 2. Hilti FIRE BLOCK
 3. 3M Firestop Foam 2001
 4. 3M Fire Barrier CS-195 Composite Sheet
- H. For openings between structurally separate sections of walls and floors, top-of-walls, the following materials are acceptable:
1. Hilti FS 601 Elastomeric Firestop Sealant
 2. Hilti CP 601s Elastomeric Firestop Sealant
 3. Hilti CP 606 Flexible Firestop Sealant
 4. Hilti FS-ONE High Performance Intumescent Firestop Sealant
 5. 3M Fire Barrier CP 25 WB
- I. Provide a firestop system with an "F" Rating as determined by UL 1479 or ASTM E814 which is equal to the time rating of construction being penetrated.
- J. Provide a firestop system with an Assembly Rating as determined by UL 2079 which is equal to the time rating of construction being penetrated.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
1. Verify penetrations are properly sized and in suitable condition for application of materials.
 2. Surfaces to which firestop materials will be applied shall be free of dirt, grease, oil, rust, laitance, release agents, water repellents, and any other substances that may affect proper adhesion.
 3. Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.

4. Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestopping.
5. Do not proceed until unsatisfactory conditions have been corrected.

3.02 COORDINATION

- A. Coordinate location and proper selection of cast-in-place Firestop Devices with trade responsible for the work.
- B. Responsible trade to provide adequate spacing of field run pipes to allow for installation of cast-in-place firestop devices without interferences.

3.03 INSTALLATION

- A. Regulatory Requirements: Install firestop materials in accordance with published "Through-Penetration Firestop Systems" in UL's Fire Resistance Directory.
- B. Manufacturer's Instructions: Comply with manufacturer's instructions for installation of through-penetration materials.
 1. Seal all holes or voids made by penetrations to ensure an air and water resistant seal.
 2. Consult with mechanical engineer, project manager prior to installation of UL firestop systems that might hamper the performance of fire dampers as it pertains to duct work.
 3. Protect materials from damage on surfaces subjected to traffic.

3.04 FIELD QUALITY CONTROL

- A. Examine sealed penetration areas to ensure proper installation before concealing or enclosing areas.
- B. Keep areas of work accessible until inspection by applicable code authorities.
- C. Perform under this section patching and repairing of firestopping caused by cutting or penetrating of existing firestop systems already installed by other trades.

3.05 ADJUSTING AND CLEANING

- A. Remove equipment, materials and debris, leaving area in undamaged, clean condition.
- B. Clean all surfaces adjacent to sealed holes and joints to be free of excess firestop materials and soiling as work progresses.

END OF SECTION

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Preparing sealant substrate surfaces.
- B. Sealant and backing.

1.02 RELATED SECTIONS

- A. Section 06 10 00 – Carpentry
- B. Section 08 13 16 – Custom Hollow Metal Doors and Frames

1.03 SUBMITTALS

- A. Submit samples and product data under provisions of General Conditions and Section 01 33 00.
- B. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, and color availability.
- C. Submit two samples illustrating colors selected.
- D. Submit manufacturer's installation instructions under provisions of General Conditions and Section 01 33 00.
- E. Submit manufacturer's certificate that products meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum three years documented experience.
- B. Applicator: Company specializing in applying the work of this Section with minimum three years documented experience.
- C. Conform to Sealant Waterproofing and Restoration Institute requirements for materials and installation.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Do not install solvent curing sealants in enclosed building spaces.
- B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.06 SEQUENCING AND SCHEDULING

- A. Coordinate work under provisions of Section General Conditions and Section 01 33 00.
- B. Coordinate the work of this Section with all Sections referencing this Section.

1.07 WARRANTY

- A. Provide a five (5) year warranty on materials and workmanship.

PART 2 - PRODUCTS

2.01 SEALANT MANUFACTURERS

- A. Tremco
- B. Pecora
- C. Dap
- D. Dow

2.02 SEALANTS

- A. Sealant for interior use between joints and unlike materials: Silicone, conform to TT-S-002306, ASTM C920, FS TT-S-01543, Type II, Class A, low modular type.
- B. Sealant at fire rated walls, around pipe, conduit, and other wall penetrations: Dow Corning Fire Stop sealant, floor/wall penetration seal design System 129, UL classified.
- C. Sealant for exterior uses and penetrations in exterior walls. One part urethane type II conforming to the requirements of FS TT-S-2300, Tremco Dymonic, or Pecora Dynatrol 1.

2.03 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

- C. Joint Backing: Expanded or extruded closed-cell polyethylene for joint open in back and joints requiring filler to create proper depth and polyethylene bond breaker tape for joints closed in back.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and joint openings are ready to receive work and field measurements are as shown on Drawings and recommended by the manufacturer.
- B. Beginning of installation means installer accepts existing surfaces.

3.02 PREPARATION

- A. Clean joints in accordance with manufacturer's instructions.
- B. Remove loose materials and foreign matter which might impair adhesion of sealant.
- C. Verify that joint backing and release tapes are compatible with sealant.
- D. Perform preparation.
- E. Protect elements surrounding the work of this Section from damage or disfiguration.

3.03 INSTALLATION

- A. Install sealant in accordance with manufacturer's instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Tool joints concave.

3.04 CLEANING AND REPAIRING

- A. Clean work under provisions of General Conditions and Supplemental General Conditions.
- B. Clean adjacent soiled surfaces.
- C. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.05 PROTECTION OF FINISHED WORK

- A. Protect finished installation under provisions of General Conditions and Supplemental General conditions.
- B. Protect sealants until cured.

END OF SECTION

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Custom fabricated non-rated steel door frames.

1.02 RELATED WORK

- A. Section 05 50 00 - Metal Fabrications.
- B. Section 09 90 00 – Painting and Coating
- C. Section 08 71 00 – Door Hardware

1.03 REFERENCES

- A. ASTM A525 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, General Requirements.
- B. DHI - Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
- C. NAAMM CHM - Custom Hollow Metal Doors (Section 7).
- D. NAAMM CHM - Fire Rated Custom Metal Doors and Frames (Section 8).
- E. NFPA 252 - Fire Tests of Door Assemblies.
- F. UL 10B - Fire Tests of Door Assemblies.

1.04 QUALITY ASSURANCE

- A. Conform to requirements of NAAMM CHM-1-74 as supplemented in this section.
- B. Installed frame and door assembly to conform to NFPA 90 for fire rated class indicated.

1.05 REGULATORY REQUIREMENTS

- A. Conform to Connecticut State Fire Safety Code and 2003 International Building Code with 2005 Connecticut Supplements for fire rated frames and doors.

1.06 SHOP DRAWINGS AND PRODUCT DATA

- A. Submit shop drawings and product data under provisions of General Conditions and Section 01 30 00.
- B. Indicate frame configuration, anchor spacings, anchor types, and location of cutouts for hardware and reinforcement.
- C. Indicate door elevations, stile and rail reinforcement and closure method, and cut outs for glazing.
- D. Submit manufacturer's installation instructions under provisions of General Conditions and Section 01 30 00.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Protect products under provisions of General Conditions and Section 01 60 00.
- B. Protect doors and frames with resilient packaging, sealed with heat shrunk plastic.
- C. Break seal on-site to permit ventilation.

1.08 WARRANTY

- A. Provide five year manufacturer's warranty under provisions of General Conditions.
- B. Warranty for face distortion, warping, defective materials, and exterior weather-stripping.

PART 2 - PRODUCTS

2.01 BASIC MATERIALS

- A. Sheet steel for frames shall be hot rolled prime quality carbon steel.
- B. Sheet steel for doors shall be cold rolled stretcher level sheet steel.
- C. Sheet steel for exterior door and frames shall be galvanized.

2.02 FRAMES

- A. Frames shall be combination buck, frame and trim type, rated and non-rated frames.

- B. Minimum gauges: 16 gauge interior frames.
14 gauge exterior frames.

- C. Brake-form steel sheets:
 - 1. Provide profiles and shapes free of warp, buckles, fractures, or other defects.
 - 2. Form stop integral with frames unless otherwise shown.

- D. Corners and connections shall be mitered and welded with exposed welds ground flush and smooth.

- E. Hardware Reinforcement: NAAM CHM-1-74.

- F. Anchors:
 - 1. Provide an anchor at each jamb for each 2'-6" of door height or fraction thereof.
 - 2. Vary anchor types to provide positive fastening to adjacent construction.
 - 3. Secure a metal clip angle at bottom of each jamb member for anchoring to floor, with a minimum of two fasteners.
 - 4. Provide high hat reinforcing and countersunk holes for lag bolting frames to existing construction. Lag bolting accepted only at existing masonry openings.

- G. Stops and Trim:
 - 1. Applied stops shall be formed of 20 ga. steel, corner made to a close, neat fit, and secured at 12" intervals with countersunk sheet metal screws.

2.03 PROTECTIVE COATINGS

- A. Bituminous Coating: Fibered asphalt emulsion.

- B. Primer: Factory coat of primer to be applied over galvanized steel for field painting.

2.04 FABRICATION

- A. Fabricate frames and assemble as a complete welded unit.

- B. Fabricate frames and doors with hardware reinforcement plates welded in place.
- C. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.
- D. Prepare frame for silencers. Provide three single silencers for single doors and mullions of double doors on strike side and two single silencers on frame head at double doors without mullions.
- E. Attach fire rated label to each frame, panel and door unit.

2.05 FINISH

- A. Exterior Units: 1.25 oz/sq ft galvanized.
- B. Primer: Air-dried.
- C. Finish: Field painting specified Section 09 90 00.
- D. Coat inside of frame profile with bituminous coating to a thickness of 1/16 inch.
- E. Door and frames shall be leveled and ground smooth. Apply mineral filler to eliminate weld scar and other blemishes.

PART 3 - EXECUTION

3.01 INSTALLATION

- 1. Install frames in accordance with NAAMM CHM.
- 2. Install doors in accordance with DHI.
- 3. Coordinate with partition construction for anchor placement.
- 4. Wherever possible, leave frame spreader bar intact until frames are set plumb and square, and anchors are secured.
- 5. Apply hardware in accord with hardware manufacturer's templates and instructions.
- 6. Adjust operable parts for correct function.
- 8. Remove hardware, with the exception of prime coated items, tag, box and reinstall after finish paint work is completed.

- 9. Installation of labeled doors shall conform with the State of Connecticut Basic Building Code.
- 10. Doors shall be hung with 1/16" space at head and jambs with 3/16" clearance over thresholds, 3/8" where no thresholds occurs. Clearance at pairs of doors shall be minimum required for operation. Clearance between pairs of smoke doors must be maintained to meet U.L. and manufacturer's label requirements without mullion or astragal.

3.02 PRIME COAT TOUCH-UP

- A. Immediately after erection, areas where prime coat has been damaged shall be sanded smooth and touched up with same primer as applied at shop.
- B. Remove rust before above specified touch-up is applied.
- C. Touch-up shall not be obvious.

3.03 PROTECTION

- A. Protect installed hollow metal work against damage from other construction work.

3.04 TOLERANCES

- A. Maximum Diagonal Distortion = 1/16 inch measured with straight edge, corner to corner.
- B. 1/8" over thresholds.

3.05 ADJUSTING AND CLEANING

- A. Adjust for smooth and balanced door movement.

END OF SECTION

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Rated and non- rated wood doors with and without glazing.

1.02 RELATED WORK

- A. Section 08 13 16- Custom Hollow Metal Frames
- B. Section 08 71 00 - Door Hardware
- C. Section 09 90 00 – Painting and Coating

1.03 REFERENCES

- A. ANSI/NWMA I.S.1 - Industry Standard For Wood Flush Doors (Includes Standards I.S. 1.1 through I.I.S. 1.7).
- B. AWI- Quality Standards of Architectural Woodwork Institute
- C. ANSI/HPMA HP - Hardwood and Decorative Plywood.
- D. NFPA 252 – Fire Test of Door Assembly.
- E. UL 10C – Fire Test of Door Assembly.

1.04 QUALITY ASSURANCE

- A. Conform to requirements of AWI Quality Standard- Premium Grade
- B. Manufacturer: Company specializing in manufacturing the products specified in the section with minimum five years documented experience.
- C. Fire rated doors and frames construction conforming to UL 10C, installed in accordance with NFPA 80.

1.05 SHOP DRAWINGS AND PRODUCT DATA

- A. Submit shop drawings and product data under provisions of General Conditions and Section 01 33 00.
- B. Indicate door elevation, stile and rail reinforcement, internal blocking for hardware attachment, and cutouts for glazing.

- C. Sample: Submit two full size samples of typical corner construction: sample to illustration construction and wood veneer.
- D. Manufacturer's Installation Instructions: Indicate special installation instructions.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Protect products under provisions of General Conditions and Section 01 60 00.
- B. Package, deliver, and store doors in accordance with AWI, Section 1300. Do not store in damp or wet area.

1.07 WARRANTY

- A. Provide: Life of installation: Interior Doors.
- B. Include coverage for delamination of veneer, warping beyond specified installation tolerance, defective materials, and telegraphing core construction.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Eggers
- B. Algoma
- C. Marshfield
- D. V.T. Industries

2.02 FLUSH INTERIOR DOORS SCHEDULED TO BE WOOD

- A. 1- $\frac{3}{4}$ " inches thick; 5-ply solid core construction; wood veneer faces.

2.03 DOOR CONSTRUCTION (AWI QUALITY STANDARD)

- A. Solid Rated Core: AWI Section 1300, Rating as per door schedule.

2.04 DOOR FACING

- A. Facing Quality: AWI A grade.
- B. Flush Interior Door Veneer: Base of design: Walnut with factory clear coat finish (three coats). To be selected from manufacturer's full range of standard finishes.

2.05 ADHESIVE

- A. Interior Doors: AWI, Type II.

2.06 FABRICATION

- A. Fabricate doors in accordance with AWI Quality Standards requirements.
- B. Provide flush doors with ½ inch thick edge strips of wood species to match face veneer.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions.
- B. Machine cut relief for hinges and coring for hardware.
- C. Trim door width by cutting equally on both jamb edges.
- D. Trim door height by cutting equally on top and bottom edges to a maximum of ¾ inches.
- E. Prepare doors to receive finish hardware in accordance with AWI requirements. Provide reinforce styles for mortised hinges on UL rated doors.
- F. Conform to AWI requirements for fit tolerances.
- G. Coordinate installation of doors with installation of frames specified in Section 08 13 16 and hardware in Section 08 71 00.
- H. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.02 ADJUSTING AND CLEANING

- A. Adjust for smooth and balanced door movement.

END OF SECTION

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Wall access panels for gypsum board construction.

1.02 RELATED WORK

- A. Section 09 21 16 - Gypsum Board Assemblies
- B. Section 09 90 00 - Painting and Coating
- C. Section 09 30 00 - Tiling

1.03 WARRANTY

- A. Five years against defects in material or workmanship.

1.04 SHOP DRAWINGS AND PRODUCT DATA

- A. Submit shop drawings and product data under provisions of General Conditions and Section 01 30 00.
- B. Indicate frame configuration, anchor spacings, anchor types, and location of cutouts for hardware and reinforcement.
- D. Submit manufacturer's installation instructions under provisions of General Conditions and Section 01 30 00.

1.05 DELIVERY, STORAGE, AND PROTECTION

- A. Protect products under provisions of General Conditions and Section 01 60 00.

PART 2 - PRODUCTS

2.01 MANUFACTURER ACCESS PANELS

- A. Acudor
- B. Cierra

C. JL Industries

2.02 MATERIALS AND PRODUCTS (based on JL Industries Model TM)

- A. Door: 14 gauge steel
- B. Frame: 16 gauge steel with 1" flange
- C. Finish: Phosphate-dipped steel with prime coat.
- D. Lock: Flush screwdriver-operated steel cam.
- E. Sizes: a minimum of 12" x 12" or as required for specific application.
15"x24" (v.i.f.) access panels at Janitor's closets
- F. Finish to match wall color
- G. Stainless steel at tiled walls

Provide a total for 20 access panels in the base bid.

PART 3 - EXECUTION

3.01 INSTALLATION

- 1. Coordinate with requirement of wall opening.
- 2. Verify that the opening is the proper size and the anchoring condition is ready to accept the door.
- 3. Install according to manufacturer's requirements.

3.02 ADJUSTING AND CLEANING

- A. Adjust for smooth and balanced door movement.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
1. Swinging doors.
- B. Door hardware includes, but is not necessarily limited to, the following:
1. Mechanical door hardware.
- C. Related Sections:
1. Division 08 Section "Hollow Metal Doors and Frames".
 2. Division 08 Section "Flush Wood Doors".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 2. ICC/IBC - International Building Code.
 3. NFPA 70 - National Electrical Code.
 4. NFPA 80 - Fire Doors and Windows.
 5. NFPA 101 - Life Safety Code.
 6. NFPA 105 - Installation of Smoke Door Assemblies.
 7. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
1. ANSI/BHMA Certified Product Standards - A156 Series
 2. UL10C - Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- D. Informational Submittals:
1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

- E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
- E. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
 - 1. Function of building, purpose of each area and degree of security required.
 - 2. Plans for existing and future key system expansion.
 - 3. Requirements for key control storage and software.
 - 4. Installation of permanent keys, cylinder cores and software.
 - 5. Address and requirements for delivery of keys.
- G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 3. Review sequence of operation narratives for each unique access controlled opening.
 4. Review and finalize construction schedule and verify availability of materials.
 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article 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. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for mortise locks and latches.
 - 2. Twenty five years for manual surface door closer bodies.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

- C. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- D. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.
 - 1. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
 - 2. Acceptable Manufacturers:
 - a. Bommer Industries (BO).
 - b. Hager Companies (HA).
 - c. McKinney Products (MK).
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
 - 1. Acceptable Manufacturers:
 - a. Bommer Industries (BO).
 - b. McKinney Products (MK).
 - c. Pemko Manufacturing (PE).

2.3 DOOR OPERATING TRIM

- A. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
3. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Rockwood Manufacturing (RO).
 - c. Trimco (TC).

2.4 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
- C. Cylinders: Original manufacturer cylinders complying with the following:
 1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
 2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 3. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 4. Keyway: Match Facility Restricted Keyway. Field verify existing keying system and setup and match as required.
- D. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
 1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.
- E. Keying System: Each type of lock and cylinders to be factory keyed.
 1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 3. Existing System: Key locks to Owner's existing system.
- F. Key Quantity: Provide the following minimum number of keys:
 1. Change Keys per Cylinder: Four (4).

2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys: Ten (10).
4. Construction Control Keys: (10).
5. Permanent Control Keys: (2).

G. Construction Keying: Provide temporary keyed construction cores.

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) – ML2000 Series.
 - b. Sargent Manufacturing (SA) – 8200 Series.
 - c. Schlage (SC) – L9000 Series.

2.6 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.

2.7 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.

3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
 4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
 5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
 7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) – DC8000 Series.
 - b. Sargent Manufacturing (SA) - 351 Series.
 - c. Norton Door Controls (NO) - 7500 Series.

2.8 ARCHITECTURAL TRIM

- A. Door Protective Trim
1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
 2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
 3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80.

Consult manufacturer's catalog and template book for specific requirements for size and applications.

4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, .050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Rockwood Manufacturing (RO).
 - c. Trimco (TC).

2.9 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 1. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Rockwood Manufacturing (RO).
 - c. Trimco (TC).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
 1. Acceptable Manufacturers:
 - a. Rixson Door Controls (RF).
 - b. Rockwood Manufacturing (RO).
 - c. Sargent Manufacturing (SA).

2.10 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.11 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- 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. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- D. Match existing finishes and types.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically 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."
 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and 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.
- D. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.
- 3.4 FIELD QUALITY CONTROL
- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.
- 3.5 ADJUSTING
- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

- B. Manufacturer's Abbreviations:

- 1. MK - McKinney
- 2. PE - Pemko
- 3. RO - Rockwood
- 4. SA - Sargent
- 5. MC - Medeco
- 6. RF - Rixson

Hardware Sets

Set: 1.0

3 Hinge (heavy weight)	T4A3386 4-1/2" x 4-1/2"	US32D	MK
1 Privacy Set	49 8266 LNL	US32D	SA
1 Surface Closer	351 O/P10	EN	SA
1 Kick Plate	K1050 8" 4BE CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Set: 2.0

3 Hinge (heavy weight)	T4A3386 4-1/2" x 4-1/2"	US32D	MK
1 Storeroom Lock	72 8204 LNL	US32D	SA
1 SFIC Permanent Core	As Required	26	MC
1 Surface OH Stop	9-X36	652	RF
1 Surface Closer	351 O/P10	EN	SA
1 Kick Plate	K1050 8" 4BE CSK	US32D	RO

Set: 3.0

3 Hinge (heavy weight)	T4A3386 4-1/2" x 4-1/2"	US32D	MK
1 Storeroom Lock	72 8204 LNL	US32D	SA
1 SFIC Permanent Core	As Required	26	MC
1 Surface Closer	351 O/P10	EN	SA
1 Kick Plate	K1050 8" 4BE CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Notes: Verify all existing frame preps and match hinges and strike as required.

Set: 4.0

1 Continuous Hinge	CFMSLF-HD1		PE
1 Push Pull	111x73C/73CL	US32D	RO
1 Surface Closer	351 O/P10	EN	SA
1 Kick Plate	K1050 8" 4BE CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

END OF SECTION 08 71 00

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Gypsum Wall Board Soffit and Ceilings.
- B. Light gauge metal studs.
- C. Suspended ceiling systems.
- D. Gypsum Wall Board Accessories.
- E. Finish Accessories.
- F. Installing rings and frames in drywall surfaces for grilles, registers and recessed and cove lighting fixtures.

1.02 RELATED WORK

- A. Section 06 10 00 – Carpentry
- B. Section 07 90 00 – Joint Protection
- C. Section 05 50 00 – Metal Fabrications
- D. Section 09 90 00 – Painting and Coating
- E. Finishes
- F. Divisions 21, 23 and 26

1.03 QUALITY ASSURANCE

- A. Perform gypsum wallboard systems work in accordance with GA 216 unless otherwise specified in this section.

1.04 SUBMITTALS

- A. Submit samples and product data under provisions of General Conditions and Section 01 30 00.
- B. Provide product data on specified products, describing physical and performance characteristics, sizes, patterns and colors available.
- C. Submit manufacturer's installation instruction under provisions of General Conditions and Section 01 30 00.
- D. Submit maintenance data under provisions of Section 01 30 00.

PART 2 - PRODUCTS

2.01 GYPSUM WALLBOARD

- A. Provide gypsum wallboard material in accordance with recommendations of GA216. Gypsum wallboard material to include:
1. 5/8" water resistant Gypsum Wallboard Soffit and ceiling:
 - a. U. S. Gypsum Company
 - b. National Gypsum Company
 - c. G-P Gypsum Corporation
 - B. Standard gypsum length(s): maximum permissible length(s). End square cut, tapered or tapered and beveled edges.

2.02 GYPSUM WALLBOARD ACCESSORIES

- A. Provide gypsum wallboard accessories in accordance with GA216.
1. Corner Beads and edge trim ("J" molding): Metal or metal paper combination for tape on application. Exposed trim is unacceptable.
 2. Reinforcing tape, joint compound, adhesive, water, fasteners: GA216.

2.03 FINISHING ACCESSORIES

- A. Taping compound: U.S.G. joint compound or approved equal, ready mixed material designed for taping joints and topping.
- B. Joint Tape
1. U.S.G. Perf-a-Tape or approved equal at Drywall to receive paint.

2.04 METAL SUPPORTS

- A. Metal Floor and Ceiling Runners
1. Channel Type: Formed from 20 U.S. Std. gauge (unless otherwise noted) galvanized steel, width to suit channel type metal studs. Use 20 ga. top runners with 1-1/4" minimum flanges.
 2. Ceiling runners and head of wall connections at rated partitions shall conform to UL #2079 for cycle movement. Provide positive mechanical connection of framing to structure, allowing for vertical movement within connections.

Minimum of 20 ga. galvanized steel for clips, 25 ga. galvanized steel for ceiling runners. Providing a friction free – anti-seizure movement capacity.

- a. As manufactured by the Steel Network, VertiClip or VertiTrack or equal made by Metal-Lite Inc.
- b. FireTrak (including stud clips) by FireTrak Corp. or equal made by Metal-Lite Inc.

3. "J" Type: Formed from 20 U.S. Std. gauge galvanized steel, 1" x 2-1/2" or 4" wide (to suit detail) x 2-1/4".

B. Metal Studs, Framing and Furring

1. Channel Type Studs: Channel type with holes for passage of conduit formed from minimum 20 U.S. Std. gauge (unless heavier gauge is required to meet deflection limits) galvanized steel, width as shown on drawings.
2. Furring Channels: Hat shaped, formed from galvanized steel, 25 U.S. Std. gauge, 7/8" and 1 1/2".
3. "C-H," "CT," or "I" Type Stud: 1-1/2" x 2-1/2", 3 5/8", 4" or 6" wide (to suit detail) galvanized steel. Use for shaft wall construction; gauge and size as required to meet deflection limits given herein.
4. Double "E" Type Stud or "J" Track with Holding Tabs: 1" x 2-1/2", 3 5/8", 4" or 6" wide (to suit detail) galvanized steel. Use for shaft wall construction; gauge and size as required to meet deflection limits given herein.
5. Continuous 16 gauge x 8" wide steel wall plate screwed to studs as required for support of railings, toilet partitions and other items supported on drywall partitions and walls.

C. Suspended Ceiling and Fascia Supports

1. Main Runners: 1-1/2" steel channels, cold rolled at 0.475 lbs. per ft., rust-inhibitive paint finish.
2. Furring Members: Screw-type hat-shaped furring channels of 25 ga. zinc-coated steel; comply with ASTM C 645.
3. Hangers: Galvanized, 1" x 3/16" flat steel slats capable of supporting 5x calculated load supported.
4. Hanger Anchorages: Provide inserts, clips, bolts, screws and other devices applicable to the required method of structural anchorage for ceiling hangers. Size devices for 5x calculated load supported.
5. Furring Anchorages: 16 ga. galvanized wire ties, manufacturer's standard clips, bolts or screws as recommended by furring manufacturer.

- D. All galvanized steel members shall have coating conforming to ASTM A 653, G60.

2.05 DRYWALL SUSPENSIONS SYSTEM

- A. Manufacturers: Armstrong; Chicago Metallic Corporation; USG
- B. Grid: 2 x 4, ASTM C635, intermediate duty; 15/16 components die cast and interlocking.
- C. Accessories: stabilizer bars, clips, splices and edge moldings as required for suspended grid system. Provide ceiling hold down clips No. 24 MSG spring steel at 2'-0" o.c on all ceilings comprising a return air plenum and/or smoke barriers.
- D. Grid Materials: commercial quality cold rolled steel with galvanized coating.
- E. Grid Finish: ACT-1: White; ACT 2: to match tile color (to be selected by Architect from full range of 'Coloration' colors or equal).
- F. Support Channels and Hangers: galvanized steel; size and type to suit application, to rigidly secure acoustic system including integral mechanical and electrical components with maximum deflection of 1/360. Suspension system shall be diagonally braced with wire at 4'-0" o.c.
- G. Perimeter profile and edge for Trimless detail at cove lighting.
- H. Coordinate grid placement with lights and ceiling mounting diffusers, grilles, sprinkler heads etc. to achieve layout shown on drawings.

PART 3 - EXECUTION

3.01 LIGHT GAUGE METAL STUD FRAMING

- A. See drawings for locations of gypsum board partitions, soffits and ceilings.
- B. Stud framing spacing to be 16" on center, from floor to structural slab. Metal stud framing shall be true, plumb and level at elevation(s) indicated on drawings. Brace stud frame to existing structure at four feet on center.

3.02 SUSPENSION SYSTEM INSTALLATION

- A. Install drywall suspensions system in accordance with manufacturer's instructions and as supplemented in this Section.
- B. Install system capable of supporting imposed loads to a deflection of 1/360 maximum.
- C. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.

- D. Hang system structurally independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- E. Laterally brace entire suspension system as per requirements of seismic requirements.
- F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- G. Locate systems according to ceiling and floor plans and interior elevations. Coordinate layout with column enclosures, wall panels, etc. as called for in the construction documents.
- H. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 6 inches of each corner; or support components independently.
- I. Do not eccentrically load system, or produce rotation of runners.
- J. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths. Miter corners. Provide edge moldings at junctions with other interruptions. Where round obstructions occur, provide preformed closers to match edge molding.
- K. Install gypsum board using screws and accessories per manufacturer's instructions and details.

3.03 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with recommendations of GA216.
- B. Erect single layer gypsum board vertically, with edges and ends occurring over firm bearing.
- C. Use screws when fastening gypsum board to or framing.
- D. Place corner beads at external corners. Use longest practical lengths. Place edge trim where gypsum board abuts dissimilar materials.
- E. Tape, fill and sand exposed joints, edges corners, openings and fasteners, to produce surface ready to receive surface finishes. Feather coats onto adjoining surfaces so that camber is maximum.
- F. Remove and re-do defective work.

3.04 JOINT TREATMENT

A. Prefill:

1. Fill "V" grooves formed by abutting rounded edges of wallboard with prefill joint compound.
2. Fill "V" joint flush, and remove excess compound beyond groove.
3. Leave clear depression to receive tape.
4. Permit prefill joint compound to harden prior to application of tape.

B. Taping and Finishing Joints:

1. Taping or embedding joints:
 - a. Apply compound in thin uniform layer to all joints and angles to be reinforced.
 - b. Apply reinforcing tape immediately.
 - c. Center tape over joint, and seat tape into compound.
 - d. Leave approximately 1/64" to 1/32" compound under tape to provide bond.
 - e. Apply skim coat immediately following tape embedment but not to functions as fill or second coat.
 - f. Fold tape and embed in angles to provide true angle.
 - g. Dry embedding coat prior to application of fill coat.
2. Filling:
 - a. Apply joint compound over embedding coat.
 - b. Fill taper flush with surface.
 - c. Apply fill coat to cover tape.
 - d. Feather out fill coat beyond tape and previous joint compound line.
 - e. Joints with no taper: Feather out at least 4" on either side of tape.
 - f. Do not apply fill coat on interior angles.
 - g. Allow fill coat to dry prior to application on finish coat.

3. Finishing:
 - a. Spread joint compound evenly over and beyond fill coat on all joints.
 - b. Feather to smooth uniform finish.
 - c. Apply finish coat to taped angles to cover tape and taping compound.
 - d. Sand final application of compound to provide surface ready for paint.
- C. Filling and finish depressions:
 1. Apply joint compound as first coat to fastener depressions.
 2. Apply at least two additional coats of compound after first coat is dry.
 3. Leave filled and finished depression level with plane of surface.
- D. Finishing beads and trim at all outside corners and edges and where indicated.
 1. First fill coat:
 - a. Apply tape and joint compound to bead and trim.
 - b. Feather out from ground to plane of the surface.
 - c. Dry compound prior to application of second fill coat.
 2. Second fill coat:
 - a. Apply joint compound in same manner as first fill coat.
 - b. Extend beyond first coat into face of wallboard.
 - c. Dry compound prior to application of finish coat.
 3. Finish coat:
 - a. Apply joint compound to bead and trim.
 - b. Extend beyond second coat.
 - c. Feather finish coat from ground to plane of surface.
 - d. Sand finish coat to provide flat surface ready for painting.

3.05 ADJUST AND CLEAN

A. Nail Pop

1. Repair "nail pop" by driving new screw approximately 1-1/2" from nail pop and reset nail.
2. When face paper is punctured drive new screw approximately 1-1/2" from defective fastening and remove defective fastening.

B. Ridging

1. Do not repair ridging until condition has fully developed: approximately six months after installation or one heating season.
2. Sand ridges to reinforcing tape without cutting through tape.
3. Fill concave areas on both sides of ridge in taping compound.
4. After fill is dry, blend in taping compound over repaired area.

C. Fill cracks with compound and finish smooth and flush.

END OF SECTION

PART 1 - GENERALRELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Ceramic tile flooring, base and wall.
- B. Ceramic tile accessories.

1.02 RELATED WORK

- A. Section 09 21 16 – Gypsum Board Assemblies
- B. Plumbing Fixtures
- C. Section 06 10 00 – Carpentry
- D. Section 10 21 16 – Solid Plastic Toilet Compartments

1.02 REFERENCES

- A. ANSI/TCA A137.1- Specifications for Ceramic Tile.
- B. TCA (Tile Council of America)- Handbook for Ceramic Tile Installation.

1.03 SUBMITTALS

- A. Submit samples and product data under provisions of General Conditions and Section 01 30 00.
- B. Provide product data on specified products, describing physical and performance characteristics, sizes, patterns and colors available.
- C. Submit two sample boxes of full line of each material specified in size, illustrating color and pattern.
- D. Submit manufacturer's installation instruction under provisions of General Conditions and Section 01 30 00.
- E. Submit maintenance data under provisions of Section 01 30 00.

1.04 ENVIRONMENTAL REQUIREMENTS

- A. Do not install adhesives in a closed, unventilated environment.
- B. Maintain 50 degrees Fahrenheit (10 degrees C) during installation of mortar materials.

1.06 EXTRA MATERIALS

- A. Provide 5% extra stock for each tile type.

PART 2 - PRODUCTS2.01 MANUFACTURERS

- A. Daltile, American Olean, or Marazzi. Representative Contact Lucia Franco 203-230-8907, lucia.franco@daltile.com

2.02 FLOOR TILE

- A. Glazed Porcelain non-slip finish as manufactured by Daltile, see drawings.
 - 1. 12" x 24" x 3/8" tile (See Tile Schedule 2.07 for color).
 - 2. 6" x 24" x 3/8" 'wood'-look tile (See Tile Schedule 2.07 for color).

2.03 WALL TILE AND BASE:

- A. Glazed ceramic tile 3"X6"
 - 1. Dimensions listed – nominal; even dimensions on grout line – see elevations
 - 2. Field tile - 3"X6" Rittenhouse Square made by Daltile, Accent 3"X6" Rittenhouse Square by Daltile with Natural Hues color glaze, allow 4-6 week lead time for custom colors. (See Tile Schedule 2.07). See elevations for patterns.

2.02 TRANSITION STRIPS AND THRESHOLDS

- A. Provide transition strips of the same tile as the floor tile at all doors that transition from floor tile to another material and between new and old floors.
- B. Grade A, First Quality

- C. Free from cracks, chips stains and defects.
- D. Floor prep to match finished floor levels.
- E. Use Schluter-Deco strips at transition between existing quarry tile and new ceramic tile.

2.03 ADHESIVE

- A. Latex Portland Cement Mortar.

2.04 GROUT MATERIALS

- A. Grout: Chemical resistant type, consisting of epoxy resin and hardener.
- B. Color Admixture: QT type, color as selected from grout manufactured by Custom Building Products or equal.
- C. Color: G1: 89 Smokey Grey made by Laticrete at 12x24 tile (typ).
 G2: to be selected by architect at 6x24 wood-like tile.

2.05 GROUT AND MORTAR MIX

- A. Mix and proportion pre-mix grout materials in accordance with manufacturer's instructions.

2.06 ACCESSORIES

- A. Subfloor Filler: Type recommended by flooring material manufacturer.

2.07 TILE SCHEDULE (Basis of Design) Manufactured by Daltile – see drawings.

T1: Rittenhouse Square Matte Arctic White 0790

T2: Rittenhouse Square Matte Desert Gray X714

T3: Rittenhouse Square with Natural Hues custom spray Blueberry QH46

T4 (Accent1): Rittenhouse Square with Natural Hues custom spray Real Teal QH66

T5 (Accent2): Rittenhouse Square with Natural Hues custom spray Eggplant QH51

T6 (Accent3): Rittenhouse Square with Natural Hues custom spray Butterscotch QH07

T7 (Accent4): Rittenhouse Square with Natural Hues custom spray Espresso QH85

T8: Volume 1.0 Glazed Porcelain Electric Moss VL79

T9: Timber Glen Contemporary P622 Cherry

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work and are free of glue, bumps and ridges.
- B. Verify that surfaces are smooth and flat with maximum variation of 1/8 inch in 10 ft, and are ready to receive work.
- C. Verify concrete floors are dry to a maximum moisture content of 7 percent, and exhibit negative alkalinity, carbonization, or dusting.
- D. Check squareness of room and verticality of walls to avoid difficult installations at corner intersections. Coordinate work with the contractor and sub-contractors responsible for the substrate to provide a sub-surface square and plumb, ready to receive the tile application.
- E. Beginning of installation means acceptance of existing substrate and site conditions.

3.02 PREPARATION

- A. Remove sub-floor ridges, bumps, and foreign materials. Fill low spots, cracks, joints, holes, and other defects with subfloor filler. Adjust thickness to create level top surface between different floor types
- B. Apply trowel, and float filler to leave a smooth, flat, hard surface and to the required slope as shown on drawings.
- C. Prohibit traffic from area until filler is cured.
- D. Vacuum clean substrate.
- E. Apply conditioner to surfaces as recommended by adhesive manufacturer.

3.03 INSTALLATION

- A. Follow manufacturer's recommendations for the installation of the setting bed of mortar and the grout of tile joints.
- B. Install with pattern parallel to walls, see drawings for layout.
- C. Cut and fit tile tight to penetrations through tile. Form corners and bases neatly.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
- E. Sound tile after setting. Replace hollow sounding units.
- F. Allow tile to set for a minimum of 48 hours prior to grouting.
- G. Grout tile joints.

3.05 PROTECTION

- A. Prohibit traffic on floor finish for 48 hours after installation.
- B. Provide protective cover over finish installation where there will be construction traffic.

3.06 CLEANING

- A. Clean work under provisions of General Conditions.

END OF SECTION

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Resilient base.
- B. Resilient accessories.

1.02 RELATED WORK

- A. Section 09 65 10 - Self Leveling Underlayment.
- B. Section 09 72 16 - Vinyl Wallcovering

1.03 REFERENCES

- A. FS SS-T-312 - Tile, Floor: Asphalt, rubber, and vinyl composition.
- B. FS SS-W-40 - Wall Base: Rubber and vinyl plastic wall cover.

1.04 REGULATORY REQUIREMENTS

- A. Conform to code for flame/fuel/smoke rating requirements in accordance with ASTM E84.

1.05 SUBMITTALS

- A. Submit samples and product data under provisions of General Conditions and Section 01 33 00.
- B. Provide product data on specified products, describing physical and performance characteristics, sizes, patterns and colors available.
- C. Submit two sample boxes of full line of each floor material specified in size, illustrating color and pattern.
- D. Submit two-sample chains of base.
- E. Submit manufacturer's installation instruction under provisions of General Conditions and Section 01 33 00.

1.06 OPERATION AND MAINTENANCE DATA

- A. Submit cleaning and maintenance data under provisions of General Conditions and Section 01 78 23.

- B. Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Store materials for three days prior to installation in area of installation to achieve temperature stability.
- B. Maintain ambient temperature required by adhesive manufacturer three days prior to, during, and 24 hours after installation of materials.
- C. General Contractor shall moisture test slabs prior to installation to confirm flooring manufacturer's requirements.

1.08 EXTRA MATERIALS

- A. Provide 50 sq. ft. of flooring and 20 linear feet of base of each material specified under provisions of General Conditions and Section 01 78 23.

PART 2 - PRODUCTS

2.01 RUBBER BASE

- A. Manufacturers: Roppe, or equivalent of Burke Mercer, Marley Flexco, or Johnsonite.
- B. Base of Design:
 - Roppe Pinnacle Plus Profile #65 , Color: 100 Black
 - Type TS - rubber, vulcanized thermoset
 - Group 1 – solid (homogenous)
 - Style A – Straight
 - 4" (101.6 mm) high
 - 3/8" (9.53 mm) thick
 - 8' (2.44 mm) sections or roll
 - 1 year, Manufacturing Only
 - 100% vulcanized homogenous rubber compound comprised of a premium blend & SBR rubber materials.
 - 70 standard color
- C. 4" high; 3/8" thick; premolded external corners.

2.02 ACCESSORIES

- A. Subfloor Filler: See Section 09 65 10.

- B. Primers and Adhesives: Waterproof; types recommended by manufacturer.
- C. Edge Strips and Reducer Strips by Mercer, Roppe or Johnsonite: Vinyl as required for transition between different materials. Submit manufacturer catalog for selection. Colors to be selected from Manufacturer's full range.
- D. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that existing floor area to receive new flooring is free of glue bumps and ridges.
- B. Verify that surfaces are smooth and flat with maximum variation of 1/8 inch in 10 ft, and is ready to receive work.
- C. Verify underlayment is dry as per underlayment manufacturer installation directions.
- D. Beginning of installation means acceptance of existing substrate and site conditions.

3.02 PREPARATION

- A. Remove sub-floor ridges, bumps, and foreign materials. Fill low spots, cracks, joints, holes, and other defects with self leveling underlayment per Section 09 65 10.
- B. Apply trowel, and float filler to leave a smooth, flat, hard surface.
- C. Prohibit traffic from area until filler is cured.
- D. Vacuum clean substrate.
- E. Apply primer to surfaces.

3.03 INSTALLATION - BASE MATERIAL

- A. Fit joints tight and vertical. Maintain minimum measurement of 18 inches between joints.
- B. Miter internal corners. At external corners, use premolded units. At exposed ends use premolded units.

C. Install base on solid backing. Bond tight to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.05 PROTECTION

A. Prohibit traffic on floor finish for 48 hours after installation.

B. Provide protective cover over finish installation where there will be construction traffic.

3.06 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean, seal, and wax floor and base surfaces in accordance with manufacturer's instructions.

END OF SECTION

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions.

1.01 WORK INCLUDED

- A. Self-leveling floor underlayment topping for all existing concrete floors to fill voids and level existing concrete floor prior to receiving specified flooring material.

1.02 RELATED WORK

- A. Section 09 30 00- Tiling.

1.03 QUALITY ASSURANCE

- A. Installer's Qualifications: Installation of underlayment shall be by an applicator authorized by the manufacturer using approved mixing and pumping equipment.

1.04 DELIVERY, STORAGE AND HANDLING

- A. General Requirements: Materials shall be delivered in their original, unopened packages, and protected from exposure to the elements. Damaged or deteriorated materials shall be removed from the premises.

1.05 SITE CONDITIONS

- A. Environmental Requirements: Before, during and after installation of underlayment, building interior shall be maintained at a temperature above 40 degrees F (4.4 degrees C) and below 100 degrees F (37.7 degrees C).

1.05 SUBMITTALS

- A. Submit samples and product data under provisions of General Conditions.
- B. Provide product data on specified products, describing physical and performance characteristics.
- C. Submit manufacturer's installation instruction under provisions of General Conditions.

PART 2 PRODUCTS

2.01 Manufacturer: Self-Leveling Poured Floor Underlayment

- A. Level-Right Plus Cementitious self-leveling floor underlayment as manufactured by Maxxon Corporation.
- B. 86 LatilLevel self-leveling floor underlayment as manufactured by Laticrete.
- C. Novoplan 2 Plus self-leveling floor underlayment as manufactured by MAPEI

2.02 Accessories

- A. Mix Water: Potable, free from impurities.
- B. Concrete Primer: Manufacturer Approved Primer
- C. Sealer: Manufacturer Approved Sealer

2.03 MIX DESIGNS

- A. General Requirements: mix proportions and methods shall be in strict accordance with product manufacturer recommendations.

PART 3 EXECUTION

3.01 APPLICATION OF SELF-LEVELING FLOORING

- A. Application: Place underlayment 0 - 1 1/2" (0 - 38 mm). Deeper applications can be done in multiple lifts. Spread and float underlayment to a smooth surface. Place underlayment as continuously as possible until application is complete so that no underlayment slurry is placed against underlayment that has obtained its initial set.
- B. Drying: Contractor shall provide continuous ventilation and adequate heat until underlayment is dry. Contractor shall provide mechanical ventilation if necessary.

3.03 PROTECTION

- A. Protection From Heavy Loads: During construction, place temporary wood planking over Level-Right Plus wherever it will be subject to heavy wheeled or concentrated loads.

END OF SECTION

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Vinyl wall covering, including vinyl corner guards and end wall protectors.

1.02 RELATED WORK

- A. Section 09 21 16 - Gypsum Board Assemblies.

1.03 QUALITY ASSURANCE

- A. Product Manufacturer: Company specializing in manufacturing quality vinyl wall covering products with minimum five years experience.
- B. Applicator: Company specializing in commercial vinyl wall covering with five years documented experience.

1.04 REGULATORY REQUIREMENTS

- A. Conform to code for flame/fuel/smoke rating requirements for finishes.

1.05 SUBMITTALS

- A. Submit according to provisions of General Conditions and Section 01 33 00.
- B. Submit product data.
- C. Provide product data on all finishing products.
- D. Submit manufacturer's application instructions.
- F. Contractor shall submit for architect's approval – a sample of each texture, type or color to be installed.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. All necessary materials for installation including wall covering, primer and adhesives must be delivered to the job site undamaged.

- A. Deliver products to site under provisions of General Conditions and Section 01 33 00.
- B. Store and protect products under provisions of General Conditions and Section 01 60 00.
- C. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.
- D. Container labeling to include manufacturer's name, brand name, brand code, coverage, surface preparation, drying time, cleanup, and instructions for mixing and reducing.
- E. Store vinyl wall covering materials at minimum ambient temperature of 65 degrees Fahrenheit and a maximum of 90 degrees Fahrenheit, in well ventilated area, for at least 4 days before and throughout the installation.
- F. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperature above 65 degrees Fahrenheit for 48 hours before, during, and 48 hours after application of vinyl wall covering, unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80-ft candles measured mid-height at substrate surface.
- F. Protection:
 - 1. Cover or otherwise protect finish work of other trades and surfaces.

PART 2 - PRODUCTS

2.01 VINYL WALLCOVERING

- A. Products: Subject to compliance with requirements, provide the Type II Vinyl wall covering manufactured by:
 - 1. Koroseal Interior Products, LLC
 - 2. MDC Wall covering
 - 3. Colour & Design Inc.
 - 4. Arte USA Inc.
- B. All Vinyl wall coverings specified and installed shall meet the latest GSA Federal Specification CCC-W-408-D. In addition, wall coverings must meet or exceed Wallcovering Association Quality Standard W-1012013 for Vinyl Coated Fabric

wall covering. All wall coverings specified shall pass the ASTM-G21 testing for mold and mildew resistance. The ASTM-E84 test must be passed with the wall covering mounted to common gypsum wallboard.

C. Color: Koroseal Dazzle Wedding Band D121-95.

2.02 FLAME AND SMOKE CHARACTERISTICS

A. The manufacturer shall certify that the vinyl wall covering supplied meets Federal and International specified limits for flame, smoke development and flash over according to the following tests:

	Type II	Type I
ASTM E-84 Tunnel Test		
NFPA Life Safety Code 101	Passed Class A	Passed Class A
NFPA 286	Passed	
EU Class Flame (EN 15102)	Passed Class B, s2	Passed Class B, s2
CAN/ULC S102.2	Passed	
BS476 Part 7	Passed Class 1	

2.03 ENVIRONMENTAL- ALL VERSIONS

- A. Meet or exceeds EN12149 A, B, C – the EU Toxicity requirement for heavy metals (including Cadmium, Mercury, Lead and Antimony), and Formaldehyde under EN15102.
- B. Manufactured without the use of Brominated Flame retardants.
- C. Indoor air Quality
 - a. Manufactured with low VOC Vinyl
- D. Non-woven Backing contains 50% post-consumer recycled content.

2.04 TEST ACCREDITATION

- A. All product testing for compliance with Federal Specifications shall be performed and evaluated by one or more of the following independent and accredited testing companies:

Intertek Testing Services NA, Inc.	American	Flamecoat
Underwriters Laboratories		Vartest
Omega Point Laboratories, Inc.		Govmark

2.05 ADHESIVES AND PRIMERS

- A. Adhesives and Primers used must be of the type designed for vinyl wall coverings. Adhesives and Primers must contain mildew inhibitors. All adhesives and primers must be manufacturer's recommendations for commercially available products.

2.06 VINYL CORNER GUARDS

- A. Surface Mount high impact corner guards with retainers and finishing caps.
 - B. End wall protector vinyl filler piece.
 - C. Sizes: 2 1/4"x2 1/4"x4' and 2 1/4"x2 1/4"x8' corner guards; filler pieces – v.i.f. the width of the wall.
 - D. Color to be selected from manufacturer's full range of color.
 - E. Basis of design: Roppe Vinyl accessories #19 Corner Guard, Color: 114 Lunar Dust.
 - F. Products of equal or similar technical, aesthetic and performance criteria by Johnsonite, Pawling.
- 2.07 TRANSITION STRIP – 1" wide 1/8" thick vinyl strip, Roppe #195, Johnsonite FS-XX-DW3 or equal, color by Architect from Manufacturer's full range of color. Wall mount per manufacturer's instructions.

PART 3 - EXECUTION

3.01 INSPECTION

- A. The Contractor shall provide a complete copy of current Hanging Instructions from the manufacture to the installer pertaining to the installation of the vinyl wall covering.
- B. All labels shall be checked for accuracy by the installer to insure that the shipment is received as ordered.
- C. If no defect is evident before installation, the material should be inspected after three (3) panels are installed. If any defect is evident at this time (or any point of the installation) no further material should be applied and Contractor should be contacted IMMEDIATELY.

3.02 PREPARATION

- A. All hanging surfaces must be clean, smooth, dry, undamaged, free of mold, mildew, grease or stains, and structurally intact. All loose paint and other wall coverings must be removed. If moisture is present, immediately identify and eliminate the source(s) of the moisture and verify that all wall surfaces are completely dry before proceeding.
- B. Any mold or mildew must be removed from walls and hanging surfaces prior to installation. Walls should not contain in excess of 4% residual moisture content. A moisture meter should be used to determine moisture content. Moisture infiltration and accumulation can lead to mold or mildew growth and must be corrected PRIOR to the installation of the wall covering. This product is intended for use in buildings that are properly designed and maintained to avoid moisture

infiltration, condensation and or accumulation at wall cavities and wall surfaces, particularly in warm, humid climates. Old walls shall also be treated with bleach, Lysol and/or other approved, mildew –inhibiting products in order to inhibit further mildew growth.

- C. For new drywall construction, a coat of wall covering primer shall be applied to the surface before application of wall covering. Use a primer that dries to a solid color to conceal drywall joints
- D. Use only a lead pencil for marking walls and back of wall covering. Do not use ballpoint or marking pen, they will bleed through the surface

3.03 INSTALLATION

- A. Wallcovering shall be installed by experienced workers and contractors in strict accordance with the manufactures printed instructions using vinyl wallcovering adhesive specified for the specific application. It is absolutely imperative the installer read the manufacturer’s instructions sheet in each roll before installing the vinyl wallcovering. Permanent building light shall be available for installation.
- B. If the application is a textured or non-matched wallcovering pattern, reverse hanging of alternate panels is required to ensure color continuity from strip to strip. If the application is a mural it is recommended that every other panel is rotated 180 degrees when printing to minimize the side-to-side color shift that may occur with each printer.
- C. Determine whether the pattern match is random, straight across, or drop match. Measure the wall height, allowing for pattern match, add 4 inches, and then cut the wallcovering. It will overlap onto the ceiling and the base approximately 2 inches. Apply the recommended adhesive to the back using either a pasting machine or a paint roller. Work the adhesive in, to cover the back completely, especially near the edges. Fold each end toward the middle, pasted sides together, aligning the edges carefully so they do not dry out. CAUTION: Do not crease wallcovering. Allow to “relax” for ten minutes (booking). This will allow the adhesive to penetrate the wallcovering fabric, which is important to a successful installation.
- D. With all directional patterns, it is important to line up patterns at eye level allowing any drift in lineup to run off toward ceiling and floor. The standard allowance is one quarter of an inch up or down. If pattern is lined up at the ceiling the pattern will begin misalignment sooner and the gap will be larger. Also, most patterns will be viewed at eye level therefore it is that area that needs to look aligned. If there are any questions about pattern lineup, contact supplier. Be sure first drop of wallcovering is square on wall by plumbing the wall and using a level.
- E. Avoid burnishing the face of the material. Use a wallcovering brush or a plastic scraper to smooth the wallcovering onto the wall. For optimal durability we recommend the use of a liquid topcoat to protect the surface of the wallcovering pattern from stain and abrasion.

- F. Do not rub. Do not allow vinyl adhesive to dry on surface as it may leave a white residue. Wash off excess paste from face of wallcovering as you hang it with a cellulose sponge. The cellulose sponge must be rinsed in clean water after every use. Blot dry with a clean cloth.
- G. Place the second strip to the edge of the first strip. Tape seams before overlapping and double cutting to avoid getting adhesive on the wallcovering. If paste does get on the vinyl, clean it off immediately with clean warm water and blot dry with a clean lint less towel. Use a soft bristle brush to wash the ceiling and the baseboard to remove any paste residue. Do not leave any overlap on the seams since vinyl will not adhere to itself. *Seams should be vertical, have a tight fit, and be free from air and paste bubbles. Seams should not be located closer than 6" to corners.
- H. After three panels are smoothed to wall surface and excess paste removed, examine the installed panels for color uniformity. Any objectionable variations in color match, pattern match, etc...should be immediately communicated to the printer for inspection before proceeding further with installation.
- I. Once all the vinyl wallcovering is installed there shall be a protective coating applied to its surface to minimize migration of stains into the vinyl and, therefore, offer stain protection from a variety of staining agents and provider greater ease of cleanability.
- J. After installation, the walls and wallcovering should be monitored for potential moisture or vapor infiltration or accumulation. Any such infiltration/accumulation after installation must be promptly eliminated in order to reduce the risk of mold/mildew growth.

3.04 CLEANING

- A. As work proceeds, promptly remove adhesive where spilled-splashed or spattered.
- B. During progress of work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Collect cotton waste, clothes, and material, which may constitute a fire hazard, place in closed metal containers and remove daily from site.

END OF SECTION

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Surface preparation.
- B. Painting.
- C. Multi-color Coating.
- d. Surface finish schedule.

1.02 RELATED WORK

- A. Section 05 50 00: Metal Fabrications
- B. Section 06 10 00: Carpentry
- C. Section 08 13 16: Custom Hollow Metal Doors and Frames
- D. Division 21: Fire Suppression
- E. Division 22: Plumbing
- F. Division 23: HVAC
- G. Division 26: Electrical
- H. Division 27: Communications

1.03 REFERENCES

- A. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
- B. ASTM D2016 - Test Method for Moisture Content of Wood.

1.04 DEFINITIONS

- A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.

1.05 QUALITY ASSURANCE

- A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with five years experience.
 - B. Applicator: Company specializing in commercial painting and finishing with five years documented experience.
- 1.06 REGULATORY REQUIREMENTS
- A. Conform to code for flame/fuel/smoke rating requirements for finishes.
- 1.07 SUBMITTALS
- A. Submit according to provisions of General Conditions and Section 01 33 00.
 - B. Submit product data.
 - C. Provide product data on all finishing products.
 - D. Submit manufacturer's application instructions.
 - E. Submit color charts for color selection.
- 1.08 DELIVERY, STORAGE, AND HANDLING
- A. Deliver products to site under provisions of General Conditions and Section 01 33 00.
 - B. Store and protect products under provisions of General Conditions and Section 01 60 00.
 - C. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.
 - D. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.
 - E. Store paint materials at minimum ambient temperature of 45 degrees Fahrenheit and a maximum of 90 degrees Fahrenheit, in well ventilated area, unless required otherwise by manufacturer's instructions.
 - F. Take precautionary measures to prevent fire hazards and spontaneous combustion.
- 1.09 ENVIRONMENTAL REQUIREMENTS
- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperature above 45 degrees Fahrenheit for 24 hours before, during,

and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

- B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.
- C. Minimum Application Temperatures for Latex Paints: 45 degrees Fahrenheit for interiors; 50 degrees Fahrenheit for exterior; unless required otherwise by manufacturer's instructions.
- D. Minimum Application Temperature for Varnish Finishes: 65 degrees Fahrenheit for interior or exterior, unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80-ft candles measured mid-height at substrate surface.
- F. Protection:
 - 1. Cover or otherwise protect finish work of other trades and surfaces not being painted concurrently or not to be painted.

1.10 EXTRA STOCK

- A. Provide a one gallon container of each color of each type finish paint to Contracting Officer. Do not provide extra stock of primers.
- B. Label each container with color and room locations, in addition to the manufacturer's label.

PART 2 - PRODUCTS

2.01 MANUFACTURER- PAINT

- A. Except as otherwise specified, materials shall be the products of the following manufacturer:
 - 1. Benjamin Moore Co.
 - 2. Sherwin Williams
 - 3. Pittsburg Paints
- B. Materials selected for coating systems for each type surface shall be the products of a single manufacturer.

2.02 MATERIALS

- A. Products specified are as manufactured by Benjamin Moore, unless otherwise indicated. Substitutions from the listed manufacturers should be technically similar from a performance, aesthetic and quality perspective.
- B. Coating: Ready mixed, except field-catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
- C. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks and sags.
- D. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

2.03 FINISHES

- A. Refer to end of Section for surface finish schedule.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

- A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.
- B. Correct minor defects and clean surfaces which affect work of this Section.
- C. Shellac and seal marks which may bleed through surface finishes.
- D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- E. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

- F. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.
- G. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Prime metal items including shop primed items.
- H. Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.
- I. Set and fill all nail holes. Sand to achieve a smooth surface.

3.03 PROTECTION

- A. Protect elements surrounding the work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. Remove empty paint containers from site.

3.04 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Do not apply finishes to surfaces that are not dry.
- C. Apply each coat to uniform finish.
- D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- E. Sand lightly between coats to achieve required finish.
- F. Allow applied coat to dry before next coat is applied.
- G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

3.06 CLEANING

- A. As work proceeds, promptly remove paint where spilled-splashed or spattered.
- B. During progress of work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Collect cotton waste, clothes, and material, which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.07 PAINT SCHEDULE

- A. **Interior Ferrous Metal:** Including but not limited to new and existing hollow metal doors and frames, angles, plates, stripes, existing structural steel. Where rust has formed apply one coat of Benjamin Moore M82 Rust Converter prior to the primer application.

Primer: (1-coat) Benjamin Moore M06 Alkyd Metal Primer
Finish: (2-coats) Benjamin Moore 133 Impervo Alkyd High Gloss Enamel.

- C. **Interior Galvanized Metal:**

Primer: (1-coat) Benjamin Moore M04 Acrylic Metal Primer
Finish: (2-coats) Benjamin Moore 133 Impervo Alkyd High Gloss Enamel.

- D. **Interior Wood Surfaces called for to be painted:**

Primer: (1-coat) Benjamin Moore 253 Super Spec Enamel Undercoat & Primer Sealer.
Finish: (2-coats) Benjamin Moore 333 Regal Semi-Gloss Enamel

- G. **Interior Gypsum Wall Board:**

Primer: (1-coat) Benjamin Moore 253 Super Spec Enamel Undercoat & Primer Sealer.
Finish: (2-coats) Benjamin Moore 223 Eco Spec Acrylic Eggshell Enamel

- H. **Interior Wood Surfaces:** Scheduled to receive natural finish.

Finish: (3-coats) Benjamin Moore 435 Benwood Polyurethane Low-Lustre Finish

- I. **Interior Aluminum:** clear anodized.

3.08 COLORS (basis of design):

- PT 1: Manufacturer Benjamin Moore,
 Color: **728 Bermuda Turquoise**

- PT 2: Manufacturer Benjamin Moore,
 Color: **1386 Purple Rain**

- PT 3: Manufacturer Benjamin Moore,
 Color: **168 Amber**

- PT 4: Manufacturer Benjamin Moore,
 Color: **1001 North Creek Brown**

- PT 5: Manufacturer Benjamin Moore,
 Color: **1680 Hudson Bay (NAVY)**

- PT 6: Manufacturer Benjamin Moore,
 Color: **1300 Tucson Red**

- PT 7: Manufacturer Benjamin Moore,
 Color: **1468 Willow Creek (MED GRAY)**

- PT 8: Manufacturer Benjamin Moore,
 Color: **OC-63 Winter Snow**

- PT 9: Manufacturer Benjamin Moore,
 Color: **1473 Gray Huskie (LIGHT GRAY)**

- PT 10: Manufacturer Benjamin Moore,
 Color: **1596 Nightfall (DARK GRAY)**

- A. Architect will select colors from manufacturer's full range.
- B. Up to TEN new colors for finished surfaces will be selected.

END OF SECTION

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Interior wall mounted panel room signs.
- B. Mounting accessories.

1.02 RELATED SECTIONS

- A. Section 09 21 16- Gypsum Board Assemblies

1.03 SUBMITTALS

- A. Submit shop drawings and product data.
- B. Indicate on shop drawings, details dimensions, font, letter size and layout of the entire logo, lettering arrangement relative to the columns and beam locations as indicated on the elevations.
- C. Provide product data on material and fasteners.
- D. Submit manufacturer's installation instructions.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 60 00.
- B. Store and protect products under provisions of Section 01 60 00.
- C. Wrap logo and letters with protective covering and pack in protective shipping containers.
- D. Protect on site from damage or moisture.

PART 2 - PRODUCTS

2.01 INTERIOR WALL MOUNTED PANEL ROOM SIGNS: 8" X 8"

- A. New Unframed Panel Signs: Raised (tactile) room plaques shall be die-raised aluminum plate, 0.102 inches thick. Lettering to be Helvetica Medium. Letters and numbers to have a width-to-height ratio between 3:5 and 1:1 and stroke width-to-height ratio between 1:5 and 1:10. Letter to be approximately 1" high. All signs shall have Braille equivalent. Men's and Women's Rooms to have

graphic signage. Include the "wheelchair-accessible" symbol at all Toilet rooms, Lactation rooms, and Baby Changing Room.

- B. Provide signs to be used for identification of all doors numbered in the Door schedule as well as at the existing doors to be repainted as part of the renovated walls. All rooms shall be identified with raised letters and numbers. Such identification shall be placed typically on the wall adjacent to the latch side of the door or on the door as directed by the Architect at a height of 60" above the floor or as near thereto as possible. See elevations for location of signage at corridors. Room names are: MEN; WOMEN; JANITOR; BABY CHANGING ROOM; LACTATION ROOM; STORAGE; ELECTRICAL ROOM. Names at existing doors currently not identified with signage to be provided by Owner. Preserve existing door signs mounted on doors to remain.

1. Fasteners: Tamper-proof, stainless steel screws and silicone.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that site conditions allow work to proceed.

3.02 INSTALLATION

- A. Install as per manufacturer's directions.
- B. Install plumb and level.

END OF SECTION

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Solid Plastic toilet compartments, urinal screens and entry partitions, floor mounted and head rail braced.

1.02 RELATED SECTIONS

- A. Section 09 30 00 - Tiling
- B. Section 10 28 00 - Toilet Accessories
- C. Section 05 50 00 - Metal Fabrications

1.03 REFERENCES

- A. FS RR-R-1352 - Partitions, Toilets, Complete.
- B. ASTM International (ASTM):
 - B85 - Standard Specification for Aluminum-Alloy Die Castings.
 - B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- C. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.04 SYSTEM DESCRIPTION

- A. Compartment Configurations:
 - 1. Toilet partitions, privacy screens, and entry partitions: Floor Mounted, overhead braced.
 - 2. Urinal screens: Wall mounted.

1.05 SUBMITTALS

- A. Submit samples and product data under provisions of General Conditions and Section 01 30 00.

- B. Indicate on shop drawings dimensioned partition plan and elevation views, details of supports and door swings, trim, closures and accessories.
- C. Submit color chart for color selections.
- D. Samples of 2x3 inch samples showing available colors.
- E. Submit manufacturer's installation instructions.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5 years experience in manufacture of solid plastic toilet compartments with products in satisfactory use under similar service conditions.
- B. Installer's qualifications: Minimum 5 years experience in work in this Section.

1.07 WARRANTIES

- A. Provide manufacturer's 25 year warranty against breakage, corrosion, and delamination under normal conditions.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Contract Documents are based on Eclipse by Scranton Products
www.scrantonproducts.com
- B. Other qualified manufacturers of High Density Polyethylene partition system products that meet or exceed NFPA 101 - 6.6.1 through 7 /1997: ASI Global, Bradley Corp.
- C. Color: Stainless-rotary brushed by Scranton Productions.

2.02 MATERIALS

- A. Doors, Panels and Pilasters:
 - 1. High density polyethylene (HDPE), fabricated from extruded polymer resins, forming single thickness panel.
 - 2. Waterproof and nonabsorbent, with self-lubricating surface, resistant to marks by pens, pencils, markers, and other writing instruments.
 - 3. 1 inch thick with edges rounded to 1/4 inch radius.
 - 4. Recycled content: Minimum 25 percent.
 - 5. Fire hazard classification: Not required.
- B. Aluminum Extrusions: ASTM B221, 6463-T5 alloy and temper.
- C. Aluminum Die Castings: ASTM B85, A380 alloy.

- D. Injection Molded Plastic: High density polyethylene.
- E. Rubber: Abrasion resistant Styrene Butadiene Rubber, 65 to 80 Shore A durometer, black.

2.03 HARDWARE

- A. Hinges:
 - 1. Inswing hinges:
 - a. Hidden pivot type fabricated from heavy-duty cast aluminum.
 - b. Auto-close feature, adjustable to 15 degree open position.
 - c. Mounted to doors with stainless steel Torx head screws and through bolted to metal post with tamper proof Torx head sex bolts.
 - d. Hinge pivot point: 6 to 8 inches from edge of door; maintain sufficient clearance to water closet.
 - 2. Outswing hinges:
 - a. Fabricated from extruded aluminum.
 - b. Auto-close feature, adjustable to 15 degree open position.
 - c. Surface mounted to doors with stainless steel Torx head screws and fastened to metal posts with countersunk tamper proof screws.
 - 3. Provide for field adjustment of plus or minus 0.125 inch laterally and plus or minus 0.125 inch vertically.
- B. Door Keeper:
 - 1. 3.5 inches long, fabricated from heavy duty extruded aluminum, clear anodized finish.
 - 2. Mount in gap between dividing panel and door.
- C. Latch and Housing:
 - 1. Heavy duty extruded aluminum.
 - 2. Latch housing: Clear anodized finish.
 - 3. Slide bolt and button: Black anodized finish.
- D. Coat Hook/Bumper: Combination type, chrome plated Zamak.
- E. Door Pulls and Push Plates:
 - 1. Heavy duty extruded aluminum, clear anodized finish.
 - 2. Single component providing door pull capability on outswing doors.

2.04 COMPONENTS

- A. Doors and Dividing Panels:
 - 1. 62 inches high, mounted 9 inches above finished floor.
 - 2. Doors: 60 degree angle on two opposite edges for enhanced privacy.
 - 3. Dividing panels: Two modular pieces, both slotted on one edge to accept wall bracket.

- B. Metal Posts: 82.75 inches high, heavy duty extruded aluminum, clear anodized finish, fastened to foot with stainless steel tamper resistant screw.
- C. Hidden Shoe (Foot): One-piece molded polyethylene invisible shoe inserted into metal post and secured to metal post with stainless steel tamper resistant screw.
- D. Headrail Cap and Corner Cap: One-piece molded polyethylene secured to metal post with stainless steel tamper resistant screw; adjustable to level headrail to finished floor.
- E. Hidden Wall Brackets: 61 inches long, heavy-duty extruded aluminum, clear anodized finish, inserted into slotted panel and fastened to panels with stainless steel tamper resistant screws.
- F. Headrail: Heavy duty extruded aluminum, designer anti-grip design, clear anodized finish, fastened to headrail bracket with stainless steel tamper resistant screw and to headrail cap or corner cap with stainless steel tamper resistant screw.
- G. Headrail Brackets: Heavy duty extruded aluminum, clear anodized finish, secured to wall with stainless steel tamper screws.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install compartments in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Install rigid, straight, plumb, and level.
- C. Locate bottom edge of doors and panels 9 inches above finished floor.
- D. Provide uniform, maximum 3/8 inch vertical clearance at doors.
- E. Not Acceptable: Evidence of cutting, drilling, or patching.

3.02 ADJUSTING

- H. Adjust doors and latches to operate correctly.

END OF SECTION

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary General Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

- A. Toilet and washroom accessories.
- B. Attachment hardware.

1.02 RELATED SECTIONS

- A. Section 09 30 00- Tiling.
- B. Section 10 21 13- Toilet Compartments.

1.03 REFERENCES

- A. ADA requirements.
- B. ANSI/ASTM A123 - Zinc (Hot Dip Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strips.
- C. ANSI/ASTM A366 - Steel, Carbon, Cold-rolled Sheet, Commercial Quality.
- D. ANSI/ASTM A386 - Zinc Coated (Hot Dip) on Assembled Steel Products.
- E. ANSI/ASTM B456 - Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
- F. ASTM A167 - Stainless and Heat-Resisting Chromium- Nickel Steel Plate, Sheet and Strip.
- G. ASTM A269 - Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- H. Grab bars to conform loading requirements of 2003 International Building Code Section 1607.7.2.

1.04 SUBMITTALS

- A. Submit samples and product data under provisions of General Conditions and Section 01 33 00.

- B. Provide product data on accessories describing size, finish, details of function, attachment methods.
- C. Submit manufacturer's installation instructions.

1.04 SEQUENCING AND SCHEDULING

- A. Coordinate the work of this Section with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Bobrick
- B. Bradley
- C. American Specialties Inc.
- D. Kimberly-Clark

2.02 MATERIALS

- A. Sheet Steel: ANSI/ASTM A366.
- B. Stainless Steel Sheet: ASTM A167, Type 304.
- C. Tubing: ASTM A269, stainless steel.
- D. Fasteners, Screws, and Bolts: Stainless Steel Tamperproof,

2.03 FABRICATION

- A. Weld and grind smooth joints of fabricated components.
- B. Form exposed surfaces from single sheet of stock free of joints.
- C. Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.
- D. Back paint components where contact is made with building finishes to prevent electrolysis.
- E. Shop-assemble components and package complete with anchors and fittings.
- F. Provide steel anchor plates, adapters, and anchor components for installation.

G. Hot dip galvanize exposed and painted ferrous metal and fastening devices.

2.04 FACTORY FINISHING

A. Stainless Steel: No. 4 satin luster.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that site conditions are ready to receive work and dimensions are as indicated on shop drawings.

B. Beginning of installation means acceptance of existing surfaces and conditions.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site at appropriate time.

B. Provide templates and rough-in measurements as required.

C. Verify exact location of accessories for installation.

3.03 INSTALLATION

A. Install fixtures, accessories and items in accordance with manufacturer's instructions.

B. Install plumb and level, securely and rigidly anchored to substrate.

3.04 SCHEDULE OF ACCESSORIES (except as noted, accessories are based on Bobrick). Accessories shall be from single manufacturer.

A. Frameless Mirrors: #1 quality 1/4" plate glass mirror electrolytically copper plated, 15 year guarantee. Flat polished edge, safety back. Provide concealed wall hangers/z-clips. Mirror sizes as shown on drawings.

B. Grab bars: Bobrick No. B-5806, 1-1/4" diameter type 304 satin finish stainless steel with peened gripped surface.

C. Toilet Paper Dispenser: Bobrick 4288.

D. Sanitary Napkin Disposal: Bobrick No. B-354 or ASI 0472 Partition mounted serves two compartments.

- E. Coat Hook: Bobrick No. B-7671 or ASI 7340
- F. Soap Dispenser: surface mounted, Bobrick B-4112; or B-2013 automatic wall mounted foam soap dispenser
- G. Wall mounted Waste Receptacle: Bradley Model 346 w/ heavy-duty vinyl liner #P11-004 or Bobrick B-43644 w/ littermate;
- H. Floor standing waste receptacle: B-2400 typ. B-2550 at Baby Changing Room and Lactation rooms.
- I. Paper Towel Dispenser: or B-29744 automatic semi-recessed roll towel dispenser
- J. Utility Shelf with Mop Holder: Bobrick No. B-239 or ASI 1308
- K. Hand Dryer: Dyson Airblade V, finish AB12 Sprayed Nickel

3.05 LOCATION SCHEDULE

WOMEN'S TOILET Rooms

- Mirror- 3 per toilet room- sizes and location on drawing
- Sanitary napkin disposal – 1 per toilet stall
- Coat hooks – 1 per toilet stall and 2 per toilet room in common area – see elevation drawings
- Grab bars for toilets- for each HC toilet stall: 1@ 42", 1@ 36", and 1@ 18"
- Toilet Paper Dispenser- 1 per toilet stall
- Paper Towel Dispenser- 1 per room
- Waste Basket – 1 wall mounted and 1 floor standing per room
- Hand Driers – 2 per room
- Soap Dispenser: 1 per room

MEN'S TOILET Rooms

- Mirror- 3 per toilet room- sizes and location on drawing
- Coat hooks – 1 per toilet stall and 2 per toilet room in common area – see elevation drawings
- Grab bars for toilets- for each HC stall: 1@ 42", 1@ 36", and 1@ 18"
- Toilet Paper Dispenser- 1 per toilet stall
- Paper Towel Dispenser- 1 per room
- Waste Basket- 1 wall mounted and 1 floor standing per room
- Hand Driers – 2 per room
- Soap Dispenser: 1 per room

BABY CHANGING ROOM

- Mirror – 1, size on drawings

- Coat hooks: 5
- Paper Towel Dispenser: 3
- Waste Basket: 1 free standing
- Baby Changing Stations: 2
- Soap Dispenser: 1
- Hand drier: 1

LACTATION ROOMS

- Mirror – 1, size on drawings
- Coat hooks: 2 per room
- Paper Towel Dispenser: 1 per room
- Waste Basket: 1 free standing
- Soap Dispenser: 1 per room

JANITORS

- Utility Shelf and Mop Holder – 1 per room
- Paper towel dispensers – 1 per room
- Coat hooks: 2 per room

END OF SECTION

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SECTION 21 10 00 - WET-PIPE SPRINKLER SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Pipes, fittings, and specialties.
 - 2. Sprinklers.

1.3 DEFINITIONS

- A. Standard-Pressure Sprinkler Piping: Wet-pipe sprinkler system piping designed to operate at working pressure of 175 psig maximum.

1.4 SYSTEM DESCRIPTIONS

- A. Wet-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing water and that is connected to water supply through alarm valve. Water discharges immediately from sprinklers when they are opened. Sprinklers open when heat melts fusible link or destroys frangible device. Hose connections are included if indicated.

1.5 PERFORMANCE REQUIREMENTS

- A. Standard-Pressure Piping System Component: Listed for 175-psig minimum working pressure.
- B. Sprinkler system design shall be approved by authorities having jurisdiction.
 - 1. Margin of Safety for Available Water Flow and Pressure: 10 percent, including losses through water-service piping, valves, and backflow preventers.
 - 2. Sprinkler Occupancy Hazard Classifications:
 - a. Office and Public Areas: Light Hazard.

3. Minimum Density for Automatic-Sprinkler Piping Design:
 - a. Light-Hazard Occupancy: 0.10 gpm over 1500-sq. ft. area.
 4. Maximum Protection Area per Sprinkler:
 - a. Office Spaces: 225 sq. ft.
- C. Seismic Performance: Sprinkler piping shall withstand the effects of earthquake motions determined according to NFPA 13.

1.6 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For wet-pipe sprinkler systems. Include plans, elevations, sections, details, and attachments to other work.
- C. Coordination Drawings: Sprinkler systems, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 1. Domestic water piping.
 2. HVAC ductwork.
 3. Items penetrating finished ceiling include the following:
 - a. Lighting fixtures.
 - b. Air outlets and inlets.
- D. Approved Sprinkler Piping Drawings: Working plans, prepared according to NFPA 13, that have been approved by authorities having jurisdiction, including hydraulic calculations if applicable.
- E. Field Test Reports and Certificates: Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13. Include "Contractor's Material and Test Certificate for Aboveground Piping."
- F. Field quality-control reports.
- G. Operation and Maintenance Data: For sprinkler specialties to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications:

1. Installer's responsibilities include designing, fabricating, and installing sprinkler systems and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.
- B. 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.
- C. NFPA Standards: Sprinkler system equipment, specialties, accessories, installation, and testing shall comply with the following:
 1. NFPA 13, "Installation of Sprinkler Systems."

1.8 PROJECT CONDITIONS

- A. Interruption of Existing Sprinkler Service: Do not interrupt sprinkler service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary sprinkler service according to requirements indicated:
 1. Notify General Contractor and owner no fewer than two days in advance of proposed interruption of sprinkler service.
 2. Do not proceed with interruption of sprinkler service without Owners permission.

1.9 COORDINATION

- A. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

1.10 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. Sprinkler Cabinets: Finished, wall-mounted, steel cabinet with hinged cover, and with space for minimum of six spare sprinklers plus sprinkler wrench. Include number of sprinklers required by NFPA 13 and sprinkler wrench. Include separate cabinet with sprinklers and wrench for each type of sprinkler used on Project.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.

2.2 STEEL PIPE AND FITTINGS

- A. Standard Weight, Black Steel Pipe: Schedule 40 ASTM A53, FM Approved. Pipe ends may be factory or field formed to match joining method.
- B. Malleable- or Ductile-Iron Unions: UL 860.
- C. Cast-Iron Flanges: ASME 16.1, Class 125.
- D. Steel Flanges and Flanged Fittings: ASME B16.5, Class 150.
- E. Steel Welding Fittings: ASTM A 234/A 234M and ASME B16.9.
- F. Materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

2.3 SPRINKLERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following, but are not limited to, the following]:
1. Reliable Automatic Sprinkler Co., Inc.
 2. Tyco Fire & Building Products LP.
 3. Victaulic Company.
 4. Viking Corporation.
- B. General Requirements:
1. Standard: UL's "Fire Protection Equipment Directory" listing or "Approval Guide," published by FM Global, listing.
 2. Pressure Rating for Automatic Sprinklers: 175 psig minimum.
- C. Automatic Sprinklers with Heat-Responsive Element:
1. Characteristics: Nominal 1/2-inch orifice with Discharge Coefficient K of 5.6, and for "Ordinary" temperature classification rating unless otherwise indicated or required by application.

- D. Sprinkler Escutcheons: Materials, types, and finishes for the following sprinkler mounting applications. Escutcheons for concealed, flush, and recessed-type sprinklers are specified with sprinklers.
 - 1. Ceiling Mounting: White steel, one piece, flat.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

- A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.
 - 1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.
- B. Piping Standard: Comply with requirements for installation of sprinkler piping in NFPA 13.
- C. Install seismic restraints on piping. Comply with requirements for seismic-restraint device materials and installation in NFPA 13.
- D. Use listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.
- E. Install unions adjacent to each valve in pipes 2 inch and smaller.
- F. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having 2-1/2 inch and larger end connections.
- G. Install "Inspector's Test Connections" in sprinkler system piping, complete with shutoff valve, and sized and located according to NFPA 13.
- H. Install sprinkler piping with drains for complete system drainage.
- I. Install hangers and supports for sprinkler system piping according to NFPA 13. Comply with requirements for hanger materials in NFPA 13.
- J. Fill sprinkler system piping with water.
- K. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for Sleeves and Sleeve Seals for Fire-Suppression Piping. Maintain Fire separation at Fire Rated penetrations.

3.2 JOINT CONSTRUCTION

- A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure ratings same as or higher than system's pressure rating for aboveground applications unless otherwise indicated.
- B. Install unions adjacent to each valve in pipes 2 inch and smaller.
- C. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having 2-1/2 inch and larger end connections.
- D. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- E. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- F. Flanged Joints: Select appropriate gasket material in size, type, and thickness suitable for water service. Join flanges with gasket and bolts according to ASME B31.9.
- G. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
- H. Twist-Locked Joints: Insert plain end of steel pipe into plain-end-pipe fitting. Rotate retainer lugs one-quarter turn or tighten retainer pin.
- I. Steel-Piping, Pressure-Sealed Joints: Join lightwall steel pipe and steel pressure-seal fittings with tools recommended by fitting manufacturer.
- J. Welded Joints: Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.
 - 1. Shop weld pipe joints where welded piping is indicated. Do not use welded joints for galvanized-steel pipe.
- K. Steel-Piping, Cut-Grooved Joints: Cut square-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe joints.
- L. Steel-Piping, Roll-Grooved Joints: Roll rounded-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join

steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe grooved joints.

- M. Steel-Piping, Pressure-Sealed Joints: Join Schedule 5 steel pipe and steel pressure-seal fittings with tools recommended by fitting manufacturer.
- N. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

3.3 SPRINKLER INSTALLATION

- A. Install sprinklers in suspended ceilings in center of acoustical ceiling panels.
- B. Install dry-type sprinklers with water supply from heated space. Do not install pendent or sidewall, wet-type sprinklers in areas subject to freezing.

3.4 IDENTIFICATION

- A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.
- B. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 26 05 22 "Electrical Identification".

3.5 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 - 1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 3. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
- C. Sprinkler piping system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

3.6 CLEANING

- A. Clean dirt and debris from sprinklers.
- B. Remove and replace sprinklers with paint other than factory finish.

3.7 PIPING SCHEDULE

- A. Standard-pressure, wet-pipe sprinkler system, 2 inch and smaller, shall be one of the following:
 - 1. Schedule 40, black-steel pipe with threaded ends; uncoated, gray-iron threaded fittings; and threaded joints.

3.8 SPRINKLER SCHEDULE

- A. Use sprinkler types in subparagraphs below for the following applications:
 - 1. Rooms without Ceilings: Upright sprinklers
 - 2. Rooms with Suspended Ceilings: Concealed sprinklers
- B. Provide sprinkler types in subparagraphs below with finishes indicated.
 - 1. Concealed Sprinklers: Rough brass, with factory-painted white cover plate.

END OF SECTION 21 10 10

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawing and general provisions of contract, including Bidding Requirements, General and Supplementary Conditions, Division 1 and Division 22 specification sections, apply to work of this section.

1.02 DESCRIPTION

- A. The work of this Division shall include, but not necessarily be limited to the following:
 - 1. Installation of domestic water piping, hot water heaters, plumbing fixtures, drain, waste, and vent piping, and natural gas piping and accessories.

1.03 DEFINITIONS

Word "Engineer" shall mean the Mechanical and Electrical Engineers.

"As Necessary" - Work referred to as "as necessary" shall be that work which is required for completed construction, but is not necessarily shown or described in the Contract Documents.

"As Required" - Work referred to as "as required" shall be that work which is required for completed construction and is shown on the drawings or described in the project manual.

Word "install" shall mean set in place complete with all mounting facilities and connections as required ready for normal use of service. Note: Take care to ascertain limits of responsibility for connecting equipment which requires connections by two or more trades.

Words "furnish" or "supply" shall mean purchase, deliver to, and offload at the jobsite, all ready to be installed including where appropriate all necessary interim storage and protection.

Word "provide" shall mean furnish (or supply) and install as required.

Word "finished" refers to all rooms and areas scheduled to be painted in Room Finish Schedule on the drawings. All rooms and areas not covered in Schedule, including areas above ceilings shall be considered not finished, unless otherwise noted.

Words "approved equal" mean any product which in the opinion of the Engineer is equal in quality, arrangement, appearance, and performance to the product specified.

Word "wiring" shall mean cable assembly, raceway, conductors, fittings and any other necessary accessories to make a complete wiring system.

Word "product" shall mean any item of equipment, material, fixture, apparatus, appliance or accessory installed under this Division.

1.04 REFERENCE STANDARDS

- A. Certain products are described by reference to standard specifications published by organization abbreviated as follows:

AGA	American Gas Association
IEEE	Institute of Electrical & Electronic Engineers
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers.
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing Material
AWS	American Welding Society
AWWA	American Water Work Association
FM	Factory Mutual
IBR	Institute of Boiler & Radiation Manufacturers
IRI	Industrial Risk Insurers
NBFU	National Board of Fire Underwriters
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
SBI	Steel Boiler Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
UL	Underwriters Laboratories, Inc.

- B. The edition of the standard current at the date of these specifications shall apply.

1.05 DRAWINGS

- A. All drawings are diagrammatic and are intended to provide sufficient information and detail to enable proper execution and completion of the work.

1.06 WORKMANSHIP

- A. Execute all work in a neat and workmanlike manner. The quality of workmanship shall be consistent with that to be expected of experienced journeymen in the area and acceptable to both the Engineer and the authority having jurisdiction.
- B. Furnish the services of an experienced Superintendent, who shall constantly be in charge of the execution of the work.

1.07 ACCESSIBILITY

- A. Install all work with proper facilities for access for inspection, operation, maintenance and repair. Minor changes from the drawings will be permitted in order to accomplish this, but major changes shall not be made without prior written approval from the Engineer.
- B. Where products requiring access are installed behind plaster or gypsum board finishes, furnish access doors for installation by the General Contractor.
- C. Group as many items as practicable together to minimize the number of access doors required. Direct and be responsible for the correct location of all access doors required for the work of the Division.
- D. Access doors shall be a minimum of 12" long by 12" high, and flush type, ready to install. They shall be constructed of 14 gauge or heavier steel with radial safety corners and furnished with zinc chromate coating. All doors shall have heavy duty concealed hinges of the pinless type to insure no rusting or wearing. All doors shall have sturdy screwdriver locks. In public areas, doors shall have cylinder locks. Where clearances do not allow doors to swing open, they shall have double butt hinge or snap-on clips for quick removal. Doors shall be manufactured as per Architect Specifications. Door shall be compatible with and have appropriate rating to match materials where installed.

1.08 LUBRICATION

- A. Prior to testing and operation, lubricate all equipment with moving parts in accordance with manufacturer's recommendations. Any such equipment discovered to have been operated before lubrication shall be subject to rejection and replacement without extra compensation.
- B. On all equipment requiring lubrication, provide grease gun fittings or sight gravity-feed oilers equipped with shut-off and needle valve adjustment. All fittings and oilers shall be fully accessible for lubrication and shall not require special adapters.
- C. Each lubrication point on all equipment provided under this Division shall be permanently identified with type of lubricant to be used and the intervals between lubrication.

1.09 QUIET OPERATION

- A. Install all products such that vibration from them under any load is not transmitted to the building. Noise from any product shall be controlled such that its operation under any load condition will be inaudible during normal use of any occupied space.

- B. Notwithstanding any liability on the part of the product supplier, the subcontractor will be held responsible for eliminating in an approved manner any unacceptable vibration or noise condition without extra compensation.

1.10 PAINTING

- A. This subcontractor shall touch up factory coat where marred.
- B. Paint finish on all materials shall be manufacturer's standard unless otherwise specified.

1.11 WATERPROOFING

- A. Where any work penetrates exterior walls, roofs, basement slabs, or slabs on grade, such penetrations shall be made permanently watertight. Provide all sleeves, caulking, and flashing as necessary.

1.12 BASES AND SUPPORTS

- A. Provide all concrete equipment bases described below unless otherwise indicated. Provide all bases, supports and structures not part of the building structure. These shall be of the required size, type and strength for the proper installation of mechanical equipment.
- B. Unless otherwise specified, all mechanical equipment shall be firmly secured by corrosion-protected metal stock to the building structure. Unless so approved, equipment shall not be supported by roof deck.
- C. All equipment, bases, supports and structures shall be adequately anchored to prevent shifting of position under operating conditions.
- D. Provide concrete bases at least 4" high for equipment as required unless otherwise indicated. Bases shall extend approximately six inches beyond equipment base in all directions. Top edge shall be chamfered. To secure equipment, provide anchor bolts set in pipe sleeves. The latter shall be two sizes larger than the anchor bolts. After anchor bolts are aligned with equipment base, fill sleeves with non-shrink grout and allow to set. Alternatively, approved type expansion bolts can be used for securing equipment.

1.13 CLEANING OF WORK

- A. Thoroughly clean all work of all foreign matter inside and out before placing in operation.
- B. If any part of a system becomes obstructed or impaired by any foreign matter after being placed in operation, disconnect the system, remove the obstruction or

impairment and re-connect it as necessary. Repair or replace without extra compensation any work damaged in the course

1.14 SLEEVES, INSERTS AND ANCHOR BOLTS

- A. Locate and maintain properly in position all sleeves, inserts, and anchor bolts as required. In the event of failure to do so, perform any necessary cutting and patching of finished work without extra compensation.
- B. All piping passing through floors, walls or ceilings shall be provided with sleeves having an internal diameter 1" larger than the outside diameter of the piping, tubing or raceway.
- C. Sleeves in floors shall be standard weight steel pipe and extend 1-1/2" above floor except in finished areas when sleeves shall be flush with finish floor. Sleeves shall be caulked with backer rod stock and one part polysulfide caulk. Wall and ceiling sleeves shall be packed with mineral wool. All penetrations thru rated walls and floors shall be sealed with U.L. listed system for the rating of the assembly and be equal to Pecora AC-20 FTR.
- D. Where ductwork passes through walls, floors, ceilings and partitions, it shall be covered with 1" wool felt to prevent the ductwork from being in direct contact with the building construction. The joints between the floor and ducts in all mechanical rooms located above finished rooms shall be caulked to make them watertight.
- E. Inserts shall be of the individual or of the strip type and of pressed steel construction with accommodation for removable nuts and threaded rods up to 3/4" diameter. Individual inserts shall have an opening at the top to allow reinforcing rods up to 1/2" diameter to be passed through the insert body as made by Fee & Mason Mfg. Co., Fig. 178 or approved equal. Strip inserts shall have attached rods with hooked ends to allow fastening to reinforcing rods as made by Fee & Mason Mfg. Co., Fig. 190 or approved equal.

1.15 ELECTRICAL WORK

- A. The Electrical Subcontractor shall provide power wiring for all electrical switches, motor starters and motors. See Division 16.
- B. Electrical devices and equipment to be installed and wired by Electrical Subcontractor, shall be delivered to him at the proper time by the appropriate Subcontractor complete with detailed instructions for installation and wiring connections.
- C. Where equipment includes a number of interconnected electrical devices mounted in a single enclosure or on a common base, the devices shall be wired as a unit and be complete with terminal boxes and ample leads ready for wiring connections.

1.18 TESTING - GENERAL

- A. Perform all required tests in the presence of the Owner, Engineer and representative of the authority having jurisdiction. Provide minimum of (10) working days notice of testing to all parties concerned. Provide all test equipment.
- B. Furnish certification of satisfactory testing, signed by subcontractor's authorized representative, countersigned where appropriate by the authority having jurisdiction.
- C. All testing and certification shall be complete before any claim for substantial completion will be considered.
- D. Equipment and systems which normally operate during certain seasons of the Year shall be tested during the appropriate season. Tests shall be performed on individual equipment, systems and their controls. Whenever the equipment or system under test is related to or depends upon the operation of other equipment, systems and controls for proper operation, functioning and performance, the latter shall be operated simultaneously with the equipment or system being tested.

1.19 OWNERS MANUAL

- A. Thirty days prior to claim for substantial completion, submit (3) copies of Owners manual. Manual shall be bound, indexed and titled and contained in a 3" diameter minimum, black, (3) ring loose leaf binder equal to Boorum and Pease #062-35PL. Divide subject matter with mylar index tabbed separators equal to Boorum and Pease #5312-28C.
- B. Manual shall contain the following:
 - 1. Manufacturers catalog sheets.
 - 2. List of materials used on project.
 - 3. Service call list.
 - 4. Installation instruction which were packaged with equipment.
 - 5. Parts list for items normally replaced under regular maintenance.
 - 6. Guarantees.
 - 7. Wiring diagrams reduced to 8-1/2" x 11" or 11" x 17" folded.
- C. Sufficient information shall be given to enable quick and easy cross-referencing between manual and record drawings.

1.20 MANUFACTURERS IDENTIFICATION

- A. Manufacturer's nameplate, name or trademarks shall be permanently affixed to all equipment and material furnished under this specification. The nameplate of a Subcontractor or distributor will not be acceptable.

1.21 TAGS, IDENTIFICATION AND INSTRUCTIONS

- A. Every valve, damper, control, switch, motor starter and piece of apparatus shall be tagged, labeled or stenciled. Tags and labels shall be securely fastened by brass chains, screws, or mastic as appropriate. Equipment, controls, panels, etc., shall be numbered according to the equipment schedule shown on the drawing. Tags shall be listed in directories by-number, location and use. Directories shall be mounted under glass in aluminum self closing frames manufactured by Seton Nameplate Company, #A11G or approved equal. Tags shall be manufactured by Seton Nameplate Company or approved equal and be of the following types.
 - 1. Valve tags shall be style #2961 plastic, color coded in accordance with ANSI 13.1-1981 and the Owner's standards.
 - 2. Manual starters for small motors shall be provided with 1" x 3" engraved Seton-nameplates suitable for attaching directly to standard switch plates.
 - 3. All piping shall be identified with Seton "Setmark" pipe markers clearly indicating the service and direction of flow. Markers shall be located every 30 ft. in straight runs of pipe and shall be so arranged that piping systems can be readily identified. Pipe markers shall comply with ANSI A13.1 for lettering size, length of color field, colors and viewing angles of identification devices.
 - 4. Equipment such as air handlers, pumps, etc. shall be neatly stenciled with letters not less than 2" high. In lieu of stenciling, Subcontractor may use Seton self sticking numbers and letters. Any equipment too small to receive such stenciling shall be provided with name tags as above.
- B. "DYMO" type labels will not be accepted for any permanent identification.

1.22 INSTRUCTIONS

- A. Furnish all necessary labor and services for a minimum net period of (2) - 8 hour working days to instruct the Owners staff in the operation of all systems and equipment provided under this Division. Provide additional time for Owner training as described in associated sections. Include where appropriate the services of manufacturers technical personnel to instruct the Owner in the use of special systems. Instruction shall include sufficient demonstration of equipment and systems, and explanation of technical manuals furnished, instruction in the use of any special

tools or instruments, etc., so that the Owner will be fully conversant with operating and maintenance procedures.

1.23 PIPE PENETRATING 2 OR 4 HOUR WALLS SHALL BE AS FOLLOWS

- A. Contractor is to provide fire stopping and/or smoke stopping for all penetrations of (new and existing) fire or smoke barrier walls, chases, floors, etc. as required to maintain rating of floor, wall, chase, etc.
- B. Install conduit to preserve fire resistance rating of partitions and other elements.
- C. Install fire proofing material to maintain existing rating of floor, beams, etc. damaged or removed by renovation.
- D. Fire and smoke stopping material: A two-part silicone foam or a one-part putty, UL classified and FM approved with flame spread of 0 and smoke development not to exceed 50 in accord with ASTM E84. Material shall be suitable for penetration seals through fire-rated floors and walls when tested in accord with ASTM E119. Material shall not melt or soften at high temperatures, shall be suitable for direct outdoor and ultraviolet exposures, shall cure to give a tight compression fit, and shall not produce toxic fumes. Material, when heated, shall expand to fill and hold penetration closed where burn out of cable insulation or ATC tubing occurs. Comply with above and/or supplemental general conditions, whichever is more stringent.
- E. All penetrations shall be sealed/fire stopped in strict accordance with UL Fire Directory, latest addition. Submit applicable details for acceptance. Prepare and install exactly as delineated by UL detail(s).
- F. Comply with UL Fire Directory "F" and "T" ratings respectfully.

END OF SECTION 22 01 00

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 SUMMARY

- A. This Section includes general duty valves common to most plumbing piping systems.
- B. Special purpose valves are specified in individual piping system specifications.

1.03 SUBMITTALS

- A. Product Data: including body material, valve design, pressure and temperature classification, end connection details, seating materials, trim material and arrangement, dimensions and required clearances, and installation instructions.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Preparation For Transport: Prepare valves for shipping as follows:
 - 1. Ensure valves are dry and internally protected against rusting and galvanic corrosion.
 - 2. Protect valve ends against mechanical damage to threads, flange faces, and weld end preps.
- B. Storage: Use the following precautions during storage:
 - 1. Do not remove valve end protectors unless necessary for inspection; then reinstall for storage.
 - 2. Protect valves against weather. Where practical store valves indoors. Maintain valve temperature higher than the ambient dew point temperature. If outdoor storage is necessary, support valves off the ground or pavement and protect in watertight enclosures.
- C. Handling: Valves whose size requires handling by crane or lift shall be slung or rigged to avoid damage to exposed valve parts. Handwheels and stems, in particular, shall not be used as lifting or rigging points.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide valves from one of the manufacturers listed.

2.02 VALVE FEATURES

- A. General: NSF Compliance: NSF 61 for valve materials for potable-water service
- B. Valve Design: Valves shall have rising stem, or rising outside screw and yoke stems; except, non-rising stem valves may be used where headroom prevents full extension of rising stems.
- C. Pressure and Temperature Ratings: as scheduled and required to suit system pressures and temperatures.
- D. Sizes: Unless otherwise indicated, provide valves of same size as upstream pipe size.
- E. Extended Stems: Where insulation is indicated or specified, provide extended stems arranged to receive insulation.
- F. End Connections: as specified in the individual valves specifications.

2.03 BALL VALVES

- A. Ball Valves - 1 Inch and Smaller: rated for 150 psi saturated steam pressure, 400 psi WOG pressure; 2-piece construction, bronze body conforming to ASTM B 62, standard (or regular) port, chrome-plated brass ball, replaceable "Teflon" or "TFE" seats and seals, blowout proof stem, and vinyl-covered steel handle.
- B. Ball Valves - 1-1/4 Inch to 2 Inch: rated for 150 psi saturated steam pressure, 400 psi WOG pressure; 3-piece construction, bronze body conforming to ASTM B 62, conventional port, chrome-plated brass ball, replaceable "Teflon" or "TFE" seats and seals, blowout proof stem, and vinyl-covered steel handle. Provide solder ends for condenser water, chilled water, and domestic hot and cold water service; threaded ends for heating hot water, gas, and low pressure steam.

2.04 CHECK VALVES

- A. Swing Check Valves - 2 Inch and Smaller: MSS SP-80; Class 125, cast bronze body and cap conforming to ASTM B 62, horizontal swing, Y-pattern, with a bronze disc, and having threaded or solder ends. Valve shall be capable of being reground while the valve remains in the line. Class 150 valves meeting the above specifications may be used where pressure requires or Class 125 are not available.
- B. Swing Check Valves - 2 Inch and Smaller: MSS SP-80; Class 150, cast bronze body and cap conforming to ASTM B 62, horizontal swing, Y-pattern, with a bronze disc, and having threaded ends. Valve shall be capable of being reground while the valve remains in the line.

- C. Swing Check Valves - 2-1/2 Inch and Larger: MSS SP-71; Class 125 (Class 175 FM approved for fire protection piping systems), cast iron body and bolted cap conforming to ASTM A 126, Class B; horizontal swing, with a bronze disc or cast iron disc with bronze disc ring, and flanged ends. Valve shall be capable of being refitted while the valve remains in the line.
- D. Wafer Check Valves - (Non-Slam): Class 250, cast iron body, replaceable lapped bronze seat, lapped and balanced twin bronze flappers and stainless steel trim. Valve shall be designed to open and close at approximately one foot differential pressure. Twin flappers shall be loaded with a stainless steel torsion spring to minimize flapper drag and assure even non-slam checking action.
- E. Lift Check Valves 2 Inch and Smaller: Class 125, cast bronze body and cap conforming to ASTM B 62, horizontal or angle pattern, lift type valve, with stainless steel spring, bronze disc holder with renewable "Teflon" disc, and threaded ends. Valve shall be capable of being refitted and ground while the valve remains in the line.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine valve interior through the end ports, for cleanliness, freedom from foreign matter and corrosion. Remove special packing materials, such as blocks used which prevents disc movement during shipping and handling.
- B. Actuate valve through an open-close and close-open cycle. Examine functionally significant features, such as guides and seats made accessible by such actuation. Following examination, return the valve closure member to the position in which it was shipped.
- C. Examine threads on both the valve and the mating pipe for form (out-of-round or local indentation) and cleanliness.
- D. Examine mating flange faces for conditions which might cause leakage. Check bolting for proper size, length, and material. Check gasket material for proper size and material, and for freedom from defects and damage.
- E. Prior to valve installation, examine the piping for cleanliness, freedom from foreign materials, and proper alignment.

3.02 VALVE SELECTION

- A. Selection of Valve Ends (Pipe Connections): Except as otherwise indicated, select valves with the following ends or types of pipe/tube connections:

1. Copper Tube Size 2 Inch and Smaller: Solder ends.

3.03 VALVE INSTALLATIONS

- A. General Application: Use gate, ball, and butterfly valves for shut-off duty; globe ball, and plug valves for throttling duty. Refer to piping system specification sections for specific valve applications and arrangements.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves and unions for each fixture and item of equipment in a manner to allow equipment removal without system shut-down. Unions are not required on flanged devices.
- E. Install valves in horizontal piping with stem at or above the center of the pipe.
- F. Installation of Check Valves: Install for proper direction of flow as follows:
 1. Swing Check Valves: Install in horizontal position with hinge pin level.
 2. Wafer Check Valves: Install between 2 flanges in horizontal or vertical position.
 3. Lift Check Valve: Install in piping line with stem upright and plumb.

3.04 SOLDER CONNECTIONS

- A. Cut tube square and to exact lengths.
- B. Clean end of tube to depth of valve socket, using steel wool, sand cloth, or a steel wire brush to a bright finish. Clean valve socket in same manner.
- C. Apply proper soldering flux in an even coat to inside of valve socket and outside of tube.
- D. Open gate and globe valves to fully open position.
- E. Remove the cap and disc holder of swing check valves with composition discs.
- F. Insert tube into valve socket making sure the end rests against the shoulder inside valve. Rotate tube or valve slightly to insure even distribution of the flux.
- G. Apply heat evenly to outside of valve around joint until solder will melt upon contact. Feed solder until it completely fills the joint around tube. Avoid hot spots or overheating the valve. Once the solder starts cooling, remove excess amounts around the joint with a cloth or brush.

3.05 FIELD QUALITY CONTROL

- A. Testing: After piping systems have been tested and put into service, but before final adjusting and balancing, inspect each valve for leaks. Adjust or replace packing to stop leaks; replace valve if leak persists.

3.07 ADJUSTING AND CLEANING

- A. Cleaning: Clean mill scale, grease, and protective coatings from exterior of valves and prepare to receive finish painting or insulation.

3.09 VALVE PRESSURE/TEMPERATURE CLASSIFICATION SCHEDULES

VALVES 2 INCH AND SMALLER

<u>SERVICE</u>	<u>GATE</u>	<u>GLOBE</u>	<u>BALL</u>	<u>CHECK</u>
Domestic Hot and Cold Water	150	125	150	125

END OF SECTION 22 05 23

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PART I - GENERAL

1.01 RELATED DOCUMENTS

Drawings and general provisions of Contract, including Bidding Requirements, General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION

Hangers and supports for all domestic sanitary, storm and hydronic piping systems. Refer to specific sections for special hanging and supporting requirements.

1.03 QUALITY ASSURANCE

- A. Codes and Standards:
 - 1. U.L. listing.
 - 2. F.M. approval.
 - 3. M.S.S. Spec. SP-58.

1.04 SUBMITTALS

- A. Manufactures Literature - catalog data.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. F and S.
- B. Carpenter and Patterson.
- C. Central Iron.
- D. Grinnell (catalog numbers given as reference standard for style and quality)

2.02 SUPPORTS

- A. For piping, 1-1/2" or smaller, non-insulated - Grinnell Fig. 69 or CT-69 adjustable swivel pipe ring, or Fig. 65 or CT-65 clevis. Clevis type shall be used wherever insulation is required to pass uninterrupted through inside of hangers.
- B. For all piping, 2" and larger Grinnell Fig. 260 adjustable clevis type. For hot water, chilled water, low pressure steam, and condenser water piping 4" and larger use roller hangers, Grinnell Fig. 171, 177.178, 277.
- C. Pipe attachments in metal-to-metal contact with copper and brass pipe shall be copper plated or PVC-coated.

- D. On all insulated pipes, provide attachments sized for O.D. of insulation to permit insulation to pass through hanger. Provide pipe covering protection shields, equal to Grinnell Fig. 167 for piping 3" and smaller and all copper tube systems. Provide saddles equal to Grinnell Fig. 160, 161 or for pipe 4" and larger.
- E. Support rods for hangers shall be adjustable, threaded, complete with locknuts. Where double rod hangers are used rod sizes may be reduced one size, except 3/8" shall be the minimum size permitted.
- F. For attaching hanger rods to the structure, provide the following:
 - 1. To structural steel beams for pipes 3" and smaller, malleable iron C-type beam clamps with retaining clip - Grinnell Fig. 85 or Fig. 87; for pipes 2" to 5" - by beam clamps, Grinnell Fig. 225 or 227; for pipes 6" and larger - bolted and welded beam attachments Grinnell Fig. 66, or beam clamps, Grinnell Fig., 229 or 292. Channel clamps may be used in lieu of above types.
 - 2. In completed concrete work or in other solid masonry, use expansion shields equal to Grinnell Fig. 152, cadmium plated.
- G. For piping along walls Grinnell support hanger rods from welded steel brackets, Grinnell Fig. 195, or Grinnell Fig. 199 heavy duty. In lieu of hangers 4" and larger pipe may rest on adjustable roll stands supported by welded channel or I-beam wall brackets.
- H. For securing wall brackets to building concrete structure provide expansion shields equal to Grinnell Fig. 152, cadmium plated.
- I. For piping along walls and close to floor - 2-1/2" and larger - adjustable pipe saddles, Grinnell Fig. 264, support from floor on pipe legs, or on stands of angle iron channels.
- J. Riser clamps for vertical piping shall be equal to Grinnell Fig. 261 (or Fig. CT-121 for copper pipe) where concealed.
- K. Supports for groups of horizontal pipes 3" and smaller, running at the same elevation, shall be vertical hangers and horizontal angles, channels or "Unistrut" on which pipes shall rest and be held in alignment with suitable pipe clamps. Building attachments and rods shall be sized for total load of all pipes, No contact between dissimilar metals will be permitted.

PART 3 - EXECUTION

3.01 SPACING

- A. Maximum spacing between pipe supports shall be as follows providing concentrated loads do not exist between supports, unless otherwise noted in other sections:

1/2" diameter 5'-0" maximum span

3/4" diameter	6'-0" maximum span
1" diameter	7'-0" maximum span
1-1/2" diameter	9'-0" maximum span
2" diameter	10'-0" maximum span

3.02 APPLICATION

- A. Select hangers for each application in accordance with MSS-SP-69 - Selection and Application.
- B. Install in accordance with MSS-SP-89 - Fabrication and Installation.
- C. Where concentrated loads exist, provide supports on each side of the load at a maximum distance of three (3) pipe diameters from the load.
- D. Support spacing for non-metallic piping shall be in accordance with pipe manufacturer's recommendations for the type of service and operating temperature.
- E. Provide shields for cold service insulated pipes and for non-metallic piping. Clevis hangers shall be located outside the insulation.
- F. Provide saddles welded to pipe for hot service insulated pipes.
- G. Roller type supports shall be so braced that movement occurs in the rollers without deflection in the support rods.

3.03 PRIME COAT PAINTING

- A. All hangers, including clevis hangers, rods, inserts, clamps, stations and brackets shall be dipped in zinc chromate primer before installation. It is required that a layer of primer exists between the hanger and the pipe.

3.04 INSTALLATION OF ANCHORS

- A. Install anchors at proper locations to prevent stresses from exceeding those permitted by ANSI B31, and to prevent transfer of loading and stresses to connected equipment.
- B. Fabricate and install anchor by welding steel shapes, plates and bars to piping and to structure. Comply with ANSI B31 and with AWS standards.
- C. Where expansion compensators are indicated, install anchors in accordance with expansion unit manufacturer's written instructions, to limit movement of piping and forces to maximums recommended by manufacturer for each unit.
- D. Anchor Spaces: Where not otherwise indicated, install anchors at ends of principal pipe-runs, at intermediate points in pipe-runs between expansion loops and bends.

Make provisions for preset of anchors as required to accommodate both expansion and contraction of piping.

END OF SECTION 22 05 29

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

Drawings and general provisions of Contract, including Bidding Requirements, General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION

Thermal insulation for piping and equipment.

1.03 QUALITY ASSURANCE

- A. Standards
 - 1. N.F.P.A. 255.
 - 2. U.L. 723.

1.04 SUBMITTALS

Submit manufacturer's specification sheets on all insulation, insulation fittings, jackets, sealants and adhesives, submit samples as requested.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

Insulation shall be as manufactured by Owens Corning, Johns-Manville, CSG Certain-Teed Corp., Armstrong or equivalent.

2.02 PIPING INSULATION

- A. Rigid, preformed, glass fiber insulation, 3-1/2 lb. minimum density. White, factory-applied vapor jacket composed of a foil kraft laminate, common name "All Service Jacket" (ASJ). Flame spread rating not exceeding 25. Smoke developed rating not exceeding 50. ASTM C547, Class I otherwise noted. Insulation conductivity shall be 0.27 BTU/in/h-ft²-F.
- B. Fittings and valves shall be insulated with premolded glass fiber insulation of the proper size and configuration with a final finish consisting of a premolded fitting cover. Insulation and fitting covers shall be manufactured by the same manufacturer, and shall be equal to those as manufactured by Zeston Corp. Contractor has the option to use in lieu of the premolded fitting cover, mitered sections of the proper thickness pipe covering. Final finish over the fittings concealed in chases and above ceilings shall be vapor barrier jacketing. Piping exposed in tunnels, basements and mechanical spaces and not concealed above ceilings or in chases shall have a final finish consisting of remolded PVC fitting and

pipe cover. Where piping is concealed, fittings may be covered by applying tightly wrapped layers of glass fiber blanket built up to the thickness of the adjacent pipe covering and held in place with wrappings of vapor barrier tape.

- C. Encase exterior piping insulation with stainless steel jacket with weatherproof construction and all seams sealed watertight as manufactured by Zeston.
- D. Accessible Lavatories: Molded closed cell vinyl covering with 3/16" wall thickness, nylon fasteners, paintable, self extinguishing per ASTM D635, white color for stop, wastes, traps and supplies as manufactured by Truebro, Inc.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine areas and conditions under which mechanical insulation is to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 PLUMBING PIPING SYSTEM INSULATION

- A. Insulation Omitted: Omit insulation on chrome-plated exposed piping (except for handicapped fixtures), air chambers, unions, strainers, check valves, balance cocks, flow regulators, drainage piping located in crawl spaces or tunnels, buried piping, (unless otherwise indicated) fire protection piping, and pre-insulated equipment.
- B. Application Requirements: Insulate the following cold plumbing piping systems:

Potable hot, hot water return and cold water piping.
- C. Insulate each piping system specified above with one of the following types and thicknesses of insulation:

Fiberglass: 1" thickness.

3.03 INSTALLATION OF PIPING INSULATION

- A. General: Install insulation products in accordance with manufacturer's written instructions, and in accordance with recognized industry practices to ensure that insulation serves its intended purpose.
- B. Install insulation on pipe systems subsequent to installation of heat tracing, painting, testing, and acceptance of tests.
- C. Install insulation materials with smooth and even surfaces. Insulate each continuous run of piping with full-length units of insulation, with single cut piece to complete run. Do not use cut pieces or scraps abutting each other.

- D. Clean and dry pipe surfaces prior to insulating. Butt insulation joints firmly together to ensure complete and tight fit over surfaces to be covered.
- E. Maintain integrity of vapor-barrier jackets on pipe insulation, and protect to prevent puncture or other damage.
- F. Cover valves, fittings and similar items in each piping system with equivalent thickness and composition of insulation as applied to adjoining pipe run. Install factory molded, precut or job fabricated units (at Installer's option).
- G. Extend piping insulation without interruption through walls, floors and similar piping penetrations, except where otherwise indicated.
- H. Butt pipe insulation against pipe hanger insulation inserts. For hot pipes, apply 3" wide vapor barrier tape or band over the butt joints. For cold piping apply wet coat of vapor barrier lap cement on butt joints and seal joints with 3" wide vapor barrier tape or band.

3.04 PROTECTION AND REPLACEMENT

- A. Replace damaged insulation which cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.
- B. Protection: Insulation Installer shall advise Contractor of required protection for insulation work during remainder of construction period, to avoid damage and deterioration.

END OF SECTION 22 07 19

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- B. Requirements of the following Division 22 Sections apply to this section:
 - 1. Plumbing General Provisions.
 - 2. Hangers and Supports.
 - 3. Insulations.
 - 4. Valves.

1.02 SUMMARY

- A. This Section specifies the water distribution piping system, including potable cold, and hot water piping, fittings, and specialties within the building to a point 5 feet outside the building.
- B. Related Sections: The following Sections contain requirements that relate to this section.
 - 1. Division 22 Section "Plumbing Fixtures" for plumbing fixtures.

1.03 DEFINITIONS

- A. Water Distribution Piping: A pipe within the building, or on the premises, which conveys water from the water service pipe, or meter, to the points of usage.
- B. Water Service Piping: The pipe from the water main, or other source of potable water supply, to the water distributing system of the building served.
- C. Pipe sizes used in this Specification are Nominal Pipe Size (NPS).

1.04 SUBMITTALS

- A. Product data for each piping specialty and valve specified.
- B. Maintenance data for each piping specialty and valve specified for inclusion in Maintenance Manual specified in Division 1 and Division 15 - Mechanical General Provisions.
- C. Welders' Certificates certifying that welders comply with requirements specified in Quality Assurance below.
- D. Certification of Compliance with ASME and UL fabrication requirements specified in below.

- E. Test reports specified in Part 3 of this Section.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: comply with the provisions of the following:
1. ASME B 31.9 "Building Services Piping" for, materials, products, and installation. Safety valves and pressure vessels shall bear the appropriate ASME label.
 2. ASME "Boiler and Pressure Vessel Code", Section IX, "Welding and Brazing Qualification" for Qualifications for Welding Processes and Operators.
 3. Connecticut State Plumbing Code and Supplements.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store pipe in a manner to prevent sagging and bending.

1.07 EXTRA STOCK

- A. Maintenance Stock: Furnish one valve key for each key operated hydrant, bibb, or faucet installed.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include, but are not limited to, the following:
1. Basket Strainers:
Josam Mfg. Co.
Metraflex Co.
Spirax Sarco.
Smith (Jay R.) Mfg. Co.
 2. Balance Cocks:
Bell & Gossett ITT; Fluid Handling Div.
Hammond Valve Corp.
Milwaukee Valve Co., Inc.
Spirax Sarco.
Taco, Inc.
 3. Bibbs and Faucets:
Hammond Valve Corp.
Lee Brothers; Div. Phelps Dodge Brass Co.
Mansfield Plumbing Products.
Nibco Inc.

Prier Brass Mfg. Co.
Tanner Mfg. Co.
Watts Regulator Co.
Woodford

4. Hydrants:
Josam Mfg. Co.
Smith, (Jay R.) Mfg. Co.
Tyler Pipe; Sub. of Tyler Corp.
Woodford Mfg. Co.
Zurn Industries Inc., Hydromechanics Div.
5. Backflow Preventers:
Febco Sales, Inc.; Subs. of Charles M. Bailey Co., Inc.
Hersey Products, Inc.
ITT Lawler; Fluid Handling Div.
Watts Regulator Co.
6. Pressure Regulating Valves:
Cash (A. W.) Valve Mfr. Corp.
Cla-Val Co.
Spence Engineering Co., Inc.
Watts Regulator Co.
7. Relief Valves:
Cash (A. W.) Valve Mfg. Corp.
Conbraco Industries, Inc.
Watts Regulator Co.
Zurn Industries, Inc.; Wilkins-Regulator Div.
8. Water Hammer Arresters:
Amtrol, Inc.
Smith (Jay R.) Mfg. Co.
Tyler Pipe; Sub. of Tyler Corp.
9. Y-Pattern Strainers:
Armstrong Machine works.
Hoffman Specialty ITT; Fluid Handling Div.
Metraflex Co.
Spirax Sarco.
Trane Co.
Victaulic Co. of America. (low pressure applications only) Watts Regulator Co.

2.02 PIPE AND TUBE MATERIALS

- A. General: Refer to Part 3, Article "PIPE APPLICATIONS" for identification of systems where the below materials are used.
- B. Drawn Temper Copper Tubing: ASTM B88, Type L.

- C. Annealed Temper Copper Tubing: ASTM B88, Type K.

2.03 FITTINGS

- A. Wrought-Copper Fittings: ANSI B16.22, streamlined pattern.
- B. Cast Bronze Flanges: ANSI B16.24, Class 150; raised ground face, bolt holes spot faced.
- C. Unions: ANSI B16.39, malleable iron, Class 150, hexagonal stock, with ball-and-socket joints, metal-to-metal bronze seating surfaces; female threaded ends. Threads shall conform to ANSI B1.20.1.
- G. Flexible Connectors: stainless steel bellows with woven flexible bronze wire reinforcing protective jacket; minimum 150 psig working pressure, maximum 250 deg F operating temperature. Connectors shall have flanged or threaded end connections to match equipment connected; and shall be capable of 3/4 inch misalignment.

2.04 JOINING MATERIALS

- A. Solder Filler Metals: ASTM B 32, 95-5 Tin-Antimony.
- B. Press Fit

2.05 GENERAL DUTY VALVES

- A. General duty valves (i.e., gate, globe, check, ball, and butterfly valves) are specified in Division 22 Section "Valves." Special duty valves are specified below by their generic name; refer to Part 3 Article "VALVE APPLICATION" for specific uses and applications for each valve specified.

2.06 PIPING SPECIALTIES

- A. Water Hammer Arresters: Bellows type, with stainless steel casing and bellows, pressure rated for 250 psi, tested and certified in accordance with PDI Standard WH-201.
- B. Basket Strainers: Cast-iron body, 125 psi flanges, bolted type or yoke type cover; with removable non-corrosive perforated strainer basket having 1/8 inch perforations and lift-out handle.
- C. Hose Bibbs: Bronze body, renewable composition disc, tee handle, 3/4 inch NPT inlet, 3/4 inch hose outlet.
- D. Sill Faucets: Bronze body, with renewable composition disc, wheel handle, 3/4 inch solder inlet, 3/4 inch hose outlet.
- E. Floor Level Non-Freeze Hydrants: Cast-bronze hydrant, with rough bronze box, tee handle key, drain hole, automatic draining, backflow preventer, frost pump, hinged

locking cover, 3/4 inch inlet, and hose outlet. Bronze casing shall be length to suit depth of bury. See Section 15411 "Plumbing Fixtures."

- F. Backflow Preventers: Reduced pressure principle assembly consisting of shutoff valves on inlet and outlet, and strainer on inlet. Assemblies shall include test cocks, and pressure-differential relief valve located between 2 positive seating check valves, and comply with requirements of ASSE Standard 1013, equal to Watts 909 Series.
- G. Pressure Regulating Valves: Single seated, direct operated type; having bronze body with integral strainer, and complying with requirements of ASSE Standard 1003. Select proper size for maximum flow rate and inlet and outlet pressures indicated.
- H. Relief Valves: Provide proper size for relief valve, in accordance with ASME Boiler and Pressure Vessel Codes, for indicated capacity of the appliance for which installed.
- I. Combined Pressure-Temperature Relief Valves: Bronze body, test lever, thermostat, complying with ANSI Z21.22 listing requirements for temperature discharge capacity. Provide temperature relief at 210 deg F, and pressure relief at 150 psi.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify all dimensions by field measurements. Verify that all water distribution piping may be installed in accordance with pertinent codes and regulations, the original design, and the referenced standards.
- B. Examine rough-in requirements for plumbing fixtures and other equipment having water connections to verify actual locations of piping connections prior to installation.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PIPE APPLICATIONS

- A. Install Type L, drawn copper tubing with wrought copper fittings and solder joints for 2 inch and smaller, above ground, within building. Install Type K, annealed temper copper tubing for 2 inch and smaller, with minimum number of joints, below ground and within slabs.

3.03 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawings (plans, schematics, and diagrams) indicate the general location and arrangement of the piping systems. Location and arrangement of piping layout take into consideration pipe sizing and friction loss, expansion, pump sizing, and other design considerations. So far as practical, install piping as indicated.

- B. Use fittings for all changes in direction and all branch connections.
- C. Install exposed piping at right angles or parallel to building walls. Diagonal runs are not permitted, unless expressly indicated.
- D. Install piping free of sags or bends and with ample space between piping to permit proper insulation applications.
- E. Conceal all pipe installations in walls, pipe chases, utility spaces, above ceilings, below grade or floors, unless indicated to be exposed to view.
- F. Install piping tight to slabs, beams, joists, columns, walls, and other permanent elements of the building. Provide space to permit insulation applications, with 1 inch clearance outside the insulation. Allow sufficient space above removable ceiling panels to allow for panel removal.
- G. Locate groups of pipes parallel to each other, spaced to permit applying full insulation and servicing of valves.
- H. Install drains at low points in mains, risers, and branch lines consisting of a tee fitting, 3/4 inch ball valve, and short 3/4 inch threaded nipple and cap.
- I. Exterior Wall Penetrations: Seal pipe penetrations through exterior walls using sleeves and mechanical sleeve seals. Pipe sleeves smaller than 6 inch shall be steel; pipe sleeves 6 inch and larger shall be sheet metal.
- J. Fire Barrier Penetrations: Where pipes pass through fire rated walls, partitions, ceilings, and floors, maintain the fire rated integrity. Refer to Division 7 for special sealers and materials.
- K. Install piping with 1/32 inch per foot (1/4 percent) downward slope towards drain point.

3.04 PIPE AND TUBE JOINT CONSTRUCTION

- A. Soldered Joints: comply with the procedures contained in the AWS "Soldering Manual."
 - 1. CAUTION: Remove stems, seats, and packing of valves and accessible internal parts of piping specialties before soldering.
 - 2. Fill the tubing and fittings during soldering with an inert gas (nitrogen or carbon dioxide) to prevent formation of scale.
 - 3. Heat joints to proper and uniform temperature.

3.05 VALVE APPLICATIONS

- A. General Duty Valve Applications: The Drawings indicate valve types to be used. Where specific valve types are not indicated the following requirements apply:

1. Shut-off duty: use ball valves
2. Throttling duty: use globe, ball, and butterfly valves.

3.06 INSTALLATION OF VALVES

- A. Sectional Valves: Install sectional valves on each branch and riser, close to main, where branch or riser serves 2 or more plumbing fixtures or equipment connections, and elsewhere as indicated. For sectional valves 2 inch and smaller, use gate or ball valves; for sectional valves 2-1/2 inch and larger, use gate or butterfly valves.
- B. Shutoff Valves: Install shutoff valves on inlet of each plumbing equipment item, and on inlet of each plumbing fixture, and elsewhere as indicated. For shutoff valves 2 inch and smaller, use gate or ball valves; for shutoff valves 2-1/2 inch and larger, use gate or butterfly valves.
- C. Drain Valves: Install drain valves on each plumbing equipment item, located to completely drain equipment for service or repair. Install drain valves at the base of each riser, at low points of horizontal runs, and elsewhere as required to completely drain distribution piping system. For drain valves 2 inch and smaller, use gate or ball valves; for drain valves 2-1/2 inch and larger, use gate or butterfly valves.
- D. Check Valves: Install swing check valves on discharge side of each pump, and elsewhere as indicated.
- E. Balance Cocks: Install in each hot water recirculating loop, discharge side of each pump, and elsewhere as indicated.
- F. Hose Bibbs: Install on exposed piping where indicated, with vacuum breaker.

3.07 INSTALLATION OF PIPING SPECIALTIES

- A. Install backflow preventers at each connection to mechanical equipment and systems, and in compliance with the plumbing code and authority having jurisdiction. Locate in same room as equipment being connected. Pipe relief outlet without valves, to nearest floor drain.
- B. Install pressure regulating valves with inlet and outlet shutoff valves, and balance cock bypass. Install pressure gage on valve outlet.

3.08 EQUIPMENT CONNECTIONS

- A. Piping Runouts to Fixtures: Provide hot and cold water piping runouts to fixtures of sizes indicated, but in no case smaller than required by Plumbing Code.
- B. Mechanical Equipment Connections: Connect cold water piping system to mechanical equipment as indicated. Provide shutoff valve and union for each connection, provide drain valve on drain connection. For connections 2-1/2" and larger, use flanges instead of unions.

3.09 FIELD QUALITY CONTROL

- A. Inspections: Inspect water distribution piping as follows:
1. Do not enclose, cover, or put into operation water distribution piping system until it has been inspected and approved by the authority having jurisdiction.
 2. During the progress of the installation, notify the plumbing official having jurisdiction, at least 24 hours prior to the time such inspection must be made. Perform tests specified below in the presence of the plumbing official.
 3. Rough-in Inspection: Arrange for inspection of the piping system before concealed or closed-in after system is roughed-in, and prior to setting fixtures.
 4. Final Inspection: Arrange for a final inspection by the plumbing official to observe the tests specified below and to insure compliance with the requirements of the plumbing code.
 5. Reinspections: Whenever the plumbing official finds that the piping system will not pass the test or inspection, make the required corrections and arrange for reinspection by the plumbing official.
 6. Reports: Prepare inspection reports, signed by the plumbing official.
- B. Test water distribution piping as follows:
1. Test for leaks and defects all new water distribution piping systems and parts of existing systems, which have been altered, extended or repaired. If testing is performed in segments, submit a separate report for each test, complete with a diagram of the portion of the system tested.
 2. Leave uncovered and unconcealed all new, altered, extended, or replaced water distribution piping until it has been tested and approved. Expose all such work for testing, that has been covered or concealed before it has been tested and approved.
 3. Cap and subject the piping system to a static water pressure of 50 psig above the operating pressure without exceeding the pressure rating of the piping system materials. Isolate the test source and allow to stand for a period of 4 hours. Leaks and loss in test pressure constitute defects which must be repaired.
 4. Repair all leaks and defects using new materials and retest system or portion thereof until satisfactory results are obtained.
 5. Prepare reports for all tests and required corrective action.

3.10 ADJUSTING AND CLEANING

- A. Clean and Disinfect water distribution piping as follows:
1. Purge all new water distribution piping systems and parts of existing systems, which have been altered, extended, or repaired prior to use.
 2. Use the purging and disinfecting procedure proscribed by the authority having jurisdiction, or in case a method is not proscribed by that authority, the procedure described in either AWWA C601, or AWWA D105, or as described below:

Flush the piping system with clean, potable water until dirty water does not appear at the points of outlet.

Fill the system or part thereof, with a water/chlorine solution containing at least 50 parts per million of chlorine. Isolate (valve off) the system, or part thereof, and allow to stand for 24 hours.

Drain the system, or part thereof, of the previous solution, and refill with a water/chlorine solution containing at least 200 parts per million of chlorine and isolate and allow to stand for 3 hours.
 3. Following the allowed standing time, flush the system with clean potable water until chlorine does not remain in the water coming for the system.

Submit water samples in sterile bottles to the authority having jurisdiction. Repeat the procedure if the biological examination made by the authority shows evidence of contamination.
- B. Prepare reports for all purging and disinfecting activities.

3.11 COMMISSIONING

- A. Fill the system.
- B. Check compression tanks to determine that they are not air bound and that the system is completely full of water.
- C. Before operating the system perform these steps:
1. Open valves to full open position. Close drain, valves, hydrants, and sill cocks.
 2. Remove and clean strainers.

END OF SECTION 22 11 16

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- B. Requirements of the following Division 22 Sections apply to this section:

Mechanical General Provisions.
Supports and Anchors.

1.02 SUMMARY

- A. This Section includes building sanitary and storm drainage and vent piping systems, including drains and drainage specialties.
- B. Division 22 Section "Plumbing Fixtures", for identification of floor drains, roof drains, floor clean-outs, wall clean-outs.

1.03 DEFINITIONS

- A. Building Drain: That part of the lowest piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer.
- B. Building Sewer: That part of the drainage system which extends from the end of the building drain and conveys its discharge to a public sewer, private sewer, individual sewage disposal system, or other point of disposal.
- C. Drainage System: Includes all the piping within the building which conveys sewage, rain water or other liquid wastes to a point of disposal. It does not include the mains of public sewer systems or a private or public sewage treatment or disposal plant.
- D. Vent System: A pipe or pipes installed to provide a flow of air to or from a drainage system, or to provide a circulation of air within such system to protect trap seals from siphonage and back pressure.

1.04 SUBMITTALS

- A. Product data for the following products:
Drainage piping product data sheets.
Drainage piping specialties.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: comply with the provisions of the following:

Connecticut State Plumbing Code and Supplements.

1.06 SEQUENCING AND SCHEDULING

- A. Coordinate the installation of roof drains, flashing, and roof penetrations.
- B. Coordinate flashing materials installation of roofing, waterproofing, and adjoining substrate work.
- C. Coordinate the installation of drains in poured-in-place concrete slabs, to include proper drain elevations, installation of flashing, and slope of slab to drains.
- D. Coordinate with installation of sanitary and storm sewer systems as necessary to interface building drains with drainage piping systems.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering drainage and vent systems which may be incorporated in the work include, but are not limited to, the following:

Drainage Piping Specialties, including backwater valves, expansion joints, drains, trap primers, and vandal-proof vent caps:

Ancon Inc.
Josam Mfg. Co.
Smith (Jay R) Mfg. Co.
Tyler Pipe; Subs. of Tyler Corp.

- B. Freeze-proof vent caps:

F.J. Moore Mfg. Co.

2.02 ABOVE GROUND DRAINAGE AND VENT PIPE AND FITTINGS

- A. Copper Tube: ASTM B306, Type DWV for pipe, and cast-bronze, drainage pattern fittings, with soldered joints.

Solder Filler Materials: ASTM B32, 50-50 tin-lead solder.

- B. Hubless Cast-Iron Soil Pipe: CISPI Standard 301, Service weight, cast-iron soil pipe and fittings, with neoprene gaskets conforming to CISPI Standard 310.

2.03 UNDERGROUND BUILDING DRAIN PIPE AND FITTINGS

- A. PVC schedule 40, solid core, drainage pattern fittings, solvent weld joints.

2.04 DRAINAGE PIPING SPECIALTIES

- A. Expansion Joints: Cast-iron body with adjustable bronze sleeve, bronze bolts with wing nuts.
- B. Cleanout Plugs: Cast-bronze or brass, threads complying with ANSI B2.1, countersunk head.
- C. Floor Cleanouts: Cast-iron body and frame, with cleanout plug and adjustable round top as follows:
 - Nickel-Bronze Top: Manufacturer's standard cast unit with the following patterns:
 - Exposed rim type, with recess to receive 1/8 inch thick resilient floor finish.
 - Exposed rim type, with recess to receive 1 inch thick terrazzo floor finish.
 - Exposed finish type, standard mill finish.
 - Exposed flush type, standard non-slip scored or abrasive finish.
- D. Wall Cleanouts: Cast-iron body adaptable to pipe with cast-bronze or brass cleanout plug; stainless steel cover including screws.
- E. Flashing Flanges: Cast-iron watertight stack or wall sleeve with membrane flashing ring. Provide underdeck clamp and sleeve length as required.
- F. Vent Flashing Sleeves: Cast-iron caulking type roof coupling for cast-iron stacks, cast-iron threaded type roof coupling for steel stacks, and cast-bronze stack flashing sleeve for copper tubing.
- G. Frost-Proof Vent Caps: Construct of galvanized iron, copper, or lead-coated copper, sized to provide 1 inch air space between outside of vent pipe and inside of flashing collar extension.

2.05 FLOOR DRAINS

- A. Floor drain type designations and sizes are indicated on Drawings and in Section 224200 "Plumbing Fixtures."

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify existing grades, inverts, utilities, obstacles, and topographical conditions prior to installations.
- B. Examine rough-in requirements for plumbing fixtures and other equipment having drain connections to verify actual locations of piping connections prior to installation.

- C. Examine walls, floors, roof, and plumbing chases for suitable conditions where piping and specialties are to be installed.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION FOUNDATION FOR UNDERGROUND BUILDING DRAINS

- A. Grade trench bottoms to provide a smooth, firm, and stable foundation, free from rock, throughout the length of the pipe.
- B. Remove unstable, soft, and unsuitable materials at the surface upon which pipes are to be laid and backfill with clean sand or pea gravel to indicated invert elevation.
- C. Shape bottom of trench to fit bottom of pipe for 90-degrees (bottom 1/4 of the circumference). Fill unevenness with tamped sand backfill. At each pipe joint dig bell holes to relieve the bell of the pipe of all loads, and to ensure continuous bearing of the pipe barrel on the foundation.

3.03 PIPE APPLICATIONS - ABOVE GROUND, WITHIN BUILDING

- A. Install copper tube with cast bronze fittings for 3 inch and smaller, drainage and vent pipe where exposed in plenum.
- B. Install hubless, service weight, cast-iron soil pipe and fittings for larger than 3 inch drainage and vent pipe where exposed in plenum.
- C. In accordance with contract drawings, the manufacturer's recommendations, and the local plumbing code. Entire system shall be installed free of stress and in proper alignment without strain. Horizontal supports shall be split ring or clevis type hanger spaced in accordance with manufacturer's recommendations. Vertical supports shall be standard riser clamps at each floor.

3.04 PIPE APPLICATIONS - BELOW GROUND, WITHIN BUILDING

- A. Install schedule 40 PVC, solid core soil pipe and fittings.

3.05 PIPE AND TUBE JOINT CONSTRUCTION

- A. Copper Tubing: Solder joints in accordance with the procedures specified in AWS "Soldering Manual."
- B. Cast-Iron Soil Pipe: Make lead and oakum caulked joints, compression joints, and hubless joints in accordance with the recommendations in the CISPI Cast Iron Soil Pipe and Fittings Handbook, Chapter IV.

3.06 INSTALLATION

- A. General Locations and Arrangements: Drawings (plans, schematics, and diagrams) indicate the general location and arrangement of the piping systems. Location and

arrangement of piping layout take into account many design considerations. So far as practical, install piping as indicated.

- B. Use fittings for all changes in direction and all branch connections.
- C. Install exposed piping at right angles or parallel to building walls. Diagonal runs are not permitted, unless expressly indicated.
- D. Install piping free of sags or bends and with ample space between piping to permit proper insulation applications.
- E. Conceal all pipe installations in walls, pipe chases, utility spaces, above ceilings, below grade or floors, unless indicated to be exposed to view.
- F. Install piping tight to slabs, beams, joists, columns, walls, and other permanent elements of the building. Allow sufficient space above removable ceiling panels to allow for panel removal.
- G. Exterior Wall Penetrations: Seal pipe penetrations through exterior walls using sleeves and mechanical sleeve seals. Pipe sleeves smaller than 6 inch shall be steel; pipe sleeves 6 inch and larger shall be sheet metal.
- H. Fire Barrier Penetrations: Where pipes pass through fire rated walls, partitions, ceilings, and floors, maintain the fire rated integrity.
- I. Make changes in direction for drainage and vent piping using appropriate 45 degree wyes, half-wyes, or long sweep quarter, sixth, eighth, or sixteenth bends. Sanitary tees or short quarter bends may be used on vertical stacks of drainage lines where the change in direction of flow is from horizontal to vertical, except use long-turn tees where two fixtures are installed back to back and have a common drain. Straight tees, elbows, and crosses may be used on vent lines. No change in direction of flow greater than 90 degrees shall be made. Where different sizes of drainage pipes and fittings are connected, use proper size, standard increasers and reducers. Reduction of the size of drainage piping in the direction of flow is prohibited
- J. Install underground building drains to conform with the plumbing code, and in accordance with the Cast Iron Soil Pipe Institute Engineering Manual. Lay underground building drains beginning at low point of systems, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install required gaskets in accordance with manufacturer's recommendations for use of lubricants, cements, and other special installation requirements. Maintain swab or drag in line and pull past each joint as it is completed.
- K. Install building drain pitched down at minimum slope of 1/4 inch per foot (2 percent) for piping 2-1/2 inch and smaller, and 1/8 inch per foot (1 percent) for piping 3 inch and larger.
- L. Extend building drain to connect to sewer piping, of size and in location indicated for service entrance to building.

- M. Install sleeve and mechanical sleeve seal through foundation wall for watertight installation.
- N. Install 1 inch thick extruded polystyrene over underground building drain piping not under building. Width of insulation shall extend minimum of 12 inch beyond each side of pipe. Install directly over, and center on pipe center line.

3.07 HANGERS AND SUPPORTS

- A. General: Hanger, supports, and anchors devices are specified in Division 15 Section "Hangers and Supports." Conform to the table below for maximum spacing of supports:

Install the following pipe attachments:

Adjustable steel clevis hangers for individual horizontal runs less than 20 feet in length.

Install hangers at the following intervals:

<u>PIPE MATERIAL</u>	<u>MAX HORIZ SPACING</u> <u>IN FEET</u>	<u>MAX VERT SPACING</u> <u>IN FEET</u>
Schedule 40 PVC	5	10
Cast-Iron Pipe	5	15
Copper Tubing - 1-1/4 inch and smaller	6	10
Copper Tubing - 1-1/2 inch And larger	10	10

3.08 INSTALLATION OF PIPING SPECIALTIES

- A. Install expansion joints on vertical risers as indicated, and as required by the plumbing code.
- B. Above Ground Cleanouts: Install in above ground piping and building drain piping as indicated, and:
 - as required by plumbing code;
 - at each change in direction of piping greater than 45 degrees;
 - at minimum intervals of 50' for piping 4" and smaller and 100' for larger piping;
 - at base of each vertical soil or waste stack.
- C. Cleanouts Covers: Install floor and wall cleanout covers for concealed piping, types as indicated.

- D. Flashing Flanges: Install flashing flange and clamping device with each stack and cleanout passing through waterproof membranes.
- E. Vent Flashing Sleeves: Install on stacks passing through roof, secure over stack flashing in accordance with manufacturer's instructions.
- F. Frost-Proof Vent Caps: Install frost-proof vent caps on each vent pipe passing through roof. Maintain 1 inch clearance between vent pipe and roof substrate.

3.09 CONNECTIONS

- A. Piping Runouts to Fixtures: Provide drainage and vent piping runouts to plumbing fixtures and drains, with approved trap, of sizes indicated; but in no case smaller than required by the plumbing code.
- B. Locate piping runouts as close as possible to bottom of floor slab supporting fixtures or drains.

3.10 FIELD QUALITY CONTROL

Inspections

- A. Do not enclose, cover, or put into operation drainage and vent piping system until it has been inspected and approved by the authority having jurisdiction.
- B. During the progress of the installation, notify the plumbing official having jurisdiction, at least 24 hours prior to the time such inspection must be made. Perform tests specified below in the presence of the plumbing official.
- C. Rough-in Inspection: Arrange for inspection of the piping system before concealed or closed-in after system is roughed-in, and prior to setting fixtures.
- D. Final Inspection: Arrange for a final inspection by the plumbing official to observe the tests specified below and to insure compliance with the requirements of the plumbing code.
- E. Reinspections: Whenever the piping system fails to pass the test or inspection, make the required corrections, and arrange for reinspected by the plumbing official.
- F. Reports: Prepare inspection reports, signed by the plumbing official.
- G. Piping System Test Test drainage and vent system in accordance with the procedures of the authority having jurisdiction, or in the absence of a published procedure, as follows:
- H. Test for leaks and defects all new drainage and vent piping systems and parts of existing systems, which have been altered, extended or repaired. If testing is performed in segments, submit a separate report for each test, complete with a diagram of the portion of the system tested.

- I. Leave uncovered and unconcealed all new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose all such work for testing, that has been covered or concealed before it has been tested and approved.
- J. Rough Plumbing Test Procedure: Except for outside leaders and perforated or open jointed drain tile, test the piping of plumbing drainage and venting systems upon completion of the rough piping installation. Tightly close all openings in the piping system, and fill with water to the point of overflow, but not less than 10 feet head of water. Water level shall not drop during the period from 15 minutes before the inspection starts, through completion of the inspection. Inspect all joints for leaks.
- K. Finished Plumbing Test Procedure: After the plumbing fixtures have been set and their traps filled with water, their connections shall be tested and proved gas and water-tight. Plug the stack openings on the roof and building drain where it leaves the building, and introduce air into the system equal to a pressure of 1" water column. Use a "U" tube or manometer inserted in the trap of a water closet to measure this pressure. Air pressure shall remain constant without the introduction of additional air throughout the period of inspection. Inspect all plumbing fixture connections for gas and water leaks.
- L. Repair all leaks and defects using new materials and retest system or portion thereof until satisfactory results are obtained.
- M. Prepare reports for all tests and required corrective action.

3.11 ADJUSTING AND CLEANING

- A. Clean interior of piping system. Remove dirt and debris as work progresses.
- B. Clean drain strainers, domes, and traps. Remove dirt and debris.

3.12 PROTECTION

- A. Protect drains during remainder of construction period, to avoid clogging with dirt and debris, and to prevent damage from traffic and construction work.
- B. Place plugs in ends of uncompleted piping at end of day or whenever work stops.

END OF SECTION 22 13 16

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of water heater work required by this section is indicated on drawings and schedules, and by requirements of this section.
- B. Refer to other Division-23 sections for water piping, specialties, pumps, fuel piping, and breechings which are required external to water heaters for installation; not work of this section.
- C. Refer to Division-26 sections for other electrical wiring including motor starters, disconnects, wires/cables, raceways, and other required electrical devices; not work of this section.

1.03 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacturer of water heaters of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Codes and Standards:
 - 1. UL Compliances: Construct water heaters in accordance with the following UL standards:

Provide water heater components which are UL-listed and labeled.
 - 2. AGA and NSF Labels: Provide water heaters which are listed and labeled by American Gas Association and National Sanitation Foundation.
 - 3. ASHRAE Compliance: Provide water heaters with Performance Efficiencies not less than prescribed in ASHRAE 90.1.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data including rated capacities and efficiencies of selected model clearly indicated; operating weights; furnished specialties and accessories; and installation and start-up instructions.
- B. Shop Drawings: Submit manufacturer's assembly type shop drawings indicating dimensions, required clearances, and methods of assembly of components.

- C. Wiring Diagrams: Submit manufacturer's electrical requirements for electrical power supply wiring to water heaters. Submit manufacturer's ladder-type wiring diagrams for interlock and control wiring required for final installation of water heaters and controls. Differentiate between portions of wiring that are factory-installed and portions that are to be field-installed.
- D. Maintenance Data: Submit maintenance data and parts lists for each type and size of water heater, control, and accessory; including "trouble-shooting" maintenance guide. Include this data, product data, shop drawings, and wiring diagrams in maintenance manual; in accordance with requirements of Division 1.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Handle water heaters and components carefully to prevent damage, breaking, denting and scoring. Do not install damaged water heaters or components; remove from site and replace with new.
- B. Store water heaters and components in clean dry place. Protect from weather, dirt, fumes, water, construction debris, and physical damage.
- C. Comply with manufacturer's rigging and installation instructions for unloading water heaters, and moving units to final location for installation.

1.06 SPECIAL PROJECT WARRANTY

- A. Warranty on Coils and tanks: Provide written warranty, signed by manufacturer, agreeing to replace/repair, within warranty period, coils, and burners with inadequate or defective materials and workmanship, including leakage, breakage, improper assembly, or failure to perform as required; provided manufacturer's instructions for handling, installing, protecting, and maintaining units have been adhered to during warranty period. Replacement is limited to component replacement only, and does not include labor for removal and reinstallation.
 - 1. Warranty Period: 5 years from Date of Substantial Completion.

PART 2 - PRODUCTS

2.01 COMMERCIAL ELECTRIC WATER HEATER

- A. Heater: Construct for working pressure of 150 PSI; bolted type hand hole cleanout; two magnesium anode rods; 3/4" tapping for relief valve; glass lining on internal surfaces exposed to water. Heater shall have a rated storage capacity as scheduled on the plans.
- B. Jacket: Insulate tank with vermin-proof glass fiber insulation. Provide outer steel jacket with baked enamel finish over bonderized undercoating. Heater shall be insulated with not less than 2" of new CFC foam.

- C. Accessories: Provide brass drain valve; 3/4" pressure and temperature relief valve; and radiant floor shield. Thermostats shall be surface mounted.
- D. Controls: Provide thermostat; and temperature limit control.
- E. Electrical Requirements: 480 volts, heater to be completely pre-wired with pressure lug terminal block.
- F. Manufacturers: Subject to compliance with requirements, provide commercial Electric water heaters of one of the following:
- G. Manufacturers: Subject to compliance with requirements, provide commercial electric water heaters of one of the following:
 - AO Smith
 - Bradford-White
 - Rheem

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions under which water heaters are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 INSTALLATION OF WATER HEATERS

- A. General: Install water heaters in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances.
- B. Support: Place units on concrete pads, orient so controls and devices needing service and maintenance have adequate access.
- C. Piping: Connect hot and cold water piping to units with shutoff valves and unions. Connect recirculating water line to unit with shutoff valve, check valve, and union. Extend relief valve discharge to closest floor drain, or as indicated.
- D. Gages: Provide thermometers on inlet and outlet piping of water heaters, in accordance with Basic Mechanical Materials and Methods Section "Meters and Gages."

3.03 FIELD QUALITY CONTROL

- A. Start-Up: Start-up, test, and adjust gas-fired water heaters in accordance with manufacturer's start-up instructions, and utility company's requirements. Check and calibrate controls, adjust burner for maximum efficiency.

END OF SECTION 22 31 16

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 DESCRIPTION

- A. This Section specifies plumbing fixtures and trim. The types of fixtures specified included the following:

Lavatories;
Stainless Steel Sinks;
Service Sinks;
Water Closets;
Faucets;
Toilet Seats;
Fittings, Trim, and Accessories.

1.03 QUALITY ASSURANCE

- A. Codes and Standards:

ASHRAE Standard 18: "Method of Testing for Rating Drinking Water Coolers with Self-Contained Mechanical Refrigeration Systems."

ARI Standard 1010: "Drinking-Fountains and Self-Contained Mechanically-Refrigerated Drinking-Water Coolers"

ANSI Standard A117.1: "Specifications for Making Buildings and Facilities Accessible To and Usable By Physically Handicapped People."

UL Standard 399: "Drinking-Water Coolers."

Connecticut State Building Code and Supplements.

1.04 SUBMITTALS

- A. Product Data: Submit Product Data and installation instructions for each fixture, faucet, specialties, accessories, and trim specified; clearly indicate rated capacities of selected models of water coolers.
- B. Shop Drawings: Submit rough-in drawings. Detail dimensions, rough-in requirements, required clearances, and methods of assembly of components and anchorages. Coordinate requirements with Architectural Woodwork shop drawings specified in Division 6 for fixtures installed in countertops and cabinets. Furnish templates for use by millwork contractor.

- C. Color Charts: Submit manufacturer's standard color charts for cabinet finishes and fixture colors.
- D. Maintenance Data: Include data in Maintenance Manual specified in Division 1.
- E. Quality Control Submittals:

Submit certification of compliance with specified ANSI, UL, and ASHRAE Standards.

Submit certification of compliance with performance verification requirements specified in this Section.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store fixtures where environmental conditions are uniformly maintained within the manufacturer's recommend temperatures to prevent damage.
- B. Store fixtures and trim in the manufacturer's original shipping containers. Do not stack containers or store in such a manner that may cause damage to the fixture or trim.

1.06 SEQUENCE AND SCHEDULING

- A. Schedule rough-in installations with the installation of other building components.

1.07 MAINTENANCE

- A. Extra Stock:

Furnish special wrenches and other devices necessary for servicing plumbing fixtures and trim to Owner with receipt in a quantity of one device for each 10 fixtures.

Furnish faucet repair kits complete with all necessary washers, springs, pins, retainers, packings, O-rings, sleeves, and seats in a quantity of 1 kit for each 40 faucets of each type of manufacturer.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturer uniformity shall be as specified in Section 15010: Mechanical General Provisions under Product Options.
- B. Subject to compliance with specified requirements, manufacturers offering plumbing fixtures which may be incorporated in the Work include, but are not limited to, the following:

Lavatories and Water Closets:

American Standard; U.S. Plumbing Products.
Kohler Co.
Toto

Stainless Steel Sinks:

American Standard; U.S. Plumbing Products.
Elkay Mfg. Co.
Just Mfg. Co.
Moen; Div. of Stanadyne.

Faucets:

American Standard; U.S. Plumbing Products.
Bradley
Chicago Faucet Co.
Delta Faucet Co.; Div. of Masco Corp.
Eljer Plumbingware Div.; Household International Co.
Elkay Mfg. Co.
Kohler Co.
Toto
Symmons

Water Closet Seats:

Bemis Mfg. Co.
Beneke Corp.
Forbes-Wright Industries, Inc.; Church Products.
Olsonite Corp.; Olsonite Seats.
Kohler.

Service Sinks:

American Standard; U.S. Plumbing Products.
Advanced Tabco
Crane Co.
Eljer Plumbingware Div.; Household International Co.
Fiat Products.
Kohler Co.

Water Coolers/ Drinking Fountains

Elkay
Haslet Taylor
Haws

2.02 FIXTURES

- A. Refer to plans for plumbing fixture schedule.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify all dimensions by field measurements. Verify that all plumbing fixtures may be installed in accordance with pertinent codes and regulations, the original design, and the referenced standards.
- B. Examine rough-in for potable water and waste piping systems to verify actual locations of piping connections prior to installing fixtures.
- C. Examine walls, floors, and cabinets for suitable conditions where fixtures are to be installed.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install plumbing fixtures level and plumb, in accordance with fixture manufacturer's written instructions, rough-in drawings, and pertinent codes and regulations, the original design, and the referenced standards.
- B. Comply with the installation requirements of ANSI A117.1 and ADA with respect to plumbing fixtures for the physically handicapped.
- C. Fasten plumbing fixtures securely to supports or building structure. Secure supplies behind or within wall construction to provide rigid installation.
- D. Install a stop valve in an accessible location in the water connection to each fixture.
- E. Install escutcheons at each wall, floor, and ceiling penetration in exposed finished locations and within cabinets and millwork.

3.03 FIELD QUALITY CONTROL

- A. Test fixtures to demonstrate proper operation upon completion of installation and after units are water pressurized. Replace malfunctioning units, then retest.
- B. Inspect each installed unit for damage. Replace damaged fixtures.
- C. Inspect valves and faucets for cross flow and replace malfunctioning units.

3.04 ADJUSTING

- A. Adjust water pressure at drinking fountains, faucets, shower valves, and flush valves to provide proper flow and stream.
- B. Replace washers of leaking or dripping faucets and stops.

- C. Clean fixtures, trim, and strainers using manufacturer's recommended cleaning methods and materials.

3.05 CLEANING

- A. Clean fixtures, trim, and strainers using manufacturer's recommended cleaning methods and materials.

3.06 PROTECTION

- A. Provide protective covering for installed fixtures, water coolers, and trim.
- B. Do not allow use of fixtures for temporary facilities unless expressly approved in writing by the Owner.

END OF SECTION 22 42 00

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SECTION 23 01 00 – MECHANICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawing and general provisions of contract, including Bidding Requirements, General and Supplementary Conditions, Division I and Division 23 specification sections, apply to work of this section.

1.02 DESCRIPTION

- A. The work of this Division shall include, but not necessarily be limited to the following:
 - 1. Installation of split system air conditioning unit, exhaust fans, ductwork, Piping, insulation and controls.
 - 2. Installation of equipment, ductwork, pipe, and accessories, etc. as shown on plans.

1.03 DEFINITIONS

Word "Engineer" shall mean the Mechanical and Electrical Engineers.

"As Necessary" - Work referred to as "as necessary" shall be that work which is required for completed construction, but is not necessarily shown or described in the Contract Documents.

"As Required" - Work referred to as "as required" shall be that work which is required for completed construction and is shown on the drawings or described in the project manual.

Word "install" shall mean set in place complete with all mounting facilities and connections as required ready for normal use of service. Note: Take care to ascertain limits of responsibility for connecting equipment which requires connections by two or more trades.

Words "furnish" or "supply" shall mean purchase, deliver to, and offload at the jobsite, all ready to be installed including where appropriate all necessary interim storage and protection.

Word "provide" shall mean furnish (or supply) and install as required.

Word "finished" refers to all rooms and areas scheduled to be painted in Room Finish Schedule on the drawings. All rooms and areas not covered in Schedule, including areas above ceilings shall be considered not finished, unless otherwise noted.

Words "approved equal" mean any product which in the opinion of the Engineer is equal in quality, arrangement, appearance, and performance to the product specified.

Word "wiring" shall mean cable assembly, raceway, conductors, fittings and any other necessary accessories to make a complete wiring system.

Word "product" shall mean any item of equipment, material, fixture, apparatus, appliance or accessory installed under this Division.

1.04 REFERENCE STANDARDS

- A. Certain products are described by reference to standard specifications published by organization abbreviated as follows:

AGA	American Gas Association
IEEE	Institute of Electrical & Electronic Engineers
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers.
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing Material
AWS	American Welding Society
AWWA	American Water Work Association
FM	Factory Mutual
IBR	Institute of Boiler & Radiation Manufacturers
IRI	Industrial Risk Insurers
NBFU	National Board of Fire Underwriters
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
SBI	Steel Boiler Institute
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
UL	Underwriters Laboratories, Inc.

- B. The legally adopted editions of the standard by the State of Connecticut at the date of these specifications shall apply.

1.05 DRAWINGS

- A. All drawings are diagrammatic and are intended to provide sufficient information and detail to enable proper execution and completion of the work.

1.06 WORKMANSHIP

- A. Execute all work in a neat and workmanlike manner. The quality of workmanship shall be consistent with that to be expected of experienced journeymen in the area and acceptable to both the Engineer and the authority having jurisdiction.
- B. Furnish the services of an experienced Superintendent, who shall constantly be in charge of the execution of the work.

1.07 ACCESSIBILITY

- A. Install all work with proper facilities for access for inspection, operation, maintenance and repair. Minor changes from the drawings will be permitted in order to accomplish this, but major changes shall not be made without prior written approval from the Engineer.
- B. Where products requiring access are installed behind plaster or gypsum board finishes, furnish access doors for installation by the General Contractor.
- C. Group as many items as practicable together to minimize the number of access doors required. Direct and be responsible for the correct location of all access doors required for the work of the Division.
- D. Access doors shall be a minimum of 12" long by 12" high, and flush type, ready to install. They shall be constructed of 14 gauge or heavier steel with radial safety corners and furnished with zinc chromate coating. All doors shall have heavy duty concealed hinges of the pinless type to insure no rusting or wearing. All doors shall have sturdy screwdriver locks. In public areas, doors shall have cylinder locks. Where clearances do not allow doors to swing open, they shall have double butt hinge or snap-on clips for quick removal. Doors shall be manufactured as per Architect Specifications. Door shall be compatible with and have appropriate rating to match materials where installed.

1.08 LUBRICATION

- A. Prior to testing and operation, lubricate all equipment with moving parts in accordance with manufacturer's recommendations. Any such equipment discovered to have been operated before lubrication shall be subject to rejection and replacement without extra compensation.
- B. On all equipment requiring lubrication, provide grease gun fittings or sight gravity-feed oilers equipped with shut-off and needle valve adjustment. All fittings and oilers shall be fully accessible for lubrication and shall not require special adapters.
- C. Each lubrication point on all equipment provided under this Division shall be permanently identified with type of lubricant to be used and the intervals between lubrication.

1.09 QUIET OPERATION

- A. Install all products such that vibration from them under any load is not transmitted to the building. Noise from any product shall be controlled such that its operation under any load condition will be inaudible during normal use of any occupied space.
- B. Notwithstanding any liability on the part of the product supplier, the subcontractor will be held responsible for eliminating in an approved manner any unacceptable vibration or noise condition without extra compensation.

1.10 PAINTING

- A. This subcontractor shall touch up factory coat where marred.
- B. Paint finish on all materials shall be manufacturer's standard unless otherwise specified.

1.11 WATERPROOFING

- A. Where any work penetrates exterior walls, roofs, basement slabs, or slabs on grade, such penetrations shall be made permanently watertight. Provide all sleeves, caulking, and flashing as necessary.

1.12 BASES AND SUPPORTS

- A. Provide all concrete equipment bases described below unless otherwise indicated. Provide all bases, supports and structures not part of the building structure. These shall be of the required size, type and strength for the proper installation of mechanical equipment.
- B. Unless otherwise specified, all mechanical equipment shall be firmly secured by corrosion-proofed metal stock to the building structure. Unless so approved, equipment shall not be supported by roof deck.
- C. All equipment, bases, supports and structures shall be adequately anchored to prevent shifting of position under operating conditions.
- D. Provide concrete bases at least 4" high for equipment as required unless otherwise indicated. Bases shall extend approximately six inches beyond equipment base in all directions. Top edge shall be chamfered. To secure equipment, provide anchor bolts set in pipe sleeves. The latter shall be two sizes larger than the anchor bolts. After anchor bolts are aligned with equipment base, fill sleeves with non-shrink grout and allow to set. Alternatively, approved type expansion bolts can be used for securing equipment.

1.13 CLEANING OF WORK

- A. Thoroughly clean all work of all foreign matter inside and out before placing in operation.
- B. If any part of a system becomes obstructed or impaired by any foreign matter after being placed in operation, disconnect the system, remove the obstruction or impairment and re-connect it as necessary. Repair or replace without extra compensation any work damaged in the course

1.14 SLEEVES, INSERTS AND ANCHOR BOLTS

- A. Locate and maintain properly in position all sleeves, inserts, and anchor bolts as required. In the event of failure to do so, perform any necessary cutting and patching of finished work without extra compensation.
- B. All piping passing through floors, walls or ceilings shall be provided with sleeves having an internal diameter 1" larger than the outside diameter of the piping, tubing or raceway.
- C. Sleeves in floors shall be standard weight steel pipe and extend 1-1/2" above floor except in finished areas when sleeves shall be flush with finish floor. Sleeves shall be caulked with backer rod stock and one part polysulfide caulk. Wall and ceiling sleeves shall be packed with mineral wool. All penetrations thru rated walls and floors shall be sealed with U.L. listed system for the rating of the assembly and be equal to Pecora AC-20 FTR.
- D. Where ductwork passes through walls, floors, ceilings and partitions, it shall be covered with 1" wool felt to prevent the ductwork from being in direct contact with the building construction. The joints between the floor and ducts in all mechanical rooms located above finished rooms shall be caulked to make them watertight.
- E. Inserts shall be of the individual or of the strip type and of pressed steel construction with accommodation for removable nuts and threaded rods up to 3/4" diameter. Individual inserts shall have an opening at the top to allow reinforcing rods up to 1/2" diameter to be passed through the insert body as made by Fee & Mason Mfg. Co., Fig. 178 or approved equal. Strip inserts shall have attached rods with hooked ends to allow fastening to reinforcing rods as made by Fee & Mason Mfg. Co., Fig. 190 or approved equal.

1.15 ELECTRICAL WORK

- A. The Electrical Subcontractor shall provide power wiring for all electrical switches, motor starters and motors.
- B. Electrical devices and equipment to be installed and wired by Electrical Subcontractor, shall be delivered to him at the proper time by the appropriate

Subcontractor complete with detailed instructions for installation and wiring connections.

- C. Where equipment includes a number of interconnected electrical devices mounted in a single enclosure or on a common base, the devices shall be wired as a unit and be complete with terminal boxes and ample leads ready for wiring connections.

1.16 ELECTRICAL MOTORS

- A. All electric motors shall be UL listed and meet NEMA Standards MG 1-25, 26 and 27.
- B. All motors shall be suitable for the application and for the environment in which installed. Nameplate data shall include maker's name, serial number, horsepower, speed, full load current, and ambient temperature characteristics.
- C. Motors 1/2 HP and larger shall have ball or roller bearings with pressure grease lubrication.
- D. Motors 1/2 HP and smaller shall be 115V, single phase 60 Hz capacitor start or split phase start. Motors 3/4 HP and large shall be suitable for 3 phase operation unless otherwise indicated. Three phase voltage will depend upon the utilization voltage available. Refer to drawings for details.
- E. Direct connected motors shall be furnished without an adjustable base. All integral horsepower motors driving equipment by belt or chain shall have adjustable sliding bases. Fractional horsepower motors shall have slotted mounting holes.
- F. All motor leads shall be permanently identified and furnished with connectors. Unmounted motors shall be set in place by the subcontractor who furnishes the motor.
- G. Motors used for air handlers, fans and pumps shall be high efficiency type with nominal efficiency standard on the motor nameplate per NEMA standard MGI-12.54 and conform to the following schedule:

1.17 ELECTRIC MOTOR STARTERS AND DISCONNECT SWITCHES

- A. General:
 - 1. All starters shall be manufactured and rated in accordance with NEMA Standards for the motors they control. Individually mounted starters shall be housed in enclosures suitable for the environment in which they are installed. Where indicated, starters shall be suitable for installation in existing motor control centers. Where a motor is required to have a

particular starting characteristic, the starter shall be of the type approved by the Engineer and recommended by the motor or equipment manufacturer. Submit shop drawings to Engineer for review listing type, enclosure, voltage, equipment served and accessories.

B. Three Phase Motor Starters:

1. Starters for 3 phase motors shall be furnished by the subcontractor who furnishes the motor, and shall be installed and wired by the Electrical Subcontractor, except that automatic temperature control wiring associated with the starters shall be provided by the Subcontractor responsible for that particular work. Three phase starters shall be combination with starter breaker disconnect unless otherwise indicated and, magnetic type complete with thermal overload protection for each winding, 120 volt operating coil, control transformer and a minimum of one normally open and one normally closed auxiliary contact. Additional auxiliary contacts shall be provided as necessary for interlocking or indicating purposes. Manually operated starters shall have start-stop buttons and automatically operated starters shall have hand-off-auto selector switch mounted in their enclosure cover. Motor running pilot light(s) shall be provided in the starter enclosure cover.

C. Single Phase Starters:

1. Where single phase motors are controlled manually, furnished to the Electrical Subcontractor shall provide toggle operated starters.
2. Where single speed, single phase motors are controlled by remote thermostat, pressure electric switch, interlocking auxiliary contact on another starter, or any other automatic switching device, furnish to the Electrical Subcontractor combination manual starter/hand-off-auto switches with thermal overloads which shall be installed and wired by him except that automatic temperature control wiring related to the starter shall be provided by the Subcontractor responsible for that particular work.
3. Where two speed single phase motors are controlled by an automatic switching device, suitable two speed single phase magnetic starters shall be furnished by the Subcontractor who furnishes the motors and shall be installed and wired by the Electrical Subcontractor.
4. Single phase starters which initiate an interlocking action with other starters, shall be of the magnetic type, similar to those specified for three phase application and complete with the required number of auxiliary contacts for interlocking purposes. They shall be furnished by the Subcontractors who furnishes the motor and installed and wired by the

5. Electrical Subcontractor except that automatic temperature control wiring related to the starter shall be provided by the Subcontractor responsible for that particular work.

D. Manufacturers:

1. Starters shall be manufactured by one of the following manufacturers.

Allen Bradley
Arrow Hart
Cutler Hammer
General Electric
Square D
Westinghouse

2. Unless otherwise approved by the Engineer, all starters furnished by each Subcontractor shall be by the same manufacturer. Whenever possible, Subcontractors shall cooperate with each other in furnishing all starters by the same manufacturer to facilitate future stocking of spare parts by the Owner.

1.18 TESTING - GENERAL

- A. Perform all required tests in the presence of the Owner, Engineer and representative of the authority having jurisdiction. Provide minimum of (10) working days notice of testing to all parties concerned. Provide all test equipment.
- B. Furnish certification of satisfactory testing, signed by subcontractor's authorized representative, countersigned where appropriate by the authority having jurisdiction.
- C. All testing and certification shall be complete before any claim for substantial completion will be considered.
- D. Equipment and systems which normally operate during certain seasons of the Year shall be tested during the appropriate season. Tests shall be performed on individual equipment, systems and their controls. Whenever the equipment or system under test is related to or depends upon the operation of other equipment, systems and controls for proper operation, functioning and performance, the latter shall be operated simultaneously with the equipment or system being tested.

1.19 OWNER'S MANUAL

- A. Thirty days prior to claim for substantial completion, submit (3) copies of Owners manual. Manual shall be bound, indexed and titled and contained in a 3" diameter minimum, black, (3) ring loose leaf binder equal to Boorum and

Pease #062-35PL. Divide subject matter with mylar index tabbed separators equal to Boorum and Pease #5312-28C.

- B. Manual shall contain the following:
 - 1. Manufacturers catalog sheets.
 - 2. List of materials used on project.
 - 3. Service call list.
 - 4. Installation instruction which were packaged with equipment.
 - 5. Parts list for items normally replaced under regular maintenance.
 - 6. Guarantees.
 - 7. Wiring diagrams reduced to 8-1/2" x 11" or 11" x 17" folded.
- C. Sufficient information shall be given to enable quick and easy cross-referencing between manual and record drawings.

1.20 MANUFACTURER'S IDENTIFICATION

- A. Manufacturer's nameplate, name or trademarks shall be permanently affixed to all equipment and material furnished under this specification. The nameplate of a Subcontractor or distributor will not be acceptable.

1.21 TAGS, IDENTIFICATION AND INSTRUCTIONS

- A. Every valve, damper, control, switch, motor starter and piece of apparatus shall be tagged, labeled or stenciled. Tags and labels shall be securely fastened by brass chains, screws, or mastic as appropriate. Equipment, controls, panels, etc., shall be numbered according to the equipment schedule shown on the drawing. Tags shall be listed in directories by-number, location and use. Directories shall be mounted under glass in aluminum self closing frames manufactured by Seton Nameplate Company, #AIIG or approved equal. Tags shall be manufactured by Seton Nameplate Company or approved equal and be of the following types.
 - 1. Valve tags shall be style #2961 plastic, color coded in accordance with ANSI 13.1-1981 and the Owner's standards.
 - 2. Manual starters for small motors shall be provided with 1" x 3" engraved Seton-ply nameplates suitable for attaching directly to standard switch plates.

3. All piping shall be identified with Seton "Setmark" pipe markers clearly indicating the service and direction of flow. Markers shall be located every 30 ft. in straight runs of pipe and shall be so arranged that piping systems can be readily identified. Pipe markers shall comply with ANSI A13.1 for lettering size, length of color field, colors and viewing angles of identification devices.
 4. Equipment such as air handlers, pumps, etc. shall be neatly stenciled with letters not less than 2" high. In lieu of stenciling, Subcontractor may use Seton self sticking numbers and letters. Any equipment too small to receive such stenciling shall be provided with name tags as above.
- B. "DYMO" type labels will not be accepted for any permanent identification.

1.22 INSTRUCTIONS

- A. Furnish all necessary labor and services for a minimum net period of (2) - 8 hour working days to instruct the Owners staff in the operation of all systems and equipment provided under this Division. Provide additional time for Owner training as described in associated sections. Include where appropriate the services of manufacturers technical personnel to instruct the Owner in the use of special systems. Instruction shall include sufficient demonstration of equipment and systems, and explanation of technical manuals furnished, instruction in the use of any special tools or instruments, etc., so that the Owner will be fully conversant with operating and maintenance procedures.

1.23 BUILDING CONSTRUCTION

- A. The warehouse building is being constructed with a two inch thick insulated metal panel walls and roof. Mechanical contractor shall review architectural plans and specifications for details of the building construction.
- B. All penetration in exterior wall for vents and louvers shall be cut by the mechanical contractor
- C. Round penetrations shall be covered on interior and exterior by escutcheons or ring angles. Escutcheon and ring angle shall be finished white to match wall. Escutcheon and ring angle shall be fastened to metal panel with TEK screws. All voids shall be filled with expanded foam and covered completely by escutcheons or ring angles, perimeter shall be caulked.
- D. Square or rectangular penetrations for louvers shall wrapped with a bent metal channel to protect wall insulation. Bent metal channel shall be finished white. Louvers shall be screwed to the insulated metal panel wall. Exterior perimeter shall be caulked.

END OF SECTION 23 0100

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- B. Related Sections:
 - 1. General requirements for testing agencies are specified in the Division-1 Section Quality Control Services.
 - 2. Other Division-23 Sections specify balancing devices and their installation, and materials and installations of mechanical systems.
 - 3. Other Division 23 Section "Sequence of Operation for HVAC Controls" for sequence of operation.

1.02 SUMMARY

- A. This Section specifies the requirements and procedures for testing, adjusting, and balancing. Requirements include measurement and establishment of the air and water quantities of the mechanical systems as required to meet design specifications, and recording and reporting the results.
- B. Test, adjust, and balance the following mechanical systems:
 - Supply air systems;
 - Exhaust air systems;
 - Verify temperature control system operation.

The Equipment to be tested, adjusted and balanced is:

 - (1) Exhaust Fan and grilles
 - (2) Supply air diffusers
- C. Balancing Contractor to verify actual required air flows prior to balancing and coordinate with mechanical and ATC Contractors to provide set-up and adjustment of all hydronic and air systems including variable drives, terminal devices and flow metering.
- D. This Section does not include:
 - 1. Testing pressure vessels for compliance with safety codes;
 - 2. Specifications for materials for patching mechanical systems;

3. Specifications for materials and installation of adjusting and balancing devices. If devices must be added to achieve proper adjusting and balancing, refer to the respective system sections for materials and installation requirements.
4. Requirements and procedures for piping and ductwork systems leakage tests.

1.03 DEFINITIONS

- A. Systems testing, adjusting, and balancing is the process of checking and adjusting all the building environmental systems to produce the design objectives. It includes:
 - the balance of air distribution;
 - electrical measurement;
 - verification of performance of all equipment and automatic controls;
- B. Test: To determine quantitative performance of equipment.
- C. Adjust: To regulate the specified fluid flow rate and air patterns at the terminal equipment (e.g., reduce fan speed, throttling).
- D. Balance: To proportion flows within the distribution system (submains, branches, and terminals) according to specified design quantities.
- E. Procedure: Standardized approach and execution of sequence of work operations to yield reproducible results.
- F. Report forms: Test data sheets arranged for collecting test data in logical order for submission and review. These data should also form the permanent record to be used as the basis for required future testing, adjusting, and balancing.
- G. Terminal: The point where the controlled fluid enters or leaves the distribution system. These are supply inlets on water terminals, supply outlets on air terminals, return outlets on water terminals, and exhaust or return inlets on air terminals such as registers, grilles, diffusers, louvers, and hoods.
- H. Main: Duct containing the system's major or entire flow.
- I. Submain: Duct or pipe containing part of the systems' capacity and serving two or more branch mains.
- J. Branch main: Duct or pipe serving two or more terminals.
- K. Branch: Duct or pipe serving a single terminal.

1.04 SUBMITTALS

- A. Agency Data:
 - 1. Submit proof that the proposed testing, adjusting, and balancing agency meets the qualifications specified below.
- B. Engineer and Technicians Data:
 - 1. Submit proof that the Test and Balance Engineer assigned to supervise the procedures, and the technicians proposed to perform the procedures meet the qualifications specified below.
- C. Procedures and Agenda: Submit a synopsis of the testing, adjusting, and balancing procedures and agenda proposed to be used for this project.
- D. Maintenance Data: Submit maintenance and operating data that include how to test, adjust, and balance the building systems. Include this information in maintenance data specified in Division 1 and Section 15010.
- E. Sample Forms: Submit sample forms, if other than those standard forms prepared by the AABC are proposed.
- F. Certified Reports: Submit testing, adjusting, and balancing reports bearing the seal and signature of the Test and Balance Engineer. The reports shall be certified proof that the systems have been tested, adjusted, and balanced in accordance with the referenced standards; are an accurate representation of how the systems have been installed; are a true representation of how the systems are operating at the completion of the testing, adjusting, and balancing procedures; and are an accurate record of all final quantities measured, to establish normal operating values of the systems. Follow the procedures and format specified below:
 - 1. Draft reports: Upon completion of testing, adjusting, and balancing procedures, prepare draft reports on the approved forms. Draft reports may be hand written, but must be complete, factual, accurate, and legible. Organize and format draft reports in the same manner specified for the final reports. Submit 2 complete sets of draft reports. Only 1 complete set of draft reports will be returned.
 - 2. Final Report: Upon verification and approval of draft reports, prepare final reports, type written, and organized and formatted as specified below. Submit 2 complete sets of final reports.
 - 3. Report Format: Report forms shall be those standard forms prepared by the referenced standard for each respective item and system to be tested, adjusted, and balanced. Bind report forms complete with

schematic systems diagrams and other data in reinforced, vinyl, three-ring binders. Provide binding edge labels with the project identification and a title descriptive of the contents. Divide the contents of the binder into the below listed divisions, separated by divider tabs:

General Information and Summary
Air Systems
Temperature Control Systems

4. Report Contents: Provide the following minimum information, forms and data:
 - a. General Information and Summary: Inside cover sheet to identify testing, adjusting, and balancing agency, Contractor, Owner, Architect, Engineer, and Project. Include addresses, and contact names and telephone numbers. Also include a certification sheet containing the seal and name address, telephone number, and signature of the Certified Test and Balance Engineer. Include in this division a listing of the instrumentations used for the procedures along with the proof of calibration.
 - b. The remainder of the report shall contain the appropriate forms containing as a minimum, the information indicated on the standard report forms prepared by the AABC and NEBB, for each respective item and system. Prepare a schematic diagram for each item of equipment and system to accompany each respective report form.
- G. Calibration Reports: Submit proof that all required instrumentation has been calibrated to tolerances specified in the referenced standards, within a period of six months prior to starting the project.

1.05 QUALITY ASSURANCE

- A. Agency Qualifications:
 1. Employ the services of an independent testing, adjusting, and balancing agency meeting the qualifications specified below, to be the single source of responsibility to test, adjust, and balance the building mechanical systems identified above, to produce the design objectives. Services shall include checking installations for conformity to design, measurement and establishment of the fluid quantities of the mechanical systems as required to meet design specifications, and recording and reporting the results.
 2. An independent testing, adjusting, and balancing agency certified by Associated Air Balance Council (AABC) in those testing and balancing disciplines required for this project, and having at least one Professional

Engineer registered in the State in which the services are to be performed, certified by AABC as a Test and Balance Engineer.

- B. Codes and Standards:
 - 1. AABC: "National Standards For Total System Balance".
 - 2. ASHRAE: ASHRAE Handbook, Systems, Testing, Adjusting, and Balancing.
- C. Pre-Balancing Conference: Prior to beginning of the testing, adjusting, and balancing procedures, schedule and conduct a conference with the Engineer and representatives of installers of the mechanical systems. The objective of the conference is final coordination and verification of system operation and readiness for testing, adjusting, and balancing.

1.06 PROJECT CONDITIONS

- A. Systems Operation: Systems shall be fully operational prior to beginning procedures. Due to the nature of the projects, supplemental duct openings may be required to operate the air equipment until the building is fully occupied.

1.07 SEQUENCING AND SCHEDULING

- A. Test, adjust, and balance the air systems.
- B. Test, adjust and balance air conditioning systems during summer season and heating systems during winter season, including at least a period of operation at outside conditions within 5 deg F wet bulb temperature of maximum summer design condition, and within 10 deg F dry bulb temperature of minimum winter design condition. Take final temperature readings during seasonal operation.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 PRELIMINARY PROCEDURES FOR AIR SYSTEM BALANCING

- A. Before operating the system, perform these steps:
 - 1. Obtain new design drawings and specifications and become thoroughly acquainted with the design intent.
 - 2. Obtain copies of approved shop drawings of all air handling equipment, outlets (supply, return, and exhaust), and temperature control diagrams.

3. Compare design to installed equipment and field installations.
4. Walk the system from the system air handling equipment to terminal units to determine variations of installation from design.
5. Check filters for cleanliness.
6. Check dampers (both volume and fire) for correct and locked position, and temperature control for completeness of installation before starting fans.
7. Prepare report test sheets for both fans and outlets. Obtain manufacturer's outlet factors and recommended procedures for testing. Prepare a summation of required outlet volumes to permit a crosscheck with required fan volumes.
8. Determine best locations in main and branch ductwork for most accurate duct traverses.
9. Place outlet dampers in the full open position.
10. Prepare schematic diagrams of system "as-built" ductwork and piping layouts to facilitate reporting.
11. Lubricate all motors and bearings
12. Check fan belt tension
13. Check fan rotation

3.02 MEASUREMENTS

- A. Provide all required instrumentation to obtain proper measurements, calibrated to the tolerances specified in the referenced standards. Instruments shall be properly maintained and protected against damage.
- B. Provide instruments meeting the specifications of the referenced standards.
- C. Use only those instruments which have the maximum field measuring accuracy and are best suited to the function being measured.
- D. Apply instrument as recommended by the manufacturer.
- E. Use instruments with minimum scale and maximum subdivisions and with scale ranges proper for the value being measured.

- F. When averaging values, take a sufficient quantity of readings which will result in a repeatability error of less than 5 percent. When measuring a single point, repeat readings until 2 consecutive identical values are obtained.
- G. Take all reading with the eye at the level of the indicated value to prevent parallax.
- H. Use pulsation dampeners where necessary to eliminate error involved in estimating average of rapidly fluctuation readings.
- I. Take measurements in the system where best suited to the task.

3.03 PERFORMING TESTING, ADJUSTING, AND BALANCING

- A. Perform testing and balancing procedures on each system identified, in accordance with the detailed procedures outlined in the referenced standards.
- B. Cut insulation, ductwork, and piping for installation of test probes to the minimum extent necessary to allow adequate performance of procedures.
- C. Patch insulation, ductwork, and housings, using materials identical to those removed.
- D. Seal ducts and piping, and test for and repair leaks.
- E. Seal insulation to re-establish integrity of the vapor barrier.
- F. Mark equipment settings, including damper control positions, valve indicators, and similar controls and devices, to show final settings. Mark with paint or other suitable, permanent identification materials.
- G. Retest, adjust, and balance systems subsequent to significant system modifications, and resubmit test results.

3.04 RECORD AND REPORT DATA

- A. Record all data obtained during testing, adjusting, and balancing in accordance with, and on the forms recommended by the referenced standards, and as approved on the sample report forms.
- B. Prepare report of recommendations for correcting unsatisfactory mechanical performances when system cannot be successfully balanced.

END OF SECTION 23 05 93

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

Drawings and general provisions of Contract, including Bidding Requirements, General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION

Thermal insulation for ductwork and equipment.

1.03 QUALITY ASSURANCE

- A. Standards
 - 1. N.F.P.A. 255.
 - 2. U.L. 723.
 - 3. 2009 International Energy Conservation Code

1.04 SUBMITTALS

Submit manufacturer's specification sheets on all insulation, insulation fittings, jackets, sealants and adhesives, submit samples as requested.

PART 2 - PRODUCTS

2.01 DUCTWORK INSULATION

- A. Rigid Fiberglass Ductwork Insulation with FSK vapor barrier jacket: ASTM C 612, Class 1.
- B. Flexible Fiberglass Ductwork Insulation with FSK vapor barrier jacket: ASTM C 553, Type I, Class B-4, 2.0 lb./Ft³. Installed R-Value of R-6.
- C. Cellular Glass Ductwork Insulation: ASTM C 552, Type I.
- D. Jackets for Exterior Ductwork Insulation Venturclad proof jacket.
- E. Ductwork Insulation Accessories: Provide staples, bands, wires, tape, anchors, corner angles and similar accessories as recommended by insulation manufacturer for applications indicated.
- F. Ductwork Insulation Compounds: Provide cements, adhesives, coatings, sealers, protective finishes and similar compounds as recommended by insulation manufacturer for applications indicated.

2.02 EQUIPMENT INSULATION

- A. Rigid Fiberglass Equipment Insulation: ASTM C 612, Class 2.
- B. Flexible Fiberglass Equipment Insulation: ASTM C 553, Type I, Class B-4.
- C. Calcium Silicate Equipment Insulation: ASTM C 533, Type I, Block.
- D. Cellular Glass Equipment Insulation: ASTM C 552, Type I.
- E. Flexible Unicellular Equipment Insulation: ASTM C 534, Type II.
- F. Jacketing Material for Equipment Insulation: Provide pre-sized glass cloth jacketing material, not less than 7.8 ounces per square yard, or metal jacket at Installer's option except as otherwise indicated.

- G. Equipment Insulation Compounds: Provide adhesives, cements, sealers, mastics and protective finishes as recommended by insulation manufacturer for applications indicated.

- H. Equipment Insulation Accessories: Provide staples, bands, wire, wire netting, tape, corner angles, anchors and stud pins as recommended by insulation manufacturer for applications indicated.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine areas and conditions under which mechanical insulation is to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 DUCTWORK SYSTEM INSULATION

- A. Insulation Omitted: Do not insulate lined ductwork.

- B. Ductwork :
Application Requirements: Insulate the following ductwork:

Supply ductwork
Exhaust duct within ten feet of wall louver or roof fan

- C. Insulate each ductwork system specified above with one of the following types and thicknesses of insulation:

Ductwork above Ceiling: Flexible Fiberglass with FSK jacket, 2" thick, installed R-Value of 6.0.

3.03 INSTALLATION OF DUCTWORK INSULATION

- A. General: Install insulation products in accordance with manufacturer's written instructions, and in accordance with recognized industry practices to ensure that insulation serves its intended purpose.

- B. Install insulation materials with smooth and even surfaces.
- C. Clean and dry ductwork prior to insulating. Butt insulation joints firmly together to ensure complete and tight fit over surfaces to be covered.
- D. Maintain integrity of vapor-barrier on ductwork insulation, and protect it to prevent puncture and other damage.
- E. Extend ductwork insulation without interruption through walls, floors and similar ductwork penetrations, except where otherwise indicated.
- F. Lined Ductwork: Except as otherwise indicated, omit insulation on ductwork where internal insulation or sound absorbing linings have been installed.
- G. Ductwork Exposed to Weather: Protect outdoor insulation from weather by installing outdoor protective aluminum jacketing.
- H. Corner Angles: Install corner angles on external corners of insulation on ductwork in exterior or exposed finished spaces before covering with jacketing.

3.04 PROTECTION AND REPLACEMENT

- A. Replace damaged insulation which cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.
- B. Protection: Insulation Installer shall advise Contractor of required protection for insulation work during remainder of construction period, to avoid damage and deterioration.

END OF SECTION 23 07 13

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- B. Division-23 Sections apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of metal ductwork is indicated on drawings and in schedules, and by requirements of this section.

1.03 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of metal ductwork products of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Codes and Standards:
 - 1. 2012 International Mechanical Code with Connecticut Supplement
 - 2. SMACNA Standards: Comply with SMACNA's "HVAC Duct Construction Standards, Metal and Flexible" for fabrication and installation of metal ductwork.
 - 3. ASHRAE Standards: Comply with ASHRAE Handbook, Equipment Volume, Chapter 1 "Duct Construction", for fabrication and installation of metal ductwork.
 - 4. NFPA Compliance: Comply with NFPA 90A "Standard for the Installation of Air Conditioning and Ventilating Systems" and NFPA 90B "Standard for the Installation of Warm Air Heating and Air Conditioning Systems" and NFPA 96 "Ventilation Control and Fire Protection of Commercial Cooking Operations".
- C. Field Reference Manual: Have available for reference at project field office, copy of SMACNA "HVAC Duct Construction Standards, Metal and Flexible".

1.04 SUBMITTALS

- A. General: Submit sheetmetal shop drawings at scale indicated for review before fabrication. Any shop fabricated ductwork delivered to site without engineers review may be rejected.

- B. Product Data: Submit manufacturer's technical product data and installation instructions for metal ductwork materials and products. Submit sheetmetal shop standards.
- C. Shop Drawings: Submit 1/4" scaled layout drawings of metal ductwork and fittings including, but not limited to, duct sizes, locations, elevations, and slopes of horizontal runs, wall and floor penetrations, and connections. Show interface and spatial relationship between ductwork and proximate equipment. Show modifications of indicated requirements, made to conform to local shop practice, and how those modifications ensure that free area, materials, and rigidity are not reduced. Show sections through building and ductwork, including other trade components, in areas requiring close coordination and clarity.
- E. Maintenance Data: Submit maintenance data and parts lists for metal ductwork materials and products. Include this data, product data, shop drawings, and record drawings in maintenance manual; in accordance with requirements of Division 1.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protection: Protect shop-fabricated and factory-fabricated ductwork, accessories and purchased products from damage during shipping, storage and handling. Prevent end damage and prevent dirt and moisture from entering ducts and fittings.
- B. Storage: Where possible, store ductwork inside and protect from weather. Where necessary to store outside, store above grade and enclose with waterproof wrapping.

PART 2 - PRODUCTS

2.01 DUCTWORK MATERIALS

- A. Exposed Ductwork Materials: Where ductwork is indicated to be exposed to view in occupied spaces, provide materials which are free from visual imperfections including pitting, seam marks, roller marks, stains and discolorations, and other imperfections, including those which would impair painting.
- B. Sheet Metal: Except as otherwise indicated, fabricate ductwork from galvanized sheet steel complying with ASTM A 527, lockforming quality; with G 90 zinc coating in accordance with ASTM A 525; and mill phosphatized for exposed locations.

2.02 MISCELLANEOUS DUCTWORK MATERIALS

- A. General: Provide miscellaneous materials and products of types and sizes indicated and, where not otherwise indicated, provide type and size required to comply with ductwork system requirements including proper connection of ductwork and equipment.
- B. Fittings: Use 45 deg. laterals and 45 deg. elbows for branch takeoff connections. Where 90 deg. branches are indicated, provide conical type tees.
- C. Duct Sealant: Non-hardening, non-migrating mastic or liquid elastic sealant, type applicable for fabrication/ installation detail, as compounded and recommended by manufacturer specifically for sealing joints and seams in ductwork.
- D. Duct Cement: Non-hardening migrating mastic or liquid neoprene based cement, type applicable for fabrication/ installation detail, as compounded and recommended by manufacturer specifically for cementing fitting components, or longitudinal seams in ductwork.
- E. Ductwork Support Materials: Except as otherwise indicated, provide hot-dipped galvanized steel fasteners, anchors, rods, straps, trim and angles for support of ductwork.
- F. Flexible Ducts: Spiral round spring steel with flameproof vinyl sheathing complying with UL 181. Provide with 1" thick continuous flexible fiberglass sheath with vinyl vapor barrier jacket.

2.03 FABRICATION

- A. Shop fabricate ductwork in 4, 8, 10 or 12-ft lengths, unless otherwise indicated or required to complete runs. Preassemble work in shop to greatest extent possible, so as to minimize field assembly of systems. Disassemble systems only to extent necessary for shipping and handling. Match-mark sections for reassembly and coordinated installation.
- B. Shop fabricate ductwork of gages and reinforcement complying with SMACNA "HVAC Duct Construction Standards". Ductwork shall be constructed to 1" pressure class standards.
- C. Fabricate duct fittings to match adjoining ducts, and to comply with duct requirements as applicable to fittings. Except as otherwise indicated, fabricate elbows with center-line radius equal to 1-1/2 times the associated duct width; and fabricate to include turning vanes in elbows where shorter radius is necessary. Limit angular tapers to 30 deg. for contracting tapers and 20 deg. for expanding tapers.

- D. Fabricate ductwork with accessories installed during fabrication to the greatest extent possible. Refer to Division-23 section "Ductwork Accessories" for accessory requirements. Seal all raw edges.

2.04 ROUND DUCTS AND FITTINGS

- A. Single wall prefabricated galvanized ductwork of Class G-90 galvanized steel and fittings. Provide certified tests by Manufacturer show that rigidity and performance is equivalent to SMACNA and/or ASHRAE standard gage ductwork, provide ducts and fittings as follows:
 - 1. Ducts: Construct of Manufacturer's standard gage, with spiral lock seam and intermediate standing rib.
 - 2. Fittings: Construct by fabricating with spot welding and bonding with neoprene-base cement in lieu of continuous weld seams for supply ductwork.
- B. Manufacturers: Subject to compliance with requirements, provide factory-fabricated ductwork of one of the following:
 - Semco Mfg., Inc.
 - Spiral Mfg
 - United Sheet Metal Div., United McGill Corp.

PART 3 - EXECUTION

3.01 INSPECTION

- A. General: Examine areas and conditions under which metal ductwork is to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 INSTALLATION OF METAL DUCTWORK

- A. General: Assemble and install ductwork in accordance with recognized industry practices which will achieve air-tight and noiseless (no objectionable noise) systems, capable of performing each indicated service. Install each run with minimum number of joints. Align ductwork accurately at connections, within 1/8" misalignment tolerance and with internal surfaces smooth. Support ducts rigidly with suitable ties, braces, hangers and anchors of type which will hold ducts true-to-shape and to prevent buckling. Support vertical ducts at every floor.
- B. Field Fabrication: Complete fabrication of work at project as necessary to match shop-fabricated work and accommodate installation requirements.
- C. Routing: Locate ductwork runs, except as otherwise indicated, vertically and horizontally and avoid diagonal runs wherever possible. Locate runs as

indicated by diagrams, details and notations or, if not otherwise indicated, run ductwork in shortest route which does not obstruct useable space or block access for servicing building and its equipment. Hold ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building. Limit clearance to 1/2" where furring is shown for enclosure or concealment of ducts, but allow for insulation thickness, if any. Where possible, locate insulated ductwork for 1" clearance outside of insulation. Wherever possible in finished and occupied spaces, conceal ductwork from view, by locating in mechanical shafts, hollow wall construction or above ceilings. Coordinate layout with suspended ceiling and lighting layouts, pipings and similar finished work.

- D. Electrical Equipment Spaces: Do not route ductwork through transformer vaults and their electrical equipment spaces and enclosures.
- E. Penetrations: Where ducts pass through interior partitions and exterior walls, and are exposed to view, conceal space between construction opening and duct or duct insulation with sheet metal flanges of same gage as duct. Overlap opening on 4 sides by at least 1-1/2". Fasten to duct and substrate.
- F. Coordination: Coordinate duct installations with installation of accessories, dampers, coil frames, equipment, controls and other associated work of ductwork system.
- G. Installation: Install metal ductwork in accordance with SMACNA HVAC Duct Construction Standards.

3.03 INSTALLATION OF FLEXIBLE DUCT

- A. Maximum Length: For any duct run using flexible ductwork do not exceed 8'-0" extended length.
- B. Installation: Install in accordance with Section III of SMACNA'S "HVAC Duct Construction Standards, Metal and Flexible".

3.04 EQUIPMENT CONNECTIONS

- A. General: Connect metal ductwork to equipment as indicated, provide flexible connection for each ductwork connection to equipment mounted on vibration isolators, and/or equipment containing rotating machinery. Provide access doors as indicated.

3.05 ADJUSTING AND CLEANING

- A. Clean ductwork internally, unit by unit as it is installed, of dust and debris. Clean external surfaces of foreign substances which might cause corrosive

deterioration of metal or, where ductwork is to be painted, might interfere with painting or cause paint deterioration.

- B. Temporary Closure: At ends of ducts which are not connected to equipment or air distribution devices at time of ductwork installation, provide temporary closure of polyethylene film or other covering which will prevent entrance of dust and debris until time connections are to be completed.
- C. Balancing: Refer to Division-23 section "Testing, Adjusting, and Balancing" for air distribution balancing of metal ductwork; not work of this section. Seal any leaks in ductwork that become apparent in balancing process.

END OF SECTION 23 31 13

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of ductwork accessories work is indicated on drawings and in schedules, and by requirements of this section.
- B. Types of ductwork accessories required for project include the following:
 - Turning vanes.
 - Duct hardware.
 - Duct access doors.
 - Flexible connections.
 - Fire Dampers
- C. Refer to other Division-23 sections for testing, adjusting, and balancing of ductwork accessories; not work of this section.

1.03 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of ductwork accessories, of types and sizes required, whose products have been in satisfactory use in similar service for not less than 3 years.
- B. Codes and Standards:
 - 1. SMACNA Compliance: Comply with applicable portions of SMACNA "HVAC Duct Construction Standards, Metal and Flexible".
 - 2. Industry Standards: Comply with ASHRAE recommendations pertaining to construction of ductwork accessories, except as otherwise indicated.
 - 3. UL Compliance: Construct, test, and label fire dampers in accordance with UL Standard 555 "Fire Dampers and Ceiling Dampers".
 - 4. UL Compliance: Construct, test, and label smoke dampers in accordance with UL Standard 555S
 - 5. NFPA Compliance: Comply with applicable provisions of NFPA 90A "Air Conditioning and Ventilating Systems", pertaining to installation of ductwork accessories.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data for each type of ductwork accessory, including dimensions, capacities, and materials of construction; and installation instructions.
- B. Shop Drawings: Submit manufacturer's assembly-type shop drawings for each type of ductwork accessory showing interfacing requirements with ductwork, method of fastening or support, and methods of assembly of components.
- C. Maintenance Data: Submit manufacturer's maintenance data including parts lists for each type of duct accessory. Include this data, product data, and shop drawings in maintenance manual; in accordance with requirements of Division 1.

PART 2 - PRODUCTS

2.01 TURNING VANES

- A. Fabricated Turning Vanes: Provide fabricated turning vanes and vane runners, constructed in accordance with SMACNA "HVAC Duct Construction Standards". Fabricate of same material as ductwork.
- B. Manufactured Turning Vanes: Provide turning vanes constructed of 1-1/2" wide curved blades set at 3/4" o.c., supported with bars perpendicular to blades set at 2" o.c., and set into side strips suitable for mounting in ductwork. Use same material as ductwork.
- C. Manufacturer: Subject to compliance with requirements, provide turning vanes of one of the following:

Aero Dyne Co.
Airsan Corp.
Anemostat Products Div.; Dynamics Corp. of America.
Duro Dyne Corp.
Environmental Elements Corp.; Subs. Koppers Co., Inc.
Hart & Cooley Mfg. Co.
Souther, Inc.

2.02 DUCT HARDWARE

- A. General: Provide duct hardware, manufactured by one manufacturer for all items on project, for the following:
 - 1. Test Holes: Provide in ductwork at fan inlet and outlet, and elsewhere as indicated, duct test holes, consisting of slot and cover, for instrument tests.

- 2. Quadrant Locks: Provide for each damper, quadrant lock device on one end of shaft; and end bearing plate on other end for damper lengths over 12". Provide extended quadrant locks and end extended bearing plates for externally insulated ductwork.

- B. Manufacturer: Subject to compliance with requirements, provide duct hardware of one of the following:

Duro Dyne Corp
Ventfabrics, Inc.
Young Regulator Co.

2.03 DUCT ACCESS DOORS

- A. General: Provide duct access doors at every fire damper and control sensing device not accessible through grilles. Refer to Section 15010 "Mechanical General Provisions" for sizes of access doors.

- B. Construction: Construct of same or greater gage as ductwork served, provide insulated doors for insulated ductwork. Provide flush frames for uninsulated ductwork, extended frames for externally insulated duct. Provide one size hinged, other side with one handle-type latch for doors 12" high. 2 handle-type latches for larger doors.

- C. Manufacturer: Subject to compliance with requirements, provide duct access doors of one of the following:

Air Balance Inc.
Duro Dyne Corp.
Register & Grille Mfg. Co., Inc.
Ruskin Mfg. Co.
Ventfabrics, Inc.

2.04 FLEXIBLE CONNECTIONS

- A. General: Provide flexible duct connections wherever ductwork connects to vibration isolated equipment or elsewhere as indicated. Construct flexible connections of neoprene-coated flameproof fabric crimped into duct flanges for attachment to duct and equipment. Make airtight joint. Provide adequate joint flexibility to allow for thermal, axial, transverse, and torsional movement, and also capable of absorbing vibrations of connected equipment.

- B. Manufacturer: Subject to compliance with requirements, provide flexible connections of one of the following:

American/Elgen Co.; Energy Div.
Duro Dyne Corp.
Flexaust (The) Co.

Ventfabrics, Inc.

2.05 FIRE DAMPER

- A. Dynamic curtain type fire dampers.
- B. Ratings:
 - 1. Fire Resistance: ½ hours in accordance with UL 555.
 - 2. Dynamic Closure Rating: Dampers shall be classified for dynamic closure to 2000 fpm and 4 inches w.g. (1 kPa) static pressure.
- C. Construction:
 - 1. Frame: Maximum 5 inch (127 mm) roll formed, galvanized steel channel.
 - 2. Sleeves: Damper shall be supplied as a single assembly with an integral factory sleeve.
 - 3. Retaining Angles: Damper shall be supplied with factory retaining angles sized to provide installation overlap in accordance with manufacturer's UL listing.
 - 4. Blades: Galvanized curtain type.
 - 5. Closure Springs: Type 301 stainless steel, constant force or spring clip type.
 - 6. Temperature Release Device: 165 degrees F fusible link.
 - 7. Mounting: Vertical or Horizontal.
 - 8. Duct Transition Connection, Damper Style: rectangular connection, blades out of air stream, high free area.
 - 9. Finish: Mill galvanized.

Manufacturers:

Ruskin
Greenheck
Air Balance Inc

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine areas and conditions under which ductwork accessories will be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 INSTALLATION OF DUCTWORK ACCESSORIES

- A. Install ductwork accessories in accordance with manufacturer's installation instructions, with applicable portions of details of construction as shown in SMACNA standards, and in accordance with recognized industry practices to ensure that products serve intended function.
- B. Install turning vanes in square or rectangular 90 deg. elbows in supply, return and exhaust air systems, and elsewhere as indicated.
- C. Install access doors to open against system air pressure, with latches operable from outside only.
- D. Coordinate with other work, including ductwork, as necessary to interface installation of ductwork accessories properly with other work.

3.03 FIELD QUALITY CONTROL

- A. Operate installed ductwork accessories to demonstrate compliance with requirements. Test for air leakage while system is operating. Repair or replace faulty accessories, as required to obtain proper operation and leakproof performance.

3.04 ADJUSTING AND CLEANING

- A. Adjusting: Adjust ductwork accessories for proper settings.
 - 1. Label access doors in accordance with Division-23 section "Mechanical General Provisions."
- B. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

3.05 EXTRA STOCK

- A. Furnish extra fusible links to Owner, one link for every 10 installed fire dampers of each temperature range; obtain receipt.

END OF SECTION 23 33 00

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- B. Division-23 "Mechanical General Provisions" sections apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of power ventilator work required by this section is indicated on drawings and schedules, and by requirements of this section.
- B. Types of power ventilators and centrifugal fans specified in this section include the following:

Power ventilators.
- C. Refer to Division-23 section "Testing, Adjusting, and Balancing" for balancing of ventilators not work of this section.
- D. Refer to Division-23 integrated automation sections for control work required in conjunction with power ventilators; not work of this section.
- E. Refer to Division-26 sections for the following work; not work of this section.
 - 1. Power supply wiring from power source to power connection on ventilators. Include starters, disconnects, and required electrical devices, except where specified as furnished, or factory-installed, by manufacturer.
 - 2. Interlock wiring specified as factory-installed is work of this section.
- F. Provide the following electrical work as work of this section, complying with requirements of Division-26 sections:
 - 1. Control wiring between field-installed controls, indicating devices, and ventilators.
 - 2. Control and interlock wiring specified as work of Division-15 for Automatic Temperature Controls is work of that section.

1.03 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of power ventilators, of types and sizes required, whose products have been in satisfactory use in similar service for not less than 3 years.
- B. Codes and Standards:
 - 1. AMCA Compliance: Provide power ventilators which have been tested and rated in accordance with AMCA standards, and bear AMCA Certified Ratings Seal.
 - 2. UL Compliance: Provide power ventilators which are listed by UL and have UL label affixed.
 - 3. UL Compliance: Provide power ventilators which are designed, manufactured, and tested in accordance with UL 705 "Power Ventilators".
 - 4. NEMA Compliance: Provide motors and electrical accessories complying with NEMA standards.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for power and gravity ventilators, including specifications, capacity ratings, dimensions, weights, materials, accessories furnished installation instructions and fan curves.
- B. Shop Drawings: Submit assembly-type shop drawings showing unit dimensions, construction details, methods of assembly of components, and field connection details.
- C. Wiring Diagrams: Submit manufacturer's electrical requirements for power supply wiring to power ventilators. Submit manufacturer's ladder-type wiring diagrams for interlock and control wiring. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed.
- D. Maintenance Data: Submit maintenance data and parts list for each type of power and gravity ventilator, accessory, and control. Include this data, product data, shop drawings, and wiring diagrams in maintenance manual; in accordance with requirements of Division 1.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fans with factory-installed shipping skids and lifting lugs; pack components in factory-fabricated protective containers.

- B. Handle fans carefully to avoid damage to components, enclosures, and finish. Do not install damaged components; replace and return damaged components to centrifugal fan manufacturer.
- C. Store fans in clean dry place and protect from weather and construction traffic.
- D. Comply with manufacturer's rigging and installation instructions for unloading ventilators, and moving them to final location.

PART 2 - PRODUCTS

2.01 GENERAL:

- A. Except as otherwise indicated, provide standard prefabricated power ventilator units of type and size indicated, modified as necessary to comply with requirements, and as required for complete installation.

2.03 CENTRIFUGAL ROOF VENTILATORS

- A. Provide centrifugal roof type, curb mounted, power ventilators of type, size, and capacity as scheduled, and as specified herein.
- B. Type: Centrifugal fan, direct or belt driven as scheduled. Provide aluminum housings. Provide square base to suit roof curb. Provide permanent split-capacitor type motor for direct driven fans; capacitor-start, induction-run type motor for belt driven fans.
- C. Housing Design: Hooded type.
- D. Electrical: Provide factory-wired non-fusible type disconnect switch at motor in fan housing. Provide thermal overload protection in fan motor. Provide conduit chase within unit for electrical connection.
- E. Bird Screens: Provide removable bird screens, 1/2" mesh, 16-ga aluminum or brass wire.
- F. Dampers: Provide motorized louvered dampers in curb bases as scheduled.
- G. Manufacturer: Subject to compliance with requirements, provide centrifugal roof ventilators of one of the following:

Cook Co., Loren.
Greenheck Fan Corp.
Penn Ventilator Co., Inc.

PART 3 - EXECUTION

3.01 INSPECTION

- A. General: Examine areas and conditions under which power ventilators are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION OF POWER VENTILATORS

- A. General: Except as otherwise indicated or specified, install ventilators in accordance with manufacturer's installation instructions and recognized industry practices to insure that ventilators serve their intended function.
- B. Coordinate ventilator work with work of walls, and ceilings, as necessary for proper interfacing.
- C. Ductwork: Refer to Division-23 section "Ductwork". Connect ducts to ventilators in accordance with manufacturer's installation instructions.
- D. Provide access door in duct below ventilator to service damper.
- E. Access: Provide access and service space around and over centrifugal fans as indicated, but in no case less than that recommended by manufacturer.
- F. Isolation: Hang centrifugal fans with vibration isolators, fasten in accordance with manufacturer's installation instructions.
- G. Electrical Wiring: Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical Installer.
- I. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division-26 sections. Verify proper rotation direction of fan wheels. Do not proceed with equipment start-up until wiring installation is acceptable to equipment installer.
- J. Remove shipping bolts and temporary supports within ventilators. Adjust dampers for free operation.

3.03 FIELD QUALITY CONTROL

- A. Testing: After installation of ventilators has been completed, test each ventilator to demonstrate proper operation of units at performance requirements specified. When possible, field correct malfunctioning units, then retest to demonstrate compliance. Replace units which cannot be satisfactorily corrected.

3.04 ADJUSTING AND CLEANING

- A. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

END OF SECTION 23 34 00

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of air outlets and inlets work is indicated by drawings and schedules, and by requirements of this section.
- B. Types of air outlets and inlets required for project include the following:

Ceiling air diffusers and registers
Wall registers and grilles.
- C. Refer to other Division-23 sections for ductwork and duct accessories required in conjunction with air outlets and inlets; not work of this section.
- D. Refer to other Division-23 sections for balancing of air outlets and inlets; not work of this section.

1.03 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of air outlets and inlets of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years.

1.04 CODES AND STANDARDS

- A. ARI Compliance: Test and rate air outlets and inlets in accordance with ARI 650 "Standard for Air Outlets and Inlets".
- B. ASHRAE Compliance: Test and rate air outlets and inlets in accordance with ASHRAE 70 "Method of Testing for Rating the Air Flow Performance of Outlets and Inlets".
- C. ADC Compliance: Test and rate air outlets and inlets in certified laboratories under requirements of ADC 1062 "Certification, Rating and Test Manual".
- D. ADC Seal: Provide air outlets and inlets bearing ADC Certified Rating Seal.
- E. NFPA Compliance: Install air outlets and inlets in accordance with NFPA 90A "Standard for the Installation of Air Conditioning and Ventilating Systems".

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data for air outlets and inlets including the following:
- B. Schedule of air outlets and inlets indicating drawing designation, room location, number furnished, model number, size, CFM and accessories furnished.
- C. Data sheet for each type of air outlet and inlet, and accessory furnished; indicating construction, finish, and mounting details.
- D. Performance data for each type of air outlet and inlet furnished, including aspiration ability, temperature and velocity traverses, throw and drop, and noise criteria ratings. Indicate selections on data.
- E. Samples: Submit 1 sample of each type of finish furnished.
- F. Shop Drawings: Submit manufacturer's assembly-type shop drawing for each type of air outlet and inlet, indicating materials and methods of assembly of components.
- G. Maintenance Data: Submit maintenance data, including cleaning instructions for finishes, and spare parts lists. Include this data, product data, and shop drawings in maintenance manuals; in accordance with requirements of Division 1.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver air outlets and inlets wrapped in factory-fabricated fiber-board type containers. Identify on outside of container type of outlet or inlet and location to be installed. Avoid crushing or bending and prevent dirt and debris from entering and settling in devices.
- B. Store air outlets and inlets in original cartons and protect from weather and construction work traffic. Where possible, store indoors; when necessary to store outdoors, store above grade and enclose with waterproof wrapping.

PART 2 - PRODUCTS

2.01 CEILING AIR DIFFUSERS

- A. General: Except as otherwise indicated, provide manufacturer's standard ceiling air diffusers where shown; of size, shape, capacity and type indicated; constructed of materials and components as indicated, and as required for complete installation.

- B. Performance: Provide ceiling air diffusers that have, as minimum, temperature and velocity traverses, throw and drop, and noise criteria ratings for each size device as listed in manufacturer's current data.
- C. Ceiling Compatibility: Provide diffusers with border styles that are compatible with adjacent ceiling systems, and that are specifically manufactured to fit into ceiling module with accurate fit and adequate support. Refer to general construction drawings and specifications for types of ceiling systems which will contain each type of ceiling air diffuser.
- D. Types: Provide ceiling diffusers of type, capacity, and size as shown on drawing.
- E. Diffuser Dampers:

Opposed Blade (O-B): Adjustable opposed blade damper assembly, key operated from face of diffuser.
- F. Diffuser Finishes:

White Enamel (W-E): Semi-gloss white enamel prime finish.
- G. Manufacturer: Subject to compliance with requirements, provide diffusers of one of the following:

Krueger
Metal-Aire
Price
Titus

2.2 SIDEWALL REGISTERS

- A. General: Except as otherwise indicated, provide manufacturer's standard wall registers and grilles where shown; of size, shape, capacity and type indicated; constructed of materials and components as indicated, and as required for complete installation.
- B. Performance: Provide wall registers that have, as minimum, temperature and velocity traverses, throw and drop, and noise criteria ratings for each size device as listed in manufacturer's current data.
- C. Types: Provide wall registers and grilles of type, capacity, and size as indicated on drawings.
- D. Register and Grille Materials:

Steel Construction (ST): Manufacturer's standard stamped sheet steel frame and adjustable blades.

E. Register Patterns:

Double Deflection: 2-sets of blades with front face set parallel to long dimension and back blades set perpendicular to long dimension with 3/4" spacing with adjustable deflection.

F. Register and Grille Dampers:

Opposed Blade: Adjustable opposed blade damper assembly, key operated from face of register.

G. Register and Grille Finishes:

White Enamel (W-E): Semi-gloss white enamel prime finish.

H. Manufacturer: Subject to compliance with requirements, provide registers and grilles of one of the following:

Krueger
Metal-Aire
Price
Titus

2.3 CEILING RETURNS AND EXHAUST REGISTERS

A. General: Except as otherwise indicated, provide manufacturers standard ceiling returns where shown, of size, shape, capacity and type indicated. Constructed of materials and components as indicated, and as required for complete installation.

B. Types: Provide ceiling returns and exhaust registers of type, capacity and size as indicated on drawing.

C. Ceiling Return and Exhaust Registers Material

Steel Construction

D. Ceiling Return and Exhaust Register Pattern

35 degree blades, 1/2" spacing.

E. Ceiling Return Finish

White enamel semi-gloss white enamel finish.

F. Manufacturer: Subject to compliance with requirements, provide ceiling returns from one of the following.

Krueger

Metal-Aire
Price
Titus

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine areas and conditions under which air outlets and inlets are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. General: Install air outlets and inlets in accordance with manufacturer's written instructions and in accordance with recognized industry practices to insure that products serve intended functions.
- B. Support ceiling grilles and diffusers independent of ceiling grid. Support with steel ceiling wire.
- C. Coordinate with other work, including ductwork and duct accessories, as necessary to interface installation of air outlets and inlets with other work.

END OF SECTION 23 37 00

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work.

1.2 DESCRIPTION OF WORK

- A. The work required under this Division shall include all materials, labor and auxiliaries required to install a complete and properly operating electrical system.
- B. The **Contractor** shall furnish, perform, or provide all labor including planning, purchasing, transporting, storing, installing, testing, cutting and patching, trenching, excavating, backfilling, coordination, field verification, equipment (installation and safety), supplies, and materials necessary for the correct installation of complete electrical systems (as described or implied by these specifications and the applicable drawings) in strict accordance with applicable codes, which may not be repeated in these specifications, but are expected to be common knowledge of qualified Bidders.
- C. The Division 26, 27 and 28 Contract Documents refer to work required in addition to (or above) the minimum requirements of the N.E.C. and applicable local codes. All work shall comply with all applicable codes as a minimum and with the additional requirements called for in these Contract Documents.
- D. Only trained and licensed personnel shall be used by the **Contractor** to perform work. The **Contractor** shall not perform work which violates applicable Codes, even if called for in the Contract Documents. The **Contractor's** Bid shall include work necessary to completely install the electrical systems indicated by the Contract Documents in accordance with applicable Codes.
- E. Refer to other Division 26, 27 and 28 Sections for additional work requirements.
- F. Coordinate and verify power and telephone company service requirements prior to bid. Bid to include all work required.
- G. Connections of all items using electric power shall be included under this division of the specifications, including necessary wire, conduit, circuit protection, disconnects and accessories. Securing of roughing-in drawings and connection information for equipment involved shall also be included under this division. See other divisions for specifications for electrically operated equipment.

1.3 WORK SEQUENCE

- A. Install work in stages and/or phases to accommodate **Owner's** occupancy requirements. Coordinate electrical schedule and operations with **Owner** and **Architect/Engineer**.

1.4 CODES, FEES, AND STANDARDS

- A. Conform to all applicable requirements of the REFERENCE STANDARDS AND REGULATORY REQUIREMENTS - SECTION 26 01 12.
- B. Material shall be new and free of defects with U.L. listing or be listed with an approved, nationally recognized Electrical Testing Agency if and only if U.L. Listing is not available for material.

1.5 PROJECT/SITE CONDITIONS

- A. Install Work in locations shown or described in the Contract Documents, unless prevented by Project conditions.
- B. The **Contractor** shall install all equipment so that all Code required and Manufacturer recommended servicing clearances are maintained. Contractor shall be responsible for the proper arrangement and installation of all equipment within any designated space. Should the **Contractor** determine that a departure from the Contract Documents is necessary, he shall submit to the **A/E**, for approval, detailed drawings of his proposed changes with his written reasons for the changes. No changes shall be implemented by the **Contractor** without the issuance of the required drawings, clarifications, and/or change orders.
- C. The **Contractor** shall verify finish dimensions at the project site in preference to using dimensions noted on Contract Documents.

1.6 INVESTIGATION OF SITE

- A. Check site and existing conditions thoroughly before bidding. Advise **A/E** of discrepancies or questions noted.
- B. Each Bidder shall visit the site and shall thoroughly familiarize himself with existing field conditions and the proposed work as described or implied by the Contract Documents. During the course of his site visit, the electrical bidder shall verify every aspect of the proposed work and the existing field conditions in the areas of construction and demolition which will affect his work. The **Contractor** will receive no compensation or reimbursement for additional expenses he incurs due to failure to make a thorough investigation of the existing facilities. This shall include rerouting around existing obstructions.
- C. Submission of a proposal will be construed as evidence that such examination has been made and later claims for labor, equipment or materials required because of difficulties encountered will not be recognized.
- D. Existing conditions and utilities indicated are taken from existing construction documents, surveys, and field investigations. Unforeseen conditions probably exist and existing conditions shown on drawings may differ from the actual existing installation with the result being that new work may not be field located exactly as shown on the drawings. **Contractor** shall field verify dimensions of all site utilities, conduit routing,

boxes, etc., prior to bidding and include any deviations in the contract. Notify **A/E** if deviations are found.

- E. All existing electrical is not shown. The **Contractor** shall become familiar with all existing conditions prior to bidding, and include in his bid the removal of all electrical equipment, wire, conduit, devices, fixtures, etc. that is not being reused, back to its originating point.
- F. The **Contractor** shall locate all existing utilities and protect them from damage. The **Contractor** shall pay for repair or replacement of utilities or other property damaged by operations in conjunction with the completion of this work.
- G. Remove existing power, lighting, systems, material and equipment which are made obsolete or which interfere with the construction of the project. Reinstall power, lighting, systems, materials and equipment which are required to remain active for the facility to be fully functional.
- H. All items removed and not re-used shall be immediately turned over to Owner as they are made available by renovation. Remove items from job site and deliver to Owner's storage location(s) as directed by project manager. Discard complete items which Owner elects to refuse.
- I. Investigate site thoroughly and reroute all conduit and wiring in area of construction in order to maintain continuity of existing circuitry. Existing conduits indicated in Contract Documents indicate approximate locations only. **Contractor** shall verify and coordinate existing site conduits and pipes prior to any excavation on site. Bids shall include hand digging at existing utility locations and all required rerouting in areas of existing conduits or pipes.
- J. Work is in connection with existing buildings which must remain in operation while work is being performed. Work shall be in accordance with the schedule required by the Contract. Schedule work for a minimum outage to Owner. Notify Owner 72 hours in advance of any shut-down of existing systems. Perform work during school] operating hours unless otherwise approved by Owner. Protect existing buildings and equipment during construction.
- K. Bid shall include all removal and relocation of all piping, fixtures or other items required for completion of alterations and new construction.

1.7 CONTRACT DOCUMENTS

- A. These specifications and applicable drawings shall be considered supplementary, one to the other and are considered Contract Documents. These specifications are not intended to delineate or limit required work by sections or divisions, and shall be considered as one document from cover to cover, front to back, including all other applicable specification sections and general conditions. All workmanship, methods, and/or material described or implied by one and not described or implied by the other shall be furnished, performed, or otherwise provided just as if it had appeared in both sets of documents.

- B. Where a discrepancy or conflict is found between these specifications and any applicable drawing, the **Contractor** shall notify the **A/E** in written form. In the event that a discrepancy exists herein or between specifications and any applicable drawing, the most stringent requirement shall govern unless the discrepancy conflicts with applicable codes wherein the code shall govern.
- C. The drawings are diagrammatic and are not intended to include every detail of construction, materials, methods, and equipment. They indicate the result to be achieved by an assemblage of various systems. Coordinate equipment locations with Architectural and Structural drawings. Layout equipment before installation so that all trades may install equipment in spaces available. Coordinate installation in a neat and workmanlike manner.
- D. Wiring arrangements for equipment shown on the drawings are intended to be diagrammatic and do not show all required conductors and functional connections. All wiring and appurtenances required for the proper operation of all equipment to be connected shall be provided.
- E. Specifications require the **Contractor** to provide shop drawings which shall indicate the fabrication, assembly, installation, and erection of a particular system's components. Drawings that are part of the Contract Documents shall not be considered a substitute for required shop drawings, field installation drawings, Code requirements, or applicable standards.
- F. Locations indicated for outlets, switches, and equipment are approximate and shall be verified by instructions in specifications and notes on the drawings. Where instructions or notes are insufficient to locate the item, notify the **A/E**.
- G. The **Contractor** shall take finish dimensions at the project site in preference to scaling dimensions on the drawings.
- H. Where the requirements of another Division, section, or part of these specifications exceed the requirements of this Division those requirements shall govern.

1.8 MATERIALS AND EQUIPMENT

- A. Material shall be new (except where specifically noted, shown or specified as "Reused") and shall be U.L. listed and bear U.L. label. Where no U.L. label listing is available for a particular product, material shall be listed with an approved, nationally recognized Electrical Testing Agency. Where no labeling or listing service is available for certain types of equipment, test data shall be submitted to prove to the **Engineer** that equipment meets or exceeds available standards.
- B. Where Contract Documents list design selection or manufacturer, type, this model shall set the standard of quality and performance required. Where no brand name is specified, the source and quality shall be subject to **A/E's** review and approval. Where Contract Documents list approved substitutions, these items shall comply with Section 00 72 13 General Conditions Article 15 Materials: Standards and Section 00 21 13 Instructions to Bidder, Paragraph 1.12 Pre-Bid Equals and Substitutions.

- C. When a product is specified to be in accordance with a trade association or government standard and at the request of **A/E** the **Contractor** shall furnish a certificate that the product complies with the referenced standard and supporting test data to substantiate compliance.
- D. Where multiple items of the same equipment or materials are required, they shall be the product of a single Manufacturer.
- E. Where the Contract Documents require materials and/or equipment installed, pulled, or otherwise worked on, the materials and/or equipment shall be furnished and installed by the **Contractor** responsible for Division 26, 27 and 28 methods and materials unless specifically noted otherwise.
- F. Where the contract documents refer to the terms "furnish," "install," or "provide," the materials and/or equipment shall be supplied and delivered to the project including all labor, unloading, unpacking, assembly, erection, anchoring, protecting supplies and materials necessary for the correct installation of complete system unless specifically noted otherwise.
- G. Before the **Contractor** orders equipment, the physical size of specified equipment shall be checked to fit spaces allotted on the drawings, with NEC working clearances provided. Internal access for proposed equipment substitutions shall be provided.
- H. Electrical equipment shall be protected from the weather, during shipment, storage, and construction per manufacturer's recommendations for storage and protection. Should any apparatus be subjected to possible damage by water, it shall be thoroughly dried and put through a dielectric test, at the expense of the **Contractor**, to ascertain the suitability of the apparatus, or it shall be replaced without additional cost to the **Owner**.
- I. Inspect all electrical equipment and materials prior to installation. Damaged equipment and materials shall not be installed or placed in service. Replace or repair and test damaged equipment in compliance with industry standards at no additional cost to the **Owner**. Equipment required for the test shall be provided by the **Contractor**.
- J. Material and equipment shall be provided complete and shall function up to the specified capacity/function. Should any material and/or equipment as a part or as a whole fail to meet performance requirements, replacements shall be made to bring performance up to specified requirements. Damages to finish by such replacements, alterations, or repairs shall be restored to prior conditions, at no additional cost to the **Owner**.
- K. Materials installed in environmental air plenum s shall be UL Plenum Listed and bear the appropriate UL markings.
- L. Where tamperproof screws are specified or required, Phillips head or Allen head devices shall not be accepted. For each type used, provide **Owner** with three tools. **Owner** will designate the specific hardware design to correspond with existing devices elsewhere in the building, to limit special tool requirements.

1.9 SUPERVISION OF THE WORK

- A. The **Contractor** shall provide experienced, qualified, and responsible supervision for work. A competent foreman shall be in charge of the work in progress at all times. If, in the judgment of the **A/E**, the foreman is not performing his duties satisfactorily, the **Contractor** shall immediately replace him upon receipt of a letter of request from the **A/E**. Once a satisfactory foreman has been assigned to the work, he shall not be withdrawn by the **Contractor** without the written consent of the **A/E**.
- B. Provide field superintendent who has had a minimum of four (4) years previous successful experience on projects of comparable size and complexity. Superintendent shall be on the site at all times during construction and must have an active Journeyman's Electrical License.
- C. Superintendent shall be employed by a State certified electrical contractor.
- D. Maintain at all times the appropriate Journeyman to apprentice ratio as defined by the State Of Connecticut.

1.10 COORDINATION

- A. Provide all required coordination and supervision where work connects to or is affected by work of others, and comply with all requirements affecting this Division. Work required under other divisions, specifications or drawings to be performed by this Division shall be coordinated with the **Contractor** and such work performed at no additional cost to **Owner** including work required for:
 - 1. Door Hardware
 - 2. Mechanical Division of the Specifications
 - 3. Interior design drawings
 - 4. Millwork design drawings and shop drawings
 - 5. Owner furnished equipment
 - 6. Network and premise systems
- B. **Contractor** shall obtain set of contract documents from **Owner** or **Contractor** for all areas of work noted above and include all electrical work in bid whether included in Division 26, 27 and 28 Contract Documents or not.
- C. Installation studies shall be made to coordinate the electrical work with other trades. Work shall be preplanned. Unresolved conflicts shall be referred to the **A/E** prior to installation of the equipment.
- D. For locations where several elements of electrical or combined mechanical and electrical work must be sequenced and positioned with precision in order to fit into the available space, prepare coordination drawings at 1/4" scale showing the actual physical dimension required for the installation to assure proper integration of equipment with building systems and NEC required clearances. Coordination drawings shall be provided for all areas determined by the **A/E**.
- E. Secure approved shop drawings from all required disciplines and verify final electrical

characteristics before roughing power feeds to any equipment. When electrical data on approved shop drawings differs from that shown or called for in Construction Documents, make adjustments to the wiring, disconnects, and branch circuit protection to match that required for the equipment installed.

- F. Damage from interference caused by inadequate coordination shall be corrected at no additional cost to the **Owner**.
- G. The **Contractor** shall maintain an up-to-date set of Contract Documents and Specifications of all trades on project, including Architectural, Structural, Mechanical, Electrical and, where provided Interior Design.
- H. It is the responsibility of this **Contractor** to coordinate the exact required location of floor outlets, floor ducts, floor stub-ups, etc. with **Owner** and **Architect** (and receive their approval) prior to rough-in. Locations indicated in Contract Documents are only approximate locations.
- I. The Contract Documents describe specific sizes of switches, breakers, fuses, conduits, conductors, motor starters and other items of wiring equipment. These sizes are based on specific items of power consuming equipment (heaters, lights, motors for fans, compressors, pumps, etc.). The **Contractor** shall coordinate the requirements of each load with each load's respective circuitry shown and with each load's requirements as noted on its nameplate data and manufacturer's published electrical criteria. The **Contractor** shall adjust circuit breaker, fuse, conduit, and conductor sizes to meet the actual requirements of the equipment being provided and installed and change from single point to multiple points of connection (or vice versa) to meet equipment requirements. Changes shall be made at no additional cost to the **Owner**.

1.11 PROVISION FOR OPENINGS

- A. Locate openings required for work. Provide sleeves, guards or other approved methods to allow passage of items installed.

1.12 SURFACE MOUNTED EQUIPMENT

- A. Surface mounted fixtures, outlets, cabinets, conduit, panels, etc. shall have finish or shall be painted as directed by **A/E**. Paint shall be in accordance with other applicable sections of these specifications.

1.13 CUTTING AND PATCHING

- A. New Construction:
 - 1. Reference Division 1 - General Requirements.
 - 2. Cutting of work in place shall be cut, drilled, patched and refinished by trade responsible for initial installation.
 - 3. The **Contractor** shall be responsible for backfilling and matching new grades with adjacent undisturbed surface.

1.14 INSTALLATION

- A. Erect equipment to minimize interference and delays in execution of the work.
- B. Take care in erection and installation of equipment and materials to avoid marring finishes or surfaces. Any damage shall be repaired or replaced as determined by the A/E at no additional cost to the **Owner**.
- C. Equipment requiring electrical service shall not be energized or placed in service until **A/E** is notified and is present or have waived their right to be present. Where equipment to be placed in service involves service or connection from another **Contractor** or the **Owner**, the **Contractor** shall notify the **Owner** in writing when the equipment will be ready. The **Owner** shall be notified as far in advance as possible of the date the various items of equipment will be complete.
- D. Equipment furnished by other divisions of work requiring electrical service or connection by this Contractor shall not be energized until the equipment has been certified by the provider and/or manufactures representative and is present at time of energizing. Voltage shall be checked prior to energizing to ensure compatibility.
- E. Equipment supports shall be secured and supported from structural members except as field approved by the **A/E**.
- F. Plywood material shall not be used as a backboard for mounting panel boards, disconnects, motor starters, and dry type transformers. Provide "cast in place" type inserts or install expansion type anchor bolts. Electrical equipment shall not be mounted directly to dry wall for support without additional channels as anchors. Channels shall be anchored to the floor and structure above. Panelboards and terminal cabinets shall be provided with structural framing located within drywall partitions.
- G. The **Contractor** shall keep the construction site clean of waste materials and rubbish. Upon completion of the work, the **Contractor** shall remove from the site debris, waste, unused materials, and equipment.
- H. Inserts, pipe sleeves, supports, and anchorage of electrical equipment shall be provided. Where items are to be set or embedded in concrete or masonry, the items shall be furnished and layout made for setting or embedment thereof so as to cause no delay.

1.15 PROGRESS AND RECORD DRAWINGS

- A. Keep two sets of blueline prints including shop drawings on the job, and neatly mark up design drawings each day as components are installed. Different colored pencils shall be used to differentiate each system of electrical work. All items on Progress Drawings shall be shown in actual location installed. Change the equipment schedules to agree with items actually furnished. Cross out all electrical no longer applicable and/or shown redirected. **Contractor** shall include all existing conduit, routing, circuitry, etc. effected/modified/reworked by renovation (if applicable). Panelboard schedules,

equipment schedules, systems shop drawing floor plans, and riser diagrams shall also be included as part of a complete as-built set of drawings.

- B. Prior to request for substantial completion inspection, furnish a set of neatly marked prints showing "as-installed" (as-built) condition of all electrical installed under this Division of the specifications. Marked up prints are to reflect all changes in work including change orders, field directives, request for information, addenda, etc. from bid set of Contract Documents. Marked up set of prints are to show:
1. All raceways 1-1/2" and above, exactly as installed.
 2. Any combining of circuits or change in homerun outlet box shall be made on as-builts.
 3. Any circuit number changes on plan shall be indicated on as-builts.
 4. Any panelboard schedule changes shall be indicated on as-builts.
- C. Marked up prints as noted above are to be submitted to A/E for approval. Contractor shall review submitted "as-builts" with Engineer in the field at time of substantial completion. Contractor shall verify every aspect for accuracy. Items installed and/or modified from time of substantial completion and final shall be incorporated accordingly. All A/E review comments shall be incorporated and re-submitted.
- D. Marked up prints as noted above are to be submitted to A/E for approval.
- E. Where the **Contractor** has failed to produce representative "as-built" drawings in accordance with requirements specified herein, the **Contractor** shall reimburse **Engineer** all costs to produce a set of "as-built" drawings to the **Architect/Owner** satisfaction. The A/E shall be reimbursed cost to review re-submittal as-builts subsequent to the second submittal. Cost will be billed to contractor at engineer's standard \$90.00 hourly rate.
- F. Where the contractor has failed to produce representative "as-built" drawings as specified herein, to the satisfaction of the A/E /Owner, shall be cause for disallowing request for payments.

1.16 "OBSERVATION OF WORK" REPORT

- A. Items noted by **A/E** or his **representative** during construction and before final acceptance which do not comply with the Contract Documents will be listed in a "Observation of Work" report which will be sent to the **Contractor** for action. The **Contractor** shall correct all deficiencies in a prompt concise manner. After completion of the outstanding items, provide a written confirmation report for each item. The report shall indicate each item noted, and method of correction. Enter the date on which the item was corrected, and return the signed reports so items can be rechecked. Failure to correct the deficiencies in a prompt concise manner or failure to return the signed reports shall be cause for disallowing request for payments.
- B. Items noted after acceptance during one-year guarantee period shall be checked by

the **Contractor** in the same manner as above. The signed reports are to be returned by him when the items have been corrected.

1.17 SYSTEMS WARRANTY

- A. The work shall include a one-year warranty. This warranty shall be by the **Contractor** to the **Owner** for any defective workmanship or material which has been furnished at no cost to the **Owner** for a period of one year from the date of substantial completion of System. Warranty shall not include light bulbs in service after one month from date of substantial completion of the System. Explain the provisions of warranty to the **Owner** at the "Demonstration of Completed System" meeting to be scheduled with the **Owner** upon project completion.
- B. Where items of equipment or materials carry a manufacturer's warranty for any period in excess of twelve (12) months, then the manufacturer's warranty shall apply for that particular piece of equipment or material.
- C. Where extended Guarantees are called for herein, furnish three copies to be inserted in Operation and Maintenance Manuals.
- D. All preventative maintenance and normal service will be performed by the **Owner's** maintenance personnel after final acceptance of the work which shall not alter the **Contractor's** warranty.

1.18 WASTE MATERIALS DISPOSAL

- A. Contractor shall include in his bid the transport and disposal or recycling of all waste materials generated by this project in accordance with all rules, regulations and guidelines applicable. Contractor shall comply fully with State and Federal Statutes regarding mercury containing devices and lamps. Lamps, ballasts and other materials shall be transported and disposed of in accordance with all DEP and EPA guidelines applicable at time of disposal. Contractor shall provide owner with written certification of approved disposal.

1.19 OBSERVATION OF WORK/SUBSTANTIAL COMPLETION

- A. The **Contractor** shall be fully responsible for contacting all applicable parties (A/E and OAR) to schedule required observation of work reviews throughout the construction/renovation period. A minimum of 72 hours notice shall be given for all required inspections, and minimum of 120 hours for substantial inspection. Time and date shall be agreed on by all applicable parties.
- B. Work shall be complete as required by authorities having jurisdiction and the general conditions of the contract prior to request for substantial completion inspection. Work must be deemed substantially complete by **A/E** to fulfill requirements.
- C. When the Contractor considers that the work, or portion thereof which the owner/architect agrees to accept separately, is substantially complete, the Contractor shall prepare and submit a list to the A/E a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on

the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete work in accordance with the Contract Documents. The A/E will review the list to determine if work appears to be substantially complete, if so determined, base on the list submitted, will perform a substantial completion walk-thru.

- D. The **Contractor** shall have the electrical project superintendent present at all required observation of work reviews as project progresses. The **Contractor** shall provide the **A/E** adequate ladders, staging, etc, for access and review of all work in place, as well as adequate forces fully familiar with all aspects of the work. The **Contractor** shall provide access to all electrical components for review by **A/E** as directed by **A/E** (i.e., junction boxes, panelboards, switchboards, devices, fixtures, etc.).
- E. Prior to start of substantial completion walk-thru the **Contractor** shall provide access to and prepare all electrical equipment and related components complete and readily for review by **A/E** including but not limited to the following (where applicable):
1. All panelboard covers removed.
 2. Terminal cabinet covers open or removed.
 3. Wireway covers open or removed.
 4. Access to all grounding/bonding terminations.
 5. Access to rated wall and through floor fire stopping.
 6. Access to all control systems (i.e. CCTV, Voice, Data, Fire Alarm, Sound/Paging, etc).
 7. Access to mechanical equipment, electrical connection points, and control devices.
 8. Access to all raceways crossing structural expansion/deflection joints.
 9. Access to all components of the fire alarm control system including control devices, dampers, Etc.
 10. Removal of access panels.
 11. Each and every item deemed necessary by A/E to perform a comprehensive review of the work as installed relative to the contract documents.
- F. Where the **Contractor** has failed to perform work in accordance with requirements of the contract documents and has not identified items to be completed or corrected as stated above, and the **A/E** finds numerous items to be completed or corrected, the substantial completion walk-thru will be concealed. The **Contractor** shall reimburse **A/E** all costs to perform exhausting review(s) of the installation and produce a lengthily list of deficiencies observed, where the **Owner** elects that a report to be generated by **A/E** at that time. The **A/E** shall also be reimbursed cost to perform continues ongoing project site visits, meeting, reports, etc resulting from the **Contractors** failure to perform work in accordance with the requirements of the Contract Documents. Cost will be billed to the contractor at engineer's standard \$90.00 hourly rate for each engineering representative involved.

1.20 PROHIBITION OF ASBESTOS AND PCB

- A. The use of any process involving asbestos or PCB, and the installation of any product, insulation, compound of material containing or incorporating asbestos or PCB, is prohibited. The requirements of this specification for complete and operating electrical systems shall be met without the use of asbestos or PCB.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 26 01 00

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work.
- B. See Section 00 72 13 General Conditions Article 15 Materials: Standards, and Section 00 21 13 Instructions to Bidder, Paragraph 1.12 Pre-Bid Equals and Substitutions for additional requirements when submittal consists of approved substitution equipment.
- C. See Section 00 72 13 Article 5; Section 01 33 00 Submittal Procedures and Section 01 31 00 – 1.5 for additional requirements.

1.2 SUBMITTAL OF "ACCEPTABLE SUBSTITUTE" EQUIPMENT/PRODUCT

- A. Representation: In submitting item, equipment, product, etc. that has been listed on contract drawings, in contract documents or in an addenda, Contractor represents that he:
 - 1. Has investigated substitution item and determined that it is equal or superior to specified product in all aspects.
 - 2. Will coordinate installation of accepted substitution into Work, making changes as may be required to complete work in all aspects.
 - 3. Waives all claims for additional costs related to substitution which may subsequently become apparent.
 - 4. Will provide the same warranties for the substitution as for the product specified.
 - 5. Will absorb all costs incurred by the substitution when affecting other trades including but not limited to electrical, structural, architectural, etc.
 - 6. Will absorb any cost incurred by the Engineer in review of the substituted product if the acceptance of the substituted item creates the need for system modification and/or redesign, or if the substituting contractor exhibits negligence in his substituting procedure thus submitting inferior, misapplied or mis-sized equipment. In the event of additional engineering costs the billing structure shall be agreed upon prior to review by all involved parties.
- B. Substitutions that cannot meet space requirements, or other requirements of these specifications whether approved or not, shall be replaced at the contractor's expense.

1.3 SUBMITTAL BROCHURES

- A. Brochures shall consist of a minimum of two (2) hard cover, view type, 3-ring binders (white) sized to hold 8 1/2" x 11" sheets. One (1) for power and lighting submittals; one (1) for systems (Sections 27 00 00 through 27 50 13) submittals (where sections 27 00 00 through 27 50 13 are not applicable or are very limited, then only one book is required).
1. Each binder is to be adequately sized to comfortably hold required submittals. Minimum spine size to be 2", maximum spine size to be 3" (provide additional binders if 3" size is not sufficient to properly hold submittals).
 2. Binder covers to have outer clear vinyl pocket on front cover (to hold 8 1/2" x 11" sheet) and on spine (to hold spine width x 11" sheet). Provide correct designation of project in each pocket, see "EXAMPLES" included at end of this section. Description sheet is to be white with black letters, minimum of 11" high and full width of pocket. Description is to describe project and match project drawing/spec description. Description to include submittal type, i.e. "Electrical" for power and lighting submittals or "Systems" for Section 27 00 00 – 27 50 13 submittals.
- B. Submittal Brochures to include:
1. First sheet in brochure shall be a photocopy of the Electrical Index pages in Specifications.
 2. Second sheet shall be prepared and filled out by Contractor and shall list project addresses, contact names, telephone, fax, and email addresses. List shall include all team members, sub-contractors etc. (see form included at end of this section).
 3. Third sheet shall also be filled out by contractor and list project information for project (see form included at end of this section).
 4. Provide reinforced separation sheets tabbed with the appropriate specification reference number and typed index for each section in the Systems Schedule.
 5. Submittals consisting of marked catalog sheets or shop drawings shall be inserted in the binder in proper order. Submittal data shall be presented in a clear and thorough manner. Clearly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Markings shall be made with arrows or circles (highlighting is not acceptable).
 6. Shop Drawings: Drawings to include identification of project and names of Architect, Engineer, General Contractor, subcontractor and supplier, data, number sequentially and indicate the following:
 - a) Fabrication and erection dimensions.

- b) Arrangements and sectional views.
 - c) Necessary details, including complete information for making connections with other work.
 - d) Kinds of materials and finishes.
 - e) Descriptive names of equipment.
 - f) Modifications and options to standard equipment required by the work.
 - g) Leave blank area, size approximately 4 by 2 1/2 inches, near title block (for A/E's stamp imprint)
 - h) In order to facilitate review of shop drawings, they shall be noted, indicating by cross-reference the contract drawings, note, and specification paragraph numbers where items occur in the Contract Documents.
 - i) Conduit/raceway rough in drawings.
 - j) Items requiring shop drawings including but not limited to (if applicable):
 - 1) Special built light fixtures.
 - 2) Special and/or modified equipment.
 - 3) Systems control cabling Interconnect/interface connections
 - 4) See specific sections of specifications for further requirements.
7. Product Data: Technical data is required for all items as called for in the specifications regardless if item furnished is as specified.
- a) Submit technical data verifying that the item submitted complies with the requirements of the specifications. Technical data shall include manufacturer's name and model number, dimensions, weights, electrical characteristics, and clearances required. Indicate all optional equipment and changes from the standard item as called for in the specifications. Furnish drawings, or diagrams, dimensioned and in correct scale, covering equipment, showing arrangement of components and overall coordination.
 - b) Refer to Section 00 72 13 Article 5, Section 01 20 00 for additional Product Data requirements.
 - c) In order to facilitate review of product data, they shall be noted, indicating by cross reference the contract drawings, note, and/or specification paragraph numbers where and/or what item(s) are used for and where item(s) occur in the contract documents.
 - d) Items requiring product data including but not limited to (if applicable):
 - 1) Light fixtures.
 - 2) Modified equipment.
 - 3) Panelboards
 - 4) Disconnects switches and enclosed circuit breakers
 - 5) Overcurrent protective devices (C.B.'s, fuses, etc.)
 - 6) Control devices, motor controls
 - 7) Conduit, fitting, elbows, etc

- 8) Supporting devices, anchors, hardware
- 9) Grounding components and related termination hardware
- 10) Conductors and cables
- 11) Outlet boxes, pull boxes, manholes, etc.
- 12) Wiring devices and cover plates
- 13) U.L. listed fire and smoke stopping assemblies for each applicable penetration.
- 14) See specific sections of specifications for further requirements.

1.4 PROCESSING SUBMITTALS

- A. Submit under provisions of the General Requirements of the Contract and this section of the Specifications, whichever is the most strict.
- B. Quantity of brochures with marking on each copy shall be submitted under provisions of general requirements of the contract, Division 1, and this and other sections of the specifications. Submit a minimum of six (6) copies or quantity of copies required under the provisions of the General Requirements, whichever is the most strict. Original submittal must contain as a minimum the specified 3-ring binders with:
 1. Specification Index
 2. Project Address Sheet
 3. Project Information Sheet
 4. Separation tabbed Sheets
 5. Basic Materials
 6. Panelboards
 7. Light Fixtures
 8. Long lead items
 9. Systems product data
- C. Remainder of submittals are to be submitted no later than 60 days after award of contract or 60 days prior to request for substantial completion whichever is earlier. Contractor is responsible to expedite submittal process as necessary to comply with the established project schedule. Contractor may elect to submit all submittal data at one time provided project schedule permits so.
- D. The Contractor shall review the brochures before submitting to the A/E. No request for payment will be considered until the brochure has been prepared as specified herein, reviewed and submitted for approval.
- E. Product Data: For standard manufactured materials, products and items submit one (1) copy or sets of data (per brochure). If submittal is rejected, resubmittal shall contain same quantity of new data. The rejected submittal data shall be removed from the brochure.
- F. Shop Drawings:
 1. Refer to Section 00 72 13 Article 5, Section 01 33 00 -1.8 for shop drawing

requirements and Section 01 31 00 - 1.5 for coordination drawings.

2. For custom fabricated items and systems shop drawings, initially submit a transparency (suitable for reproduction) together with two (2) prints made therefrom. When submittal is acceptable, furnish one (1) print per brochure made from the accepted transparency.
3. Shop drawing shall be provided for custom items and systems to include the following for each:
 - a) Detailed riser diagrams including all field devices, wiring/cabling, control devices, area/floor/room, control panels, racks, interface and connections with other divisions of work, device detailing, mounting, operational sequencing, schedules, etc.
 - b) Detailed data as required by A/E.
- G. Acceptance: When returned to Contractor, submittals will be marked with A/E's stamp. If box marked "Rejected- see remarks", or "Amend and Resubmit" is checked, submittal is not approved and Contractor is to correct and resubmit as noted. When returned to contractor, "Make corrections noted" submittal is accepted and Contractor is to comply with notation making necessary corrections on submittal and resubmit for final record.
- H. Note that the approval of shop drawings or other information submitted in accordance with the requirements hereinbefore specified, does not assure that the Engineer, Architect, or any other Owner's Representative, attests to the dimensional accuracy or dimensional suitability of the material or equipment involved, the ability of the material or equipment involved or the Mechanical/Electrical performance of equipment. Approval of shop drawings does not invalidate the plans and specifications if in conflict, unless a letter requesting such change is submitted and approved on the Engineer's letterhead.
- I. Contractor shall produce a schedule of items to be submitted to General Contractor for inclusion in the overall submittal schedule as required in Section 01 33 00-1.6. Submittal Schedules.
- J. Refer to Section 00 72 13 Article 5 and 00 33 00 1.12 Samples for requirements of Samples.

1.5 DELAYS

- A. Contractor is responsible for delays in job project accruing directly or indirectly from late submissions or resubmissions of shop drawings, or product data. Submittal process shall commence from time notice to proceed and/or contract is issued between owner/prime Contractor.

1.6 RE-SUBMITTALS

- A. The A/E shall be reimbursed cost to review resubmittals subsequent to the second

submittal. Cost will be billed to contractor at engineer's standard hourly rate, or as defined by the general conditions of the contract, whichever is most strict.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 26 01 10

PROJECT ADDRESSES

OWNER:

PHONES:

e-mail:

ARCHITECT:

CONSULTING ENGINEER:

OGL Consulting Engineers, LLC
32 Maple Ave, Windsor, CT 06095
Telephone No.: (860) 236-4288

CONSTRUCTION MANAGER:

GENERAL CONTRACTOR:

SUBCONTRACTOR:

(LIST SHALL INCLUDE ALL SUBCONTRACTORS)

PROJECT INFORMATION

CONTRACTOR TO COMPLETE THE FORM BELOW AND INSERT ONE COPY AS PAGE 3 IN EACH SUBMITTAL BROCHURE

Project Name	
Contractor's Job Superintendent Job Telephone; Job Fax	
Subcontractor's Job Superintendent Job Telephone; Job Fax	
Date Project Bids	
Date Official Project Start	
Date Technical Information Brochures Submitted	
Days Allowed For Construction	
Target Completion	

THE FOLLOWING ITEMS SHALL BE COMPLETED BEFORE DATE OF CONTRACTOR'S REQUEST FOR SUBSTANTIAL COMPLETION

Date Performance Verification Information Submitted	
Date Check-Out Memos Submitted	
Date Written Operating Instructions Submitted	
Date Maintenance Information Submitted	
Date Marked-Up Progress Prints Submitted	
Date As-Built Corrections Submitted	
Date Contractor's Instruction Conference With Owner	
Date Contractor's Request for Acceptance	
Date Project Accepted	

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work.

1.2 REFERENCES

- A. The following references may or may not be referenced within these specifications:

1. ADA Americans with Disabilities Act
2. AHERA Asbestos Hazard Emergency Response Act
3. AIA American Institute of Architects
1735 New York Avenue, N.W. Washington, DC 20006
4. ANSI American National Standards Institute
1430 Broadway, New York, NY 10018
5. ASCE American Society of Civil Engineers
6. ASHRAE American Society of Heating, Refrigerating and Air Conditioning Engineers
1791 Tullie Circle, N.E., Atlanta, GA 30329
7. ASME American Society of Mechanical Engineers
345 East 47th Street, New York, NY 10017
8. ASTM American Society for Testing and Materials
1916 Race Street, Philadelphia, PA 19103
9. CBBCS Connecticut Basic Building Code Supplements
10. CFSC Connecticut State Fire Safety Code: 2016 Edition
11. CLSC Connecticut Life Safety Code / supplements
12. CPHC Connecticut Public Health Code
13. CRSI Concrete Reinforcing Steel Institute
933 Plum Grove Road, Schaumburg, IL 60195
14. DER Rule 17-761 Department of Environmental Regulation
Chapter 17-761 on Underground Storage Tank Systems

15. DER Rule 17-762 Department of Environmental Regulation
Chapter 17-762 on Above Ground Storage Tank
Systems.
16. EIA/TIA Electronics Industries Association/Telecommunications
Industry Association, 2001 Pennsylvania Avenue, N.W.,
Washington, DC 20006
17. EJCDC Engineers' Joint Contract Documents Committee
American Consulting Engineers Council
1015 15th Street, N.W., Washington, DC 20005
18. FCC Federal Communications Commission
19. FEMA Federal Emergency Management Agency
20. FM Factory Mutual System
1151 Boston-Providence Turnpike
P.O. Box 688, Norwood, MA 02062
21. FPC Fire Protection Code
22. IBC International Building Code 2012
23. IEEE Institute of Electrical and Electronics
Engineers
345 East 47th Street, New York, NY 10017
24. IES Illumination Engineering Society
25. IEBC International Existing Building Code 2012
26. IFC International Fire Code 2012
27. IPCEA International Power Cable Engineer's Association
28. LPCR Local Power Company Requirements
29. LPI Lightning Protection Institute
30. LTCR Local Telephone Company Requirements
31. NFPA 70 National Electrical Code: 2014 Edition
32. NECPA National Energy Conservation Policy Act
33. NESC National Electrical Safety Code (ANSI C2)
34. NEMA National Electrical Manufacturers' Association

2101 'L' Street, N.W., Washington, DC 20037

- 35. NFPA 72 National Fire Alarm Code, 2012 Edition
- 36. OSHA The Occupational Safety and Health Act
- 37. UL Underwriters' Laboratories, Inc.
333 Pfingston Road, Northbrook, IL 60062
- 38. UFAS Uniform Federal Accessibility Standards

1.3 REGULATORY REQUIREMENTS

- A. Conform to all the applicable requirements of the following codes, standards, guidelines, etc.. If there should be conflicting requirements between these codes, standards, guidelines, etc., the more or most stringent requirement shall apply that does not violate any codes or laws.
 - 1. Standards and Miscellaneous Codes/Requirements (Comply with latest edition or notice available unless otherwise adopted by Authority having Jurisdiction):
 - a) American with Disabilities Act (ADA)
 - b) American National Standards Institute (ANSI)
 - c) American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
 - d) American Society of Mechanical Engineers (ASME)
 - e) American Society for Testing and Materials (ASTM)
 - f) Connecticut Fire Safety Code (CFSC)
 - g) Connecticut Life Safety Code and Supplements (CLSC)
 - h) Connecticut Public Health Code (CPHC)
 - i) Connecticut Basic Building Code Supplements (CBBCS)
 - j) Electronics Industries Association/ Telecommunications Industry Association (EIA/TIA)
 - k) Institute of Electrical and Electronics Engineers (IEEE)
 - l) Illumination Engineering Society (IES)
 - m) Local Power Company Requirements (LPCR)

- n) Lightning Protection Institute (LPI)
- o) Local Telephone Company Requirements (LTCR)
- p) National Energy Conservation Policy Act (NECPA)
- q) National Electrical Safety Code (NESC)
- r) National Electrical Manufacturers' Association (NEMA)
- s) National Fire Protection Association (NFPA) Codes and Standards as adopted by Authority having Jurisdiction including the National Electrical Code (NEC)
- t) The Occupational Safety and Health Act (OSHA)
- u) Occupational Safety and Health Act (OSHA)
- v) Sheet Metal and Air Conditioning Contractors (SMACNA)
- w) Underwriter's Laboratories, Inc. (UL)
- x) Uniform Federal Accessibility Standards (UFAS)
- y) All Federal, State, Local Codes, Laws and regulations

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 26 01 12

PART 1 - GENERAL

1.1 DESCRIPTION OF SYSTEM

- A. This section pertains to the furnishing of all labor, materials, equipment and services necessary to test and prove performance of the electrical system.
- B. Operate system for a 3-day period. Do performance verification work as required to show that the System is operating correctly in accordance with design. Supply instruments required to read data. Adjust System to operate at the required performance levels.

PART 2 – PRODUCTS

Not used

PART 3 - EXECUTION

3.1 TESTS

- A. System:
 - 1. General: After installation of all conductors, and before final acceptance, make required tests to determine proper functioning of all circuits. Furnish all necessary instruments required to make tests, and correct any deficiencies found.
- B. Motors:
 - 1. Test runs each motor via motor's control unit in both manual mode and automatic mode. Verify proper operation and voltage.
- C. Grounds:
 - 1. Test each raceway for raceway continuity as called for in "TESTING AND REPORTS".
 - 2. Test each grounding system used in the project as called for in "TESTING AND REPORTS".
 - 3. Submit "GROUND TEST INFORMATION" form for each and every grounding system in the project including but not limited to: each ground rod installation; each water pipe and ground installation (test water pipe to ground and test water pipe to building service equipment); and each building steel ground connection (test building steel to ground and test building steel to building service equipment).
 - 4. Grounding resistance shall be as called for in Section 26 05 26,
 - 5. Testing shall be three (3) point method in accordance with IEEE recommended practice.

END OF SECTION 26 01 16

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PART 1 - GENERAL

1.1 DEMONSTRATION

- A. Demonstrate to Owner the essential features of the following electrical systems (if applicable):
 - 1. Lighting Fixtures (include relamping and replacing lenses)
 - a) Exit and safety fixtures
 - b) Fixtures, indoor and outdoor
 - 2. Distribution Equipment
 - a) Lighting and appliance panelboards
 - 3. Wiring Devices
 - a) Low-voltage controls
 - b) Switches: regular, time
- B. Each system shall be demonstrated once only, after completion of testing.

1.2 TIME

- A. The demonstration shall be held upon completion of all systems at a date to be agreed upon in writing by the Owner or his representative.

1.3 ATTENDING PARTIES

- A. The demonstration shall be held by this Contractor in the presence of the Owner, and the manufacturer's representative.

1.4 DEMONSTRATION

- A. Demonstrate the function and location (in the structure) of each system, and indicate its relationship to the riser diagrams and drawings.
- B. Demonstrate by "start-stop operation" how to work the controls, how to reset protective devices, how to replace fuses, and what to do in case of emergency.
- C. Certificate of Completed Demonstration
 - 1. Submit one (1) copy (for each O & M manual) of Certificate of Completed Demonstration Memo Form signed by the contractor, subcontractor and owner for each type of equipment and system. Insert one copy in each O & M manual.

PART 2 – PRODUCTS Not Used

PART 3 – EXECUTION Not Used

END OF SECTION 26 01 17

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PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor.
- B. Requirements for Operation and Maintenance Manuals (O & M Manuals) specifically applicable to Division 26, 27 and 28 Sections.

1.2 OPERATION AND MAINTENANCE MANUALS

- A. O & M Manuals shall consist of a minimum of two (2) hard cover, view type, 3-ring binders sized to hold 8 1/2" x 11" sheets. One (1) for power and lighting (black); one (1) for systems (Sections 27 00 00 thru 27 50 13) (blue). (Where sections 27 50 00 through 27 50 13 are not applicable or are very limited, then only one book is required provided it is of adequate size).
- B. Refer to Division 1, general requirements for additional requirements.
 - 1. Each binder is to be adequately sized to comfortably hold required submittals. Minimum spine size to be 2", maximum spine size to be 3" (provide additional binders if 3" size is not sufficient to properly hold submittals).
 - 2. Binder covers to have outer clear vinyl pocket on front cover (to hold 8 1/2" x 11" sheet) and on spine (to hold spine width x 11" sheet). Provide correct designation of project in each pocket, see "EXAMPLES" included at end of this section. Description sheet is to be white with black letters, minimum of 11" high and full width of pocket. Description is to describe project and match project drawing/spec description. Description to include O&M submittal type, i.e. "Electrical" for power and lighting O & M Manuals or "Systems" for Section 27 00 00 – 27 50 13 O & M Manuals, and volume quantity (i.e. volume 1 of 3).
- C. O & M Data:
 - 1. Manufacturer's operation and maintenance data is required for all items as called for in the specifications. O & M's shall include manufacturer's name, model number(s), characteristics, manufacturer's agent, service agent, supplier, where and/or what item(s) are used for and description (i.e. surge suppression - switchboard MDP1). Matrix of manufacturer's agent, service agent, and supplier is acceptable. Provide in front of each section.
 - 2. Include troubleshooting instructions, list of special tools required, theory of operation, manufacturer's care and cleaning, preventative maintenance instructions, wiring diagrams, and point-to-point schematics.
- D. O & M Manuals to include:
 - 1. Shall list Project Address (see form included at the end of this section). Submit

- one (1) copy for each O & M Manual.
2. Shall include table of contents, project address, and project information list form (found under Division 1, general requirements of the specifications).
 3. Provide reinforced separation sheets tabbed with the appropriate specification reference number and typed index for each section in the Systems Schedule.
 4. Shop Drawings: Shop drawings shall be a copy of the final and approved shop drawing submitted as required in Section 26 01 10 "Submittals". These shall be inserted in binder in proper order.
 5. Product Data: Product data and/or Catalog sheets shall be a copy of the final and approved submittal submitted as required in 26 01 10 "Submittals". These shall be inserted in binder in proper order.
 6. Warranty/Guarantee: Provide copy of warranty/guarantee in respective location in O & M manual binder (power/lighting and systems). Original warranty/guarantee is to be incorporated into separate project warranty book with warranty/guarantees provided for other sections and divisions of the specifications and submitted for Architectural/Owner approval.
 7. Copies of electrical panel schedules and electrical panel directories included with the corresponding specification section
 8. Wiring diagrams, schematic, etc. inserted in proper order, for:
 - a) Panelboards.
 - b) Lighting control systems and devices
 - c) Each and every part of the systems sections of these specifications, 16700 thru 16799.
 9. For Section 26 05 00 thru 26 05 22:
 - a) Product data and/or catalog sheets on all equipment applicable to this project.
 - b) Equipment supplier list for each section's equipment.
 - c) Floor boxes; in addition to above provide:
 - 1) Installation/removal instructions.
 - 2) Parts list.
 - d) Ground fault wiring devices; in addition to above provide:
 - 1) Wiring diagram.
 10. Sections 26 05 23 thru 26 30 10:

- a) Product data and/or catalog sheets on equipment applicable to this project.
 - b) Equipment supplier list for each sections equipment.
 - c) Transformers; in addition to above provide:
 - 1) Recommended periodic testing procedures.
 - 2) Parts list.
 - 3) Any special manufacture suggested O & M information.
 - 4) Installation/removal instructions.
 - 5) Check-out memo.
 - d) Panels; in addition to above provide:
 - 1) Internal wiring diagrams.
 - 2) Bus diagrams.
 - 3) Operation and maintenance requirements, instructions, and recommended testing.
 - 4) Parts list.
 - 5) Copy of directory.
 - 6) Voltage and amperage readings.
 - 7) Check-out memo.
 - e) Overcurrent protective devices; in addition to above provide the following for large circuit breakers:
 - 1) Parts list.
 - 2) Operation and maintenance requirements.
 - 3) Wiring diagrams.
 - 4) Testing data.
 - 5) Installation/removal instructions.
 - 6) Check-out memo.
11. Section 26 50 00:
- a) Product data and/or catalog sheets on all equipment applicable to this project.
 - b) Equipment supplier list for each sections equipment.
 - c) Lighting fixtures; in addition to above provide the following:
 - 1) Operation and maintenance requirements/instructions for special light fixtures (these fixtures to be determined by A/E) including:
 - a) installation/removal instructions.
 - b) special re-lamping instructions.
 - c) Matrix of lamps applicable to each fixture
 - 2) Parts list.

1.3 PROCESSING SUBMITTALS

- A. Submit three (3) sets of O & M Manuals.
- B. Submit under provisions of the general requirements of the contract, Division 1, and this section of the specifications, whichever is not strict.
- C. The Contractor shall review the manuals before submitting to the A/E. No request for payment will be considered until the brochure has been reviewed and submitted for approval.

1.4 DELAYS

- A. Contractor is responsible for delays in job project accruing directly or indirectly from late submissions or resubmissions of shop drawings, or product data.

1.5 RE-SUBMITTALS

- A. The A/E shall be reimbursed cost to review re-submittals subsequent to the second submittal. Cost will be billed to contractor at engineer's standard hourly rate, or as defined by the general conditions of the contract, whichever is most strict.

PART 2 – PRODUCTS - Not Used

PART 3 – EXECUTION - Not Used

PROJECT
NAME

PROJECT
ADDRESS

ELECTRICAL

OPERATION
AND
MAINTENANCE
MANUAL

"EXAMPLE"
Binder Side

PROJECT
NAME

PROJECT
ADDRESS

ELECTRICAL
SYSTEMS

OPERATION
AND
MAINTENANCE
MANUAL

"EXAMPLE"
Binder Front Cover

PROJECT NAME

AT

PROJECT ADDRESS

ELECTRICAL OPERATION AND MAINTENANCE BROCHURES

"EXAMPLE"
Binder Front Cover

PROJECT NAME

AT

PROJECT ADDRESS

ELECTRICAL SYSTEMS OPERATION AND MAINTENANCE BROCHURES

END OF SECTION 26 01 18

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor
- B. Basic Electrical Requirements specifically applicable to Division 26, 27 and 28 Sections.

1.2 DESCRIPTION OF SYSTEM

- A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for the following:
 - 1. Rigid Metallic Conduit (RMC).
 - 2. Intermediate Metal Conduit (IMC).
 - 3. Electrical metallic tubing (EMT).
 - 4. Flexible metal cables(MC/HCF)
 - 5. Fittings and conduit bodies.
- B. Raceways and conduits shall begin at an acceptable enclosure and terminate only in another such enclosure except conduit/raceway stub-outs.
- C. A raceway shall be provided for all electrical power and lighting, and electrical systems unless specifically specified otherwise.
- D. Where the contract documents refer to the terms "raceway," or "conduit" the materials shall be as listed above in conjunction with NEC article 100, definition of "raceway". MC and HCF flexible metal cables shall not be considered a substitute for raceway or conduit. The use of above products shall be limited to that specified by "Part-3 Execution".

1.3 REFERENCES

- A. ANSI C80.1/Fed.Spec. WWC-581 - Rigid Steel Conduit, Hot-dipped galvanized with chromate finish.
- B. ANSI C80.3/Fed.Spec. WWC-563 - Electrical Metallic Tubing, Hot-dipped galvanized steel.
- C. ANSI C80.5/Fed.spec. WWC-581/U.L.1242 - Intermediate Metal Conduit, Hot dipped galvanized with chromate finish.
- D. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- E. ANSI/NFPA 70 - National Electrical Code.

- F. NECA "Standard of Installation."
- G. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
- H. NEMA TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).
- I. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.
- J. ANSI/Fed. Spec. J-C-30B - Flexible Metal Cables, Galvanized steel jacket.

1.4 DESIGN REQUIREMENTS

- A. Conduit Size: ANSI/NFPA 70. (see drawings and this and other sections of these specifications for additional requirements).

1.5 SUBMITTALS

- A. Submit catalog cut sheet showing brand of conduit to be used and showing that conduit is U.L. listed and labeled, and manufactured in the United States.
- B. Submit catalog cut sheet on all types of conduit bodies, and fittings.
- C. Product data shall be submitted for approval on:
 - 1. Conduits.
 - 2. Conduit straps, hangers and fittings.
 - 3. Cables.
 - 4. Expansion/deflection fittings.
- D. Submit U.L. listed fire and smoke stopping assemblies for each applicable application.
- E. Product data shall prove compliance with Specifications, National Electric Code, National Board of Fire Underwriters, manufacturer's specifications and written installation data.

1.6 PROJECT RECORD DOCUMENTS

- A. Submit record documents to accurately record actual routing of conduits larger than 1.25 inches.

1.7 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle Products to site.
- B. Accept conduit on site. Inspect for damage.
- C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- D. Protect PVC conduit from sunlight.

1.9 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Verify routing and termination locations of conduit prior to rough-in.
- C. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All conduits shall bear U.L. label or seal and shall be manufactured in the United States.
- B. Conduit systems and all related fittings, boxes, supports, and hangers must meet all the requirements of national, state, local, and other Federal codes where applicable.

2.2 MINIMUM TRADE SIZE

- A. Rigid conduit - 3/4".
- B. E.M.T. - 3/4" .
- C. E.M.T.:
 - 1. Homeruns - 3/4".
 - 2. Branches - 1/2".

2.3 RIGID METALLIC CONDUIT

- A. Comply with:
 - 1. ANSI C80.1
 - 2. U.L. Spec - No. 6
 - 3. N.E.C. 346
 - 4. Fed. Specification WW-C-581.
- B. Conduit material:

1. hot-dipped galvanized steel.

C. Fittings:

1. Threaded.
2. Insulated bushings shall be used on all rigid steel conduits terminating in boxes, wire gutters, or cabinets, and shall be impact resistant plastic molded in an irregular shape at the top to provide smooth insulating surface at top and inner edge. Material in these bushings must not melt or support flame and shall be 90 degree rated.
3. Insulated grounding bushing shall be used on all rigid steel conduits terminating in panelboards, distribution boards, switchboards and motor control centers and shall be Hot-dipped galvanized malleable iron or steel.

D. Conduit Bodies:

1. Comply with ANSI/NEMA FB 1.
2. Threaded hubs.
3. Hot-dipped galvanized malleable iron.

2.4 INTERMEDIATE METAL CONDUIT

A. Comply with:

1. U.L Standard 1242.
2. ANSI C80.5
3. N.E.C. 345.
4. Fed. Specification WW-C-581.

B. Conduit material: Zinc coated steel.

C. Fittings:

1. Threaded.
2. Zinc plated malleable iron.
3. Insulated bushings shall be used on all rigid steel conduits terminating in boxes, wire gutters, or cabinets, and shall be impact resistant plastic molded in an irregular shape at the top to provide smooth insulating surface at top and inner edge. Material in these bushings must not melt or support flame and shall be 90 degree rated.
4. Insulated grounding bushing shall be used on all rigid steel conduits terminating in panelboards, distribution boards, switchboards and motor control centers.
 - a) Hot-dipped galvanized malleable iron or steel.

- D. Conduit bodies:
1. Comply with ANSI/NEMA FB 1.
 2. Threaded hubs.
 3. Hot-dipped galvanized malleable iron.

2.5 ELECTRICAL METAL CONDUIT

- A. Comply with:
1. U.L 797
 2. ANSI C80.3
 3. N.E.C.
 4. ANSI/UL797
 5. Fed. Specification WWC-563
- B. Conduit material: Hot dipped Galvanized steel tubing.
- C. Fittings:
1. ANSI/NEMA FB 1
 2. Set screw
 3. Steel.
 4. Concrete tight.
 5. T&B Series 5031/5030.
 6. Insulated bushings shall be used on all liquid-tight conduits size 1-1/4" or larger terminating in boxes, wire gutters, cabinets, panels, etc. and shall be impact resistant plastic molded in an irregular shape at the top to provide smooth insulating surface at top and inner edge. Material in these bushings must not melt or support flame.
 7. Insulated grounding bushing shall be used on all rigid steel conduits terminating in panelboards, distribution boards, switchboards and motor control centers.
 - a) Hot-dipped galvanized malleable iron or steel.

2.6 FLEXIBLE METAL CLAD CABLE(MC)

- A. Comply with:
1. N.E.C.
 2. ANSI/UL 1
 3. Fed. Specification J-C-30B
- B. Cable material:
1. Jacket material: Galvanized Steel, interlocked.

2. Core covering: High dielectric strength assembly tape.
3. Conductor Material:
 - a) Copper, Solid THHN
 - b) Minimum #12 gauge
 - c) Maximum #8 gauge
 - d) 90 degree C, 600 volt.
 - e) Full size insulated grounding conductor, green.
 - f) Conductor color coding to match system voltage

C. Fittings:

1. ANSI/NEMA FB 1
2. ANSI/UL 514B
3. Zinc plated Malleable iron, or steel.
4. Threaded rigid and IMC conduit to flexible conduit coupling.
5. Direct flexible conduit bearing set screw type not acceptable.
6. T&B 3100 series
7. Install insulated bushings or equivalent protection (i.e. Anti-short) between core conductors and outer jacket.

PART 3 - EXECUTION

3.1 LOCATION/INSTALLATION REQUIREMENTS

A. Interior Dry Locations:

1. Concealed:
 - a) Use rigid galvanized steel conduit, intermediate metal conduit, and electrical metallic tubing. Rigid non-metallic conduit (PVC) is not permitted for use above grade unless written permission is granted by A/E and owners authorized representative.
 - b) The use of Metal Clad cables and HFC-90 Armored cables are permitted in limited applications as specified herein, provided acceptable by the local inspecting authority having jurisdiction and applicable codes and standards. Refer to "ADDITIONAL REQUIREMENTS FOR METAL CLAD/HFC ARMORED CABLES", below.
2. Exposed: Use rigid galvanized steel conduit, intermediate metal conduit, and

electrical metallic tubing. EMT may only be used where not subject to damage which is interpreted by this specification to be above 90" AFF, with exception to electrical and mechanical equipment rooms where conduit exits from top of panelboards, motor controllers, MCC's, etc.

3. Concealed or exposed flexible conduit:
 - a) Concealed: Use flexible steel conduit or liquid-tight flexible steel conduit in lengths not longer than six (6) feet in length with a ground conductor installed in the conduit.
 - b) Exposed: Use liquid-tight flexible steel conduit shall not exceed three(3) feet in length (unless written authorization by A/E for specific conditions is granted) with a ground conductor installed in the conduit, for final connections to vibrating equipment only (i.e. motors, air-handler units, etc).

B. Interior Wet and Damp Locations:

1. Use rigid galvanized steel or intermediate metal conduit.
2. Wet location: All fittings, supports, mounting hardware, etc. shall be hot dipped galvanized steel or stainless steel.
3. Use liquid-tight flexible steel conduit as specified above, for final connections to vibrating equipment.

C. Concrete Columns or Poured in-place Concrete Wall Locations:

1. Use rigid non-metallic conduit. Penetration shall be by approved metal raceway (i.e. metal conduit as required elsewhere in these specifications).

D. Fire pump rooms:

1. Use rigid galvanized steel conduit per NFPA/NEC.
2. Use liquid-tight flexible steel conduit as specified above, for final connections to vibrating equipment.

3.2 ADDITIONAL REQUIREMENTS FOR RIGID STEEL CONDUIT

A. Rigid steel conduit shall be cut and threaded with tools approved for the purpose and by qualified personnel.

1. Approved pipe vise.
2. Roller/bade type cutter or band saw.
3. Reamer capable of completely removing al ridges or burrs left by the cutter. Reaming with pliers is not acceptable.

- B. Hangers shall be installed 8 ft. apart.
- C. Conduits stubbed through floor slabs, above grade and not contained inside walls, shall be rigid galvanized metallic conduit.
- D. One hole pipe straps shall be malleable iron. Wet location applications shall include malleable iron back clamp spacers.

3.3 ADDITIONAL REQUIREMENTS FOR EMT

- A. Electric metallic tubing (thin wall) may be installed inside buildings above ground floor where not subject to mechanical injury, unless specifically noted otherwise.
- B. All cuts shall be reamed smooth and free of sharp and abrasive areas by use of an approved reamer.
- C. Cut conduit square using approved hacksaw with 32 tooth per inch blade; de-burr cut ends. Roller/blade type pipe cutter is not acceptable.
- D. One hole pipe straps shall be heavy duty type.

3.4 ADDITIONAL REQUIREMENTS FOR METAL CLAD CABLES

- A. Metal Clad Cables may be used only as specified elsewhere in this document, as specified herein, where permitted by NEC, and if approved by the Local Inspecting Authority having Jurisdiction.

3.5 ADDITIONAL REQUIREMENTS FOR ARMOR HCF-90 CABLES

- A. Armor HCF-90 Cables may be used only as specified elsewhere in this document, as specified herein, where permitted by NEC, and if approved by the Local Inspecting Authority having Jurisdiction.
- B. Type HCF-90 hospital grade cable, where permitted, shall be used in Health Care Facilities or part thereof (i.e. multifunction buildings, etc.) and where permitted by NEC Article 517 , for the following :
 - 1. Patient Care areas
 - 2. Limited Care Facilities
 - 3. Ambulatory Health Care
 - 4. Exam rooms within a Medical Office building or suite
 - 5. Clinics
 - 6. Dental office or suite
 - 7. Where redundant grounding path is required by NEC 250-91(b)

3.6 ADDITIONAL REQUIREMENTS FOR METAL CLAD/ARMOR HCF-90 CABLES

- A. Cables, where permitted, shall be used only in interior dry locations of stud wall

partitions/framing and for final connections to lighting luminaries from conduit system/junction box above each fixture. MC shall not be used as branch circuit homeruns to panelboards or similar equipment. Branch circuit homeruns and branch electrical distribution wiring system shall utilize conduit system (i.e. GRC, IMC, EMT, etc.) as specified elsewhere in this document.

- B. Cables serving stud wall partitions shall begin from circuit collector boxes/conduit system directed above first device or equipment served. Extending long runs of cable via framing system to avoid installation of raceway system as intended by these specifications is prohibited.
- C. Cables shall not be installed where subject to mechanical injury or exposure to heat.
- D. Multi-conductor home run cable is prohibited.
- E. Cables for use other than power and lighting branch circuits is not permitted without special written permission by A/E.
- F. Connectors and supporting components shall be UL Listed for such use.
- G. Cut cables with UL listed tools intended for such use. Ream smooth and free of sharp and abrasive areas. Install bushing between conductors and outer jacket. The use of slide cutters or dikes to cut cables is not acceptable.
- H. For branch circuit lighting and power circuits only, maximum #8 gauge permitted. Cables shall not be used for feeder circuits, or other type systems (i.e. fire alarm, etc).
- I. Maintain minimum 1/2 inch separation between each cable and support per NEC article 334. The practice of bundling cables is not acceptable.
- J. Support cables directly from building superstructure. Support maximum of 1'-0" from every box, cabinet, etc., secure at intervals not to exceed 5'-0".
- K. Install metal sleeves where cables pass through rated walls, one sleeve per cable with minimum 2 inches between each. Increase spacing as required per applicable UL fire stopping detail/assembly.
- L. Install cables minimum of 1'-0" from communications cables.
- M. The use of standard type A/C cables in lieu of MC cables is not permitted unless cable is HCF-90 as specified herein.
- N. Attachment of cables to ceiling system or support wires, regardless if support wire is a dedicated wire, is prohibited. Support cables directly to building superstructure. Only a vertical cable drop down to a recessed lay-in luminaire can be supported to the fixture support wire with approved fasteners. Vertical cable drop attachment may be by means of Ty-Rap cable tie if approved by the Local Inspecting Authority having jurisdiction and UL plenum rated within plenum air environments.
- O. Attachment of cables to, on, or from mechanical (HVAC) equipment, supports, etc., is

not permitted.

- P. Install cables parallel and perpendicular to building structure.
- Q. Install additional supports as necessary to omit cable sagging.
- R. Complete installation shall be in a neat and workmanlike manner to the satisfaction of the A/E.
- S. Zigzagging cables through building elements, as method of support is not acceptable.
- T. Cable with outer metal sheath damaged by construction elements and/or improper installation shall be replaced at no additional cost to owner.
- U. Cables shall be securely fastened with UL listed devices intended for such use. Cables attached to metal stub framing system shall be one hole MC cable straps with screws and/or Caddy 449 series "snap-clip" fasteners or Caddy MX3 Quick support. Caddy Quick MX3 fasteners shall be provided with supplemental screw fasteners to metal stub framing.

3.7 SUPPORTS

- A. Arrange supports to prevent misalignment during wiring installation.
- B. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- C. Group related conduits; support using conduit rack. Construct rack using steel channel; (minimum 24", increase distance as required) provide space on each for 25 percent additional conduits.
- D. Fasten conduit supports to building structure and surfaces under provisions of Section 26 01 16.
- E. Do not support conduit with wire, metal banding material, or perforated pipe straps. Remove wire used for temporary supports.
- F. Do not attach conduit, cables, or boxes to ceiling support wires, dedicated wires, or grid channel.
- G. Conduits, cables, or boxes shall not be supported from ceiling grid supports, plumbing pipes, duct systems, heating or air conditioning pipes, or other building systems.
- H. Do not support conduit to other conduits.
- I. All raceways run within building shall be supported from superstructure above by means of threaded rod hangers and kindorf racking, etc. Quantity of conduit rack shall be kept to a minimum. Above ceiling raceways ran from outlet box to outlet box shall run via racking system. Install all conduits and racking at similar elevation.

- J. Hangers shall be of galvanized steel and installed minimum of every 10 ft. the entire length of the system.
- K. Conduit hangers used exterior or in wet locations shall be hot dipped galvanized malleable iron or stainless steel.
- L. Mounting hardware used exterior or in wet locations shall be stainless steel.
- M. Supporting conduit and boxes with wire is not approved. All raceways except those from surface-mounted switches, outlet boxes or panels shall be supported with clamp fasteners with toggle bolt on hollow walls, and with lead expansion shields on masonry.
- N. Free-air cable, where specified and permitted elsewhere, shall be supported directly from the superstructure with UL Listed devices intended for such use. Ty-Rap cable ties in conjunction with UL Listed devices shall be UL plenum rated within plenum air environments.
- O. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control, deflection, and expansion joints. Provide seismic bracing and supports in accordance with BOCA (chapter 1610) latest addition.

3.8 EXPANSION/DEFLECTION FITTINGS

- A. Provide suitable fittings to accommodate expansion and deflection where conduit crosses, control and expansion joints.
- B. Expansion fittings shall be installed in the following cases:
 - 1. In each conduit run wherever it crosses an expansion/deflection joint in the concrete structure
 - 2. On one side of expansion/deflection joint with its sliding sleeve end flush with joint, and with a length of bonding jumper in expansion equal to at least three times the normal width of joints
 - 3. In each conduit run which mechanically attached to separate structures to relieve strain caused by shift on one structure in relation to the other
 - 4. In conduit runs above ground which is more than one hundred feet in length, and interval between expansion/deflection fittings in such runs shall not be greater than 100 feet.

3.9 GROUNDING

- A. All raceways shall have a copper system ground conductor throughout the entire length of circuit installed within conduit in strict accordance with NEC codes.
- B. Grounding conductor shall be included in total conduit fill determining conduit sizes,

even though not included or shown on drawings. Increase conduit size shown as required.

- C. Grounding conductors run with exterior/ underground feeders shall be bare only.
- D. Grounding conductors run with feeders shall be bonded to portions of conduit that are metal by approved ground bushings.
- E. See other sections of these specifications for additional requirements.
- F. Grounding conductors (including lightning protection down conductors) run in metal conduit shall be bonded to metal conduit at both ends.

3.10 CONDUITS PENETRATING 2 OR 4 HOUR WALLS SHALL BE AS FOLLOWS

- A. Conduits with conductors penetrating the wall shall have blow out patches on each side of the wall.
- B. Multiple conduits run through rated walls side by side shall have blow out patches on each side of the wall.
- C. Data or telephone conductors run exposed and penetrating a rated wall 2 hour fire, smoke or smoke/fire shall be sleeved with steel conduits 30" each side of the wall and conduit ends packed with approved fire sealant.

3.11 FIRE AND SMOKE STOPPING

- A. Contractor is to provide fire stopping and/or smoke stopping for all penetrations of (new and existing) fire or smoke barrier walls, chases, floors, etc. as required to maintain rating of floor, wall, chase, etc.
- B. Install conduit to preserve fire resistance rating of partitions and other elements.
- C. Install fire proofing material to maintain existing rating of floor, beams, etc. damaged or removed by renovation.
- D. Fire and smoke stopping material: A two-part silicone foam or a one-part putty, UL classified and FM approved with flame spread of 0 and smoke development not to exceed 50 in accord with ASTM E84. Material shall be suitable for penetration seals through fire-rated floors and walls when tested in accord with ASTM E119. Material shall not melt or soften at high temperatures, shall be suitable for direct outdoor and ultraviolet exposures, shall cure to give a tight compression fit, and shall not produce toxic fumes. Material, when heated, shall expand to fill and hold penetration closed where burn out of cable insulation or ATC tubing occurs. Comply with above and/or supplemental general conditions, whichever is more stringent.
- E. All penetrations shall be sealed/fire stopped in strict accordance with UL Fire Directory, latest addition. Submit applicable details for acceptance. Prepare and install exactly as delineated by UL detail(s).

- F. Comply with UL Fire Directory "F" and "T" ratings respectfully.

3.12 VERTICAL RACEWAYS

- A. Cables in vertical raceways shall be supported as per NEC Article 300-19. Provide and install supporting devices for cables, including any necessary accessible pullbox as required regardless if shown on drawings or not. Provide and install access panels as required. Coordinate location of pull box and access panel with architect prior to installation. This includes empty raceways for future use.

3.13 SLEEVES AND INSERTS

- A. Sleeves through outside wall shall be cast iron with intermediate, integral flange.
- B. Sleeves through concrete floors and interior masonry walls shall be schedule 40 black steel pipe or GRC.
- C. Sleeves through interior partitions shall be minimum 22-gauge galvanized steel.

3.14 GENERAL

- A. Install conduit in accordance with NECA "Standard of Installation." Contractor shall layout all work prior to rough-in.
- B. Install nonmetallic conduit in accordance with manufacturer's instructions.
- C. Arrange conduit to maintain headroom and present neat appearance.
- D. Route conduit installed above accessible ceilings or exposed to view parallel or perpendicular to walls. Do not run from point to point.
- E. Route conduit in and under slab from point-to-point.
- F. Do not cross conduits in slab.
- G. Maintain adequate clearance between conduit and piping.
- H. Maintain 12 inch (300 mm) clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).
- I. Bring conduit to shoulder of fittings; fasten securely.
- J. Use threaded conduit hubs to fasten conduit and flexible conduit to sheet metal boxes, disconnects switches, panelboards, equipment control panels, etc., in damp and wet locations.
- K. Boxes in damp and wet locations shall be furnished with threaded hubs cast into box.

- L. Install no more than equivalent of three 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2 inch (50 mm) size.
- M. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- N. Provide and install pullboxes, junction boxes, fire barrier at fire rated walls etc., as required by NEC Article 300, whether shown on drawings or not.
- O. Provide continuous fiber polyline 1000 lb. minimum tensile strength pull string in each empty conduit except sleeves and nipples. This includes all raceways which do not have conductors furnished under this Division of the specifications. Pullcord must be fastened to prevent accidental removal. A phenolic or brass nameplate shall be attached to each end indicating the location of both ends of conduit as follows: THIS END = "LOCATION," OTHER END = "LOCATION."
- P. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- Q. Ground and bond conduit under provisions of Section 26 05 26.
- R. Identify conduit under provisions of Section 26 05 22.
- S. Install all conduits concealed from view unless specifically shown otherwise on drawings.
- T. Rigid steel box connections shall be made with double locknuts and bushings.
- U. All raceways shall be kept clear of plumbing fixtures to facilitate future repair or replacement of said fixtures without disturbing wiring. Except where it is necessary for control purposes, all raceways shall be kept away from items producing heat.
- V. All raceway runs in masonry shall be installed at the same time as the masonry so that no face cutting is required, except to accommodate boxes.
- W. All raceways shall be run from outlet to outlet as shown on the drawings. Deviations from the drawings shall be marked on field set of drawings as previously specified.
- X. Circuit consolidation beyond that shown on the drawings is prohibited. Circuit consolidation shall be limited to three "current carrying phase conductors" per raceway.
- Y. Spare conduit stubs shall be capped and location and use marked with concrete marker set flush with finish grade. Marker shall be 6" round x 6" deep with appropriate symbol embedded into top to indicate use. Also, tag conduits in panels where originating.
- Z. All conduit stubbed above floor shall be strapped to Kindorf channel supported by conduit driven into ground or tied to steel. Spare conduit stubs shall be capped with a

U.L. listed and approved cap or plug for the specific intended use and identified with ink markers as to source and labeled "Spare".

- AA. All connections to motors or other vibrating equipment including dry type transformers or at other locations where required shall be made with not less than 12" and not more than 36" of liquid-tight conduit. Use angle connectors wherever necessary to relieve angle strain. Liquid-tight conduit terminations shall be provided with kellems strain relief grips.
- BB. Provide conduit seal-offs wherever conduit crosses obvious temperature changes (i.e. from inside to outside of coolers, freezers, etc.).
- CC. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation specified under other Sections of these specifications.
- DD. All raceways shall be run in neat and workmanlike manner and shall be properly in accordance with latest edition of NEC with approved conduit clamps, hanger rods and structural fasteners.
- EE. All raceway runs, whether terminated in boxes or not, shall be capped during the course of construction and until wires are pulled in, and covers are in place. No conductors shall be pulled into raceways until construction work which might damage the raceways has been completed.
- FF. Electrical raceways shall be supported independently of all other systems and supports, and shall in every case avoid proximity to other systems which might cause confusion with such systems or might provide a chance of electrolytic actions, contact with live parts or excessive induced heat.
- GG. Electrical nonmetallic tubing (ENT) is not permitted.

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PART 1 - GENERAL

1.1 DESCRIPTION OF SYSTEM

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work.
- B. Provide all equipment, labor, material, accessories, and mounting hardware to properly install all conductors and cables rated 600 volts and less for a complete and operating system for the following:
 - 1. Building wire and cable.
 - 2. Wiring connectors and connections.
 - 3. No aluminum wire is not permitted unless specifically noted otherwise.
- C. All sizes shall be given in American Wire Gauge (AWG) or in thousand circular mils (MCM).

1.2 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.3 SUBMITTALS

- A. Product Data: Submit catalog cut sheet showing, type and U.L. listing of each type of conductor, connector and termination.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years experience.

1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.6 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. All conductors are copper unless specifically noted otherwise.
- C. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions.

- D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.
- E. Where wire and cable sizes is not shown, size for load/equipment served in accordance with NEC, including voltage drop.

1.7 COORDINATION

- A. Determine required separation between cable and other work.
- B. Determine cable routing to avoid interference with other work.

PART 2 - PRODUCTS

2.1 BUILDING WIRE AND CABLE

- A. Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: ANSI/NFPA 70, Type THHN/THWN and XHHW.

2.2 ALUMINUM CONDUCTORS

- A. Aluminum conductors are not permitted unless specifically noted and/or specified on drawings.
- B. Where aluminum conductors are specified elsewhere, they shall be compact stranded aluminum alloy with XHHW insulation. Alcan Stabiloy AA-8000 Series, 600 volt. U.L. listed and labeled.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install products in accordance with manufacturers instructions.
- B. Conductors #10 AWG or #12 AWG shall be 600 volt type THWN/THHN unless noted otherwise, rated 90 degrees C. dry.
- C. Use solid conductor for feeders and branch circuits 10 AWG and smaller (except for control circuits).
- D. Use conductor not smaller than 12 AWG for power and lighting circuits.
- E. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet (23 m).

- F. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- G. All conductors shall be installed in raceway.
- H. Conductor sizes indicated on circuit homeruns or in schedules shall be installed over the entire length of the circuit unless noted otherwise on the drawings or in these specifications.
- I. Before installing raceways and pulling wire to any mechanical equipment, verify electrical characteristics with final submittal on equipment to assure proper number and AWG of conductors. (As for multiple speed motors, different motor starter arrangements, etc.).

3.2 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire has been completed.

3.3 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.4 WIRING METHODS

- A. Use only building wire, Type THHN/THWN insulation, in raceway unless noted otherwise.
- B. Wiring in vicinity of heat producing equipment: Use only XHHW insulation, in raceway.
- C. Conductors installed within fluorescent fixture channels shall be Type THHN or XHHW, rated 90 degrees C dry. Conductors for all other light fixtures shall have temperature ratings as required to meet the U.L. listing of the fixture; however, in no case shall the temperature rating be less than 90 degrees Centigrade. Remove incorrect insulation types in new work.

3.5 INTERFACE WITH OTHER PRODUCTS

- A. Identify wire and cable under provisions of Section 26 05 22.
- B. Identify each conductor with its circuit number or other designation indicated on Drawings.
- C. Identify neutrals with its associated circuit number(s).
- D. Test wire and cable under provisions of section 26 01 16.

3.6 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of the General Requirements of the Contract Documents and 16090.
- B. Inspect wire for physical damage and proper connection.

- C. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.
- D. Verify continuity of each branch circuit conductor.

3.7 VERTICAL RISERS

- A. Provide vertical cable riser supports per Article 300-19 in NFPA 70. Cable supports shall be O-Z/Gedney Type "S" or equal. These shall be located in accessible pullboxes of adequate size. Provide for adequate structural connection of cable supports to pullbox, which will transfer cable weight to building.

3.8 PULLING

- A. No wire shall be pulled until the conduit system is complete from pull point to pull point and major equipment terminating conduits have been fixed in position.
- B. Mechanical pulling devices shall not be used on conductors sized #8 and smaller. Pulling means which might damage the raceway shall not be used.
- C. Use only powdered soapstone or other pulling lubricant acceptable to the A/E. Compound or lubricant shall not cause the conductor or insulation to deteriorate.
- D. All conductors to be installed in a common raceway shall be pulled together. The manufacturer's recommended pulling tensions shall not be exceeded.
- E. Bending radius of insulated wire or cable shall not be less than the minimum recommended by the manufacturer.

3.9 CONTROL AND SIGNAL CIRCUITS

- A. For control and signal circuits above 50 VAC, conductors shall be #14 AWG minimum size, Type XHHW or THWN-THHN as permitted by NFPA 70, within voltage drop limits, increased to #12 AWG as necessary for proper operation.
- B. For control and signal circuits 50 VAC and below, conductors, at the Contractor's option, may be #16 AWG, 300 volt rated, PVC insulated, except where specifically noted otherwise in the contract documents.
- C. Conductor insulation for Fire Alarm Systems shall be as approved by Code Inspection Authority only. Wire specified /acceptable by the A/E through submittal process shall not supersede this final Approval for conditions of this specific project.
- D. Install circuit conductors in conduit.
- E. Circuit conductors to be stranded.

3.10 COLOR CODING

- A. All power feeders and branch circuits No. 6 and smaller shall be wired with color-coded

wire with the same color used for a system throughout the building. Power feeders above No. 6 shall either be fully color-coded or shall have black insulation and be similarly color-coded with tape or paint in all junction boxes and panels. Tape or paint shall completely cover the full length of conductor insulation within the box or panel.

- B. Unless otherwise approved or required by A/E color-code shall be as follows: Neutrals to be white for 120/208V system, natural grey for 277/480V system; ground wire green, bare, isolated ground wire green with yellow strips. 120/208V, Phase A - black; Phase B - red; Phase C - blue. 480/277V, Phase A brown; Phase B - orange; Phase C - yellow. All switchlegs, other voltage system wiring, control and interlock wiring shall be color-coded other than those above.

3.11 TAPS/SPLICES/CONNECTORS/TERMINATIONS

- A. Taps and splices are not acceptable unless specifically noted otherwise on drawings or special written approval is granted by engineer.
- B. Clean conductor surfaces before installing lugs and connectors.
- C. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- D. Power and lighting conductors shall be continuous and unspliced where located within conduit. Splices shall occur within troughs, wireways, outlet boxes, or equipment enclosures where sufficient additional room is provided for all splices. No splices shall be made in in-ground pull boxes (without written approval of engineer).
- E. Splices in lighting and power outlet boxes, wireway, and troughs shall be kept to a minimum, pull conductors through to equipment, terminal cabinets, and devices.
- F. No splices shall be made in junction box, and outlet boxes (wire No. 8 and larger) without written approval of Engineer.
- G. No splices shall be made in communications outlet boxes, pull boxes or wireways (i.e., fire alarm, computer, telephone, intercom, sound system, etc.) without written approval of Engineer. Pull cables through to equipment cabinets, terminal cabinets and devices.
- H. Allow adequate conductor lengths in all junction boxes, pull boxes and terminal cabinets. All termination of conductors in which conductor is in tension will be rejected and shall be replaced with conductors of adequate length. This requirement shall include the providing by the Contractor of sleeve type vertical cable supports in vertical raceway installations provided in pullboxes at proper vertical spacings.
- I. A calibrated torque wrench shall be used for all bolt tightening, torque to manufactures recommendations.
- J. Interior Locations:
 - 1. All (non-electronic systems) copper taps and splices in No. 8 or smaller shall be fastened together by means of "spring type" connectors. All taps and splices in

wire larger than No. 8 shall be made with compression type connectors and taped to provide insulation equal to wire.

K. Exterior Locations:

1. Make splices, taps and terminations above grade in splice or termination cabinets. Do not splice any cable in ground or below finished grade.
2. All taps and splices shall be made with compression type connectors and covered with Raychem heavywall cable sleeves (type CRSM-CT, WCSM or MCK) with type "S" sealant coating with sleeve kits as per manufacturer's installation instructions or be terminated/connected to terminal strips in above grade terminal boxes suitable for use.
3. Provide and install above grade termination cabinets sized to meet applicable codes and standards, where required for splicing.

3.12 ALUMINUM CONDUCTORS Aluminum conductors are not permitted.

END OF SECTION 26 05 14

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor
- B. Basic Electrical Requirements specifically applicable to Division 26, 27 and 28 Sections.

1.2 DESCRIPTION OF THE WORK

- A. Provide and install all outlet boxes (flush or surface) complete with all accessories as required to facilitate installation of electrical system and as required by the N.E.C.
- B. Section includes: Wall and ceiling outlet boxes (and/or small junction/pullboxes).

1.3 REFERENCES

- A. ANSI/NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.
- B. ANSI/NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- C. ANSI/NFPA 70 - National Electrical Code.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.4 SUBMITTALS

- A. Submit catalog cut sheet/product data on:
 - 1. Surface cast boxes.
 - 2. All outlet boxes to be used on project.
- B. For pullboxes and junction boxes not covered in Section 26 05 17, submit product data showing dimensions, covers, and construction.

1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.6 PROJECT CONDITIONS

- A. Verify field measurements are as shown on Drawings.
- B. Verify locations of outlets in offices and work areas prior to rough-in.
- C. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose.

PART 2 - PRODUCTS

2.1 Manufacturer

- A. Wiremold Company.
- B. Raco.

2.2 Materials

- A. The box and all system components must be UL listed in full compliance with the standard for 514A and 514C; steel shall be galvanized with a minimum wall thickness of .063 throughout. Back-feed brackets shall be .050 min, steel with gray or ivory, suitable for field painting. The device mounting bracket shall be molded from color matching UL approved resin.

2.2.1 Box

- A. The box shall include the box, dividers and mounting brackets. The dimensions of each shall be a minimum of 32 cubic inches per gang and shall be manufactured of 16 gauge min. thick steel. The box shall accommodate standard power and communication devices.
- B. The 2 and 3 gang boxes shall have knockouts located on top and bottom, 2 1/4" from the face to accommodate combinations of 1/2", 3/4", and 1" trade size conduits. Boxes of 4- or 6-gangs shall have knockouts to accommodate 1-1/2" trade size conduits.
- C. The box shall have a separate ground terminal provided in each gang.
- D. The box shall adjust for a flush installation with the finished wall. There shall be positive stops for surface mounting to 1/2", 5/8", 1" and 1 1/4" thick wallboard. Adjusting screws are to be located outside the box for adjustment prior to installation.

2.2.3 Device Mounting Bracket

- A. The self-leveling device mounting bracket shall accommodate standard power devices, connectivity inserts, and Wiremold 5507 series faceplates. A mounting bracket shall be available to accept other manufacturer's devices. The bracket accommodates up to six power devices or 18 communications inserts. All faceplates, mounting brackets and trim rings shall be color matched.

2.2.4 Fiber Optic/Category 5 Radius

- A. The depth of the box shall accommodate an 1 1/4" cable bend radius, which meets or exceeds the specifications for Fiber Optic and Category 5 cabling and TIA/EIA-569A requirements for communications pathways. A 1" controlled radius storage loop shall be available.

2.2.5 Device Covers

- A. Device cover plates in the following configurations must be available: duplex device cover plates, single 1.40" and 1.59" diameter receptacle cover plates, switch plates, GFCI cover plates, Sentrex surge receptacle cover plates and other rectangular faced plates. Single gang cover plates shall be modular in design.

2.2.6 Support Bracket

- A. A support bracket for mounting on 16" center studs must be provided on boxes more than two gangs.

2.2.7 Dividers

- A. Dividers must be removable without any tools.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
- B. Install electrical boxes to maintain headroom and to present neat mechanical appearance.
- C. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire.
- D. Above ceiling outlet and junction boxes shall be install as to permit readily accessible access from ladder or staging from corresponding floor without the need to extend ladder up through ceiling system to facilitate ease of maintenance.
- E. Install boxes to preserve fire resistance rating of partitions and other elements.
- F. Align adjacent wall-mounted outlet boxes for switches, receptacles, communications devices, and similar devices with each other.
- G. Coordinate locations of outlet boxes for TV receptacles, and TV video outlets with TV brackets, and Align boxes adjacent to each other and adjacent to bracket (where applicable).
- H. Outlets for 120V clocks shall be recessed so that the clock will hang flush with the finished surface of the wall.
- I. Use flush mounting outlet boxes in finished areas.

- J. Do not install flush mounting boxes back-to-back in walls; provide minimum 6 inch (150 mm) separation. Provide minimum 24 inches (600 mm) separation in acoustic rated walls.
- K. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- L. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- M. Support all ceiling outlet boxes from structure with minimum of one (1) 3/8" all-thread rod hangers. Boxes larger than 25 square inches shall be supported with two (2) all-thread rod hangers, minimum. Increase quantity and size of all-thread rod hangers as required for application to omit movement and swaying.
- N. Do not fasten boxes to ceiling support wires.
- O. Support boxes independently of conduit.
- P. Use gang box where more than one device is mounted together. Do not use sectional box.
- Q. Use gang box with plaster ring for single device outlets.
- R. Use cast outlet box in exterior locations and wet locations.
- S. Comply with applicable portions of the National Electrical Contractor's Association's (NECA) "Standard of Installation".
- T. Install outlets in the locations shown on the drawings; however, the Owner shall have the right to make, prior to rough-in, slight changes in locations to reflect room furniture layouts.
- U. Arrange wall outlet boxes symmetrical in spaces.
- V. The Contractor shall coordinate his work with that of the other Contractors so that each electrical box is the type suitable for the wall or ceiling construction provided and suitable fireproofing is inbuilt into fire rated walls.
- W. The Contractor shall relocate electrical boxes as required so that electrical devices, once installed, will be symmetrically located with respect to the room layout.
- X. All boxes shall be installed in a flush rigid manner with box lines at perpendicular and parallel angles to finished surfaces. Boxes shall be supported by appropriate hardware selected for the type of surface from which the box shall be supported. For example, provide metal screws for metal, wood screws for wood, and expansion devices for masonry or concrete.

- Y. For locations exposed to weather or moisture (interior or exterior), provide weatherproof boxes and accessories.
- Z. As a minimum, provide pull boxes in all raceways over 150 feet long. The pull box shall be located near the midpoint of the raceway length.
- AA. Provide knockout closures to cap unused knockout holes where blanks have been removed, and plugs for unused threaded hubs.
- BB. Provide conduit locknuts and bushings of the type and size to suit each respective use and installation.
- CC. Boxes and conduit bodies shall be located so that all electrical wiring is accessible.
- DD. Avoid using round boxes where conduit must enter box through side of box which would result in a difficult and insecure connection with a locknut or bushing on the rounded surface.
- EE. All flush outlets shall be mounted so that covers and plates will finish flush with finished surfaces without the use of shims, mats or other devices not submitted or approved for the purpose. Add-a-Depth rings or switch box extension rings (Steel City #SBEX) are not acceptable. Plates shall not support wiring devices. Gang switches with common plate where two or more are indicated in the same location. Wall-mounted devices of different systems (switches, thermostats, etc.) shall be coordinated for symmetry when located near each other on the same wall. Outlets on each side of walls shall have separate boxes. Through-wall type boxes shall not be permitted. Back-to-back mounting shall not be permitted. Trim rings shall be extended to within 1/8" of finish wall surface.
- FF. Outlet boxes mounted in metal stud walls, are to be supported to studs with two (2) screws inside of outlet box to a horizontal stud brace between vertical studs or pre-manufactured box bracket equal to caddy SGB/TSGB series, to prevent movement of outlet box after wall finished.
- GG. All outlet boxes that do not receive devices in this contract are to have blank plates installed matching wiring device plates.
- HH. Mount Height.
1. Height of wall outlets to bottom above finished floors shall be as follows, unless specifically noted otherwise, or unless otherwise required by applicable codes including ADA. Verify with the Architectural plans, interior design drawings and approved shop drawings for installing.
- | | |
|-------------|---------------------|
| Switches | 4'-0" AFF to top |
| Receptacles | 1'-4" AFF to bottom |

Lighting Panels	6'-6" AFF to centerline of highest breaker/fuse
Phone outlets	1'-4" AFF to bottom
ADA wall phones	(see part 3.1, item HH.(4.) below)
Intercom Call-in button/handsets	4'-0" AFF to top
Fire Alarm Pull Stations	4'-0" AFF to top
Fire Alarm Strobe Lights	80" AFF to lens bottom or 6" below ceiling to top, whichever to lower
Duct Detector Test Stations	80" AFF to bottom or 6" below ceiling to top, whichever to lower

2. Bottoms of outlets above counter tops or base cabinets shall be minimum 2" above counter top or backsplash, whichever is highest. Outlets may be raised so that bottom rests on top of concrete block course, but all outlets above counters in same area shall be at same height. It is the responsibility of this Division to secure cabinet drawings and coordinate outlet locations in relation to all cabinets as shown on Architectural plans, prior to rough-in, regardless of height shown on Division 26, 27 and 28 drawings.
 3. Height of wall-mounted fixtures shall be as shown on the drawings or as required by Architectural plans and conditions. Fixture outlet boxes shall be equipped with fixture studs when supporting fixtures.
 4. Coordinate locations and mounting heights of outlet boxes for all phones with architect, phone system installer and approved shop drawings prior to rough-in. Installed as directed, including requirements of ADA. In general, ADA wall phones shall be at a maximum of 54" to highest operable part essential to basic operation of telephone with side reach and maximum of 48" forward reach as defined by 4.31.
- II. Special Purpose Outlets.
1. Locate special purpose outlets as indicated on the drawings for the equipment served. Location and type of outlets shall be coordinated with appropriate trades involved. The securing of complete information for proper electrical roughing-in shall be included as work required under this section of specifications. Provide plug for each outlet.
- JJ. Outlets in Fire/Smoke and Smoke Partitions/Walls.
1. Electrical outlet boxes may be installed in vertical fire resistive assemblies classified as fire/smoke and smoke partitions without affecting the fire classification, provided such openings occur on one side only in each framing space and that openings do not exceed 16 sq. inches. All clearances between

such outlet boxes and the gypsum board must be completely filled with joint compound or other approved materials. The wall must be built around outlets of larger size so as not to interfere with the integrity of the wall rating.

3.2 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate installation of outlet box for products furnished under all Sections of these specifications.
- B. Coordinate locations and sizes of required access doors with applicable sections in these specifications.
- C. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- D. Coordinate mounting heights and locations of outlets mounted above counters, benches and backsplashes.
- E. Position outlet boxes to locate luminaires as shown on reflected ceiling plan.
- F. Ground and bond conduit under provisions of Section 26 05 26.
- G. Identify junction boxes under provisions of Section 26 05 22.

3.3 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closure in unused box opening.

END OF 26 05 15

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor
- B. Basic Electrical Requirements specifically applicable to Division 26, 27 and 28 Sections.

1.2 DESCRIPTION

- A. Provide and install pull and junction boxes as shown on drawings or as required by the National Electric Code (NEC).
- B. Provide and install pull and junction boxes wherever required for a complete and operating distribution system whether shown on drawings or not.
- C. Where outlet boxes are used for pull and/or junction boxes, they shall meet the requirements of the outlet box section of these specifications.

1.3 REFERENCES

- A. ANSI/NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.
- B. ANSI/NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- C. ANSI/NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
- D. ANSI/NFPA 70 - National Electrical Code.
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.4 SUBMITTALS

- A. Submit actual shop drawings on all pull boxes showing.
 - 1. Covers.
 - 2. Dimensions - inside and out.
 - 3. gauge of metal.
 - 4. Manufacturer.

1.5 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations and mounting heights of pull and junction boxes.

1.6 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.

- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.7 PROJECT CONDITIONS

- A. Verify field measurements are as shown on Drawings.
- B. Verify locations of pull and junction boxes prior to rough-in.
- C. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose and to maintain required access.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Dimensions of pull and junction boxes shall meet dimensions shown on drawings or dimensions required by NEC, whichever is largest.
- B. Pull and junction boxes shall meet all requirements of UL and NEC.
- C. Small pull boxes (i.e. 4" x 4") shall meet the requirements of these specifications for outlet boxes as a minimum.
- D. All boxes of 100 cubic inches or more shall be constructed of 14 gauge steel with hot dip galvanized coating.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install per N.E.C.
- B. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
- C. Install electrical boxes to maintain headroom and to present neat mechanical appearance.
- D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- E. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire.
- F. Install boxes to preserve fire resistance rating of partitions and other elements.

- G. Align adjacent wall-mounted boxes with each other.
- H. Use flush mounting boxes in finished areas.
- I. Do not install flush mounting boxes back-to-back in walls; provide minimum 6 inch (150 mm) separation. Provide minimum 24 inches (600 mm) separation in acoustic rated walls.
- J. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- K. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- L. Pull and junction boxes larger than 25 square inches shall be supported with two (2) 3/8" all-thread rod hangers minimum. Increase quantity and size of all-thread rod hangers as required for application to omit movement and swaying.
- M. Pull and junction boxes used for systems (Section 27 00 00 through 27 50 13) larger than 25 square inches shall be hinged cover type.
- N. Do not fasten boxes to ceiling support wires.
- O. Support boxes independently of conduit.
- P. Large Pull Boxes: Boxes larger than 36 inches x 36 inches or equivalent in any dimension shall be hinged cover type.

3.2 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations and sizes of required access doors with applicable sections in these specifications.
- B. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

3.3 ADJUSTING

- A. Install knockout closure in unused box opening.

END OF SECTION 26 05 17

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor
- B. Basic Electrical Requirements specifically applicable to Division 26, 27 and 28 Sections.

1.2 DESCRIPTION OF SYSTEM

- A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for the following:
 - 1. Wall switches.
 - 2. Receptacles.
 - 3. Device plates and decorative box covers.

1.3 REFERENCES

- A. NEMA WD 1 - General Purpose Wiring Devices.
- B. NEMA WD 5 - Wiring Devices, Special Purpose
- C. NEMA WD 6 - Wiring Device Configurations.

1.4 SUBMITTALS

- A. Submit Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.
 - 1. Submit product data on all types of wiring devices including plates and engraving.
- B. Submit Manufacturer's Instructions:
 - 1. Indicate application conditions and limitations of use stipulated by product testing agency specified under regulatory requirements.
 - 2. Include instructions for storage, handling, protection, examination, preparation, operation and installation of product.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years experience.

1.6 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for

purpose specified and shown.

1.7 EXPLAIN MATERIALS

- A. Provide a minimum of two (2) screw drivers of each type of tamper proof screw used on project.
- B. Turn over to owner. Submit receipt in O&M manual.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All devices shall be Specification Grade as minimum.
- B. General purpose wiring devices shall meet NEMA standard WD-1, Wiring Devices, General Purpose. Special purpose devices shall conform to the requirements of NEMA standard WD-5, Wiring Devices, Special Purpose.
- C. All wiring devices shall bear U.L. labels.
- D. All devices of one type (i.e. all snap switches, all duplex receptacles, etc.) shall be by the same Manufacturer. "Hazardous Location" and special purpose devices as may not be available from the same manufacturer, shall constitute the only exception to this requirement of single source.
- E. Corrosion resistant devices shall be as specified for normal usages, and fabricated of yellow color melamine plastic. Where "Weatherproof" type is indicated for exterior or wet locations, provide matching self-closing cover, with gasketed seals at plate/wall junctions and for cover.
- F. Provide factory packaged wiring devices having high impact strength molded plastic bodies.
- G. Except where specifically required in these specifications use of interchangeable type or combination switch-receptacle-pilot devices is not acceptable, and shall be removed.
- H. Switches and receptacles connected to emergency power system shall be red. Plates shall be as specified for devices connected to normal circuits, but shall be engraved reading "Emergency", see drawings for other engraving requirements.

2.2 WALL SWITCHES

- A. Manufacturers:
 - 1. See drawings.
- B. General:

1. Snap switches for general use shall be maintained contact types, and shall be single-pole, double-pole, three-way, or four-way as required for the specific switching arrangements shown on the drawings. They shall be quiet tumbler operation types, having silver alloy contacts, and meeting all NEMA performance standards. Color to match plates unless specifically noted otherwise in specifications and/or on drawings.
 2. Switches shall be toggle or key-operated types, as indicated on the drawings. All key-operated switches shall be keyed alike.
 3. Where switches are denoted as having pilot lights, pilot lights shall glow when the switches are "On". Provide pilot light switch with lamp and miniature step-down transformer. The pilot light shall have a red lens, and the lamp shall be long-life type.
 4. Jewels for use with switches controlling motors shall be green, and jewels for other purposes shall be amber. All units shall be front relampable.
 5. Snap switches installed in hazardous locations shall be U.L. listed for the type of location (class and division).
 6. Switches connected to emergency power shall have red lighted handles which shall illuminate when the switches are "Off".
 7. Voltage and ampere rating of switches shall be marked on switch, and shall conform to voltage of system to which applied.
- C. Description: NEMA WD 1, heavy-duty, AC only general-use snap switch.
- D. Voltage Rating: 120-277 volts, AC.
- E. Current Rating: 20 amperes minimum.
- F. Ratings: Match branch circuit and load characteristics.

2.3 RECEPTACLES

- A. General:
1. All receptacles shall be of standard NEMA configuration, as indicated on the drawings, and shall comply with the respective ANSI C73 series standard for the NEMA configuration. Color to match plates unless specifically noted otherwise in specifications and/or on drawings.
 2. Duplex receptacles shall have integral U.L. listed self-grounding clips. Similar, single receptacles shall be provided for plug-in connections of Industrial Fluorescent light fixtures on the same switching circuit. Receptacle face to be impact resistant nylon.

3. Weatherproof duplex receptacles shall be provided in all exterior locations, and shall be Ground Fault Circuit Interrupting (GFCI) types, with weatherproof stainless steel cover plates.
 4. Special purpose receptacles for specific equipment shall be grounding types, having the number of poles, voltage and ampere ratings, and NEMA configurations required by the equipment. For each special purpose receptacle, provide an identical mating plug equipped with cord grip, secured to cord.
 5. Duplex receptacles shall have back and side wired screw pressure terminals.
 6. Receptacles shown/installed in shower rooms, locker rooms, toilet rooms, janitors closets, exterior, elevator pit and machine rooms, escalator pits, within six (6) feet of a sink, and other areas as required by NEC, OSHA Standards 1910.303(b) and section 31-370(a) of the Connecticut General Statutes shall be Ground Fault Circuit Interrupting (GFCI) type, regardless if GFCI is shown on drawing or not.
 7. Receptacles installed for water coolers shall be Ground Fault Circuit Interrupting (GFCI) type, or a single receptacle as permitted by NEC.
- B. Description: NEMA WD 1; heavy-duty general use receptacle.
- C. Configuration: NEMA WD 6; heavy-duty, general use type as specified and indicated.
- D. Convenience Receptacle: Type 5-20.
- E. GFCI Receptacle: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.
- F. Manufacturers:
1. See drawings.

2.4 COVER PLATES

- A. All wiring devices shall be provided with standard size one-piece cover plates of suitable configuration for the number and type of devices to be covered.
- B. Metallic cover plates shall be used in interior spaces, unless specifically noted otherwise on drawings, shall be fabricated of corrosion-resistant #302 stainless steel, having a nominal thickness of .04", and a brushed finish. Screws securing the plates shall have flush (when installed) heads with finish to match plates. Metallic cover plates shall meet all requirements of the National Electrical Code and Federal Specifications.
- C. Cover plates used in existing interior spaces with minor renovation, unless specifically noted otherwise on drawings, shall be match existing type color and style. Cover plate engraving, where require and as specified herein shall be as determined by A/E
- D. Cover plates for switches located in corrosive atmospheres (where vaporproof is not indicated) shall be equal to Hubbell #17CM81/ #17CM82/ #17CM83/ #17CM84 one

piece neoprene with matching presswitch.

- E. Cover plates for exterior receptacles shall be gasketed #302 stainless steel lift covers with hinge.
- F. Unless specifically noted otherwise in specifications or on drawings all outlets for telephone and other communications and data systems shall be provided with standard size one-piece cover plates having a minimum 3/4 inch diameter bushed hole in the center unless specifically noted otherwise by specs, drawings, or by owner.
- G. All device plates (including systems device plates and trims) located in secure areas such as cells, dayrooms, holding rooms, recreation areas, etc., shall have security wall plates (minimum 10 gauge) with minimum 12 gauge galvanized steel backplate. Plates shall have TORX counter pin reject type tamperproof screws.
- H. All device plates (including systems device plates and trims) and blank plates located in all secure areas shall be mounted with tamper proof screws, unless otherwise noted.
- I. Cover plates shall be engraved where required as specified herein.

2.5 DEVICE AND COVER PLATE COLOR

- A. Wiring devices connected to normal power and located in unfinished spaces shall be grey color unless otherwise noted.
- B. Cover plates for devices connected to normal power and located in finished interior spaces shall be #302 Stainless steel unless otherwise noted or color selected by Architect.
- C. Devices and cover plates used in existing interior spaces with minor renovation, unless specifically noted otherwise on drawings, shall be match existing base building standard color.
- D. Devices and cover plates used in tenant spaces within an existing building, unless specifically noted otherwise on drawings, shall be as specified herein, unless base building standards dictate otherwise. If so, coordinate with landlord and provide color as directed.
- E. All devices and cover-plates in paneled walls or special fabricated walls shall have finish to match wall finish.
- F. Where a color discrepancy exists between the drawings and that specified herein, verify with A/E prior to ordering and provide as directed.
- G. Devices connected to emergency power shall be red color, except where established building standards require otherwise. Coordinate before purchase.
- H. Devices connected to UPS battery system shall be color selected by A/E (orange or orange identifier), except where established building standards require otherwise. Coordinate before purchase.

- G. Devices dedicated to serve computer/data equipment and not supplied by an emergency generator or UPS shall of special color to be determined by A/E. Coordinate with A/E prior to submittal process and provide as directed, except where established building standards require otherwise. Coordinate before purchase.
- H. Contractor shall modify any given catalog numbers as required to procure devices and plates of the proper color.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify conditions under provisions of Division 1 - General Requirements and any other applicable supplemental requirements/conditions.
- B. Verify outlet boxes are installed at proper height.
- C. Verify wall openings are neatly cut and will be completely covered by wall plates.
- D. Verify floor boxes are adjusted properly.
- E. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean debris from outlet boxes.

3.3 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install devices plumb and level.
- C. Install switches with OFF position down.
- D. Do not share neutral conductor on load side of dimmers.
- E. Install receptacles with grounding pole on bottom.
- F. Electrical boxes shall be cleaned and completely free of any debris, dust, etc. prior to the installation of wiring devices.
- G. Where 2 or more switches or receptacles are to be installed adjacent to one another, provide a multi-gang box and combination multi-gang coverplate. Provide proper NEC barriers in boxes which serve devices for both the Normal and Emergency Systems.

- H. Provide device coverplates for every device installed. Cover plates shall be installed so that they appear straight with no gaps between plate edges and the wall. Maintain vertical and horizontal to within 1/16 of an inch.
- I. In finished areas, provide same type of plate for all surface mounted devices as for recessed mounted devices.
- J. In any room, where new and existing construction is present, all receptacles, switches, and coverplates which are existing to remain shall be changed, as required to match new work.
- K. Wiring devices shall not be installed in exposed masonry until cleaning of masonry with acids has been completed.
- L. All receptacles and switches shall be grounded by means of a ground wire from device ground screw to outlet box screw and branch circuit ground conductor. Strap alone will not constitute an acceptable ground.
- M. All wiring devices, relays, contactors, pushbuttons, selector switches, pilot lights, etc. shall be installed in approved enclosures rated for the appropriate NEMA classified environment.
- N. All devices shall be installed so that only one wire is connected to each terminal.
- O. Once construction is substantially completed, replace all damaged, burned, or scorched wiring devices.
- P. Receptacles shown to be floor mounted shall be installed in floor boxes (with coverplates) which are approved for this use.
- Q. Connect wiring devices by wrapping conductor around screw terminal.
- R. Install protective rings and split nozzle on active flush cover service fittings.

3.4 NEUTRAL/PHASE CONDUCTOR CONNECTIONS

- A. At each receptacle "in" and "out" phase and neutral conductors shall have an additional conductor for connection to device. The practice of "looping" conductors through receptacle boxes shall not be acceptable.

3.5 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations of outlet boxes provided under other Sections of these specs to obtain mounting heights specified and indicated on Drawings.

3.6 FIELD QUALITY CONTROL

- A. Inspect each wiring device for defects.
- B. Operate each wall switch with circuit energized and verify proper operation.

- C. Verify that each receptacle device is energized.
- D. Test each receptacle device for proper polarity.
- E. Test each GFCI receptacle device for proper operation.

3.7 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.

END OF SECTION 26 05 18

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor
- B. Basic Electrical Requirements specifically applicable to Division 26, 27 and 28 Sections.

1.2 DESCRIPTION OF SYSTEM

- A. Provide and install all equipment, labor and material for a complete identification system, including but not limited to:
 - 1. Nameplates and labels.
 - 2. Wire and cable markers.
 - 3. Conduit markers.
- B. Identify all conduits, boxes, equipment, plates, etc. as specified herein and as specified elsewhere in this division.

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.
- B. Americans with Disabilities Act - 1990

1.4 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 - PRODUCTS

2.1 NAMEPLATES

- A. Nameplates shall be laminated phenolic plastic, chamfer edges, black front and back with white core, with lettering etched through the outer covering. White engraved letters on black background.
- B. Nameplates for emergency power (where applicable) shall be laminated phenolic plastic. Red front and back, with white core, with lettering etched through outer covering, white engraved letters on red background.
- C. Letter Size:
 - 1. Use 1/8 inch letters for identifying individual equipment and loads.

2. Use 1/4 inch letters for identifying grouped equipment and loads.
- D. Nameplates shall adequately describe the function of the particular equipment involved. Where nameplates are detailed on the drawings, inscription and size of letters shall be as shown and shop drawing submitted for approval. Nameplates for panelboards and switchboards shall include the panel designation, voltage and phase of the supply. For example, "Panel A, 120/208V, 3-phase, 4-wire". In addition, provide phenolic label in panel to describe where the panel is fed from. For example, "Fed From MDP-1:3:5". The name of the machine on the nameplates for a particular machine shall be the same as the one used on all motor starters, disconnect and P.B. station nameplates for that machine.
- E. The following items shall be equipped with nameplates: All motors, motor starters, motor-control centers, pushbutton stations, control panels, time switches, disconnect switches, transformers, panelboards, circuit breakers (i.e. all 2 pole, 3 pole C.B.'s), contactors or relays in separate enclosures, power receptacles where the nominal voltage between any pair of contacts is greater than 150V, wall switches controlling outlets that are not located within sight of the controlling switch, high voltage boxes and cabinets, large electrical systems junction and pull boxes (larger than 411/16"), terminal cabinets, terminal boards, and equipment racks. Nameplates shall also describe the associated panel and circuit number (if applicable).
- F. All Electrical Emergency System panels, transfer switches, etc. shall be labeled as per branch as defined by NEC, i.e. labeling shall be:
1. "Panel (****)-Emergency Life Safety Branch" for Emergency systems per NEC Article 700.
 2. "Panel (****)-Legally Required Standby Branch" for Emergency systems per NEC Article 701
 3. "Panel (****)-Optional Standby Branch" for Emergency systems per NEC Article 702
 4. Provide label on interior of each Electrical Emergency panel as follows:
 - a) Each Emergency Life Safety Branch panelboard label shall read: "WARNING: PANEL SHALL BE DEDICATED TO THE INSTALLATION OF EMERGENCY BRANCH WIRING AS DEFINED BY NEC-700/NFPA-110 AS ESSENTIAL FOR SAFETY TO HUMAN LIFE. CONNECTION OF OTHER LOADS/EQUIPMENT NOT DEFINED BY NEC IS PROHIBITED".
 - b) Each Emergency Legally Required Standby Branch panelboard label shall read: "WARNING: PANEL SHALL BE DEDICATED TO THE INSTALLATION OF EMERGENCY LEGALLY REQUIRED BRANCH WIRING AS DEFINED BY NEC-701/NFPA-110 WHEN INTERRUPTION COULD CREATE HAZARD OR HAMPER FIRE-FIGHTING OPERATION. CONNECTION OF OTHER LOADS/EQUIPMENT NOT DEFINED BY NEC IS PROHIBITED".
 - c) Each Emergency optional Standby Branch panelboard label shall read:

"WARNING: PANEL SHALL BE DEDICATED TO EQUIPMENT OWNER DESIRES TO BE ON EMERGENCY THAT IS NOT DEFINED BY NEC-700/NEC-701/NFPA-110 AS EMERGENCY LIFE SAFETY OR EMERGENCY LEGALLY REQUIRED. CONNECTION OF OTHER LOADS/EQUIPMENT DEFINED BY NEC 700/701 IS PROHIBITED".

2.2 WIRE MARKERS

- A. Description: Cloth, tape, split sleeve, or tubing type wire markers.
- B. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.
- C. Legend:
 - 1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings including neutral conductor.
 - 2. Control Circuits: Control wire number indicated on schematic and interconnection diagrams on shop drawings.

2.3 CONDUIT/JUNCTION BOX COLOR CODE

- A. All conduits and junction boxes (except those subject to view in public areas) shall be color coded as listed below :

<u>Color Code for Junction Boxes</u>	<u>Krylon Paint #</u>
System Emergency 277/480 volt	Cherry Red 2101
System Emergency 120/208 volt	Light Red 2110
Fire Alarm	Popsicle Orange 2410
Normal Power 277/480 volt	Leather Brown 2501
Normal Power 120/208 volt	Glossy Black 1601
Fiber Optics	Plum Purple 1929
Sound System	Daisy Yellow 1813
Clock	Baby Blue 1902
Intercom	True Blue 1910
Computer/Data	Gold 1701
TV	Glossy White 1501
BAS	Light Beige 2502
Security/CCTV	Moss Green 2004
Telephone	Light Green 2011
Grounding	Fluorescent Green # 3106

- B. Conduits (not subject to public view) longer than 20 feet shall be painted with above color paint band 20 ft. on center. Paint band shall be 4" in length. Where conduits are parallel and on conduit racking, the paint bands shall be evenly aligned. Paint shall be neatly applied and uniformed. Paint boxes and raceways prior to installation or tape conduits and surrounding surfaces to avoid overspray. Paint overspray shall be removed.

- C. Junction boxes and conduit located in public areas (i.e. areas that can be seen by the public) shall be painted to match surface attached to. Provide written request to A/E for interpretation of those public areas which may be in question.

2.4 CONDUIT/JUNCTION BOX MARKER

- A. All new and existing junction boxes/cover plates for power, lighting and systems (except those installed in public areas) shall adequately describe it's associated panel and circuit reference number(s) within, (i.e. ELRW-2, 4, 6) or systems within (i.e. fire alarm, intercom, etc.). Identification shall be by means of black permanent marker. (Paint 1/2 cover plate with appropriate color above, and 1/2 with associated panel/circuit or system as described above.)
- B. Identify conduit not installed in public areas with circuit numbers as described above. Spacing: 20 ft. on center, adjacent to color identification bands.

2.5 DEVICE COVER PLATE IDENTIFICATION

- A. Description: Self-adhesive clear printed labels with Black typed letters (pre-printed, dot matrix, or laser).
- B. Locations:
 - 1. Each new receptacle cover plate.
 - 2. Each existing receptacle cover plate in areas of remodel/renovation.
 - 3. Each new communications cover plate (Systems Electrical Division 27).
 - 4. Each existing communications cover plate (Systems Electrical Division 27) in areas of remodel/renovation.
 - 5. Fire alarm system control modules, monitor modules and remote test stations.
- C. Legend:
 - 1. Receptacle plates shall adequately describe its associated panelboard and circuit reference (i.e., L1A-3).
 - 2. System plates shall adequately describe its terminal board, or terminal cabinet, termination cable identifier, and assigned user code number, (i.e., TTB-LS2-***).
 - 3. Fire alarm control devices shall adequately describe item severed and assigned address, if addressable, (i.e., AHU-1 Supply ID 12345-***).

2.6 UNDERGROUND WARNING TAPE

- A. Description: 4 inch wide plastic tape, detectable type, colored yellow with suitable warning legend describing type of buried electrical lines.

2.7 SIGNAGE

- A. Description: laminated phenolic plastic, chamfer edges, white core, face color as specified elsewhere, with lettering etched through the outer covering, 1/4" lettering.
- B. Locations:
 - 1. More than one service per NEC 230-2(if applicable).
 - 2. Emergency Generator Systems per NEC 700-8 (if applicable).
 - 3. Electrical Fire Pump Systems per NFPA-20, chapter 6 (if applicable).

PART 3 - EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive nameplates and labels.

3.2 APPLICATION

- A. Install nameplate parallel to equipment lines.
- B. Secure nameplate to equipment front using stainless steel pop rivets.
- C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.
- D. Nameplates installed inside on dead front cover shall be self adhesive tape. (Do not drill or install screws in dead front unless prior approval is granted by equipment manufacturer).
- E. Identify conduit, junction boxes, and outlet boxes using field painting.
- F. Identify new underground conduits using underground warning tape. Install one tape per trench at 3 inches below finished grade.
- G. Install wire markers at all connections and terminations.

END OF SECTION 26 05 22

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PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor
- B. Basic Electrical Requirements specifically applicable to Division 26, 27, and 28 Sections.

1.2 DESCRIPTION OF WORK

- A. Provide all labor, materials, and equipment necessary to properly install switches as shown on the drawings and as required by codes.
- B. Disconnect switches for all mechanical equipment shall be provided and installed under this section unless specifically noted otherwise. Coordinate with Div. 15 contractor and specifications. Provide all disconnect switches not being provided by Div. 15 contractor.

1.3 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver switches in factory wrapped packaging to the site. Handle switches carefully to prevent damage. Store in a clean, dry space protected from dirt, water, and physical damage. Do not install damaged switches.

1.4 QUALITY ASSURANCE

- A. The manufacturer of switches shall be the same as that of the panelboards.

1.5 SUBMITTALS

- A. Submit catalog cut sheet on each type of disconnect switch to be used on this project.

PART 2 - PRODUCTS

2.1 CONSTRUCTION

- A. Switches shall be heavy duty types with visible, quick-make, quick-break blades.
- B. Units for 2-speed motors shall be 6-pole in a single enclosure. Use of two 3-pole units will not be acceptable.
- C. Provide ground bus and where required, a solid neutral bus.
- D. Switches shall be fusible or nonfusible as denoted on the drawings or as required by the equipment served from the switch. Fusible switches shall have rejection type fuse holders.

- E. Terminal lugs shall be rated for 75 degrees Centigrade.
- F. Enclosures, unless otherwise noted, shall be:
 - a) Interior dry locations shall be NEMA 1
 - b) Kitchens, food processing, wash-down areas or similar shall be NEMA 4X stainless steel watertight, corrosion resistant.
 - c) Exterior locations shall be NEMA 3R including those noted on drawings to be NEMA 1, minimum.
 - d) Exterior locations located within 10 miles of ocean shall be NEMA 4X stainless steel watertight, corrosion resistant whether shown on drawings or not.
- G. The enclosure shall be interlocked with the switch handle such that the enclosure door or cover cannot be opened with the switch in the "ON" position. The switch handle shall be capable of being padlocked in the "OFF" position but not in the "ON" position.
- H. Finish for NEMA I units shall be standard baked gray enamel finish over a rust inhibiting phosphate primer.
- I. Switches with RK fuses shall have rejection clips. Refer to section 16478 "OVERCURRENT PROTECTIVE DEVICES" for fuse requirements applicable to each application.
- J. Switches serving elevator control equipment specified with auxiliary battery supply operated lowering devices shall, be provided with auxiliary contacts that open before switch blades wired to elevator equipment control circuit as directed by elevator equipment manufacture.
- K. Switches that are used in conjunction with variable frequency drives (VFDs) or variable speed drives (VSDs), located downstream of the drive, shall be provided with auxiliary contacts that open before switch blades to interrupt control circuit to VFDs. Provide interlock wiring as required by drive equipment manufacture.

2.2 RATING

- A. The size, number of poles, and fusing for each switch shall be as denoted on the drawings. As a minimum, no fewer than one pole for each ungrounded conductor shall be provided. Switches shall be rated 250 VAC or 600 VAC as required by the circuit to which it is connected.
- B. Switches serving motors with more than one set of windings shall have the number of poles necessary to disconnect all conductors to all windings in a single switch.

- C. Switches serving motor loads shall be horsepower rated to match motor and of sufficient size to handle the load regardless if rating denoted on drawings is provided in ampere.

2.3 SERVICE ENTRANCE EQUIPMENT

- A. Switches used as service entrance equipment shall be listed and labeled by U.L. for use as service equipment.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install all switches in accordance with the manufacturer's written instructions, NECA's "Standard of Installation", the applicable requirements of the National Electrical Code, and recognized industry practice.
- B. All switches shall be firmly anchored to walls and supporting structures (where used) using appropriate installation. Switches shall be installed with the turning axis of their handles approximately 5'-0" above finished floor unless otherwise indicated. Provide rigid steel (hot dipped galvanized or stainless steel for exterior use) mounting stands, brackets, plates, hardware, and accessories for a complete installation.
- C. Switches shall be mounted in accessible locations chosen where the passageway to the switch is not likely to become obstructed. Where a switch serves as the disconnecting means for a load, the switch shall be located as close as practical to the load with the switch handle within sight of the load.
- D. Provide and install lugs on disconnect switch as required to accept conductors called for on drawings.
- E. Disconnect switches shall not be mounted on equipment, unless specifically noted or required and meet all applicable codes, etc. If switches are noted or required to be mounted on equipment they shall have vibrator clips on fuses and be connected to conduit system with liquid tight flexible conduit as specified elsewhere.

END OF SECTION 26 05 24

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor
- B. Basic Electrical Requirements specifically applicable to Division 26, 27 and 28 Sections.

1.2 DESCRIPTION OF WORK

- A. Provide all labor, materials, and equipment necessary to properly install a grounding system conductor in all new branch wiring and feeder installations which shall be in full compliance with all applicable Codes as approved by the Authorities having jurisdiction. The secondary distribution system shall include a grounding conductor in all raceways in addition to the return path of the metallic conduit.
- B. In general, all electrical equipment (metallic conduit, motor frames, panelboards, etc.) shall be bonded together with a green insulated or bare copper system grounding conductor in accordance with specific rules of Article 250 of the N.E.C. and State codes. Bonding conductor through the raceway system shall be continuous from main switch ground bus to panel ground bar of each panelboard, and from panel grounding bar of each panelboard to branch circuit equipment and devices.
- C. All raceways shall have an insulated copper system ground conductor throughout the entire length of circuit installed with-in conduit in strict accordance with NEC. Grounding conductor shall be included in total conduit fill determining conduit sizes, even though not included or shown on drawings. Grounding conductors run with feeders in PVC conduit outside of building(s) shall be bare only.
- D. Section Includes
 - 1. Grounding electrodes and conductors.
 - 2. Equipment grounding conductors.
 - 3. Bonding.

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.4 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 - PRODUCTS

2.1 MECHANICAL CONNECTORS

- A. All grounding connectors shall be in accordance with U.L. 467 and U.L. listed for use with rods, conductors, reinforcing bars, etc., as appropriate.
- B. Connectors and devices used in the grounding systems shall be fabricated of copper or bronze materials, and properly applied for their intended use. Specified items of designated manufacturers indicate required criteria and equal products may be provided if approved. All connectors and devices shall be compatible with the surfaces being bonded and shall not cause galvanic corrosion by dissimilar metals. Materials in items not listed herein shall be of equal quality to the following specified items:
 - 1. Lugs: substantial construction, of cast copper or cast bronze, with "ground" (micro-flat) surfaces equal to Burndy QQA Series, two hole or T&B equal. Light weight and "competitive" devices shall be rejected.
 - 2. Grounding and Bonding Bushings: Malleable iron, Thomas and Betts (T&B), or equal.
 - 3. Piping Clamps: Burndy "GAR-TC series" with two hole compression lug under U-Bolt nut or T&B equal.
 - 4. Grounding Screw and Pigtail: Raco No. 983 or equal.
 - 5. Fastening hardware: Grade 5 silicone bronze with beveled washers. Copperplate is not acceptable.
- C. Mechanical lugs or wire terminals shall be used to bond ground wires together or to junction boxes and panel cabinets and shall be manufactured by Anderson, Buchanan, Thomas and Betts Co., or Burndy.

2.2 WIRE

- A. Material: Stranded copper.
- B. Size: Size to meet NFPA 70 requirements as a minimum, increase size if called for on drawings, in these specifications, or as required for voltage drop.
- C. Insulated THHN/THWN (or bare as noted elsewhere).

PART 3 - EXECUTION

3.1 GENERAL

- A. Install products in accordance with manufacturer's instructions.

- B. Install grounding electrodes conductor, bonding conductors, etc. with all required accessories.
- C. Grounding shall meet (or exceed as required to meet these specifications) all the requirements of the N.E.C., the NFPA, and applicable standards of IEEE.
- D. Where there is a conflict between these specifications and the above applicable codes/standards, or between this section of these specifications and other sections, then the most stringent or excessive requirement shall govern. Where there is an omission of a code/standard requirement in these specifications then the code/standard requirements shall be complied with.
- E. Requirement in these specifications to comply with a specific code/standard article, etc. is not to be construed as deleting of requirements of other applicable codes/standards and their articles, etc.

3.2 GROUNDING ELECTRODE CONDUCTOR

- A. Conductor shall be sized to meet (or exceed as required to meet these specifications and/or drawings) the requirements of NEC.

3.3 EQUIPMENT GROUNDING CONDUCTOR

- A. Grounding conductors shall be provided with every circuit to meet (or exceed as required to meet these specifications and/or drawings) the requirements of NEC.
- B. At every voltage level, new portions of the electrical power distribution system shall be grounded with a dedicated copper conductor which extends from termination back to power source in supply panelboard.
- C. Provide separate, insulated (bare if with feeder in PVC conduit outside of building(s)) conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.
- D. Except as otherwise indicated, each feeder raceway on the load side of the service entrance shall contain a ground conductor sized as indicated and where not shown shall be sized to meet (or exceed as required to meet these specifications and/or drawings) the requirements of NEC. Conductor shall be connected to the equipment grounding bus in switchboards and panelboards, to the grounding bus in all motor control centers, and as specified, to lighting fixtures, motors and other types of equipment and outlets. The ground shall be in addition to the metallic raceway and shall be properly connected thereto, using a lug device located within each item enclosure at the point of electric power connections to permit convenient inspection.
- E. Provide green insulated ground wire for all grounding type receptacles and for equipment of all voltages. In addition to grounding strap connection to metallic outlet boxes, a supplemental grounding wire and screw equal to Raco No. 983 shall be provided to connect receptacle ground terminal to the box.

- F. All plugstrips and metallic surface raceway shall contain a green insulation ground conductor from supply panel ground bus connected to grounding screw on each receptacle in strip and to strip channel. Conductor shall be continuous.
- G. Where integral grounding conductor is specified elsewhere in bus duct construction, provide equivalent capacity conductor from supply switchboard or panelboard grounding bus to the bus duct grounding conductor. Bond integral conductor to bus duct enclosure at each tap and each termination.
- H. All motors, all heating coil assemblies, and all building equipment requiring flexible connections shall have a green grounding conductor properly connected to the frames and extending continuously inside conduit with circuit conductors to the supply source bus with approved connectors regardless of conduit size or type. This shall include Food Service equipment, Laundry equipment, and all other "Equipment By Owner" to which an electric conduit is provided under this Division.

3.4 MISCELLANEOUS GROUNDING CONNECTIONS

- A. Provide bonding to meet regulatory requirements.
- B. Required connections to building steel shall be with U.L. approved non-reversible crimp type ground lugs exothermically welded to bus bar that is either exothermically welded to steel or bolted to steel in locations where weld will affect the structural properties of the steel.
- C. Grounding conductors shall: be so installed as to permit shortest and most direct path from equipment to ground; be installed in conduit; be bonded to conduit at both ends when conduit is metal; have connections accessible for inspection; and made with approved solderless connectors brazed (or bolted) to the equipment or to be grounded; in NO case be a current carrying conductor; have a green jacket unless it is bare copper; be run in conduit with power and branch circuit conductors. The main grounding electrodes conductor shall be exothermically welded to ground rods, water pipe, and building steel.
- D. All surfaces to which grounding connections are made shall be thoroughly cleaned to maximum conductive condition immediately before connections are made thereto. Metal rustproofing shall be removed at grounding contact surfaces, for 0 ohms by digital Vm. Exposed bare metal at the termination point shall be painted.
- E. All ground connections that are buried or in otherwise inaccessible locations, shall be welded exothermically. The weld shall provide a connection which shall not corrode or loosen and which shall be equal or larger in size than the conductors joined together. The connection shall have the same current carrying capacity as the largest conductor.
- F. Install ground bushings on all metal conduits entering enclosures where the continuity of grounding is broken between the conduit and enclosure (i.e. metal conduit stub-up into a motor control center enclosure or at ground bus bar). Provide an appropriately sized bond jumper from the ground bushing to the respective equipment ground bus or ground bus bar.

- G. Each feeder metallic conduit shall be bonded at all discontinuities, including at switchboards and all subdistribution and branch circuit panels with conductors in accordance with Table 250-95 of NEC for parallel return with respective interior grounding conductor.
- H. Grounding provisions shall include double locknuts on all heavywall conduits.
- I. Bond all metal parts of pole light fixtures to ground rod at base.

3.5 FIELD QUALITY CONTROL

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
- B. Use suitable test instrument to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method.

END OF SECTION 26 05 26

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor
- B. Basic Electrical Requirements specifically applicable to Division 26, 27 and 28 Sections.

1.2 DESCRIPTION OF SYSTEM

- A. Furnish and install all supports, hangers and inserts required to mount fixtures, conduit, cables, pullboxes and other equipment furnished under this Division.
- B. Section Includes:
 - 1. Conduit and equipment supports.
 - 2. Anchors and fasteners.

1.3 REFERENCES

- A. NECA - National Electrical Contractors Association.
- B. ANSI/NFPA 70 - National Electrical Code.

1.4 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.5 SUBMITTALS

- A. Submit catalog cut sheet showing brand of conduit supporting hardware to be used and (where applicable) showing that conduit supporting hardware is U.L. listed and/or labeled, and manufactured in the United States, and materials.
- B. Submit catalog cut sheet on all types of conduit support fittings, hardware, straps, and hangers.
- C. Product data shall be submitted for approval on:
 - 1. Mounting hardware and inserts.
 - 2. Conduit straps, hangers and fittings.
 - 3. Supporting channel.
- D. Product data shall prove compliance with Specifications, National Electric Code, National Board of Fire Underwriters, manufacturer's specifications and written

installation data.

PART 2 - PRODUCTS

2.1 PRODUCT REQUIREMENTS

- A. Materials and Finishes: Provide corrosion resistance.
- B. Provide materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide anchors, fasteners, and supports in accordance with NECA "Standard of Installation".
- C. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.
- D. Do not use spring steel clips and clamps and metal banding straps.
- E. Concrete/insert anchors, thread rods, or similar fasteners installed on side or bottom of pre-stressed beams are not acceptable.
- F. Obtain permission from Architect/Engineer before using powder-actuated anchors.
- G. Obtain permission from Architect/Engineer before drilling or cutting structural members.
- H. Fabricate supports from structural steel or steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- I. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- J. In wet and damp locations use stainless steel channel supports to stand cabinets and panelboards 3/4 inch (25 mm) off wall.
- K. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
- L. All items shall be supported directly from structural portion of the building. All above ceiling or ceiling mounted items shall be supported directly from building superstructure, except standard lay-in type ceiling lighting fixtures, and small outlet boxes for devices such as exit lights. Lay-in type ceiling fixtures shall be provided with supplemental support wire or chain as specified elsewhere. Outlet boxes shall be attached to ceiling system by means of approved mounting brackets and shall also be provided with

supplemental threaded rod hangers from super structure as specified elsewhere. No sagging of the ceiling will be permitted. Adjust supplemental supports accordingly.

- M. Wire shall not be used as a support. Boxes and conduit shall not be supported or fastened to ceiling suspension wires or to ceiling channels. Support independent of ceiling per NEC-article 300-11(latest addition). Lighting fixtures and devices shall have supplemental supporting as specified herein.
- N. This Contractor shall lay out and install his work in advance of the laying of floors or walls, and shall furnish and install all sleeves that may be required for openings through floors, wall, etc. Where plans call for conduit to be run exposed, this Contractor shall furnish and install all inserts and clamps for the supporting of conduit. If this Contractor does not properly install all sleeves and inserts required, he will be required to do the necessary cutting and patching, later at his own expense, to the satisfaction of the Architect.
- O. All conduits shall be securely fastened in place per NEC; and hangers, supports or fastenings shall be provided at each elbow and at the end of each straight run terminating at a box or cabinet. The use of perforated iron for supporting conduits will not be permitted. The required strength of the supporting equipment and size and type of anchors shall be based on the combined weight of conduit, hanger and cables.
- P. Parallel groups of conduit or conduit runs in a similar direction; they shall be grouped together and supported by means of 1½" x 1½", 12 gauge, pre-galvanized zinc (B-Line or approved substitution), conduit channel trapeze hanger system (racking) consisting of concrete inserts, threaded rods, washers, nuts, locknut washers, etc. Where galvanized "L" angle iron is used, conduits shall be individually fastened to the cross members with malleable iron hangars listed and approved for use on "L" angle iron, bolted with proper size cadmium machine bolts, washers and nuts. Conduits supported to unistrut channel shall be individually fastened with two piece unistrut straps with bolts and nuts listed and approved for such use. Mineralak hangars or one hole type straps fastened to Kindorf racking is not acceptable. Beam clamps shall be malleable iron.
- Q. Hangers for PVC coated conduit shall be PVC coated galvanized conduit.
- R. On concrete or brick construction, insert anchors shall be installed with round head machine screws. In wood construction, round head screws shall be used. An electric or hand drill shall be used for drilling holes for all inserts in brick, concrete or similar construction. In brick, inserts shall be near center of brick, not near edge or in joint. Where steel members occur, same shall be drilled and tapped, and round head machine screws shall be used. All screws, bolts, washers, etc., used for supporting conduit or outlets shall be fabricated from rust-resisting metal, or approved substitution. Fasteners similar to "TAP-CON" self tapping power driven type are acceptable on interior block walls only. Plastic anchors and explosive fasteners are not acceptable.
- S. Threaded rod hangars shall be galvanized continuous thread type, minimum 3/8" diameter. Increase size as required to support assembly. Bending of rod hangars is not permitted.

- T. Support channel (unistrut) shall be 1-1/2" x 1-1/2", 12 gauge, pre-galvanized zinc (B-Line or approved substitution). 3/4" x 3/4" unistrut channel is acceptable on wall-mounted applications to support raceways at panelboards or where special written permission is granted by A/E.
- U. Conduit support racks shall be minimum of 24", increase, distance as required for quantity of conduits and spare capacity) provide space on each rack for 25 percent additional conduits. Group conduits on channel racking adjacent to each other at sides, allowing all remaining unused space at center as spare capacity. Spacing between conduits shall not exceed 1" unless written permission is granted by architect/engineer.
- V. Each rack shall be provided with minimum of two (2) all-thread rod hangars located at the ends of the channel. Increase number of hangars as required to support assembly.
- W. In general conduit supporting devices such as spring type conduit clips manufactured by Caddy Corporation are not acceptable. Caddy type conduit clips with snap close strap is acceptable for use in dry interior concealed locations, where steel peril type construction is used. Back to back arrangement or attachment to other raceways, piping, etc. is not permitted.
- X. Concrete/insert anchors, thread rods, or similar fasteners installed on side or bottom of pre-stressed beams are not acceptable.
- Y. All hangers, clips and accessories for supporting shall be UL listed.
- Z. Support systems shall meet requirements for seismic loads. Refer to general Conditions of the specifications.
- AA. All hangers and mounting hardware clamps shall be made of durable material suitable for the application involved. Excessive corrosive conditions, exterior and wet locations (i.e. kitchens, wash-down, etc.) conditions are encountered, hanger assemblies, supporting hardware and materials shall be made of malleable iron, hot dipped galvanizing steel, or stainless steel.
- BB. Attachment of cables to ceiling system or support wires, regardless if support wire is a dedicated wire, is prohibited. Support cables directly to building superstructure. Only a vertical cable drop down to a recessed lay-in luminaire can be supported to the fixture support wire with approved fasteners. Vertical cable drop attachment may be by means of Ty-Rap cable tie if approved by the Local Inspecting Authority having jurisdiction and UL plenum rated within plenum air environments.
- CC. Materials installed in environmental air plenum s shall be UL Plenum Listed and bear the appropriate UL markings.
- DD. Metal Clad Cables shall be securely fastened with UL listed devices intended for such use. Cables attached to metal stub framing system shall be one hole MC cable straps with screws and/or Caddy 449 series "snap-clip" fasteners or Caddy MX3 Quick support. Caddy Quick MX3 fasteners shall be provided with

supplemental screw fasteners to metal stub framing.

- EE. Free-air cable, where specified and permitted elsewhere, shall be supported directly from the superstructure with UL Listed devices intended for such use. Ty-Rap cable ties in conjunction with UL Listed support devices shall be UL plenum rated within plenum air environments.
- FF. Comply with requirements of specification section 26 05 10.

END OF SECTION 26 05 29

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor
- B. Basic Electrical Requirements specifically applicable to Division 26, 27 and 28 Sections.

1.2 DESCRIPTION OF WORK

- A. Provide all labor, materials, and equipment necessary to properly and completely install panelboards as scheduled on the drawings and as required by this section.

1.3 REFERENCES

- A. NECA (National Electrical Contractors Association) "Standard of Installation."
- B. NEMA AB 1 - Molded Case Circuit Breakers.
- C. NEMA PB 1 - Panelboards.
- D. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
- E. NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

- A. Product data shall be submitted on:
 - 1. Panel
 - 2. Cabinet
 - 3. Bus
 - 4. Construction
 - 5. Dimensions
- B. Shop drawing shall be submitted for each and every panel for this project, each and every panel drawing shall clearly indicate the following information:
 - 1. U.L. Label
 - 2. Each circuit breaker amperage rating, circuit number and position/location in panel
 - 3. Electrical characteristics of panel
 - 4. Mains rating
 - 5. Main device rating
 - 6. Mounting
 - 7. Dimension, width, depth, height
 - 8. Bus material

9. Interrupting capacity of minimum rated breaker
10. Panel type
11. Series AIC rating with upstream breakers.

1.5 PROJECT RECORD DOCUMENTS

- A. Submit record documents to record actual locations of Products; indicate actual branch circuit arrangement.

1.6 OPERATION AND MAINTENANCE DATA

- A. Submit Maintenance Data: Include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with NECA Standard of Installation.
- B. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum ten years experience.

1.8 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish products listed and classified by UL as suitable for purpose specified and indicated.

1.9 FIELD MEASUREMENTS

- A. Verify that field measurements are as instructed by manufacturer.

1.10 MAINTENANCE MATERIALS

- A. Provide two of each panelboard key.

1.11 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Handle panelboards and enclosures carefully to prevent damage.
- B. Store equipment indoors and protect from weather.
- C. Deliver tubs and internal assemblies sufficiently in advance of installation period as necessary to prevent delay of work. This time, shall be established by a CPM provided by the Contractor, and approved by the supervising authorities.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Design selection/Basis of design: Eaton.
- B. Acceptable Substitutions:
 - 1. General Electric
 - 2. Siemens
 - 3. Square D Co.

2.2 GENERAL

- A. Lighting and Appliance Branch Circuit Panelboards: NEMA PB1, circuit breaker type, dead front.
- B. Panelboard Bus: Copper ratings as indicated. Provide copper ground bus in each panelboard. Provide isolated full size neutral bus where neutral is applicable. Provide non-linear load panelboards as specified on drawings. Non-linear panelboards shall have 200 percent rated neutral busbar.
- C. Minimum integrated short circuit rating: 10,000 amperes rms symmetrical for 240 volt panelboards. Bus shall be braced for minimum capacity equal to or greater than the lowest breaker symmetrical interrupting capacity. Minimum short circuit rating shall be increased to meet the following requirements:
 - 1. Individual C.B. AIC Rating shown on panel schedules indicate lowest AIC rating allowed for individual circuit breaker in panel.
 - 2. Panel Series AIC rating shown is the required rating of panel and its circuit breakers based on series rating of individual panel circuit breakers with panel main circuit breaker or upstream feeder breaker.
 - 3. Circuit breaker types are not shown or called for. The contractor must provide breakers in panel or feeder breakers in upstream breakers to comply with the required AIC ratings given including providing current limiting breakers where required to achieve all ratings given.
- D. Enclosure: NEMA PB 1,
 - 1. Type 1 - Interior dry locations, unless noted on drawings.
 - 2. Type 3R – Damp location, exterior/outdoors or as indicated on drawings.
- E. Cabinet box: 6 inches (153 mm) deep; width: 20 inches (508 mm). Constructed of code gauge steel, galvanized or bonderized to prevent rust.
- F. Cabinet Front:
 - 1. Flush or surface (as indicated on drawings) cabinet front with concealed trim clamps, concealed hinge, and flush lock all keyed alike.

2. Finish in manufacturer's standard baked enamel finish for interior panels.
3. Exterior panels to be painted with rust inhibit primer painted over on all surfaces with epoxy paint unless indicated on drawings to be stainless steel.
4. Panelboards in wet location areas (i.e. Hose down areas, kitchens, etc), regardless if specified on drawings or not shall be heavy gauge stainless steel Exterior panelboards as indicated on drawings shall be stainless steel
5. Cover shall be door-in-door construction.
3. Panels and breakers shall be rated for voltage and class of service to which applied.

G. Spaces:

1. Space provisions or spaces for future breakers shall be located at the bottom of the panel and be fully bussed complete with all necessary mounting hardware less the breaker.
- H. Panelboards backboxes/trim covers mounted adjacent to each other (i.e. multi-section panels, etc) installed in finished areas be of same size.

2.3 MAINS

- A. Provide main lug only (MLO) or main circuit breaker (MCB) as noted on drawings either by riser diagram or by schedule. Where conflict exists, provide MCB.
- B. Regardless of what is shown on drawings provide the following minimum requirements.
 1. Main circuit breaker on each panel serving building main if required by applicable codes.
- C. Provide lugs as required for conductors being connected to panelboard lugs, circuit breakers, etc.

2.4 CIRCUIT BREAKERS

- A. General
 1. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type for 250V or less, bolt-on type for over 250V, thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled. Do not use tandem circuit breakers.
 2. Current Limiting Molded Case Circuit Breakers: NEMA AB 1. Provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 symmetrical amperes, let-through current and energy

level less than permitted for same size Class RK-5 fuse.

B. Main Breakers:

1. Main breakers shall be individually mounted separate from branch breakers.
2. Covered by a metal plate, except for operating handle.
3. Connection from the load's side to the panel bus shall be bus bar. Insulated wire not permitted.

C. Branch Breakers:

1. Thermal-magnetic, molded case, with inverse time-current overload and instantaneous magnetic tripping, unless otherwise shown. Breakers shall be calibrated for 40 degrees C or shall be ambient compensating.
2. Quick-make, quick-break, with tripped indication clearly shown by breaker handle taking a position between ON and OFF.
3. Multi-pole breakers shall have common internal trip. No handle ties between single pole breakers are acceptable for this Project.
4. Single pole 15 and 20 ampere circuit breakers shall be rated for switching duty and shall be labeled as "SWD".
5. Ground Fault Circuit Interrupters (GFI):
 - a) Provide UL Class (5 milliamp sensitivity) ground fault circuit protection on 120 VAC branch circuits for exterior location receptacles and for interior locations where required by NEC. (These may not be indicated on Panel Schedule.) This protection shall be an integral part of the branch circuit breaker which also provides overload and short circuit protection for branch circuit wiring. Tripping of a branch circuit breaker containing ground fault circuit interruption shall not disturb the feeder circuit to the panelboard. Provide separate neutral for circuits on GFI breakers whether indicated on drawings or otherwise.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install panelboards in accordance with NEMA PB 1.1. Install all panelboards and panelboard enclosures in accordance with the manufacturer's written instructions, NECA's "Standard of Installation", the applicable requirements of the National Electrical Code, and recognized industry practices.
- B. Install panelboards plumb. Install recessed panelboards flush with wall finishes. Provide supports in accordance with Section 26 05 09 Supporting Devices.

- C. Height: 6 ft (2 M) to top of panelboard; install panelboards taller than 6 ft (2 M) with bottom no more than 4 inches (10 cm) above housekeeping curb.
- D. Provide filler plates for unused spaces in panelboards.
- E. Provide typed circuit directory for each branch circuit panelboard. Mount a typewritten directory showing the actual circuit numbers, type of load and room names on inside of door. Room names shall be actual names or numbers used, not necessarily shown on the drawings. Progress Drawings shall show same arrangements as the Directory. Revise directory to reflect circuiting changes required to balance phase loads.
- F. Provide engraved plastic nameplates under the provisions of Section 26 05 22, Electrical Identification.
- G. Provide spare conduits out of each recessed panelboard to an accessible location above ceiling. Minimum spare conduits: 4 empty 1 inch. Identify each as SPARE.
- H. Proper working clearances shall be maintained at every panelboard location. The working space in front of a panelboard shall be as a minimum, 30 inches wide extending 3 feet, 3.5 feet, or 4 feet (per NEC Article 110-16) out perpendicular to the panelboard.
- I. All enclosures shall be firmly anchored to walls and supporting structures (where used) using appropriate hardware. Provide supporting (unistrut type) channels on walls constructed of gypsum board, in damp and wet locations, or where otherwise necessary to provide a mechanically secure and permanent installation. Enclosures shall be installed so that the top is 6'-6" above finished floor. Where the size of the enclosure is such that the top cannot be installed at 6'-6", the top of the enclosure shall be kept as low as possible. Enclosures shall be neatly aligned at tops wherever possible. Maintain minimum of 3" between floor and enclosure for wall mounted types.
- J. Clean the interior of each panelboard before installing conductors. At all times, keep the interior trim and exterior surfaces of the panelboard free of rust and debris. Repaint finishes if necessary.
- K. Coordinate all raceways and conductors with their respective panelboards so that all connections and conductors routing present an orderly appearance. Conductors in the panelboards shall be laced and arranged in orderly manner.
- L. Collect all keys upon delivery of panelboard. Store keys on one ring to be kept by project superintendent. Forward key ring with keys to Owner upon substantial completion.
- M. Provide a separate neutral conductor for each GFI breaker. These shall not be combined to serve more than 1 circuit, even where on different phases. Increase plan indications of conductors for neutral wires required, as necessary.

3.2 IDENTIFICATION

- A. Refer to Section 26 05 22, Electrical Identification for products and content.
- B. Each series rated panelboard shall be provided with permanent identification, interior of cover to calculated interrupting capacity, series rating, type of branch breaker to be installed, type of upstream series devices, etc. Standard manufacturer reference to published literature is not suitable.

3.3 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed.
- B. Measure steady state load currents at each panelboard feeder; rearrange circuits in the panelboard to balance the phase loads to within 10 percent of each other. Maintain proper phasing for multi-wire branch circuits.
- C. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.
- D. Feeder conductors shall be checked by approved means to establish the absence of shorts to ground; insulation value etc. and the result recorded and submitted to the Engineer.
- E. All circuits shall be operated to establish a good working order and checked for shorts.
- F. All panel directory circuit numbers shall be checked to verify accuracy of the number.
- G. Where and when requested by engineer provide:
 - 1. Inspection of equipment by authorized equipment manufacturer technician complete with submittal of statement of findings by technician, and providing any adjustments deemed necessary for a complete and operating system.
 - 2. Ground, voltage, and/or load readings complete with submittal on legible form with applicable data.

END OF SECTION 26 20 10

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PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor
- B. Basic Electrical Requirements specifically applicable to Division 26, 27, and 28 Sections.

1.2 DESCRIPTION OF SYSTEM

- A. Provide overcurrent protection for all wiring and equipment in accordance with the NEC, all federal, and state codes as required and/or as shown on the drawings.
- B. Should the electrical contractor disagree with the size of or application of, an overcurrent protection device called for on the drawings, he shall bring it to the attention of the Engineer immediately.

1.3 REFERENCES

- A. NFPA 70 - National Electric Code.
- B. NEMA FU 1 - Low Voltage Cartridge Fuses.
- C. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches.
- D. NEMA KS 1 - Enclosed Switches.

1.4 SUBMITTALS

- A. Submit under provisions of Section 26 01 10, Submittals.
- B. Submit:
 - 1. Frame sizes and interrupting capacity of all circuit breakers.
 - 2. Horsepower ratings of rated voltage of fused switches and/or circuit breakers.
 - 3. Size and type of fuses being furnished.
 - 4. Device is U.L. Listed, and bears the U.L. Label.
 - 5. Device complies with these specifications, drawings, and applicable standards of NEMA, IEEE, ANSI and ASA.
 - 6. Provide data sheets showing electrical characteristics including time-current curves.

1.5 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 26 01 10 Submittals.
- B. Record actual fuse sizes (where applicable).

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum ten years experience.

1.7 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish products listed and classified by UL as suitable for purpose specified and indicated.

1.8 MAINTENANCE MATERIALS

- A. Provide maintenance materials under provisions of Section 26 01 00, Basic Electrical Requirements.
- B. Provide two fuse pullers.

1.9 EXTRA MATERIALS

- A. Provide three of each size and type fuse installed.
- B. Provide three of each size and type of current limiter.

1.10 OPERATION AND MAINTENANCE

- A. Submit:
 - 1. Maintenance Data: Include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

PART 2 - PRODUCTS

2.1 CIRCUIT BREAKERS

- A. General:
 - 1. Circuit breakers for switchboard, distribution panelboards, power panelboards and lighting panelboards shall be of the same manufacturer provided the switchboard, distribution panelboards, power panelboards and lighting panelboards

2. Circuit breakers for lighting and appliance panelboards shall be plug-in type.
 3. Circuit breakers for switchboards, distribution panelboards, power panelboards and lighting panelboards shall be bolt-in. (Distribution panels that utilize I-line construction and have breaker bolted to enclosure will meet this bolt-on requirement.
 4. All circuit breakers shall be molded-case, quick-make, quick-break, thermal magnetic type, and shall be U.L. Listed and rated for voltage and class of service to which applied.
 5. Double and triple pole breakers shall be of the common trip, single handle type.
 6. Provide shut-trip type breakers as required and/or called for on drawings or elsewhere by these specifications.
 7. Circuit breakers shall have minimum rating of 10,000 amp for less than 250V power systems and 14,000 for over 250V power systems interrupting capacity, unless noted or required otherwise on drawings and/or by these specifications.
- B. Molded Case Circuit Breakers: NEMA AB 1, integral thermal and instantaneous magnetic trip in each pole. Provide circuit breakers UL listed as Type HACR for air conditioning equipment branch circuits.
- C. Current Limiting Molded Case Circuit Breakers: NEMA AB 1, molded case circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 rms amperes symmetrical let-through current and energy level less than permitted for same size Class RK-5 fuse.
- D. Solid-state Molded Case Circuit Breakers: NEMA AB 1, provide with electronic sensing, timing and tripping circuits for adjustable current settings. Provide with ground fault trip; instantaneous trip; and adjustable short time trip, stationary mounting, or drawout construction, ground fault sensing integral with circuit breaker, zero sequence type ground fault sensor, etc as specified elsewhere.
- E. Manufacturer of circuit breakers are to be same manufacturer as panel, switchboard, etc. that circuit breaker is being installed in, unless specific written approval is given by Engineer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install overcurrent protective devices in accordance with manufacturer's instructions, the N.E.C., and NEMA Standards.
- B. Install fuse with label oriented such that manufacturer, type, and size are easily read.

- C. Install spare fuse cabinet in main electrical room.
- D. Label each circuit breaker and/or fuse.

3.2 FIELD QUALITY CONTROL

- A. Inspect and test each circuit breaker to NEMA AB 1.
- B. Inspect each circuit breaker visually.
- C. Perform several mechanical ON-OFF operations on each circuit breaker.
- D. Verify circuit continuity on each pole in closed position.
- E. Determine that circuit breaker will trip on overcurrent condition, with tripping time to NEMA AB 1 requirements.
- F. Include description of testing and results in test report.

3.3 ADJUSTING

- A. Adjust trip settings so that circuit breakers coordinate with other overcurrent protective devices in circuit.
- B. Adjust trip settings to provide adequate protection from overcurrent and fault currents.

END OF SECTION 26 20 13

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to bidders, The General Conditions of the Contract for Construction, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor
- B. Basic Electrical Requirements specifically applicable to Division 26 and 27 Sections.

1.2 DESCRIPTION OF SYSTEM

- A. Light fixtures furnished under this Division shall be furnished complete with lamps and all necessary trim and mounting hardware, and installed as shown on the drawings.
- B. Light fixtures shall be neatly and firmly mounted, using standard supports for outlets and fixtures.
- C. Lamps shall be included in the system guarantee for a period of thirty (30) days after final acceptance of the building.

1.3 SECTION INCLUDES

- A. Interior luminaires and accessories.
- B. Exit signs.
- C. Ballasts.
- D. Lamps.
- E. Luminaire accessories.

1.4 REFERENCES

- A. LED Product Testing: Comply with U.L. 1598 and 8750. Test according to IES LM-79 and LM-80.
- B. I.E.S. - Illumination Engineering Society.
- C. ANSI/NFPA 70 - National Electrical Code.
- D. ANSI/NFPA 101 - Life Safety Code.
- E. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.5 SUBMITTALS

- A. Submit Shop Drawings: Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
 - 1. Shop drawings shall be submitted for all fixtures that require modifications either

as specified or as required to fit this projects architectural field conditions (i.e. luminous ceiling, wall/slot fixtures, special fixtures).

2. Shop drawings shall be complete showing all dimensions and installation instructions required for this projects' conditions.

B. Submit Product Data: Provide dimensions, ratings, and performance data. Product data shall be submitted for all light fixtures showing:

- dimensions
- U.L. Label
- fusing
- metal gauge
- lens/louver thickness
- finish
- voltage
- lamps
- poles
- pole bases
- pole wind-loading

1.6 OPERATION AND MAINTENANCE DATA

A. Submit Maintenance Data: Include replacement parts list.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years experience.

1.8 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Conform to requirements of NFPA 101.

C. Conform to requirements of ADA.

D. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.9 PRODUCT STORAGE AND HANDLING

A. Physically protect fixtures against damage as recommended by manufacturer.

B. Protect poles from finish damage by handling carefully and protect against damage as recommended by manufacturer.

C. Accept products on site. Inspect for damage.

1.10 COORDINATION

- A. Furnish bolt templates and pole mounting accessories to installer of pole foundations, if by other division of work.

1.11 MAINTENANCE MATERIALS

- A. Provide to Owner:
 - 1. Six (6) of each type of lamps.

1.12 WARRANTIES

- A. All ballasts and led driver furnished under this Division shall be covered by a warranty against defects. Warranty shall include payment for normal labor costs of replacement of inoperative in-warranty ballasts.

PART 2 - PRODUCTS

2.1 LUMINAIRES/FIXTURES

- A. Furnish products as specified in schedule on Drawings.
- B. Install Driver, ballasts, lamps, and specified accessories at factory.
- C. All light fixtures shall adhere to U.L. Test Standard #1571 and Section #410-65C of the National Electric Code. All manufacturers shall provide the required thermal protection as required.

2.2 LAMPS

- A. General:
 - 1. Lamps shall be manufactured by Sylvania, G.E., or Phillips.
- B. LED:
 - 1. Lamps shall be as specified on lighting fixture schedule.
 - 2. Correlated color temperature shall be 4000K or as specified on drawings

2.3 EXIT SIGNS:

- A. Description: Exit sign fixture suitable for use as emergency lighting unit.
- B. Exit signs shall be as specified on drawings.
- C. Exit sign lamps shall be LED type.
- D. Transformer shall be dual rated for 120 or 277 volt.

- E. Furnish all lamps required.
- F. Install suspended exit signs using pendants supported from swivel hangers.
- G. Mount all exit signs at 7'-6" AFF or as required to meet ADA requirements. Provide all mounting accessories/hardware as required for proper mounting including pendant/swivel hangers.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrate and supporting grids for luminaires.
- B. Examine each luminaire to determine suitability for lamps specified.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions and N.E.C.
- B. Install suspended luminaires and exit signs using pendants supported from swivel hangers. Provide pendant length required to suspend luminaire at indicated height.
- C. Support luminaires larger than 2 x 4 foot (600 x 1 200 mm) size independent of ceiling framing.
- D. Locate recessed ceiling luminaires as indicated on reflected ceiling plan.
- E. Install surface mounted luminaires and exit signs plumb and adjust to align with building lines and with each other. Secure to prohibit movement.
- F. Exposed Grid Ceilings: Support surface mounted luminaires on grid ceiling directly from building structure.
- G. Install recessed luminaires to permit removal from below.
- H. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.
- I. Install clips to secure recessed grid-supported luminaires in place.
- J. Install wall mounted luminaires and exit signs at height as indicated on Drawings.
- K. Install accessories furnished with each luminaire.
- L. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.
- M. Bond products and metal accessories to branch circuit equipment grounding conductor.

- N. Install specified lamps in each luminaire and exit sign.
- O. Connect battery operated emergency light fixtures to local lighting circuit ahead of all switches. Provide and install all wiring as required for proper operation.
- P. Where ceiling mounted fixtures are called for in the Light Fixtures Schedule and on the drawings, this Contractor shall provide fixture trims and supports as required to match type of ceiling system which will be furnished. No ceiling fixtures shall be ordered until the Ceiling System Installer has given written approval of the method and location of fixture hanging and fixture type. Fixtures supported by suspended ceiling systems shall be securely fastened to the ceiling framing member by mechanical means, such as bolts, screws, or rivets. Clips identified for use with the type of ceiling framing member(s) and fixture(s) shall also be permitted.
- Q. In addition to attaching ceiling mounted lighting fixtures to ceiling system, this contractor shall support lay-in type fixtures to superstructure above by means of 12-gauge safety wire or jack chain. Safety wire shall be attached to from each corner of fixture and be connected directly to building structure. Surface mounted fixtures and/or ceiling boxes shall be supported to superstructure with all-thread rod.
- R. All interior light fixtures shall not have any labels exposed to normal viewing angles. This includes manufacturer labels and U.L. labels. All labels shall be concealed within the body of the fixture and/or luminaire. No manufacturers name or logo shall appear on the exterior of any light fixtures unless approved in writing by the engineer.
- S. Miscellaneous (provide and install complete):
 - 1. Low voltage transformers for all low voltage light fixtures.
 - 2. Tents as required for fixtures in fire rated ceilings as per applicable codes.
 - 3. Thermal protection for all fixtures with tents or fixtures surrounded by insulation as per applicable codes.
 - 4. Heat removal or air supply slot covers for all fixtures requiring them as determined by mechanical engineer.
- T. Ceiling surface mounted fluorescent fixtures installed in exposed ceiling areas are to suspended from ceiling structure with minimum 3/8" all-thread rods and 1-1/2" x 1-1/2" Kindorf channels, full length of fixture/row. Mount outlet box at structure with flexible connection to fixture.
- U. Coordinate fixtures installed in mechanical rooms with piping and ductwork prior to installation and relocate fixtures as required to provide proper illumination and access.
- V. Electrical contractor shall remotely locate all transformers called for in these specifications in a well ventilated and easily accessible space to comply with all codes. Revise circuitry as shown on plans as required to facilitate transformer/fixture location.

- W. Voltage for all fixtures shall match the voltage of the lighting circuit fixture is connected to. Coordinate with electrical drawings.
- X. All light fixtures shall have label near lamp socket, out of view of public stating maximum wattage of lamp allowed in fixture. Maximum wattage to be stated is wattage as shown on schedule of lighting equipment herein. Circuits are based on these wattages, circuitry, etc. Any failure to comply with this requirement shall be responsibility of contractor. Location of labels must meet approval of lighting designer, architect and engineer.

3.3 EXIT SIGNS

- A. Install illuminated exit signs as shown on drawings, as herein specified or as required by applicable codes.
- B. Connect battery operated exit sign to local lighting circuit ahead of all switches. Provide and install all wiring as required for proper operation.
- C. Install suspended exit signs using pendant supported from swivel hangers.
- D. Mount all exit signs as required to meet ADA requirements. Provide all mounting and accessories/hardware as required for proper mounting including pendant/swivel hangers.

3.4 ADJUSTING

- A. Aim and adjust luminaires as directed.
- B. Adjust exit sign directional arrows as indicated.
- C. Relamp luminaires that have failed lamps at Substantial Completion.
- D. Aim and adjust luminaires to provide illumination levels and distribution as directed.

3.5 CLEANING

- A. Clean electrical parts to remove conductive and deleterious materials.
- B. Remove dirt and debris from enclosure.
- C. Clean photometric control surfaces as recommended by manufacturer.
- D. Clean finishes and touch up damage.

3.6 DEMONSTRATION

- A. Provide demonstration of luminaire operation.

3.7 FIELD QUALITY CONTROL

- A. Operate each luminaire after installation and connection. Inspect for proper connection and operation.

3.8 CLEAN-UP

- A. Luminaires:
 - 1. Clean free from dust and dirt. Wash lens and glassware using cleaner such as "Windex" and dry with absorbent paper. Clean plastic per manufacturer's recommendations; do not wipe. Lenses which are kept in original containers until immediately prior to final inspection may not require cleaning. Clean "Alzak" aluminum surfaces (reflectors, fixture cones and the like) per manufacturer's recommendations being careful to remove finger prints and smudges.
 - 2. It is the contractors' responsibility to remove any U.L. labels or manufacturers' labels from areas of fixture exposed to view and relocate label to non-obtrusive area on fixture.

END OF SECTION 26 50 00

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**Section 50 80 00
Additional Information**

Subsection 50 80 00.1

**ATC
2016 September 20
Restrooms 410 Capitol Ave
ACM Inspection Report**

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ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING

290 Roberts Street, Suite 301
East Hartford, CT 06108
Telephone 860-282-9924
Fax 860-282-9826
www.atcgroupservices.com

September 20, 2016

Mr. Mike Sanders
State of Connecticut
Department of Administrative Services
Division of Construction Services
165 Capitol Avenue, Room 483
Hartford, CT 06106

Re: Asbestos Inspection
Restrooms
410 Capitol Avenue
Hartford, Connecticut 06106
Project 2B-16-21
Building 20359
ATC Project 2257316042

Dear Mr. Sanders:

Please find enclosed the Asbestos Inspection Report for 410 Capitol Avenue, Hartford, Connecticut.

Should you have any questions concerning this report, do not hesitate to contact me at 860 282-9924 ext. 1123.

Sincerely,

ATC Group Services LLC

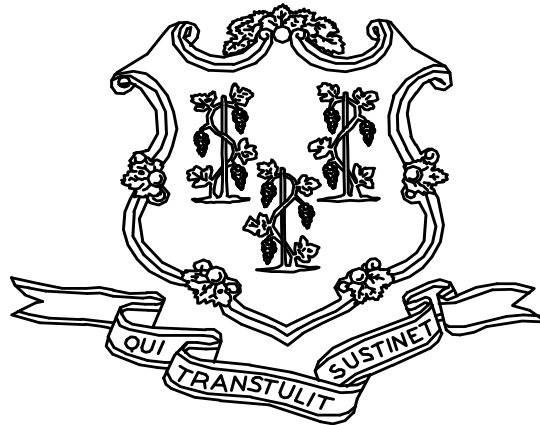
A handwritten signature in blue ink, appearing to read 'Edward P. Fennell Jr.', written over a horizontal line.

Edward P. Fennell Jr., P.E.
Division Manager
For ATC Group Services LLC
Direct Line +1 860 282 9924 x1123
Email: edward.fennell@atcassociates.com
Encl: Asbestos Inspection Report

Cc Ashour Gevargisnia, CTDCS
Richard Terrell, CTDCS

ASBESTOS INSPECTION REPORT

**RESTROOMS
410 CAPITOL AVENUE
HARTFORD, CONNECTICUT
BUILDING 20359
PROJECT 2B-16-21**



**STATE OF CONNECTICUT
DEPARTMENT OF ADMINISTRATIVE SERVICES
DIVISION OF CONSTRUCTION SERVICES**

Prepared by:

**ATC GROUP SERVICES
290 ROBERTS STREET - SUITE 301
EAST HARTFORD, CT 06108**

ATC GROUP SERVICES PROJECT NUMBER 2257316042

SEPTEMBER 20, 2016

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1.0 INTRODUCTION

ATC Group Services LLC (ATC) of East Hartford, Connecticut was retained by the State of Connecticut, Department of Administrative Services, Division of Construction Services (CTDCS) to conduct a limited inspection to identify asbestos-containing materials (ACM) at 410 Capitol Avenue, Hartford, Connecticut.

The inspection was conducted by Ms. Alisa Werst on August 30, and September 14, 2016. Ms. Werst is a State of Connecticut, Department of Public Health (CTDPH) licensed asbestos inspector (CTDPH license number 000736). The survey was performed as a walk-through visual inspection, combined with the collection and analysis of bulk samples.

2.0 ASBESTOS-CONTAINING MATERIALS SURVEY

Materials which were considered suspect ACM included gypsum board, joint compound, floor tile and associated mastic, ceramic tile grout and setting compound, thermal system insulation and miscellaneous caulks.

2.1 ASBESTOS BULK SAMPLE COLLECTION/ANALYSIS PROCEDURE

Building materials considered suspect ACM were inspected and assessed using the methods presented in the United States Environmental Protection Agency AHERA regulations (40 CFR Part 763) and NESHAP regulations (40 CFR Part 61).

ATC Group Services collected bulk samples of building materials utilizing a sampling strategy that correlated with 40 CFR 763.86 as follows:

- (a) *Surfacing materials.* An accredited inspector shall collect, in a statistically random manner that is representative of the homogeneous area, bulk samples from each homogeneous area of friable surfacing material that is not assumed to be ACM, and shall collect the samples as follows:
 - (1) At least three bulk samples shall be collected from each homogeneous area that is 1,000 ft² or less, except as provided in 40 CFR Part 763.87(c)(2).
 - (2) At least five bulk samples shall be collected from each homogeneous area that is greater than 1,000 ft² but less than or equal to 5,000 ft², except as provided in 40 CFR Part 763.87(c)(2).
 - (3) At least seven bulk samples shall be collected from each homogeneous area that is greater than 5,000 ft², except as provided in 40 CFR Part 763.87(c)(2).

- (b) *Thermal system insulation.*
 - (1) Except as provided in paragraphs (b)(2) through (4) of this section and 40 CFR Part 763.87(c), an accredited inspector shall collect, in a randomly distributed manner, at least three bulk samples from each homogeneous area of thermal system insulation that is not assumed to be ACM.
 - (2) Collect at least one bulk sample from each homogeneous area of patched thermal system insulation that is not assumed to be ACM if the patched section is less than 6 linear or square feet.

- (3) In a manner sufficient to determine whether the material is ACM or not ACM, collect bulk samples from each insulated mechanical system that is not assumed to be ACM where cement or plaster is used on fittings such as tees, elbows, or valves, except as provided under 40 CFR Part 763.87(c)(2).
 - (4) Bulk samples are not required to be collected from any homogeneous area where the accredited inspector has determined that the thermal system insulation is fiberglass, foam glass, rubber, or other non-ACM.
- (c) *Miscellaneous materials.* In a manner sufficient to determine whether material is ACM or not ACM, an accredited inspector shall collect bulk samples from each homogeneous area of friable or non-friable miscellaneous material that is not assumed to be ACM.

The bulk samples collected during the survey were analyzed by EMSL Analytical, Inc. located in New York, New York (NVLAP Lab Code 101048-9). The bulk samples were analyzed by Polarized Light Microscopy (PLM) with dispersion staining via the EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s). Utilizing PLM, the microscopist is able to identify and distinguish between asbestos group minerals and other fibrous materials such as cellulose, mineral wool, fiberglass, or synthetic fibers. The quantities of each of these substances is estimated based on the procedures defined in the above-cited reference and are reported as a percentage.

The EPA recognizes the following as asbestos: Chrysotile, Crocidolite, Amosite, Tremolite, Actinolite, and Anthophyllite. To be classified as ACM, the material must be determined to contain greater than one percent (1%) asbestos. In order to consider a material to be non-ACM, all samples of a homogeneous type of material that are collected must be analyzed and all results must indicate the material to contain less than 1% asbestos by weight.

3.0 ASBESTOS-CONTAINING MATERIALS

The results of PLM laboratory analysis indicated that asbestos-containing materials (ACM) were identified. ACM are those materials that contain greater than 1% asbestos, and are as follows:

- 12"X12" Gray Floor Tile and Associated Adhesive (West Janitor's Closets)
- Black Adhesive Remnants under 12"x12" Tile in 3rd Floor East Janitor's Closet
- Gypsum Board Joint Compound

The remaining materials which were sampled and tested were found to contain no detectable amounts of asbestos. Specifically, the following materials throughout the building were determined to be non-ACM:

- 12"X12" Gray Floor Tile and Associated Adhesive
- 12"X12" White Mottled Floor Tile and Associated Adhesive
- 4" Black Cove Base and Associated Adhesive
- 4" Brown Cove Base and Associated Adhesive
- 4" Beige Ceramic Wall Tile Grout
- 4" Beige Ceramic Wall Tile Adhesive
- Adhesive On Fiber Glass Pipe Wrap
- Caulk Around Water Fountain
- 4" Red Cove Base
- Adhesive For 4" Red Cove Base

- Red Quarry Tile Mortar
- Red Quarry Tile Grout
- Adhesive For Yellow Wall Panel
- Adhesive For Beige Wall Panel
- Mudded Pipe Fitting Insulation
- Caulk at Counter
- Caulk at Toilet
- Gypsum Board
- Brown Gypsum Wall Board
- Gypsum Ceiling Board
- Ceiling Joint Compound

Refer to Section 6.0, Bulk Sample Summary of Suspect Materials, for all suspect materials that were identified and sampled.

4.0 DISCUSSION AND RECOMMENDATIONS

EPA regulations require the removal of Regulated Asbestos-Containing Materials (RACM) prior to renovation or demolition activities. RACM is defined as (a) Friable ACM, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation activities. The CTDPH defines “asbestos abatement” as removal, encapsulation, enclosure, renovation, repair, demolition, or other disturbance of ACM but does not include activities which are related to (A) the removal or repair of asbestos cement pipe and are performed by employees of a water company as defined in section 25-32a, or (B) the removal of non-friable ACM found exterior to a building or structure other than material defined as RACM in 40 CFR 61, the National Emission Standards for Hazardous Air Pollutants (NESHAP). Based upon these definitions, ACM identified in the building requires removal prior to renovation, demolition, or disturbance. The State of Connecticut Department of Energy and Environmental Protection (CTDEEP) regulations require the proper disposal of all ACM, regardless of categorization.

5.0 LIMITATIONS

ATC attempted to identify all suspect ACM that could potentially be disturbed during renovation activities. At the time of the inspection, the lactation room on the second floor and the eastern basement janitor’s closet were locked. Due to the identification of positive joint compound in the area, this material has been presumed throughout until further detailed investigation utilizing significant selective demolition can be performed to confirm the location and quantities of this material. Any additional suspect materials found during renovation should be sampled and tested. As with all such assessments, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this assessment was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

6.0 BULK SAMPLE SUMMARY OF SUSPECT MATERIALS

**TABLE 6-1
BULK SAMPLE SUMMARY OF SUSPECT MATERIALS
410 CAPITOL AVENUE**

Sample Number	Sample Location	Material	% Asbestos	Asbestos Type
083016-1A	4th Floor Janitor's Closet West	Gypsum Board	ND	
083016-1B	3rd Floor East Janitor's Closet	Gypsum Board	ND	
083016-2A	4th Floor Janitor's Closet West	Joint Compound	3	Chrysotile
083016-2B	3rd Floor East Janitor's Closet	Joint Compound	2	Chrysotile
083016-3A	4th Floor Janitor's Closet West	12"X12" Gray Floor Tile	5	Chrysotile
083016-3B	2nd Floor Janitor's Closet West	12"X12" Gray Floor Tile	4	Chrysotile
083016-4A	4th Floor Janitor's Closet West	Adhesive for 12"X12" Gray Floor Tile	6	Chrysotile
083016-4B	2nd Floor Janitor's Closet West	Adhesive for 12"X12" Gray Floor Tile	8	Chrysotile
083016-5A	4th Floor Janitor's Closet West	4" Black Cove Base	ND	
083016-5B	2nd Floor West Lounge	4" Black Cove Base	ND	
083016-6A	4th Floor Jan West	Adhesive for 4" Black Cove Base	ND	
083016-6B	2nd Floor West Lounge	Adhesive for 4" Black Cove Base	ND	
083016-7A	4th Floor Pipe Chase	Mudded Pipe Fitting Insulation	ND	
083016-7B	3rd Floor Pipe Chase	Mudded Pipe Fitting Insulation	ND	
083016-7C	2nd Floor Pipe Chase	Mudded Pipe Fitting Insulation	ND	
083016-7D	3rd Floor West Women's Room	Mudded Pipe Fitting Insulation	ND	
083016-7E	3rd Floor West Men's Room	Mudded Pipe Fitting Insulation	ND	

**TABLE 6-1
BULK SAMPLE SUMMARY OF SUSPECT MATERIALS
410 CAPITOL AVENUE**

Sample Number	Sample Location	Material	% Asbestos	Asbestos Type
083016-8A	4th Floor West Women's Lounge	Caulk at Counter	ND	
083016-8B	3rd Floor West Men's Room	Caulk at Counter	ND	
083016-9A	4th Floor Hall outside East Women's Room	4" Brown Cove Base	ND	
083016-9B	1st Floor West Janitor's Closet	4" Brown Cove Base	ND	
083016-10A	4th Floor Hall Outside East Women's Room	Adhesive for 4" Brown Cove Base	ND	
083016-10B	1st Floor West Janitor's Closet	Adhesive for 4" Brown Cove Base	ND	
083016-11A	4th Floor East Women's Room	4" Beige Ceramic Wall Tile Grout	ND	
083016-11B	3rd Floor East Men's Room	4" Beige Ceramic Wall Tile Grout	ND	
083016-12A	4th Floor East Women's Room	4" Beige Ceramic Wall Tile Adhesive	ND	
083016-12B	3rd Floor East Men's Room	4" Beige Ceramic Wall Tile Adhesive	ND	
083016-13A	4th Floor East Women's Room	Adhesive on Fiber Glass Pipe Wrap	ND	
083016-13B	2nd Floor East Women's Room	Adhesive on Fiber Glass Pipe Wrap	ND	
083016-14A	4th Floor East Hall	Caulk Around Water Fountain	ND	
083016-14B	1st Floor East Hall	Caulk Around Water Fountain	ND	
083016-15A	4th Floor East Janitor's Closet	4" Red Cove Base	ND	
083016-15B	3rd Floor East Janitor's Closet	4" Red Cove Base	ND	
083016-16A	4th Floor East Janitor's Closet	Adhesive for 4" Red Cove Base	ND	
083016-16B	3rd Floor East Janitor's Closet	Adhesive for 4" Red Cove Base	ND	
083016-17A	4th Floor East Janitor's Closet	12"X12" White Mottled Floor Tile	ND	

**TABLE 6-1
BULK SAMPLE SUMMARY OF SUSPECT MATERIALS
410 CAPITOL AVENUE**

Sample Number	Sample Location	Material	% Asbestos	Asbestos Type
083016-17B	3rd Floor East Janitor's Closet	12"X12" White Mottled Floor Tile	ND	
083016-18A	4th Floor East Janitor's Closet	Yellow Adhesive for 12"X12" White Mottled Floor Tile	ND	
083016-18B	3rd Floor East Janitor's Closet	Yellow Adhesive for 12"X12" White Mottled Floor Tile	ND	
083016-19A	3rd Floor Vest Men's	Red Quarry Tile Mortar	ND	
083016-19B	1st Floor East Men's Room	Red Quarry Tile Mortar	ND	
083016-20A	3rd Floor West Men's Room	Red Quarry Tile Grout	ND	
083016-20B	1st Floor East Men's Room	Red Quarry Tile Grout	ND	
083016-21A	3rd Floor West Janitor's Closet	Adhesive for Yellow Wall Panel	ND	
083016-21B	2nd Floor West Janitor's Closet	Adhesive for Yellow Wall Panel	ND	
083016-22A	3rd Floor East Hall	Adhesive for Beige Wall Panel	ND	
083016-22B	2nd Floor East Hall	Adhesive for Beige Wall Panel	ND	
083016-23A	3rd Floor East Women's Room	Caulk at Toilet	ND	
083016-24A	3rd Floor West Women's Room	Brown Gypsum Wall Board	ND	
083016-24B	2nd Floor West Women's Room	Brown Gypsum Wall Board	ND	
083016-25A	3rd Floor West Janitor's Closet	Gypsum Ceiling Board	ND	
083016-25B	2nd Floor West Janitor's Closet	Gypsum Ceiling Board	ND	
083016-26A	3rd Floor West Janitor's Closet	Ceiling Joint Compound	ND	
083016-26B	2nd Floor West Janitor's Closet	Ceiling Joint Compound	ND	
083016-27A	1st Floor West Janitor's Closet	Dark Cove Base Adhesive for 4" Brown Cove Base	ND	
083016-27B	1st Floor West Janitor's Closet	Dark Cove Base Adhesive for 4" Brown Cove Base	ND	

**TABLE 6-1
BULK SAMPLE SUMMARY OF SUSPECT MATERIALS
410 CAPITOL AVENUE**

Sample Number	Sample Location	Material	% Asbestos	Asbestos Type
083016-28A	3rd Floor East Janitor's Closet	Black Adhesive Remnants Under 12"X12" Floor Tile	5	Chrysotile
083016-28B	3rd Floor East Janitor's Closet	Black Adhesive Remnants Under 12"X12" Floor Tile	4	Chrysotile
091416-1A	4th Floor Area of Refuge	Joint Compound On Wall	ND	
091416-1B	3rd Floor Hall	Joint Compound On Wall	ND	
091416-2A	4th Floor West Women's Room	Joint Compound On Wall Above Ceiling	2	Chrysotile
091416-2B	2nd Floor West Women's Room	Joint Compound On Wall Above Ceiling	2	Chrysotile
091416-3A	4th Floor West Women's Room	Joint Compound On Ceiling	ND	
091416-3B	2nd Floor West Women's Room	Joint Compound On Ceiling	ND	
091416-4A	2nd Floor Lactation Room	New Wall Joint Compound	ND	
091416-4B	2nd Floor Lactation Room	New Wall Joint Compound	ND	

ND = None Detected

7.0 BULK SAMPLE RESULTS/CHAIN-OF-CUSTODY FORMS



EMSL Analytical, Inc.

307 West 38th Street New York, NY 10018

Tel/Fax: (212) 290-0051 / (212) 290-0058

<http://www.EMSL.com> / manhattanlab@emsl.com

EMSL Order: 031626633
Customer ID: ATCE54
Customer PO: 16-10133-0001
Project ID:

Attention: Ed Fennell
 ATC Group Services LLC
 290 Roberts Street
 Suite 301
 East Hartford, CT 06108

Phone: (860) 282-9924
Fax: (860) 282-9826

Received Date: 09/01/2016 10:10 AM
Analysis Date: 09/03/2016 - 09/04/2016
Collected Date: 08/30/2016

Project: 2257316047/ CTDCS/ 410 CAPITAL AVE/ HARTFORD, CT

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
083016-1A 031626633-0001	4TH FLOOR JAN. WEST - GYPSUM WALL BOARD	Brown Non-Fibrous Homogeneous	8% Cellulose	50% Gypsum 42% Non-fibrous (Other)	None Detected
083016-1B 031626633-0002	3RD FLOOR EAST JAN. - GYPSUM WALL BOARD	Brown/White Non-Fibrous Homogeneous	60% Cellulose	22% Gypsum 18% Non-fibrous (Other)	None Detected
083016-2A 031626633-0003	4TH FLOOR JAN. WEST - JOINT COMPOUND	White/Yellow Non-Fibrous Homogeneous	15% Cellulose	60% Ca Carbonate 8% Mica 14% Non-fibrous (Other)	3% Chrysotile
083016-2B 031626633-0004	3RD FLOOR EAST JAN. - JOINT COMPOUND	Tan/White Non-Fibrous Heterogeneous	Inseparable joint compounds composited.		55% Ca Carbonate 3% Mica 40% Non-fibrous (Other) 2% Chrysotile
083016-3A 031626633-0005	4TH FLOOR JAN. WEST - 12"X12" GRAY FLOOR TILE	Gray/White Non-Fibrous Homogeneous			60% Ca Carbonate 35% Non-fibrous (Other) 5% Chrysotile
083016-3B 031626633-0006	2ND FLOOR JAN. WEST - 12"X12" GRAY FLOOR TILE	Tan/White Non-Fibrous Homogeneous			81% Non-fibrous (Other) 4% Chrysotile
083016-4A 031626633-0007	4TH FLOOR JAN. WEST - ADHESIVE FLOOR 12"X1" GRAY FLOOR TILE	Black Non-Fibrous Homogeneous			15% Ca Carbonate 79% Non-fibrous (Other) 6% Chrysotile
083016-4B 031626633-0008	2ND FLOOR JAN. WEST - ADHESIVE FLOOR 12"X1" GRAY FLOOR TILE	Black Non-Fibrous Homogeneous	5% Cellulose	87% Non-fibrous (Other)	8% Chrysotile
083016-5A 031626633-0009	4TH FLOOR JAN. WEST - 4" BLACK COVE BASE	Black Non-Fibrous Homogeneous			100% Non-fibrous (Other) None Detected
083016-5B 031626633-0010	2ND FLOOR WEST LOUNGE - 4" BLACK COVE BASE	Black Non-Fibrous Homogeneous			10% Ca Carbonate 90% Non-fibrous (Other) None Detected

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Samples analyzed by EMSL Analytical, Inc. New York, NY AIHA-LAP, LLC--IHLAP Accredited #102581, NVLAP Lab Code 101048-9, NYS ELAP 11506, NJ NY022, CT PH-0170, MA AA000170

Initial report from: 09/04/2016 15:55:00



EMSL Analytical, Inc.

307 West 38th Street New York, NY 10018

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<http://www.EMSL.com> / manhattanlab@emsl.com

EMSL Order: 031626633
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Project ID:

Attention: Ed Fennell
 ATC Group Services LLC
 290 Roberts Street
 Suite 301
 East Hartford, CT 06108

Phone: (860) 282-9924
Fax: (860) 282-9826
Received Date: 09/01/2016 10:10 AM
Analysis Date: 09/03/2016 - 09/04/2016
Collected Date: 08/30/2016

Project: 2257316047/ CTDCS/ 410 CAPITAL AVE/ HARTFORD, CT

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
083016-6A 031626633-0011	4TH FLOOR JAN WEST - ADHESIVE FOR 4" BLACK COVE BASE	Tan/Beige Non-Fibrous Homogeneous	15% Cellulose	35% Non-fibrous (Other)	None Detected
083016-6B 031626633-0012	2ND FLOOR WEST LOUNGE - ADHESIVE FOR 4" BLACK COVE BASE	Yellow Non-Fibrous Homogeneous	4% Cellulose 2% Synthetic	15% Ca Carbonate 79% Non-fibrous (Other)	None Detected
083016-7A 031626633-0013	4TH FLOOR PIPE CHASE - MUDDED FITTING	Gray/White Non-Fibrous Homogeneous	15% MinWool	85% Non-fibrous (Other)	None Detected
083016-7B 031626633-0014	3RD FLOOR PIPE CHASE - MUDDED FITTING	Gray/White Non-Fibrous Homogeneous	8% Glass	92% Non-fibrous (Other)	None Detected
083016-7C 031626633-0015	2ND FLOOR PIPE CHASE - MUDDED FITTING	Gray/White Non-Fibrous Homogeneous	8% Glass	92% Non-fibrous (Other)	None Detected
083016-7D 031626633-0016	3RD FLOOR WEST WOMENS RM - MUDDED FITTING	Tan Fibrous Homogeneous	2% Cellulose 20% MinWool	20% Ca Carbonate 58% Non-fibrous (Other)	None Detected
083016-7E 031626633-0017	3RD FLOOR WEST MENS RM - MUDDED FITTING	Tan Fibrous Homogeneous	3% Cellulose 30% MinWool	67% Non-fibrous (Other)	None Detected
083016-8A 031626633-0018	4TH FLOOR WEST WMNS LOUNGE - CAULK AT COUNTER	White Non-Fibrous Homogeneous	10% Cellulose 13% Fibrous_Other	77% Non-fibrous (Other)	None Detected
083016-8B 031626633-0019	3RF FLOOR WEST MENS RM - CAULK AT COUNTER	White Fibrous Homogeneous	12% Cellulose	68% Non-fibrous (Other)	None Detected
083016-9A 031626633-0020	4TH FLOOR HALL O/S EAST WMNS - 4" BROWN COV BASE	Black Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected

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Samples analyzed by EMSL Analytical, Inc. New York, NY AIHA-LAP, LLC--IHLAP Accredited #102581, NVLAP Lab Code 101048-9, NYS ELAP 11506, NJ NY022, CT PH-0170, MA AA000170

Initial report from: 09/04/2016 15:55:00



EMSL Analytical, Inc.

307 West 38th Street New York, NY 10018

Tel/Fax: (212) 290-0051 / (212) 290-0058

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Project: 2257316047/ CTDCS/ 410 CAPITAL AVE/ HARTFORD, CT

Phone: (860) 282-9924

Fax: (860) 282-9826

Received Date: 09/01/2016 10:10 AM

Analysis Date: 09/03/2016 - 09/04/2016

Collected Date: 08/30/2016

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
083016-9B 031626633-0021	1ST FLOOR WEST JAN. - 4" BROWN COV BASE	Brown Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected
083016-10A 031626633-0022	4TH FLOOR HALL O/S EAST WMNS - ADHESIVE FOR 4" BROWN COVE BASE	Tan/Gold Non-Fibrous Homogeneous		50% Non-fibrous (Other)	None Detected
083016-10B 031626633-0023	1ST FLOOR WEST JAN. - ADHESIVE FOR 4" BROWN COVE BASE	Yellow Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	None Detected
083016-11A 031626633-0024	4TH FLOOR EAST WMNS RM - 4" BEIGE CERAMIC WALL TILE GROUT	White Non-Fibrous Homogeneous	5% Cellulose	15% Ca Carbonate 12% Gypsum 68% Non-fibrous (Other)	None Detected
083016-11B 031626633-0025	3RD FLOOR EAST MENS RM - 4" BEIGE CERAMIC WALL TILE GROUT	White Non-Fibrous Homogeneous		60% Ca Carbonate 40% Non-fibrous (Other)	None Detected
083016-12A 031626633-0026	4TH FLOOR EAST WMNS RM - 4" BEIGE CERAMIC WALL TILE ADHESIVE	Tan/Beige Non-Fibrous Homogeneous	8% Cellulose	15% Ca Carbonate 77% Non-fibrous (Other)	None Detected
083016-12B 031626633-0027	3RD FLOOR EAST MENS RM - 4" BEIGE CERAMIC WALL TILE ADHESIVE	Tan Non-Fibrous Homogeneous	2% Cellulose	15% Ca Carbonate 83% Non-fibrous (Other)	None Detected
083016-13A 031626633-0028	4TH FLOOR EAST WMNS RM - ADHESIVE ON FIBER GLASS PIPE WRAP	Brown/Tan Non-Fibrous Homogeneous	50% Cellulose	50% Non-fibrous (Other)	None Detected
083016-13B 031626633-0029	2ND FLOOR EAST WMNS RM - ADHESIVE ON FIBER GLASS PIPE WRAP	Tan/Silver Fibrous Heterogeneous	55% Cellulose 23% Glass	22% Non-fibrous (Other)	None Detected
083016-14A 031626633-0030	4TH FLOOR EAST HALL - CAULK AROUND WATER FOUNTAIN	White Non-Fibrous Homogeneous		10% Ca Carbonate 90% Non-fibrous (Other)	None Detected

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Samples analyzed by EMSL Analytical, Inc. New York, NY AIHA-LAP, LLC--IHLAP Accredited #102581, NVLAP Lab Code 101048-9, NYS ELAP 11506, NJ NY022, CT PH-0170, MA AA000170

Initial report from: 09/04/2016 15:55:00



EMSL Analytical, Inc.

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EMSL Order: 031626633
Customer ID: ATCE54
Customer PO: 16-10133-0001
Project ID:

Attention: Ed Fennell
 ATC Group Services LLC
 290 Roberts Street
 Suite 301
 East Hartford, CT 06108

Phone: (860) 282-9924
Fax: (860) 282-9826
Received Date: 09/01/2016 10:10 AM
Analysis Date: 09/03/2016 - 09/04/2016
Collected Date: 08/30/2016

Project: 2257316047/ CTDCS/ 410 CAPITAL AVE/ HARTFORD, CT

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
083016-14B 031626633-0031	1ST FLOOR EAST HALL - CAULK AROUND WATER FOUNTAIN	Tan Non-Fibrous Homogeneous	3% Fibrous_Other	72% Non-fibrous (Other)	None Detected
083016-15A 031626633-0032	4TH FLOOR EAST JAN. - 4" RED COVE BASE	Red Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
083016-15B 031626633-0033	3RD FLOOR EAST JAN. - 4" RED COVE BASE	Red Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
083016-16A 031626633-0034	4TH FLOOR EAST JAN. - ADHESIVE FOR 4" RED COVE BASE	Brown/Tan Non-Fibrous Homogeneous	25% Cellulose	75% Non-fibrous (Other)	None Detected
083016-16B 031626633-0035	3RD FLOOR EAST JAN. - ADHESIVE FOR 4" RED COVE BASE	Tan/White Non-Fibrous Heterogeneous		30% Ca Carbonate 70% Non-fibrous (Other)	None Detected
083016-17A 031626633-0036	4TH FLOOR EAST JAN. - 12"X12" WHITE MOTTLED FLOOR TILE	White Non-Fibrous Homogeneous		23% Ca Carbonate 77% Non-fibrous (Other)	None Detected
083016-17B 031626633-0037	3RD FLOOR EAST JAN. - 12"X12" WHITE MOTTLED FLOOR TILE	White Non-Fibrous Homogeneous		22% Ca Carbonate 78% Non-fibrous (Other)	None Detected
083016-18A 031626633-0038	4TH FLOOR EAST JAN. - YELLOW ADHESIVE FOR 12"X12" WHITE MOTTLED FLOOR TILE	Yellow Non-Fibrous Homogeneous	8% Cellulose	92% Non-fibrous (Other)	None Detected
083016-18B 031626633-0039	3RD FLOOR EAST JAN. - YELLOW ADHESIVE FOR 12"X12" WHITE MOTTLED FLOOR TILE	Yellow Non-Fibrous Homogeneous	8% Cellulose	92% Non-fibrous (Other)	None Detected

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Samples analyzed by EMSL Analytical, Inc. New York, NY AIHA-LAP, LLC--IHLAP Accredited #102581, NVLAP Lab Code 101048-9, NYS ELAP 11506, NJ NY022, CT PH-0170, MA AA000170

Initial report from: 09/04/2016 15:55:00



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EMSL Order: 031626633
Customer ID: ATCE54
Customer PO: 16-10133-0001
Project ID:

Attention: Ed Fennell
 ATC Group Services LLC
 290 Roberts Street
 Suite 301
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Phone: (860) 282-9924
Fax: (860) 282-9826
Received Date: 09/01/2016 10:10 AM
Analysis Date: 09/03/2016 - 09/04/2016
Collected Date: 08/30/2016

Project: 2257316047/ CTDCS/ 410 CAPITAL AVE/ HARTFORD, CT

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
083016-19A 031626633-0040	3RD FLOOR VEST MENS - RED QUARRY TILE MORTAR	Gray/Tan Non-Fibrous Homogeneous		55% Quartz 12% Ca Carbonate 33% Non-fibrous (Other)	None Detected
083016-19B 031626633-0041	1ST FLOOR EAST MENS RM - RED QUARRY TILE MORTAR	Gray/Tan Non-Fibrous Homogeneous	3% Cellulose	56% Quartz 15% Ca Carbonate 26% Non-fibrous (Other)	None Detected
083016-20A 031626633-0042	3RD FLOOR WEST MENS RM - RED QUARRY TILE GROUT	Gray Non-Fibrous Homogeneous		48% Quartz 20% Ca Carbonate 32% Non-fibrous (Other)	None Detected
083016-20B 031626633-0043	1ST FLOOR EAST MENS RM - RED QUARRY TILE GROUT	Gray Non-Fibrous Homogeneous		50% Quartz 12% Ca Carbonate 38% Non-fibrous (Other)	None Detected
083016-21A 031626633-0044	3RD FLOOR WEST JAN. - ADHESIVE FOR YELLOW WALL PANEL	Tan/White Non-Fibrous Homogeneous	4% Cellulose	96% Non-fibrous (Other)	None Detected
083016-21B 031626633-0045	2ND FLOOR WEST JAN. - ADHESIVE FOR YELLOW WALL PANEL	Tan/White Non-Fibrous Homogeneous	2% Cellulose	73% Non-fibrous (Other)	None Detected
083016-22A 031626633-0046	3RD FLOOR EAST HALL - ADHESIVE FOR BEIGE WALLPANEL	Blue/Yellow Non-Fibrous Heterogeneous		80% Non-fibrous (Other)	None Detected
083016-22B 031626633-0047	2ND FLOOR EAST HALL - ADHESIVE FOR BEIGE WALLPANEL	Blue/Yellow Non-Fibrous Heterogeneous		60% Non-fibrous (Other)	None Detected
083016-23A 031626633-0048	3RD FLOOR EAST WMNS RM - CAULK AT TOILET	Gray/White Non-Fibrous Heterogeneous	3% Cellulose	20% Ca Carbonate 77% Non-fibrous (Other)	None Detected
083016-23B 031626633-0049	2ND FLOOR WEST WMNS RM - CAULK AT TOILET	Tan Non-Fibrous Homogeneous		60% Non-fibrous (Other)	None Detected

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Samples analyzed by EMSL Analytical, Inc. New York, NY AIHA-LAP, LLC--IHLAP Accredited #102581, NVLAP Lab Code 101048-9, NYS ELAP 11506, NJ NY022, CT PH-0170, MA AA000170

Initial report from: 09/04/2016 15:55:00



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EMSL Order: 031626633
Customer ID: ATCE54
Customer PO: 16-10133-0001
Project ID:

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Phone: (860) 282-9924
Fax: (860) 282-9826
Received Date: 09/01/2016 10:10 AM
Analysis Date: 09/03/2016 - 09/04/2016
Collected Date: 08/30/2016

Project: 2257316047/ CTDCS/ 410 CAPITAL AVE/ HARTFORD, CT

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
083016-24A 031626633-0050	3RD FLOOR WEST WMNS RM - BROWN GYSPSUM WALL BOARD	Brown Non-Fibrous Homogeneous	17% Cellulose	55% Gypsum 28% Non-fibrous (Other)	None Detected
083016-24B 031626633-0051	2ND FLOOR WEST WMNS RM - BROWN GYSPSUM WALL BOARD	Brown Non-Fibrous Homogeneous	11% Cellulose	55% Gypsum 34% Non-fibrous (Other)	None Detected
083016-25A 031626633-0052	3RD FLOOR WEST JAN. - GYPSUM CEILING BOARD	Gray Non-Fibrous Homogeneous	5% Cellulose 4% Glass	60% Gypsum 31% Non-fibrous (Other)	None Detected
083016-25B 031626633-0053	2ND FLOOR WEST JAN. - GYPSUM CEILING BOARD	Brown/Tan Non-Fibrous Homogeneous	55% Cellulose 1% Glass	25% Gypsum 19% Non-fibrous (Other)	None Detected
083016-26A 031626633-0054	3RD FLOOR WEST JAN. - CEILING JOINT COMPOUND	White Non-Fibrous Homogeneous		35% Ca Carbonate 65% Non-fibrous (Other)	None Detected
083016-26B 031626633-0055	2ND FLOOR WEST JAN. - CEILING JOINT COMPOUND	White Fibrous Heterogeneous	40% Cellulose	35% Ca Carbonate 25% Non-fibrous (Other)	None Detected
083016-27A 031626633-0056	1ST FLOOR WEST JAN. - DARK COVEBASE ADHESIVE FOR 4" BROWN COVEBASE	Brown/Tan Non-Fibrous Heterogeneous	2% Cellulose	53% Non-fibrous (Other)	None Detected
083016-27B 031626633-0057	1ST FLOOR WEST JAN. - DARK COVEBASE ADHESIVE FOR 4" BROWN COVEBASE	Brown/Tan Non-Fibrous Homogeneous	5% Cellulose	55% Non-fibrous (Other)	None Detected
083016-28A 031626633-0058	3RD FLOOR EAST JAN. - BLACK ADHESIVE REMNANTS UNDER 12"X12" TILE	Black/Yellow Non-Fibrous Heterogeneous	4% Cellulose	5% Ca Carbonate 86% Non-fibrous (Other)	5% Chrysotile

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Samples analyzed by EMSL Analytical, Inc. New York, NY AIHA-LAP, LLC--IHLAP Accredited #102581, NVLAP Lab Code 101048-9, NYS ELAP 11506, NJ NY022, CT PH-0170, MA AA000170

Initial report from: 09/04/2016 15:55:00



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EMSL Order: 031626633
Customer ID: ATCE54
Customer PO: 16-10133-0001
Project ID:

Attention: Ed Fennell ATC Group Services LLC 290 Roberts Street Suite 301 East Hartford, CT 06108	Phone: (860) 282-9924 Fax: (860) 282-9826
Project: 2257316047/ CTDCS/ 410 CAPITAL AVE/ HARTFORD, CT	Received Date: 09/01/2016 10:10 AM Analysis Date: 09/03/2016 - 09/04/2016 Collected Date: 08/30/2016

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
083016-28B 031626633-0059	3RD FLOOR EAST JAN. - BLACK ADHESIVE REMNANTS UNDER 12"X12" TILE	Black/Yellow Non-Fibrous Heterogeneous	5% Cellulose	8% Ca Carbonate 83% Non-fibrous (Other)	4% Chrysotile

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Samples analyzed by EMSL Analytical, Inc. New York, NY AIHA-LAP, LLC--IHLAP Accredited #102581, NVLAP Lab Code 101048-9, NYS ELAP 11506, NJ NY022, CT PH-0170, MA AA000170

Initial report from: 09/04/2016 15:55:00



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EMSL Order: 031626633
Customer ID: ATCE54
Customer PO: 16-10133-0001
Project ID:

Attention: Ed Fennell
ATC Group Services LLC
290 Roberts Street
Suite 301
East Hartford, CT 06108
Project: 2257316047/ CTDCS/ 410 CAPITAL AVE/ HARTFORD, CT

Phone: (860) 282-9924
Fax: (860) 282-9826
Received Date: 09/01/2016 10:10 AM
Analysis Date: 09/03/2016 - 09/04/2016
Collected Date: 08/30/2016

The samples in this report were submitted to EMSL for analysis by Asbestos Analysis of Bulk materials via EPA/600 (0513) Method using Polarized Light Microscopy. The reference number for these samples is the EMSL Order ID above. Please use this reference number when calling about these samples.

Report Comments:

Sample Receipt Date: 09/01/2016 Sample Receipt Time: 10:10 AM
Analysis Completed Date: 09/04/2016 Analysis Completed Time: 3:49 PM

Analyst(s):

Chad Layne PLM (18)

Jon Williams PLM (41)

Samples Reviewed and approved by:

James Hall, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. New York, NY AIHA-LAP, LLC--IHLAP Accredited #102581, NVLAP Lab Code 101048-9, NYS ELAP 11506, NJ NY022, CT PH-0170, MA AA000170

Initial report from: 09/04/2016 15:55:00



BULK SAMPLE LOG

021020033

Page 1 of 4
290 Roberts Street, Suite 301
East Hartford, CT 06108
(860) 282-9924 Fax: (860) 282-9826

Cardno ATC Inspector: Alisa West Client Name: CTDCS
 Accreditation No.: 736 Project No./Task No.: 2257316047
 Survey Date: 8-31-16 Project Manager: F. Fennell
 Signature: Alisa West Requested Completion Date:
 Lab Name: EMSL Requested turnaround time (circle): 3 HR 6 HR 24 HR 48 HR 3DY 5DY
 Building: 410 Capital Ave Address: Hartford CT No. Samples Collected 59

Location	Material Description	Type	Estimated Quantity	Friable Y/N	Condition (SD D ND)	Sample of - (homogeneous material)	Field Number
4th Floor Jan West	Gypsum wall board	MISC				1	2
5th Floor east Jan						1	2
4th Floor Jan West	Joint compound					1	2
3rd Floor east Jan						1	2
4th Floor Jan West	12" x 12" floor gray					1	2
2nd Floor Jan West	Adhesive for 4" x 12" x 12"					1	2
4th Floor Jan West	gray floor tile					1	2
2nd Floor Jan West	4" Black core base					1	2
2nd Floor west lounge	adhesive for 4" Black					1	2
4th Floor Jan West						1	2
2nd Floor west lounge	adhesive base					1	2
4th Floor Pipe chase	mudded fitting					1	2
3rd Floor Pipe chase						1	2
2nd Floor pipe chase						1	2
3rd Floor west women's rm						3	5
3rd Floor west mens rm						3	5

Comments: PLM

9/30/13 13:00pm

8100 2431 7975

RECEIVED
RECEIVED
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BULK SAMPLE LOG

031626633

Page 2 of 4
 290 Roberts Street, Suite 301
 East Hartford, CT 06108
 (860) 282-9924 Fax: (860) 282-9826

Cardno ATC Inspector: Alisa West Client Name: CTDCS
 Accreditation No.: 736 Project No./Task No.: Z257316047
 Survey Date: 8-31-16 Project Manager: E. Fennell
 Signature: Alisa West Requested Completion Date:
 Lab Name: EMSL Requested turnaround time (circle) 3 HR 6 HR 24 HR 48 HR 6 DY 5 DY
 Building: 410 Capitol Ave Address: Hartford CT No. Samples Collected 59

Location	Material Description	Type	TSI	MISC	Estimated Quantity	Friable Y/N	Condition (SD D ND)	Sample of (homogeneous material)	Field Number
4th Floor West WWS lounge	caulk at counter		M15C						083016-84
3rd Floor West Mens RM									813
4th Floor Hall 015 east WWS	4" Brown cover base								94
1st Floor West Jan	adhesive for 4"								98
4th Floor Hall 015 east WWS	adhesive for 4"								104
1st Floor West Jan	brown cover base								108
4th Floor West WWS RM	4" Beige ceramic								114
3rd Floor east mens RM	wall tile grout								118
4th Floor east WWS RM	4" Beige ceramic								124
3rd Floor east mens RM	wall tile adhesive								128
4th Floor east WWS RM	adhesive on fiber								134
2nd Floor east WWS RM	glass pipe strap								138
4th Floor east Hall	caulk around water								144
1st Floor east Hall	faucet								148
4th Floor east Jan	4" red cover base								154
5th Floor									158

Comments: PLM

Notes:
 Damage Factors: Physical (sig dmg-dmg-no dmg) Water (extensive-moderate-slight-none)
 Disturbance Factors: Proximity (<1ft-1-6ft->6ft) Accessibility (within reach-barely reachable-not reachable)
 Relinquished By/Date: Alisa West 8-31-16 Received By/Date: Alisa West 10-08-16
 Relinquished By/Date: Alisa West 8-31-16 Received By/Date: Alisa West 10-08-16



BULK SAMPLE LOG

0810240033

Page 3 of 4
 290 Roberts Street, Suite 301
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Cardno ATC Inspector: Alisa West Client Name: CTDCS
 Accreditation No.: 736 Project No./Task No.: Z257316047
 Survey Date: 8-30-16 Project Manager: E. Fennell
 Signature: Alisa West Requested Completion Date:
 Lab Name: EMSI Requested turnaround time (circle): 3 HR 6 HR 24 HR 48 HR 3 DY 5 DY No. Samples Collected
 Building: 410 Capitol Ave Address: Hartford CT

Location	Material Description	Type	Estimated Quantity	Friable Y/N	Condition (SD D ND)	Sample of (homogeneous material)	Field Number
4th Floor east Jan	adhesive for 4" red						083016 164
3rd Floor "	red base						1613
4th Floor east Jan	12"X12" white mortar						1724
3rd Floor east Jan	floor tile						1713
4th Floor east Jan	yellow adhesive for 12"X12"						1824
3rd Floor "	white mortar floor tile						1813
3rd Floor Atrium West Meas	red quarry tile						1914
1st Floor east-mens RM	Mortar						1913
3rd Floor west mens RM	red quarry tile						2014
1st Floor east-mens RM	grout						2013
3rd Floor west mens RM	adhesive for yellow						2114
2nd Floor West Shn	wall panel						2113
3rd Floor east 1411	adhesive for beige						2214
2nd Floor "	wall panel						2213
3rd Floor east mens RM	caulid at toilet						2314
2nd Floor west mens RM							2313

Comments: PLM

Notes:
 Damage Factors: Ethical (slg dng-dng-no dng) Water (extensive-moderate-slight-none)
 Disturbance Factors: Proximity (<1ft-1-6ft->6ft) Accessibility (within reach-barely-reachable-not-reachable)
 Relinquished By/Date: Alisa West 8-31-16 Received By/Date: Alisa West 8-31-16
 Relinquished By/Date: Alisa West 8-31-16 Received By/Date: Alisa West 8-31-16



BULK SAMPLE LOG

Page 4 of 4
 290 Roberts Street, Suite 301
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 (860) 282-9924 Fax: (860) 282-9826

Cardno ATC Inspector: Alisa West Client Name: CTDCS

Accreditation No.: 736 Project No./Task No.: 2257316047

Survey Date: 8-30-16 Project Manager: E. Fennell

Signature: Alisa West Requested Completion Date:

Lab Name: EMSL Requested turnaround time (circle): 3 HR 6 HR 24 HR 48 HR 3 DY 5 DY

Building: 410 Capitol Ave Address: Hartford CT No. Samples Collected

Location	Material Description	Type	Estimated Quantity	Friable Y/N	Condition (SD D ND)	Sample of (homogeneous material)	Field Number
3rd Floor east Jan	Black adhesive remnants under 12" x 12" white mottled floor tile Misc	S				1	083016-2388
2nd Floor west wing RM	Brown gypsum wall board	MISC				2	244
2nd Floor west wing RM	gypsum ceiling					2	2413
2nd Floor west wing RM	ceiling joint compound					2	254
1st Floor west Jan	Dark cave base adhesive					2	261B
1st Floor west Jan	For 411 Brown cave base					2	274
3rd Floor east Jan	Black adhesive remnants under 12" x 12" tile					2	284

Comments: PCM

Notes:
 Damage Factors: Physical (sig dmg-dmg-no dmg) Water (extensive-moderate-slight none)
 Disturbance Factors: Proximity (<1ft- 1-6ft >6ft) Accessibility (within reach-barely reachable-not reachable)
 Relinquished By/Date: Alisa West 8-31-16 Received By/Date: [Signature]
 Relinquished By/Date: [Signature] Received By/Date: [Signature]

9/13/16 8:130am



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EMSL Order: 031628094

Customer ID: ATCE54

Customer PO: 16-10133-0001

Project ID:

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Phone: (860) 282-9924

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Received Date: 09/17/2016 11:06 AM

Analysis Date: 09/18/2016

Collected Date: 09/14/2016

Project: 2257316042/ CTDCS/ 410 CAPITOL AVE/ HARTFORD CT

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
091416-1A 031628094-0001	4TH FL AOR - JOINT COMPOUND ON WALL	White Non-Fibrous Homogeneous		68% Ca Carbonate 4% Mica 28% Non-fibrous (Other)	None Detected
Inseparable paint / coating layer included in analysis					
091416-1B 031628094-0002	3RD FL HALL - JOINT COMPOUND ON WALL	White Non-Fibrous Homogeneous		65% Ca Carbonate 2% Mica 33% Non-fibrous (Other)	None Detected
Inseparable paint / coating layer included in analysis					
091416-2A 031628094-0003	4TH FL WEST WMNS - JOINT COMPOUND ON WALL ABOVE CEILING	Tan Non-Fibrous Homogeneous		40% Ca Carbonate 58% Non-fibrous (Other)	2% Chrysotile
091416-2B 031628094-0004	2ND FL WEST WMNS - JOINT COMPOUND ON WALL ABOVE CEILING	Tan Non-Fibrous Homogeneous		65% Ca Carbonate 2% Mica 31% Non-fibrous (Other)	2% Chrysotile
Inseparable paint / coating layer included in analysis					
091416-3A 031628094-0005	4TH FL WEST WMNS - JOINT COMPOUND ON CEILING	White Non-Fibrous Homogeneous		62% Ca Carbonate 5% Mica 33% Non-fibrous (Other)	None Detected
Inseparable paint / coating layer included in analysis					
091416-3B 031628094-0006	2ND FL WEST SMNS - JOINT COMPOUND ON CEILING	White Non-Fibrous Homogeneous	10% Cellulose	70% Ca Carbonate 20% Non-fibrous (Other)	None Detected
This is a composite result of jt. compound and tape Inseparable paint / coating layer included in analysis					
091416-4A 031628094-0007	2ND FL LACTATION - NEW WALL JOINT COMPOUND	White Non-Fibrous Homogeneous	1% Cellulose	70% Ca Carbonate 29% Non-fibrous (Other)	None Detected
091416-4B 031628094-0008	2ND FL LACTATION - NEW WALL JOINT COMPOUND	White Non-Fibrous Homogeneous		75% Ca Carbonate 25% Non-fibrous (Other)	None Detected
Inseparable paint / coating layer included in analysis					

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. New York, NY AIHA-LAP, LLC--IHLAP Accredited #102581, NVLAP Lab Code 101048-9, NYS ELAP 11506, NJ NY022, CT PH-0170, MA AA000170

Initial report from: 09/18/2016 16:00:16



EMSL Analytical, Inc.

307 West 38th Street New York, NY 10018

Tel/Fax: (212) 290-0051 / (212) 290-0058

<http://www.EMSL.com> / manhattanlab@emsl.com

EMSL Order: 031628094
Customer ID: ATCE54
Customer PO: 16-10133-0001
Project ID:

Attention: ATC Group Services LLC
290 Roberts Street
Suite 301
East Hartford, CT 06108

Phone: (860) 282-9924
Fax: (860) 282-9826
Received Date: 09/17/2016 11:06 AM
Analysis Date: 09/18/2016
Collected Date: 09/14/2016


Project: 2257316042/ CTDCS/ 410 CAPITOL AVE/ HARTFORD CT


The samples in this report were submitted to EMSL for analysis by Asbestos Analysis of Bulk materials via EPA/600 (0513) Method using Polarized Light Microscopy. The reference number for these samples is the EMSL Order ID above. Please use this reference number when calling about these samples.

Report Comments:


Sample Receipt Date: 09/17/2016 Sample Receipt Time: 11:06 AM
Analysis Completed Date: 09/18/2016 Analysis Completed Time: 9:10 AM

Analyst(s):


Emmanuel Moise PLM (4)


Yolanda Chow PLM (4)

Samples Reviewed and approved by:


James Hall, Laboratory Manager
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. New York, NY AIHA-LAP, LLC--IHLAP Accredited #102581, NVLAP Lab Code 101048-9, NYS ELAP 11506, NJ NY022, CT PH-0170, MA AA000170

Initial report from: 09/18/2016 16:00:16



BULK SAMPLE LOG

Page ___ of ___
 290 Roberts Street, Suite 301
 East Hartford, CT 06108
 (860) 282-9924 Fax: (860) 282-9826

Client Name: CTDCS
 Project No./Task No.: 02257316042
 Project Manager: Ed Fennell
 Requested Completion Date: _____
 Requested turnaround time (circle): 3 HR 6 HR (24 HR) 48 HR 3 DY 5 DY
 No. Samples Collected: 8
 Address: Hartford CT

Location	Material Description	Type S TSI MISC	Estimated Quantity	Friable Y/N	Condition (SD D ND)	Sample of (homogeneous material)	Field Number
4th Floor AOR	Joint compound, on wall	MISC				2	091416 - 1A
5th Floor Hall	Joint compound, on wall					2	1B
4th Floor west wings	Joint compound, on wall					2	2A
4th Floor west wings	above ceiling					2	2B
4th Floor west wings	Joint compound, on ceiling					2	3A
2nd Floor west wings	ceiling					2	3B
2nd Floor Lactation	new wall joint compound					2	4A
							4B
							ENGL
							RECEIVED
							10 SEP 17 11:06 AM

Notes: _____
 Damage Factors: _____
 Disturbance Factors: _____
 Physical (sig dmg-dmg-no dmg) _____
 Proximity (<1ft-1.5ft->6ft) _____
 Ventilation (yes-no-if yes, type) _____
 Water (extensive-moderate-slight-none) _____
 Accessibility (within reach-barely reachable-not reachable) _____
 Air conduits (air plenum - air shaft - elevator shaft - duct) _____
 Deterioration (heavy-moderate-light-none) _____
 Vibration (gym-music m-auditorium-mechanical m-elevator-other) _____
 Friability (yes-no; hard-mod-soft surface) _____
 Barriers (perm airtight-enclosed-encapsulated) _____
 Texture (rough-pitted-moderate-smooth) _____

Relinquished By/Date: Jan Wertz 9-15-16
 Relinquished By/Date: _____
 Received By/Date: Quintise 9/17/16 11:06 AM
 Received By/Date: _____

Comments: PLM

Handwritten notes: Yc 9/18/16 3:07PM
F/X 0009 1420 0540
EKM 9/18/16

APPENDIX A
LICENSE AND CERTIFICATION

APPENDIX B
DRAWINGS





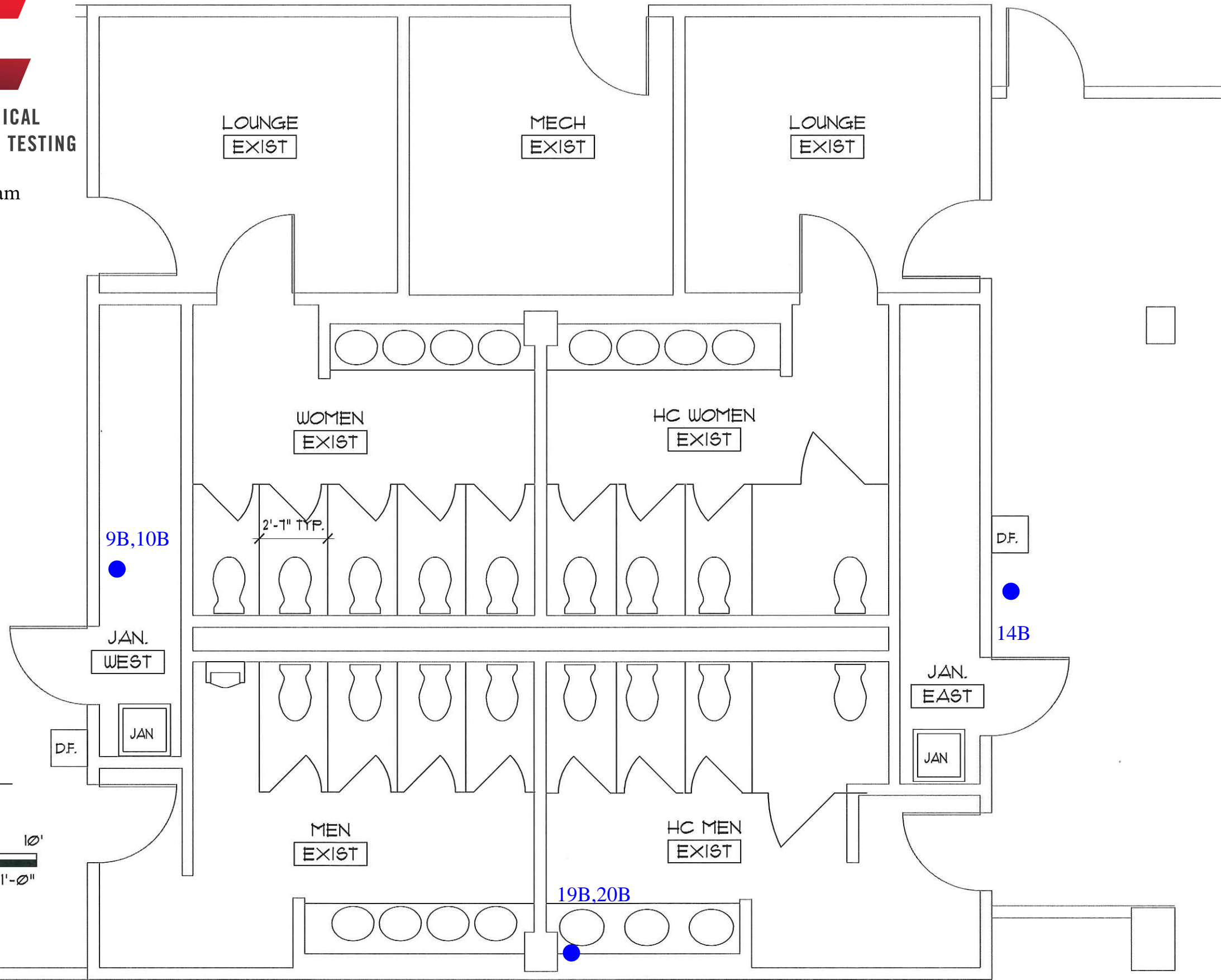
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING

Asbestos Sample Location Diagram
First Floor
09-20-2016

EXISTING PER FLOOR COUNT
(18) TOILET FIXTURES
(15) SINKS/LAVS
(2) DRINKING FOUNTAINS

BUILDING TOTAL
(12) TOILETS
(60) SINKS/LAVS
(8) DRINKING FOUNTAINS

1 EXISTING PLAN
A-02 SCALE: 1/4" = 1'-0"



MAY 18, 2015
A-02

TYPICAL EXISTING BATHROOM FLOOR PLAN
BATHROOM RENOVATIONS AND ADA UPGRADES
410 CAPITOL AVENUE
HARTFORD, CT 06106
Project No. BI-2B-400





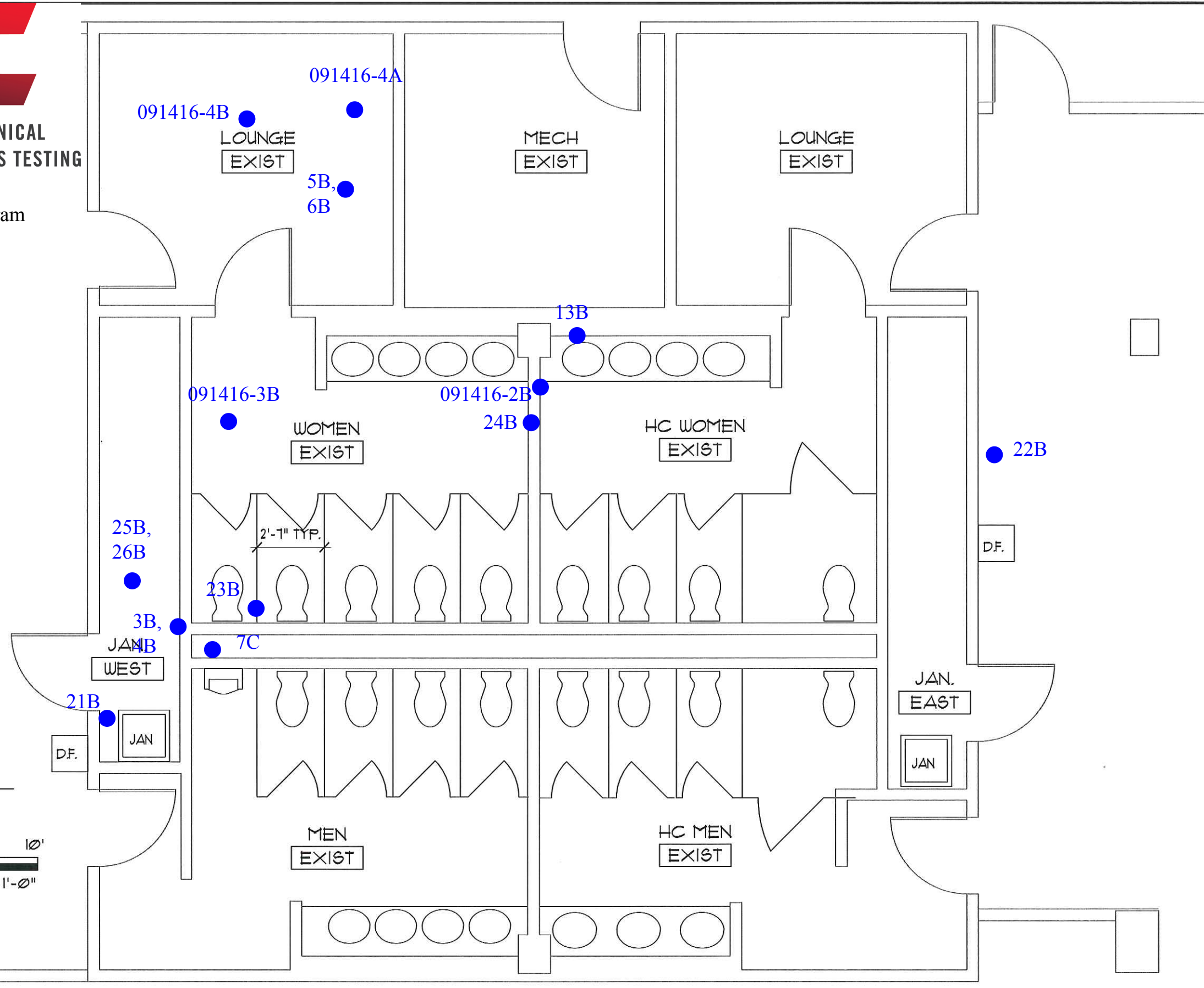
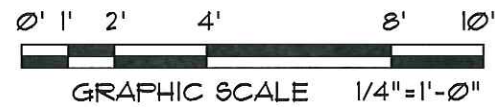
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING

Asbestos Sample Location Diagram
09-20-2016
Second Floor

EXISTING PER FLOOR COUNT
(18) TOILET FIXTURES
(15) SINKS/LAVS
(2) DRINKING FOUNTAINS

BUILDING TOTAL
(12) TOILETS
(60) SINKS/LAVS
(8) DRINKING FOUNTAINS

1 EXISTING PLAN
A-02 SCALE: 1/4" = 1'-0"



MAY 18, 2015
A-02

TYPICAL EXISTING BATHROOM FLOOR PLAN
BATHROOM RENOVATIONS AND ADA UPGRADES
410 CAPITOL AVENUE
HARTFORD, CT 06106
Project No. BI-2B-400





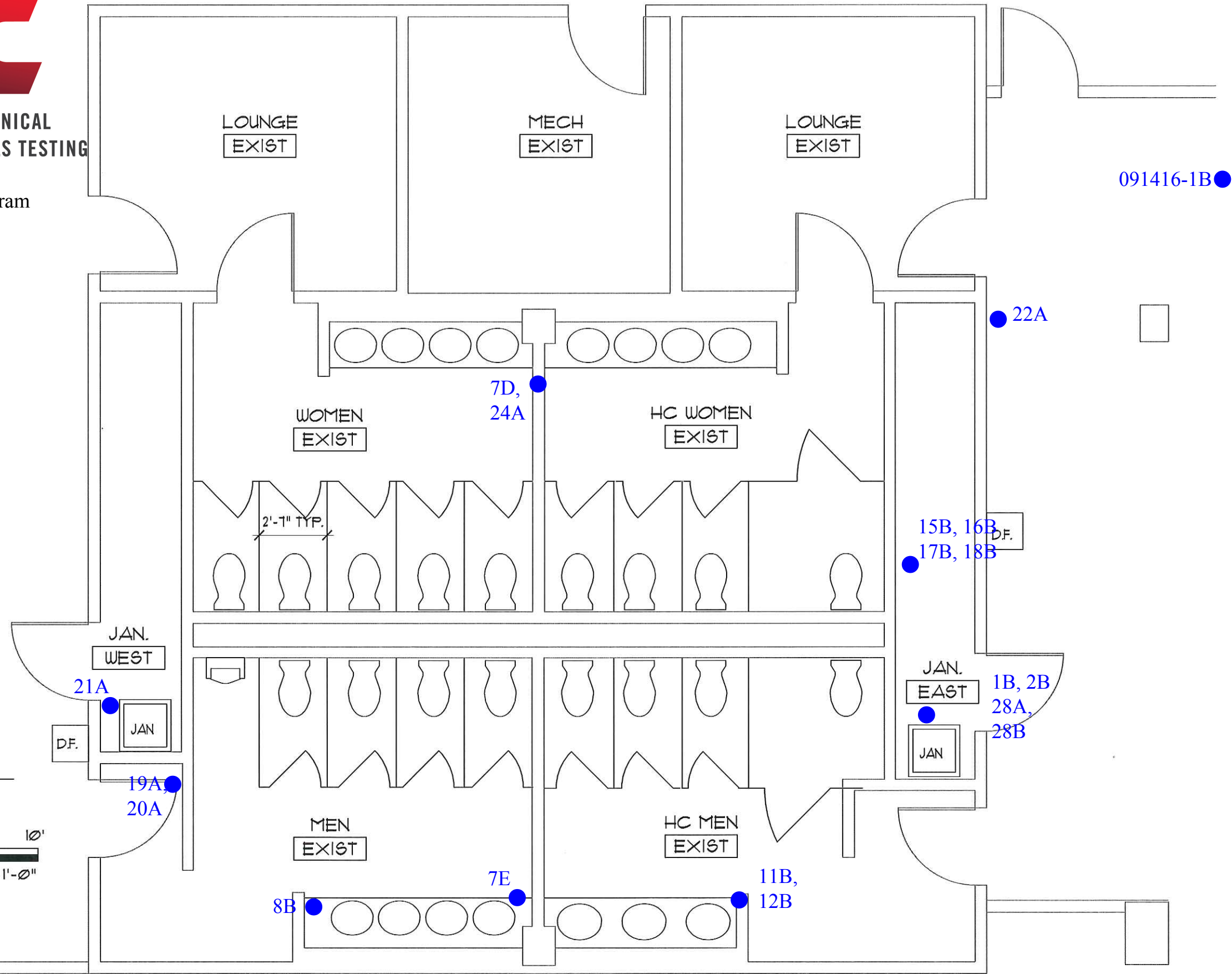
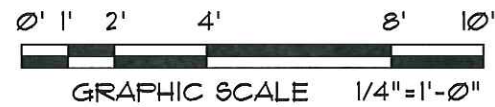
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING

Asbestos Sample Location Diagram
09-20-2016
Third Floor

EXISTING PER FLOOR COUNT
(18) TOILET FIXTURES
(15) SINKS/LAVS
(2) DRINKING FOUNTAINS

BUILDING TOTAL
(72) TOILETS
(60) SINKS/LAVS
(8) DRINKING FOUNTAINS

1 EXISTING PLAN
A-02 SCALE: 1/4" = 1'-0"



MAY 18, 2015
A-02

TYPICAL EXISTING BATHROOM FLOOR PLAN
BATHROOM RENOVATIONS AND ADA UPGRADES
410 CAPITOL AVENUE
HARTFORD, CT 06106
Project No. BI-2B-400





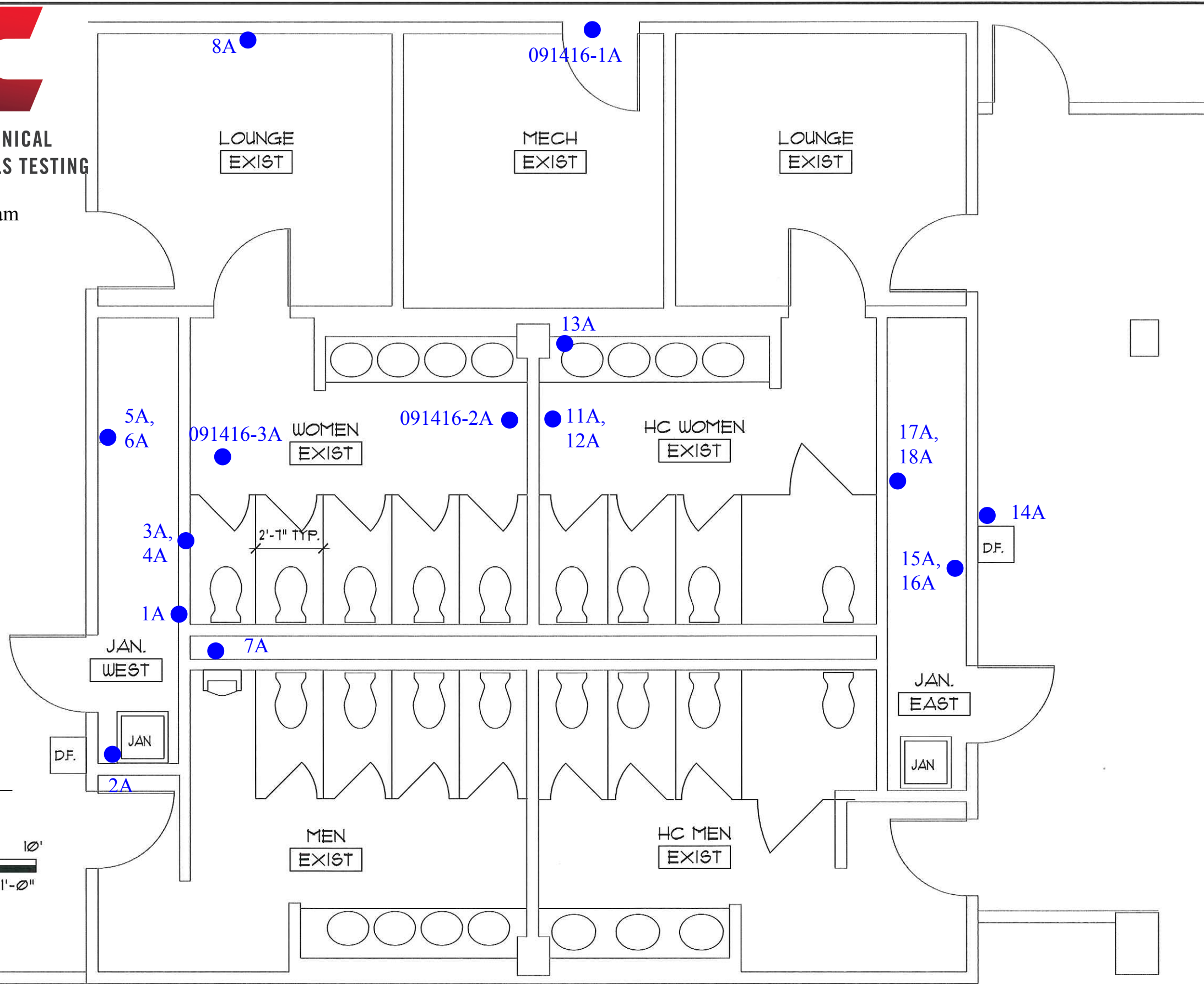
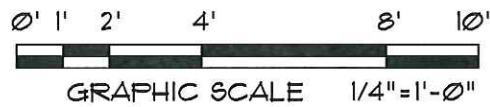
ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING

Asbestos Sample Location Diagram
09-20-2016
Fourth Floor

EXISTING PER FLOOR COUNT
(18) TOILET FIXTURES
(15) SINKS/LAVS
(2) DRINKING FOUNTAINS

BUILDING TOTAL
(12) TOILETS
(60) SINKS/LAVS
(8) DRINKING FOUNTAINS

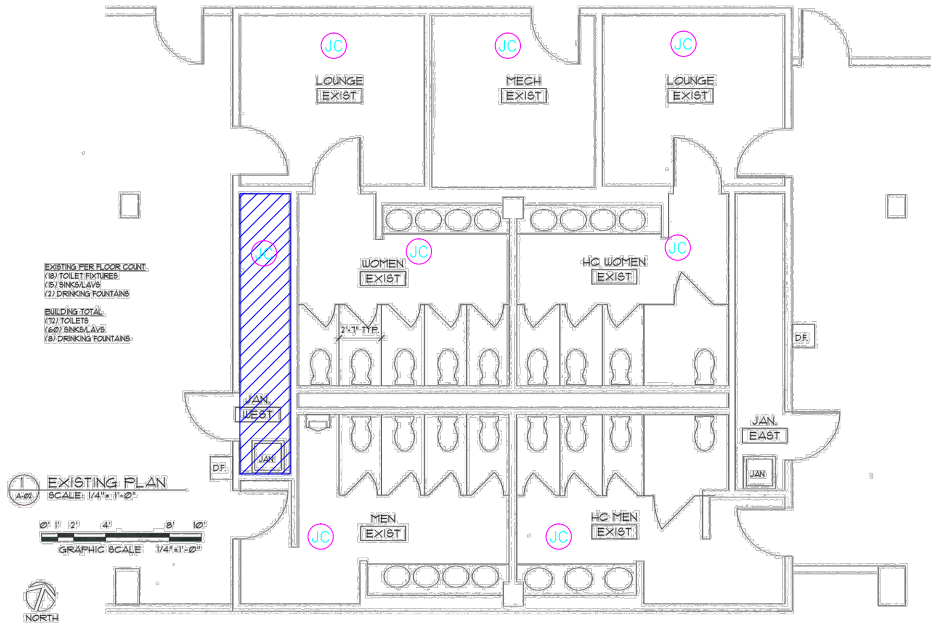
1 EXISTING PLAN
A-02 SCALE: 1/4" = 1'-0"



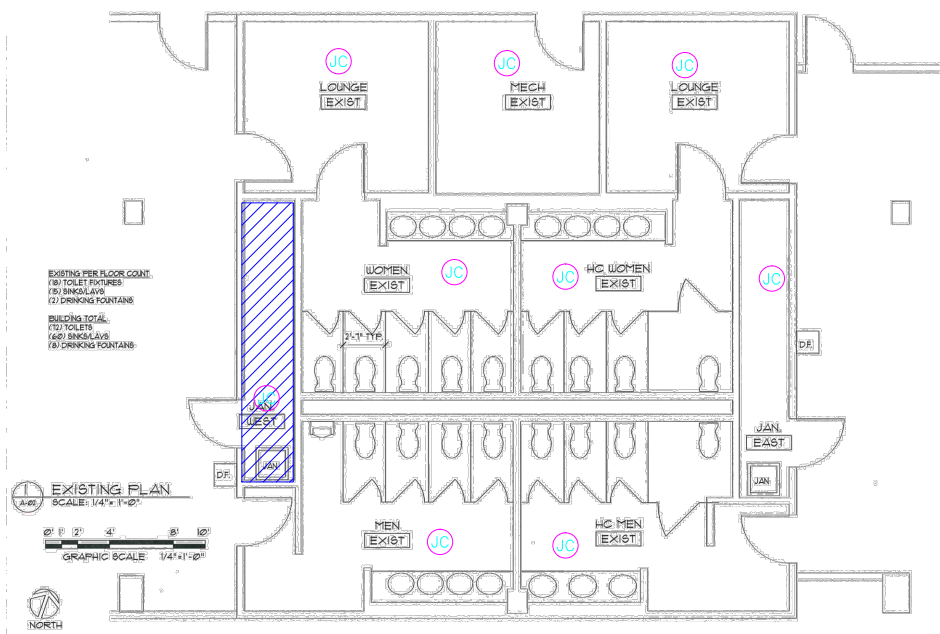
MAY 18, 2015
A-02

TYPICAL EXISTING BATHROOM FLOOR PLAN
BATHROOM RENOVATIONS AND ADA UPGRADES
410 CAPITOL AVENUE
HARTFORD, CT 06106
Project No. BI-2B-400





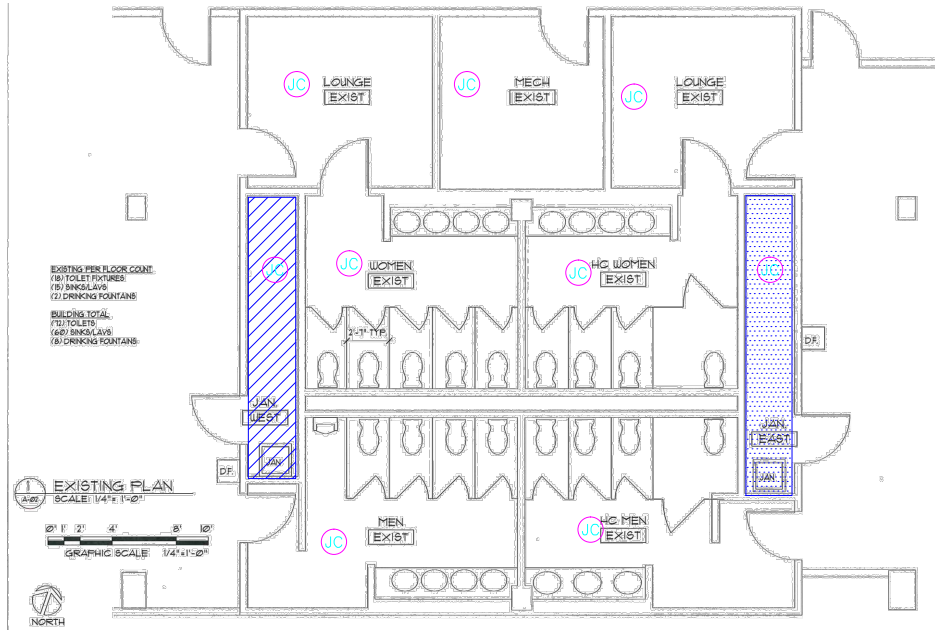
FIRST FLOOR



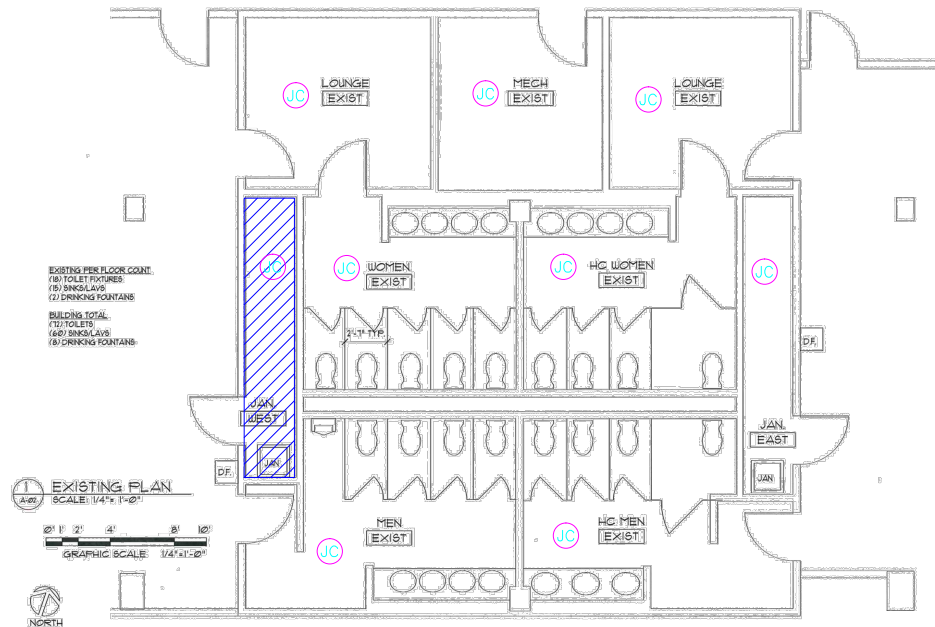
SECOND FLOOR

SYMBOL	MATERIAL DESCRIPTION
JC	GYPSUM WALL BOARD JOINT COMPOUND
[Hatched Box]	12" X 12" GRAY FLOOR TILE AND ASSOCIATED MASTIC
[Dotted Box]	RESIDUAL MASTIC

drawing title ASBESTOS LOCATION DIAGRAM		STATE OF CONNECTICUT DEPARTMENT OF CONSTRUCTION SERVICES	
REVISIONS		DRAWING PREPARED BY ATC ATC Environmental - Connecticut BUILDING INSPECTION	
mark	date	description	date 02/20/16 scale N/A
			drawn by AMW approved by EF drawing no. ASB-1
CAD no.	project no. 22573160042		




THIRD FLOOR



FOURTH FLOOR

SYMBOL	MATERIAL DESCRIPTION
JC	GYPSUM WALL BOARD JOINT COMPOUND
12" X 12" GRAY FLOOR TILE AND ASSOCIATED MASTIC	
RESIDUAL MASTIC	

drawing title		STATE OF CONNECTICUT DEPARTMENT OF CONSTRUCTION SERVICES	
ASBESTOS LOCATION DIAGRAM		DRAWING PREPARED BY	
REVISIONS			
mark	date	description	
project		 <small>ATC</small> <small>INTERNATIONAL - REGISTERED</small> <small>REGISTERED ARCHITECTS - REGISTERED ENGINEERS</small>	
drawing no.		09/20/16 SHEET NTS	
drawing no.		drawn by AMW approved by EF drawing no. ASB-2	
CAT no.		project no. 22573160042	

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**Section 50 80 00
Additional Information**

Subsection 50 80 00.2

TRC

2009 November 11

**Compliance Report
for Abatement of ACM
410 Capitol Ave**

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REPORT

COMPLIANCE REPORT FOR THE ABATEMENT OF ASBESTOS CONTAINING MATERIALS 410 CAPITOL AVENUE HARTFORD, CONNECTICUT

**Project No. 2B-09-13
DPW No. 20359**

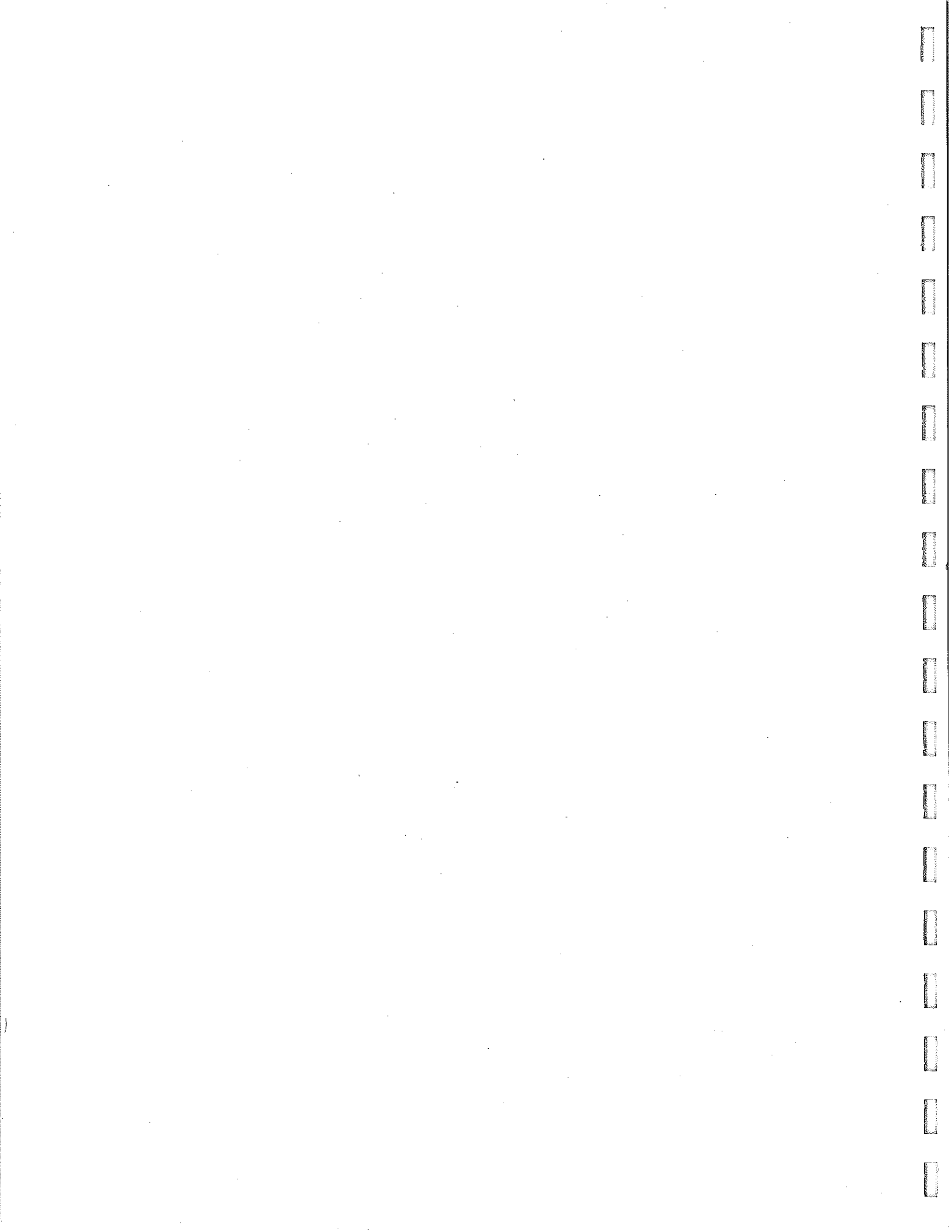
Prepared for

**State of Connecticut
Department of Public Works**
Hartford, Connecticut

Prepared by

TRC
Windsor, Connecticut

November 11, 2009





**COMPLIANCE REPORT
FOR THE ABATEMENT OF
ASBESTOS CONTAINING MATERIALS
410 CAPITOL AVENUE
HARTFORD, CONNECTICUT**

**Project No. 2B-09-13
DPW No. 20359**

Prepared for
State of Connecticut Department of Public Works
Hartford, Connecticut

Prepared by
TRC
Windsor, Connecticut

Donald LePage

Donald LePage
Project Manager

TRC Project No. 164560-0870-0003
November 11, 2009

TRC
21 Griffin Road North
Windsor, Connecticut 06095
Telephone 860-298-9692
Facsimile 860-298-6399

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PROJECT OUTLINE

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B	DAILY PROJECT SIGN-IN SHEETS
C	CONTRACTOR OSHA PERSONNEL AIR SAMPLING RESULTS
D	TRC CERTIFICATIONS/LICENSES
E	EQUIPMENT CALIBRATION DATA
F	LABORATORY ANALYTICAL CERTIFICATIONS
G	ASBESTOS AIR SAMPLE ANALYSIS AND CHAIN-OF-CUSTODY DATA
H	ASBESTOS WASTE SHIPMENT RECORDS



1.0 EXECUTIVE SUMMARY

TRC of Windsor, Connecticut was retained by the State of Connecticut Department of Public Works (CTDPW) to provide project compliance and industrial hygiene services during the abatement of asbestos containing materials (ACM) conducted at 410 Capitol Avenue, Hartford, Connecticut. TRC conducted this work per DAS Contract 08PSX0202 which is effective from January 30, 2009 through December 31, 2011. Asbestos abatement was necessitated in accordance with the U.S. Environmental Protection Agency (USEPA) Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP) (40 CFR Part 61 Subpart M) as the building structure was scheduled for future renovation. The asbestos abatement contractor for the project was A.A.I.S. Corporation (A.A.I.S.) of West Haven, Connecticut. TRC was on site throughout the duration of the project to provide monitoring services.

The scope of work for the project, which took place on August 28, 2009, involved the abatement of less than 10 linear feet (LF) of asbestos containing pipe insulation/mudded pipe fittings in the third floor bathroom area. Written notification to CTDPH of the abatement activity was not required as the project involved less than 10LF/ 25SF of ACM. All work conducted by A.A.I.S. was performed in compliance with OSHA's Occupational Exposure to Asbestos Standard, 29 CFR 1926.1101, the CT DPH Standards for Asbestos Abatement, 19a-332a-1 through 16, and the EPA's Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP) 40 CFR Part 61 Subpart M. A.A.I.S. is a licensed State of Connecticut Asbestos Abatement Contractor and all A.A.I.S. employees performing work on this project were appropriately licensed, trained, and medically qualified to perform such work. ACM pipe insulation/mudded pipe fitting removal was performed as a spot removal utilizing the glovebag technique and a remote decontamination facility with HEPA-vacuum cleanup methods.

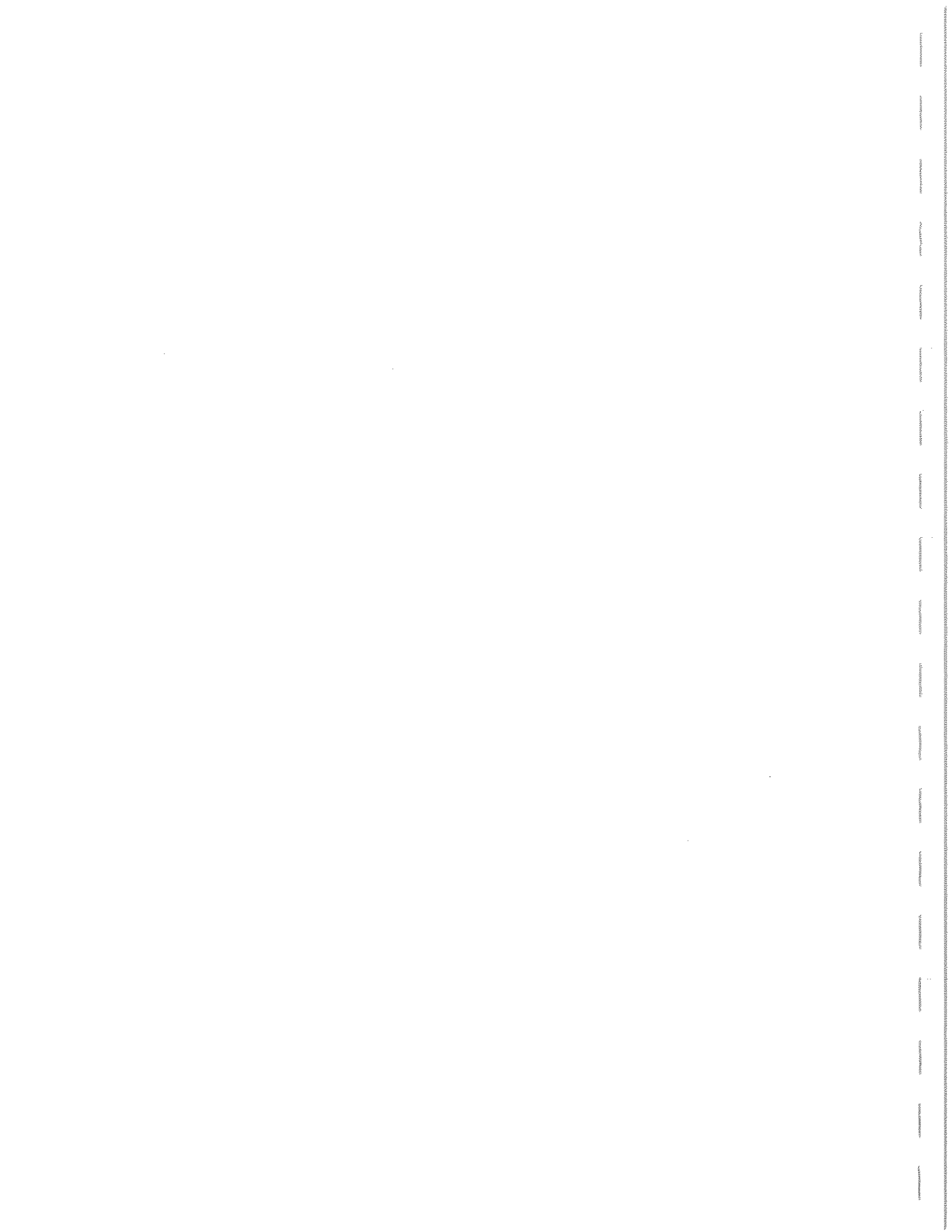
Air samples were collected during abatement activities to monitor airborne asbestos fiber emissions and were transferred using proper chain-of-custody records to TRC's Accredited Laboratory in

Windsor, Connecticut and analyzed on-site by an AIHA Registered Asbestos Analyst from TRC for Phase Contrast Microscopy (PCM) analysis via the National Institute for Occupational Safety and Health (NIOSH) 7400 method. All asbestos air samples collected by TRC (inside and outside of the work areas) were found to be below the OSHA Permissible Exposure Level (PEL).

After abatement activities, the work areas were visually inspected by a TRC licensed Asbestos Project Monitor following ASTM Standard E1368-90 to ensure complete abatement. The glovebag spot removal areas received a satisfactory visual inspection on August 28, 2009 and were deregulated.

The asbestos-containing waste generated during this project was containerized and labeled as asbestos waste in compliance with CTDEP/CTDPH, OSHA, DOT and USEPA requirements. The waste was removed from the site in accordance with all state and federal disposal requirements, including the USEPA Asbestos NESHAP, and transported by Red Technologies, LLC of Bloomfield, Connecticut and Swift Transportation of Jonestown, Pennsylvania to Minerva Enterprises of Waynesburg, Ohio where it was deposited. Less than one (0.15) cubic yard of asbestos waste was removed from the project site.

This concluded TRC's on-site efforts for this project. Refer to Section 2.0 for TRC's complete site log notes documenting all aspects of the project on a daily basis.



2.0 SITE LOGS



Site / Station 410 Capitol Ave
Hartford, CT

 Month / Year 8/09
 Project No 164560.0870.000

Date	Time	Instrument and TRC ID	Comments	Initials
8/28/09	0740		TRC onsite. AAIS already onsite.	RB
	0750		TRC checks in with Security & meets up with Peter Vaughan (AAIS) and Stephen Link (Mechanical Services).	
	0800		Peter & RB walk through work area.	
	0820		AAIS loads equipment into 3 rd Floor Bathrooms in 410 Capitol Ave.	
			AAIS will complete 4-6 glove bags to complete work. Work/Removal includes (1) 90° elbow, (1) valve, (1) T-Coupling, and any other areas. AAIS will also remove any insulation from the pipe (Asbestos or Fiberglass).	
	0910		AAIS begins to prep area between Men's & Women's 3 rd Floor bathroom from the Women's side.	
	0920		RB starts area samples.	
	0950		AAIS finishes prep of the 1 st glove bag for the valve fitting. RB gives pre-visual. * RB passes pre-visual *	
	1000		AAIS finishes "valve" glove bag. RB gives post visual. RB passes post visual. AAIS tear-down & moves to men's bathroom to complete the remainder of the glove bags.	
	1035		AAIS preps the remainder of the glove bags.	
	1115		AAIS preps the remaining glovebags. RB gives pre visual on all 5.	
	1125		RB passes pre-visual on all 5 glovebags. AAIS will complete glovebags one at a time until they are all done & then RB will give a post visual on all of them.	
	1230		AAIS finishes removal in remaining glovebags. RB gives post-visual. RB passes post-visual	



PROJECT OUTLINE

Project Address:	410 Capitol Avenue Hartford, CT
DAS Contract Number:	08PSX0202
DPW Project Manager:	James Sinclair
DPW Project No.:	2B-09-13
DPW Building No.:	20359
TRC Project No.:	164560-0870-0003
Date(s) of Project:	8/28/09
TRC Project Manager:	Donald LePage
TRC Project Monitor(s)/Inspector(s):	Robert Belding (#000607) – PM
Abatement Contractor:	A.A.I.S. Corporation (#000017)
Materials Abated:	<10 LF ACM pipe insulation/mudded pipe fitting insulation – 3 rd floor bathrooms
Waste Hauler(s):	Red Technologies, LLC, Bloomfield, CT Swift Transportation, Jonestown, PA
Asbestos Landfill:	Minerva Enterprises, Waynesburg, Ohio
Asbestos Waste Generated:	< One (0.15) cubic yard (CY)



APPENDIX A
CONTRACTOR CERTIFICATIONS/LICENSES



CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH



[ABOUT US](#) [PROGRAMS AND SERVICES](#) [PUBLICATIONS](#) [FORMS](#) [CONTACT](#)

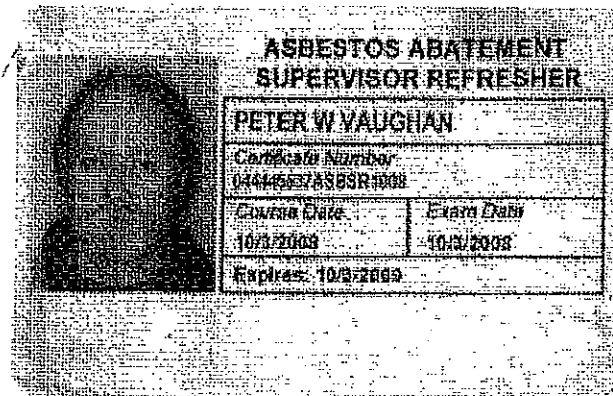
Health Care or Environmental Health Professional's License Status

This site is part of **CT-clic.com**, the **Connecticut Licensing Info Center**, that links to all YOUR State licer and registration needs.

License Type:	Asbestos Abatement Supervisor
License Number:	000594
Name:	VAUGHAN, PETER W
Expiration Date:	2/28/2010
Granted Date:	8/11/2000
License Name:	Peter W. Vaughan
License Status:	Current
Disciplinary Action:	None

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**NEW ENGLAND LABORERS'
TRAINING TRUST FUND**

P.O. Box 77
Pomfret Center, CT 06259
(800) 974-1455

PETER W VAUGHAN

The individual named has completed
the requisite training for asbestos
accreditation under TSCA TR 11

Joseph M. Sabitoni Training Director

PETER VAUGHAN
Has attended an 8 hour Annual Refresher Asbestos Training Course for Asbestos Workers/Site Supervisors on MAY 27, 1994 and has passed a written examination.

Course topics covered include asbestos health hazards, respiratory, government regulations, worker protection, control measures, air monitoring, removal planning and procedures.

COURSE INSTRUCTORS

Thomas E. Verrill
Thomas E. Verrill, Vice President
Certified Chemical Engineer
Industrial Hygienist

Bruna Bixette
Bruna Bixette, Environmental Health Professional
Subsidiary Hygienist

No. SAE-0112

PETER VAUGHAN
Has attended an 8 hour Annual Refresher Asbestos Training Course for Asbestos Workers/Site Supervisors on MAY 27, 1994 and has passed a written examination.


Course topics covered include asbestos health hazards, respirators, government regulations, worker protection, control measures, air monitoring, removal planning and procedures.

COURSE INSTRUCTORS

Thomas E. Verrill
Thomas E. Verrill, Vice President
Certified Chemical Engineer
Industrial Hygienist

Bruna Bixette
Bruna Bixette, Environmental Health Professional
Subsidiary Hygienist


HEALTH, SAFETY & ASBESTOS ABATEMENT TECHNIQUES 8-HOUR REVIEW COURSE FOR FOREMAN/SUPERVISOR

	
Name: Peter Vaughan	
SS#: 044-44-5537	
Issued: 5-7-92	Expires: 5-7-93
Test Grade: 92%	Certificate #: C-02165R

New England Laborers' Training Trust Fund
Route 87 & Marlock Rd. - P.O. Box 77
Pomfret Center, CT 06259




HEALTH, SAFETY & ASBESTOS ABATEMENT TECHNIQUES 8-HOUR REVIEW COURSE FOR FOREMAN/SUPERVISOR

	
Name: Peter Vaughan	
SS#: 044-44-5537	
Issued: 4/26/91	Expires: 4/26/92
Test Grade: 96	Certificate #: 02165R

New England Laborers' Training Route 87 & Marlock Rd. - P.O. Box 77 Pomfret Center, CT 06259

New England Laborers' Training Route 87 & Marlock Rd. - P.O. Box 77 Pomfret Center, CT 06259


HEALTH, SAFETY & ASBESTOS ABATEMENT TECHNIQUES 8-HOUR REVIEW COURSE FOR FOREMAN/SUPERVISOR

	
Name: Peter Vaughan	
SS#: 044-44-5537	
Issued: 2-17-94	Expires: 2-17-95
Test Grade: 92%	Certificate #: C-02165R

NEW ENGLAND LABORERS' TRAINING TRUST FUND
P.O. Box 77
Pomfret Center, CT 06259
(203) 974-1455




HEALTH, SAFETY & ASBESTOS ABATEMENT TECHNIQUES 8-HOUR REVIEW COURSE FOR FOREMAN/SUPERVISOR

	
Name: Peter Vaughan	
SS#: 044-44-5537	
Issued: 4/7/93	Expires: 4/7/94
Test Grade: 92%	Certificate #: C-0216

New England Laborers' Training Trust Fund Route 87 & Marlock Rd. - P.O. Box 77 Pomfret Center, CT 06259

Genevra S. Laporte
Administrator

ASBESTOS ABATEMENT SUPERVISOR REFRESHER


	
Name/Certificate # Peter Vaughan 044445537ASB8RD296	
Course Date 02-02-96	Exam Date 020296
Expires 020297	

NEW ENGLAND LABORERS' TRAINING TRUST FUND
P.O. Box 77
Pomfret Center, CT 06259
(203) 974-1455

The individual named has completed the requisite training for asbestos accreditation under TSCA Title II

John L. Brooker, Administrator

ASBESTOS ABATEMENT SUPERVISOR REFRESHER


	
Name/Certificate # Peter Vaughan 044445537ASB8RD295	
Course Date 02-03-95	Exam Date 020395
Expires 020396	

NEW ENGLAND LABORERS' TRAINING TRUST FUND
P.O. Box 77
Pomfret Center, CT 06259
(203) 974-1455

The individual named has completed the requisite training for asbestos accreditation under TSCA Title II

John L. Brooker, Administrator

ASBESTOS ABATEMENT SUPERVISOR REFRESHER

	
Name/Certificate # Peter Vaughan 044445537ASB8RD197	
Course Date 01-16-97	Exam Date 011097
Expires 011098	

NEW ENGLAND LABORERS' TRAINING TRUST FUND
P.O. Box 77
Pomfret Center, CT 06259
(203) 974-1455

The individual named has completed the requisite training for asbestos accreditation under TSCA Title II

Concentra Medical Centers (CT)
900 Northrup Road WALLINGFORD, CT 06492
Phone: (203) 949-1534 Fax: (203) 948-9036

EMPLOYER AUTHORIZATION AND INFORMATION FOR RESPIRATORY EVALUATION

EMPLOYER TO COMPLETE THE FOLLOWING :

Employee Name: Vaughan, Peter W.

Address:
110 Northwood Ct

Employer: AAIS

CHESHIRE CT 06410

Employee SSN: XXX-XX-5537

Check Type of Respirator(s) To Be Used (Check ALL that apply)

- Air-purifying (non-powered) Air-purifying (powered)
 - Atmosphere supplying Respirator
 - Combination air-line and SCBA
 - Continuous-Flow Respirator
 - Supplied-Air Respirator
 - Open Circuit SCBA Closed Circuit SCBA
 - Dust Mask 1/2 Face with Canisters Full Face with Canisters
- Make: _____ Model: _____ Cartridge: _____

Extent of Usage (Check ALL that apply)

- On a daily basis _____ Total Hours
- Occasionally - but not more than twice a week _____ Total Hours
- Rarely - or for Emergency situations only _____ Total Hours

Expected Physical Effort Required (Check ALL that apply)

- Light Moderate Heavy

Exposure to Hazardous Materials (Check ALL that apply)

- Arsenic Benzene
- Coke Oven Cotton Seed / Dust
- Cadmium Formaldehyde
- Methylene Chloride Lead
- Textiles Chromium

Other(s): _____

Special Work Conditions (Check ALL That Apply When Wearing Respirator)

- High Places Enclosed Places Protective Clothing
- Temperature Extremes Mostly Cold Mostly Hot
- Other: _____

Questionnaire will be: HAND CARRIED MAILED OTHER

EVALUATION AUTHORIZATION BY: _____

Signature of Employer Representative

DO NOT WRITE BELOW THIS LINE

DO NOT WRITE BELOW THIS LINE

DO NOT WRITE BELOW THIS LINE

PLHCP¹ WRITTEN STATEMENT for RESPIRATORS (EMPLOYER)

PHYSICIAN WILL COMPLETE THE FOLLOWING

This report may contain confidential medical information and is intended for the designated employer contact only. The Americans with Disabilities Act (ADA) imposes very strict limitations on the use of information obtained during physical examination of qualified individuals with disabilities. All information must be collected and maintained on separate forms, in separate files, and must be treated as a confidential medical record, with the following exceptions:

- Supervisors and managers may be informed about necessary restrictions on the work or duties of an employee and necessary accommodations.
- First aid and safety personnel may be informed, when appropriate, if the disability might require emergency treatment.

Based upon my findings, I have determined that this individual (Check ALL that apply)

- Employee must schedule a medical examination with Concentra Medical Centers (CT) prior to respirator approval and usage.
- Class I - No Restrictions on Respirator Use
- Class II - Some Specific Use Restrictions To be used for Emergency Response or Escape Only Other: _____
- Class III - Respirator Use is NOT PERMITTED
- Further Testing / Evaluation is Required. ²
- Fit Test Required Fit Test Performed Satisfactorily
- Fit Test Performed Unsatisfactorily Fit Test NOT Performed at: Concentra Medical Centers (CT)
- Special prescription eyewear needed to accommodate respirator Special prescription eyewear needed to accommodate respirator
- Facial hair needs to be shaved to assure tight seal on certain face masks.

¹Physician or other Licensed Healthcare Professional

²Employee must seek further medical evaluation by a private physician who must submit a report to Concentra Medical Centers (CT) of his/her findings to

(Check ALL that apply)

- The above individual **HAS** been examined for respirator fitness in accordance with 29 CFR 1910.134. This limited evaluation is specific to respirator use only. Employees should be instructed to report any difficulties in using respirators or change of any physical status to their supervisor or physician. This evaluation included the Respiratory Questionnaire outlined in 29 CFR 1910.134.
- The above individual **HAS NOT** been examined by me for respirator fitness. The employee's medical evaluation consisted of a review of OSHA's Medical Evaluation Questionnaire in Appendix C Part A Section 2. In accordance with 29 CFR 1910.134, this limited evaluation is specific to respirator use only. Employees would be instructed to report any difficulties in using respirators or change of any physical status to their supervisor or physician. This evaluation included the Respiratory Questionnaire outlined in 29 CFR 1910.134.
- In accordance with specific OSHA requirements, I have informed the above named individual of the results of this evaluation and of any medical conditions resulting from exposures that may require further explanation or treatment. Where applicable, the above named individual has been informed of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos, lead and/or other chemical exposure(s).

Physician's Signature

Physician's Name (Printed)

Physician's License Number (Optional in Most States)

Date of Exam

Expires On

plhcp_simt_resp_employer

Concentra Medical Centers (CT)
900 Northrup Road WALLINGFORD, CT 06492
Phone: (203) 949-1534 Fax: (203) 949-8036

PLHCP¹ WRITTEN STATEMENT for RESPIRATORS (EMPLOYEE)

Service Date: 06/08/2009

Employee Name: Vaughan, Peter W.

Employee SSN: XXX-XX-5537

Address:

110 Northwood Ct

CHESHIRE CT 06410

Employer: AAIS

You were evaluated in this office of your medical status related to your physical capability to wear a respirator. (Check one that applies)

- There were no abnormal findings that would hamper your ability to perform your job duties while wearing a respirator.
- The abnormal findings listed below were not related to wearing a respirator but should be reported to your personal physician for further evaluation.

Based upon the results of this evaluation it is my opinion that you: (Check ALL that apply)

- ARE qualified to wear a respirator.
- Have the following restrictions concerning respirator usage: _____
- ARE NOT qualified to wear a respirator.
- Require further testing by your private physician who must submit a written report of his/her findings to Concentra Medical Centers (CT) so that a final decision on your ability to wear a respirator can be made.
- Must wear Special prescription eye-wear needed to accommodate respirator.
- Must use an Eye glass conversion kit.
- May need to shave Facial hair to assure tight seal on certain face masks.
- Need to stop smoking.

(Check ALL that apply)

- The above individual HAS been examined for respirator fitness in accordance with 29 CFR 1910.134. This limited evaluation is specific to respirator use only. Employees should be instructed to report any difficulties in using respirators or change of any physical status to their supervisor or physician. This evaluation included the Respiratory Questionnaire outlined in 29 CFR 1910.134.
- The above individual HAS NOT been examined by me for respirator fitness. The employee's medical evaluation consisted of a review of OSHA's Medical Evaluation Questionnaire in Appendix C Part A Section 2. In accordance with 29 CFR 1910.134, this limited evaluation is specific to respirator use only. Employees should be instructed to report any difficulties in using respirators or change of any physical status to their supervisor or physician. This evaluation included the Respiratory Questionnaire outlined in 29 CFR 1910.134.
- In accordance with specific OSHA requirements, I have informed the above named individual of the results of this evaluation and of any medical conditions resulting from exposures that may require further explanation or treatment. Where applicable, the above named individual has been informed of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos, lead and/or other chemical exposure(s).

Respirators must be properly selected based on the containment and concentration levels to which the worker will be exposed. Failure to follow the use and fitting instruction and warnings for proper use contained on the respirator packaging and/or failure to wear the respirator during all times of exposure can reduce the respirator's effectiveness and result in sickness or death. Wearers must be trained in the proper care of any respirator. Refer to product literature and packaging for specific information regarding fit, use and/or limitations.

[Signature]
PLHCP Signature

Employee's Signature

[Printed Name]
PLHCP Name (printed)

6/8/10
Expiration Date

¹Physician or other Licensed Healthcare Professional

To be maintained in the employee's file with a copy to the employee

S/N: G070700517

SESSION TIME: 02:42PM
Last Cal Check: 08JUN2009

Version: 1.1.11

BEST 3 FVC/IVL REPORT

ID: 044445537
Name: PETER VAUGHAN
Gender: MALE
Modification:
Dosage:
Clinical Form: PREMED - 02:42PM
Best Criteria:

Height: 73"
Age: 55YRS
Weight: 239LB
Smoker: 15YRS, 11 Pack Yrs
Ethnicity/Correction: CAUCASIAN

Physician:
Technician:

Sensor Code: 130494
Temperature: 72F
Barometric Press: 739mmHg
BTPS Correction: 1.106
Normals: KNUDSON 83

100.0%

* Indicates Best Value
VAL

< Indicates Below LLN

MEASUREMENT	DC	Trial 3	%Pred	Trial 1	Trial 2	Pred	LLN
FVC (L)	A	4.83	92	4.84	4.85*	5.19	3.81
FEV1 (L)	A	3.63*	86	3.60	3.53	4.18	3.23
FEV1%		75	94	74	73	80	69
FEF25-75 (L/S)		2.74*	65	2.57	2.36	4.20	
PEF (L/S)		11.33*	119	11.71	11.42	9.47	
FET (S)		7.76*		8.18	7.94		

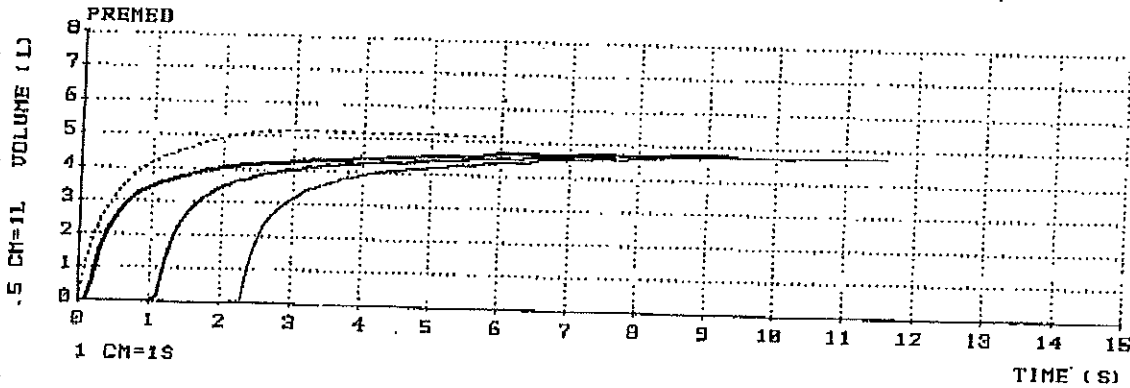
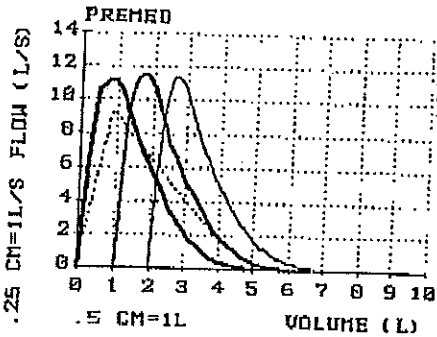
BEST FEV1% 75*

Report Summary:

Pre Med: Tests 3 Acceptable 3 Reproducible 2 FVC VAR: 15ML FEV1 VAR: 35ML PEF VAR: 379ML/S

AIS Interpretation:

Lung Age: 57 YRS
Comment: PREMED - Normal Spirometry
COPD Risk 13% If stop smoking: 9%



RESPIRATOR FIT TEST

DATE: 3-02-09

EMPLOYEE NAME: Peter Vaughan

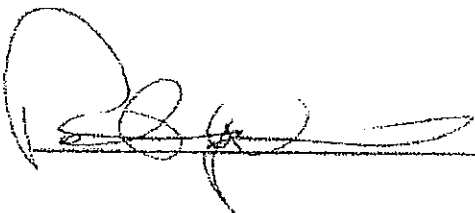
SOCIAL SECURITY # 088 445837

FIT TEST PASS ✓
 FAIL _____

REASON: 1/2 APR Wilson, 3/4 PAPP getting off

NAME OF PERSON CONDUCTING FIT TEST: Dennis Oconnor

I HAVE READ AND FULLY UNDERSTAND THE RESPIRATORY PROTECTION PROGRAM MANUAL. I HAVE ALSO RECEIVED A FIT TEST USING THE PROCEDURES IN APPENDIX A OF THE MANUAL.

EMPLOYEE SIGNATURE: 

APPENDIX B
DAILY PROJECT SIGN-IN SHEETS

APPENDIX C
CONTRACTOR OSHA PERSONNEL AIR
SAMPLING RESULTS

PO# 83710

AIR SAMPLING / NIOSH METHOD 7400 SAMPLE RECORD

Lab Rep: W. Miller

MILL.V.#
 Faxed _____
 Called _____
 Logged _____

Sample Source 410 Capitol Ave Job # 095040

Sampled by P. Vaughan Date Sampled 8-28-09 Customer Name A.A.I.S., Inc.

QC + Analyst W. Miller Date Received _____ Date Tested 8/31/09

Sample #/ Description	Time		Flow l/m		Liters	f/ flds	f/ mm2	f/cc	LOD f/cc
	Start	End	Start	End					
Date: <u>8-28</u> Mask: <u>NAPR</u> Name: <u>P. Vaughan</u> SS# <u>5537</u> Code: <u>1</u> Task: <u>glovebag</u>	<u>910</u>	<u>105</u>	<u>2.0</u>	<u>2.0</u>	<u>470</u>	<u>0/100</u>	<u>76</u>	<u>0.006</u>	<u>QC 7/100</u>
LB Date: _____ Mask: _____ Name: _____ SS# _____ Code: _____ Task: _____						<u>0/100</u>			
FB Date: _____ Mask: _____ Name: _____ SS# _____ Code: _____ Task: _____						<u>0/100</u>			
Date: _____ Mask: _____ Name: _____ SS# _____ Code: _____ Task: _____									
Date: _____ Mask: _____ Name: _____ SS# _____ Code: _____ Task: _____									

Report Reviewed by _____ Date _____ Blank(s) Received? Y ___ N ___

Field Blanks _____ Reference Slide #: _____
 Laboratory Blank _____

Project 410 Capitol Ave Hartford, CT
 Location 3rd floor lavatory
 Foreman Peter Vaughan
 Superintendent G. Miller

- Sample Codes:
- 1-Personal
 - 2-Work Area
 - 3-Outside Area
 - 4-Final Clearance
 - 5-Excursion

I, W. Miller, hereby swear that all information on this form is true and if applicable all personal air samples were worn by employees as listed above.

APPENDIX D
TRC CERTIFICATIONS/LICENSES

0001824 FP
**PRSR T6 0 1364 06066
ROBERT W. BELDING
210 REGAN ROAD, APT. 38B
VERNON CT 06066

Dear Licensed/Certified Professional,
Attached you will find your validated license/certification for the coming year. Should you have any questions about your license/certificate renewal, please do not hesitate to write or call:

Department of Public Health (860) 508-7603
P.O. Box 340308
M.S.#12MQA
Hartford, CT 06134-0308
<http://www.dph.state.ct.us>

Sincerely,

J. Robert Galvin, MD, MPH

J. ROBERT GALVIN, MD, MPH, COMMISSIONER
DEPARTMENT OF PUBLIC HEALTH

THE INDIVIDUAL NAMED BELOW IS LICENSED
BY THIS DEPARTMENT AS A

ASBESTOS CONSULTANT-PROJECT MONITOR

LICENSE NO.
000607
CURRENT THROUGH
08/31/09
VALIDATION NO.
03-712931

ROBERT W. BELDING

J. Robert Galvin, MD, MPH
COMMISSIONER

ROBERT W. BELDING
LICENSE NO.
000607
08/31/09

03-712931

ASBESTOS CONSULTANT-PROJECT MONITOR

J. Robert Galvin, MD, MPH
COMMISSIONER

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH
ASBESTOS CONSULTANT-PROJECT MONITOR

ROBERT W. BELDING
LICENSE NO.
000607
08/31/09

03-712931

ASBESTOS CONSULTANT-PROJECT MONITOR

J. Robert Galvin, MD, MPH
COMMISSIONER

CERTIFICATE OF ACHIEVEMENT

This certifies that

Robert Belding

has successfully completed the

8 Hour Asbestos Project Monitor Refresher Training

conducted by
ATC Associates Inc.
73 William Franks Drive
West Springfield, MA 01089
(415) 781-0070

Gregory J. Morsch
Principal Instructor

August 19, 2008

Date of Course

August 19, 2009

Expiration Date

Gregory J. Morsch
Regional Manager

PMR-1037

Certificate Number

August 19, 2008

Examination Date



Asbestos Analysts Registry

Laboratory Quality Assurance Programs

Retain For Your Records

February 6, 2008

Organization ID: 100122
Analyst ID: 8991

TRC Environmental Corporation
Robert Belding
21 Griffin Road North
Windsor, CT 06095

Dear Mr. Belding,

Congratulations! The American Industrial Hygiene Association (AIHA) Analytical Accreditation Board (AAB) has approved your listing on the Asbestos Analyst Registry (AAR) per AAR Policy, Article IV, Sections 4.2.13 and 4.4.13-4.1.16. This Board Approval takes effect **February 4, 2008**. You will be listed on the AIHA website as an Asbestos Analysts Registry (AAR) Board Approved Analyst within the next 10 business days.

<http://www.aiha.org/1documents/lab/AARAnalysts.pdf>.

Your Board Approval status will remain current as long as you maintain two or fewer outliers in the two most current, consecutive Asbestos Analytical Testing (AAT) rounds. You will automatically lose your Board Approval status if you cease analyzing AAT samples with an approved organization, or you transfer to an unapproved organization.

If you should receive more than two outliers in two consecutive rounds, your AAT Performance Results report will show that you are "not acceptable" or if you lose your Board Approval status, then to regain your Board Approval status, your options are to:

- 1) Purchase the current round's retest and successfully override the results; or
- 2) Analyze the next regularly scheduled AAT round or next two consecutive AAT rounds (whichever is appropriate) with no more than 2 outliers.

If you foresee non-participation in a future AAT round, in order to retain Board Approval status, AIHA requires a written request for an excused absence from that round, before the date that the results are due for that particular round. Please note that excused absences will not be granted for two consecutive AAT rounds per AAR Policy, Article III, Section 3.9.2.

Congratulations again and thank you for your continued participation in the Asbestos Analyst Registry program. If you have any questions please do not hesitate to contact Mrs. Carter Dezio, AAR Program Specialist at 703-846-0798 or cdezio@aiha.org.

Sincerely,

A handwritten signature in cursive script that reads "Cheryl O. Morton".

Cheryl Morton
Director, LQAP

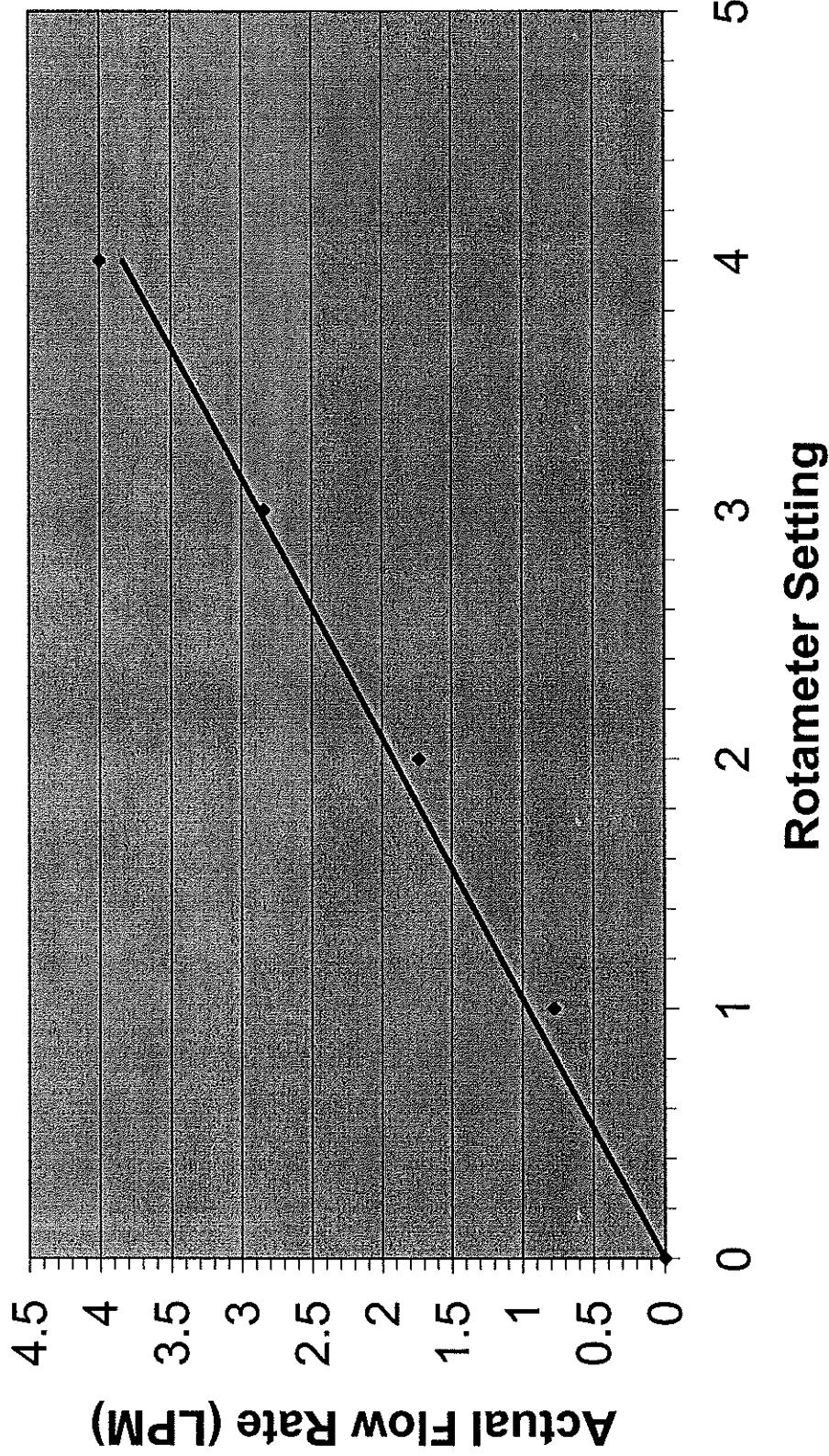
APPENDIX E
EQUIPMENT CALIBRATION DATA

Rotameter L-36

Calibrated on: 04 May 2009
Due: 04 November 2009
By: K. Williamson

Rotameter Setting	Avg. Flow
0	0
1	0.78
2	1.74
3	2.84
4	4.00

Rotameter L-36



Rotameter calibrated using center of ball

H:\Lab\Rotameters\2009\Low Flow\Rotameter L-36 (05-04-09).xls

APPENDIX F
LABORATORY ANALYTICAL CERTIFICATIONS

State of Connecticut, Department of Public Health

Approved Environmental Laboratory

THIS IS TO CERTIFY THAT THE LABORATORY DESCRIBED BELOW HAS BEEN APPROVED BY THE STATE DEPARTMENT OF PUBLIC HEALTH PURSUANT TO APPLICABLE PROVISIONS OF THE PUBLIC HEALTH CODE AND GENERAL STATUTES OF CONNECTICUT, FOR MAKING THE EXAMINATIONS, DETERMINATIONS OR TESTS SPECIFIED BELOW WHICH HAVE BEEN AUTHORIZED IN WRITING BY THAT DEPARTMENT.

TRC ENVIRONMENTAL CORPORATION

LOCATED AT 21 Griffin Road North IN Windsor, CT 06095
AND REGISTERED IN THE NAME OF Eric Plimpton

THIS CERTIFICATE IS ISSUED IN THE NAME OF Kathleen Williamson WHO HAS BEEN DESIGNATED BY THE REGISTERED OWNER/AUTHORIZED AGENT TO BE IN CHARGE OF THE LABORATORY WORK COVERED BY THIS CERTIFICATE OF APPROVAL AS FOLLOWS:

ASBESTOS
AIR-FIBER COUNTING - PCM
BULK IDENTIFICATION - PLM

SEE COMPUTER PRINT-OUT FOR SPECIFIC TESTS APPROVED

THIS CERTIFICATE EXPIRES December 31, 2009 AND IS REVOCABLE FOR CAUSE BY THE STATE DEPARTMENT OF PUBLIC HEALTH DATED AT HARTFORD, CONNECTICUT, THIS 4th DAY OF January, 2008



Registration
No. **PH-0426**

A handwritten signature in black ink, appearing to read "Suzanne Blancaflor".

SUZANNE BLANCAFLOR, MS
CHIEF, ENVIRONMENTAL HEALTH SECTION



Protecting Worker Health

The American Industrial Hygiene Association

acknowledges that

TRC Environmental Corporation

21 Griffin Road North, Windsor, CT 06095

Laboratory ID: 100122

has fulfilled the requirements of the AIHA Laboratory Quality Assurance Programs (LQAP), thereby, conforming to the ISO/IEC 17025:2005 international standard, *General Requirements for the Competence of Testing and Calibration Laboratories*. The above named laboratory, along with all premises from which key activities are performed, as listed above, have been accredited by AIHA in the following:

ACCREDITATION PROGRAMS

- | | |
|---|---------------------------------|
| <input checked="" type="checkbox"/> INDUSTRIAL HYGIENE | Accreditation Expires: 8/1/2010 |
| <input type="checkbox"/> ENVIRONMENTAL LEAD | Accreditation Expires: |
| <input type="checkbox"/> ENVIRONMENTAL MICROBIOLOGY | Accreditation Expires: |
| <input type="checkbox"/> FOOD | Accreditation Expires: |

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with LQAP requirements. This certificate is not valid without the attached Scope of Accreditation. Please review the AIHA website for the most current status of the scope of accreditation.

Laura R. McMahon

Laura R. McMahon
Chairperson, Analytical Accreditation Board

Lindsay E. Booher

Lindsay E. Booher, CIH, CSP
President, AIHA

Date Issued: 08/01/2008



SOUND DATA
LABORATORY QUALITY ASSURANCE PROGRAMS
SMART DECISIONS

AIHA
Your Essential Connection: Advancing Occupational and Environmental Health and Safety Globally
 2700 Prosperity Ave., Suite 250, Fairfax, VA 22031 U.S.A.
 (703) 849-8888; Fax (703) 207-3561; www.aiha.org

AIHA Laboratory Quality Assurance Programs SCOPE OF ACCREDITATION

TRC Environmental Corporation
 21 Griffin Road North, Windsor, CT 06095

Laboratory ID: **100122**
 Issue Date: 08/01/2008

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or revocation. A complete listing of currently accredited Industrial Hygiene laboratories is available on the AIHA website at: <http://www.aiha.org/Content/LQAP/accred/AccreditedLabs.htm>

Industrial Hygiene Laboratory Accreditation Program (IHLAP)

Initial Accreditation Date: 09/01/1984

IHLAP Category	Field of Testing (FoT)	Method	Method Description <i>(for internal methods only)</i>
Core Program Testing	Polarized Light Microscopy (PLM)	EPA/600/R-93/116	
	Phase Contrast Microscopy (PCM)	NIOSH 7400	

- The laboratory participates in the following AIHA* or AIHA-approved proficiency testing programs:**
- Metals*
 - Silica*
 - Asbestos*
 - Bulk Asbestos*
 - Beryllium*
 - WASP¹ (Thermal Desorption Tubes)
 - Pharmaceutical Round Robin
 - Compressed/Breathing Air Round Robin
 - NVLAP (determined at the time of site assessment)
 - Organic Solvents*
 - Diffusive Sampler (3M)*
 - Diffusive Sampler (SKC)*
 - Diffusive Sampler (AT)*
 - WASP¹ (Formaldehyde)
- ¹ Workplace Analytical Scheme for Proficiency

APPENDIX G
ASBESTOS AIR SAMPLE ANALYSIS AND
CHAIN-OF-CUSTODY DATA

AIR SAMPLE ANALYSIS REPORT

Project No.: 164560-0970-0003 Date: 8/28/09 Page of
 Sampler Print: Rob Belding Signature: Rob Belding Date: 8/28/09
 Analyst Print: K. Williams Signature: K. Williams Date Analyzed:
 QC Analyst Print: K. Williams Signature: K. Williams Date Analyzed:
 Lab Supervisor Print: K. Williams Signature: K. Williams Date Issued:

Contact/Name: D. Leys Phone: 860-298-9692 Rotometer No.: L-36 Date of Calibration: 5/4/09 Lab No. 37346
 Microscope No. Received in Lab for Analysis: QC Only:
 Sample Type: TEM Other: Analysis Method: AHERA Other:
 Issue 2.8/15/94
 Type of Sample: 1. Background 2. Prep. 3. Work Area 4. Environmental 5. Personal 6. Clearance

Relative Standard Deviation (Sr)		
Range Fibers/fields	Intra-lab Sr	Inter-lab Sr
<20/100	0.369	0.608
20.5 to 50/100	0.296	0.502
>50/100	0.205	0.454

Sample No.	1	2	3	4
Sampling Location/Comments	I/S Women's Bathroom on 4th of Paper Towers	I/S Men's Bathroom on Sink Counter		Blanks
Type of Sample	4	4		
Pump Number				
Start Time/Stop Time	0920/1246	0925/1245		
Total Time (min)	200	200		
Flow Rate	2.0	2.0		
Total Volume (l)	400	400		
FB - BFB				
FL - BFL	5/100	6/100		0/100
Filter Fiber Conc. (fibers/mm ²)	6.4	7.4		
Airborne Fiber Conc. (fibers/cc)	nd < 0.007	0.007		

STANDARDS
 <0.01 f/cc - EPA Re-Occupancy Clearance Criteria
 0.10 f/cc - OSHA Permissible Exposure Limit (8 hr. TWA)
 1.0 f/cc - OSHA 30 min Excursion Level
 ND < - Non Detected, less than the limit of detection
 Limit of Detection - 5.5 fibers/100 fields

Relinquished by: Rob Belding Date: 8/28/09 Time:
 Received By: Date: 8/28/09 Time: 1500
 Relinquished by: Date: Time:
 Received by Laboratory: Date: Time:

TRC Laboratory Asbestos Analytical Certifications:
 CT#PH-0426 MA#AA000052 NY#10980 RI#AAL-007C3
 ME#LB-0071 VA#3333000283 TX#300354 VT#AL014538
 AIHA/PAT#100122
 Condition of Sample: OK
 Acceptable: Y N
 Comments:
 Reliability of the laboratory's results is limited to the FB/mm².

Sample No.	FB/FL	Analyst/Date	Field/Lab
2	5/100	KW 8/28/09	Lab

APPENDIX H
ASBESTOS WASTE SHIPMENT RECORDS



73 Pickering Street
Portland, CT 06480
860) 342-1022
Fax: (860) 342-1042

CT, MA RI, VT, NH, ME
GENERATORS

NY GENERATORS

EPA New England
1 Congress Street
Boston, MA 02114-2023
(617) 918-1111

EPA Region 2
290 Broadway, 26th Floor
New York, NY 10007-1866
(212) 264-6770

PK#30447 ASBESTOS DISPOSAL & DOCUMENTATION FORM

Job Number <u>093040</u> P.O. # _____	GENERATOR/BUILDING OWNER <u>State of CT DPW</u>
Contractor <u>A.A.T.S Corporation</u>	Address <u>165 Capital Ave</u>
Address <u>802 Boston Post Road</u>	City <u>Hartford CT</u> State <u>CT</u> Zip <u>06516</u>
City <u>West Haven</u> State <u>CT</u> Zip <u>06516</u>	Phone Number <u>860 713 5821</u>
Telephone Number <u>203 932 2992</u>	GENERATING LOCATION
Date Container Del. <u>7-14-09</u> Date of Pickup <u>9-10-09</u>	Address <u>503 @</u>
Type of Container <u>100 Yard Trailer</u>	City <u>Hartford CT</u> State <u>CT</u> Zip <u>06106</u>
VOLUME <u>.15</u> CY Friable <input type="checkbox"/> Non-Friable <input type="checkbox"/>	Phone Number _____
<small>MUST BE IN CUBIC YARDS</small>	
<input checked="" type="checkbox"/> Bag <input type="checkbox"/> Drum <input type="checkbox"/> T-Pack <input type="checkbox"/> Wrapped <input type="checkbox"/> Other <input type="checkbox"/>	

certify the above named material does not contain free liquid as defined by 40 CFR part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to IESHAP standards for asbestos waste disposal found in 40 CFR part 61.150.

Shipper's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national government regulations.

AUTHORIZED SIGNATURE [Signature]

Transporter 1:

Driver: N/A Name _____ Address _____ Telephone # _____
 Registration # _____ Date: _____
 Signature _____ State / # _____
 Acknowledgement of receipt of materials

Transporter 2: RED Technologies LLC, 10 Northwood Drive Bloomfield, CT 06002 860-218-2428

Driver: [Signature] Name _____ Address _____ Telephone # _____
 Registration # 30785A CT Date: 9/11/09
 Signature _____ State / # _____
 Acknowledgement of receipt of materials

Transfer Facility: Charles M. Gordon & Sons, Inc. 203 Pickering Street, Portland, CT 06480 860-342-1022

By: [Signature] Name _____ Telephone # _____
 Transfer Date: 9/14/09 Permit # 1130836 PO
 Discrepancy: _____
 Certification of transfer of materials covered by this manifest

Transporter 3: SWIFT

Driver: [Signature] Name _____ Address _____ Telephone # _____
 Registration # _____ Date: 09-21-09
 Signature _____ State / # _____
 Acknowledgement of receipt of materials

Landfill Name: <u>Minerva Enterprises</u>	OTHER
Location: <u>9000 Minerva Rd. Waynesburg, OH 44688</u>	Landfill Name: _____
Ph: <u>330-866-3435</u> Permit # _____	Location: _____
	Ph: _____ Permit # _____

Approximate Volume of Asbestos Received: _____

Discrepancy If Any: _____

Received by: _____ Date: 2009 SEP 22 P 2:53

Certification of transfer of materials covered by this manifest

MINERVA ENTERPRISES

**Section 50 80 00
Additional Information**

Subsection 50 80 00.3

EnviroScience Consultants, Inc.
1999 December 29
410-474 Capitol Ave
ACM LBP Report

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December 29, 1999

Mr. Gerald Glassman
State of Connecticut
Department of Public Works
Asbestos Management Section
165 Capitol Avenue, Room 280
Hartford, CT 06106

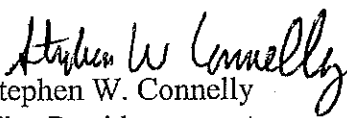
RE: **DPW Contract No. BI-2B-1000-Y-Task 12**
DPW Project No. BI-2B-070-ASB
410 – 474 Capitol Avenue, Hartford, CT
DPW Building No. 20356
EnviroScience Project Number 99-366.10

Dear Mr. Glassman:

Attached is the report for the asbestos inspection, bulk sampling of suspect asbestos-containing materials, and lead based paint testing, for State of Connecticut office buildings located at 410-474 Capitol Avenue, Hartford, Connecticut.

If you have any questions regarding the contents of this report, please contact me directly.

Sincerely,


Stephen W. Connelly
Vice President

cc: Ed Fennell, BJWF

DC:pab

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EnviroScience Consultants inc.

Environmental Engineering ♦ Industrial Hygiene ♦ Laboratory Services

Office Locations:
Newington, CT
Fairfield, CT
Boston, MA

ASBESTOS AND LEAD BASED PAINT

**STATE OFFICE BUILDING (DPW NO. 20356)
410 - 474 CAPITOL AVENUE, HARTFORD, CONNECTICUT
DPW PROJECT NO. BI-2B-070-ASB (ASB)**

Prepared for:

State of Connecticut
Department of Public Works
Asbestos Management Section
165 Capitol Avenue, Room 280
Hartford, Connecticut 06106

Prepared by:

EnviroScience Consultants, Inc.
795 North Mountain Road
Newington, CT 06111

EnviroScience Project No. 99-366.10

December 29, 1999

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APPENDIX A	Locations of Asbestos Containing Materials
APPENDIX B	Lead Based Paint Testing Field Sheet
APPENDIX C	Laboratory Reports and Field Data Sheets - Asbestos
APPENDIX D	Definitions and Regulations - Asbestos
APPENDIX E	Survey, Sampling, and Analytical Protocols - Asbestos
APPENDIX F	Polarized Light Microscopic Analytical Method
APPENDIX G	Drawings

1.0 INTRODUCTION

In September, October and November, 1999 EnviroScience Consultants, Inc. (EnviroScience's) Environmental Technician Dariusz Czarnota conducted an asbestos and lead based paint inspection of areas of the State of Connecticut office Buildings located at 410 - 474 Capitol Avenue in Hartford, Connecticut. The inspection was performed to identify any potential asbestos and lead hazards which may exist within the building for inclusion into an Operations and Maintenance Program.

This work involves five buildings, most are multiple story structures. The buildings are occupied at this time. Confirmed ACM has been identified in previous work and during this inspection.

During the survey, suspect ACM was separated into three USEPA categories. These categories are: thermal system installation (TSI), surfacing ACM, and miscellaneous ACM. TSI includes all materials used to prevent heat loss or gain or water condensation on mechanical systems. Example of TSI are pipe insulation, boiler insulation, duct insulation, and mudded insulation pipe fittings. Surfacing ACM includes all ACM that is sprayed, troweled, or otherwise applied to an existing surface. Surfacing ACM is commonly used for fireproofing, decorative and acoustical applications. Miscellaneous materials include all ACM not listed in thermal surfacing, such as linoleum, vinyl asbestos flooring, and ceiling tiles.

All suspect materials noted were sampled and analyzed to determine asbestos content. Materials that were sampled were analyzed by Polarized Light Microscopy (PLM). As per EPA standards, materials found to have <10% asbestos were subjected to either PLM-point counting or some NOB materials by TEM chatfield methods of analysis. Laboratory results are presented in Appendix C. Appendix D includes a summary of definitions and regulations appropriate to this work. Appendix E is a description of the survey, sampling, and analytical protocols while Appendix F reviews the Polarized Light Microscopy (PLM) analytical method. Locations and quantities of asbestos containing materials found in the building are provided in Appendix A.

2.0 ASBESTOS RESULTS

Sample analysis results are reported in percentages of asbestos and non-asbestos components. The USEPA defines any material that contains greater than one percent (1%) asbestos, utilizing Polarized Light Microscopy (PLM), as being an asbestos containing material.

The following materials were determined to be ACM:

Sampling Location	Material	Asbestos Content	Sample ID
450 CAPITOL AVENUE – 1ST FLOOR			
Basement level – mechanical room	Mudded fittings – residue insulation on pipes	2% Anthophyllite	9-22-DC-04A
1 st level – electrical room	12”x12” white/brown floor tile	5% Chrysotile	9-22-DC-09A
1 st level – electrical room	12”x12” white/brown floor tile mastic	10% Chrysotile	9-22-DC-10A
Stairwell – south side	Gray/brown 12”x12” floor tile	8% Chrysotile	10-5-DC-01A
Stairwell – south side	Gray/brown 12”x12” floor tile mastic	10% Chrysotile	10-5-DC-02A
470 CAPITOL AVENUE			
Exterior east and west side next to doors	Caulking	8% Chrysotile	11-1-DC-02A
474 CAPITOL AVENUE			
Bathroom	12”x12” red floor tile mastic	8% Chrysotile	09-30-DC-04A

Sample analysis results are reported in percentages of asbestos and non-asbestos components. The USEPA defines any material that contains greater than one percent (1%) asbestos, utilizing PLM as being an asbestos containing material.

The following materials were determined not to be ACM:

Location	Material	Sample ID
410 CAPITOL AVENUE		
1 st floor recovery/loading dock	12”x12” red floor tile	09-13-DC-16ABC
1 st floor recovery/loading dock	12”x12” red floor tile mastic	09-13-DC-17A
5 th floor patio lower brick wall	Caulking putty	11-5-DC-01ABC
5 th floor patio against wall	Caulking putty	11-5-DC-02ABC

Location	Material	Sample ID
1 st floor – office area north side	1'x1' ceiling tiles	9-30-DC-02ABC
Basement level	2'x2' ceiling tiles	Same as 09-13-DC-22ABC
Basement – Biological room	12"x12" white motley floor tile	Same as 09-13-DC-12ABC
Basement – Biological room	Blue 12"x12" floor tile	09-22-DC-01ABC
Basement – Biological room	Associated mastic	09-22-DC-02ABC
Basement – Electrical room	2'x4' ceiling tiles	09-22-DC-03ABC
Mechanical room – 1 st level – elevator lobby lounge	Tan carpet glue	09-22-DC-05ABC
1 st level – open offices	Blur carpet glue	09-22-DC-06ABC
1 st level – electrical room	12"x12" white gray speckle floor tile	09-22-DC-07ABC
Southeast side	Associated mastic	09-22-DC-08ABC
2 nd level computer room	White and blue speckle 12"x12" floor tile	09-22-DC-11ABC
2 nd level computer room	Yellow mastic	09-22-DC-12ABC
2 nd level computer room	Gray layering compound	09-22-DC-13ABC
Basement – Electrical room southwest corner	Cloth wrapping	09-22-DC-14ABC
Basement stockroom office	White black speckled 12"x12" floor tile with mastic	09-22-DC-15ABC
3 rd floor – hallway wall	Light tan ceramic tile glue	10-5-DC-03ABC
3 rd floor janitor storage room	Sheetrock/joint compound	10-5-DC-04ABC
3 rd floor janitor storage room	Joint compound	10-5-DC-05AB
Basement	Blue ceramic tile glue	10-5-DC-06ABC
Exterior windows	Window caulking	10-5-DC-12ABC
450 CAPITOL AVENUE		
Basement – tunnel pipes	Cap on insulation	9-13-DC-01ABC
Basement – pump room	Large mudded fittings	9-13-DC-02ABC
Basement – tunnel pipes	Paper wrapping on insulation	9-13-DC-03ABC
Basement – ceiling women's locker room and mechanical room	Sheetrock/joint compound	9-13-DC-04ABC

Location	Material	Sample ID
Basement – ceiling women's locker room and mechanical room	Joint compound	9-13-DC-05ABC
PBX room – basement	White 12"x12" floor tile	9-13-DC-06ABC
PBX room – basement	Associated mastic	9-13-DC-07ABC
Basement – conference room	Brown self adhesive baseboard	9-13-DC-08ABC
Basement – conference room	Tan carpet glue	9-13-DC-09ABC
Basement conference room, computer room	Texture ceiling paint	9-13-DC-10ABCDEF
1 st floor entrance front	Green carpet glue	9-13-DC-11ABC
1 st floor unisex and women's bathroom	12"x12" white motley floor tile	9-13-DC-12ABC
1 st floor unisex and women's bathroom	Associated mastic	9-13-DC-13ABC
1 st floor security room	Black carpet glue	9-13-DC-14ABC
1 st floor security room	Black self adhesive baseboard	9-13-DC-15ABC
2 nd floor – conference room 2A	Gray self adhesive baseboard	9-13-DC-18ABC
2 nd floor – lounge	12"x12" motley lined floor tile	9-13-DC-19ABC
3 rd floor – office area	Red glue carpet	9-13-DC-21ABC
5 th floor – office area	2'x2' ceiling tiles – Type 1	9-13-DC-22ABC
1 st floor – conference Room A, Conference Room B, Employee Office	2'x2' ceiling tiles type 2	9-13-DC-23ABC
Exterior	Window caulking	9-13-DC-24ABC
Basement and all floors	Blue ceramic glue	10-5-DC-06ABC
460 CAPITOL AVENUE		
Conference rooms	Red self adhesive baseboard glue	11-5-DC-03ABC
Basement level – Department of Public Health and mental retardation storage room	White/gray 12"x12" floor tile	Same as 09-22-DC-07ABC

Location	Material	Sample ID
Basement – C203 electrical room	Spray on fireproofing	09-27-DC-01ABC
Basement – mechanical room	Large mudded fittings	09-27-DC-02ABC
Basement – mechanical room	Sprayed on fireproofing type 2	09-27-DC-03ABC
1 st floor – office areas	Yellow carpet glue	09-27-DC-04ABC
1 st floor – office areas	Light aqua blue self adhesive baseboard	09-27-DC-05ABC
2 nd floor – southeast corner storage room	Brown carpet glue	09-27-DC-06ABC
1 st floor – northwest corner storage room	Sheetrock/joint compound	10-5-DC-07ABC
1 st floor northeast corner storage room	Joint compound	10-5-DC-08AB
Exterior windows	Window caulking	10-5-DC-11ABC
Storage rooms	Gypsum cement	11-4-DC-03ABC
470 CAPITOL AVENUE		
Cafeteria	Dark blue carpet glue	9-30-DC-01ABC
Exterior windows	Window caulking	9-30-DC-06ABC
474 CAPITOL AVENUE		
Steam room – brick wall	White mortar	9-30-DC-03ABC
Steam room	Boiler insulation	9-30-DC-05ABC
Exterior windows	Window caulking	9-30-DC-06ABC
Steam room – rear room	Door caulking	10-7-DC-01ABC
Office room	12"x12" tan/red floor tile	12-9-DC-01ABC
Office room	12"x12" tan/red floor tile mastic	12-8-DC-02ABC

Sample of 12"x12" red floor tile mastic (Sample #09-13-DC-17A) was analyzed to have 2% Chrysotile asbestos. In order to ascertain a more accurate analysis, EnviroScience decided to analyze the samples by TEM chatfield method. The result proved to be negative for 12"x12" red floor tile mastic.

3.0 LEAD-BASED PAINT RESULTS

The inspection was conducted by Dariusz Czarnota of EnviroScience. Radiation Monitoring Device LPA-1 Fluorescence Analyzer, serial numbers 1015 and 1157 were used.

X-ray fluorescence (XRF) results are classified as positive (compared to the 1.0 mg/cm² HUD standard) if they are greater than or equal to the upper limit of the inconclusive range, and negative if they are less than or equal to the lower limit of the inconclusive range (see table below). Inconclusive results are liable to be confirmed by atomic absorption spectrophotometry (AAS) analysis of a paint chip, compared to the 0.5%-by weight HUD standard. However, there were no inconclusive results, when screened on either floor.

Accessible painted surfaces inside the building were screened. Levels of toxic lead were detected on components of several of the buildings. However all are not listed in the Table below. These will be better identified during the preparation of design documents. However the lead field testing data can be found in Appendix B.

LOCATION OF LEAD BASED PAINT

The following representative materials were found upon screening. The actual extent of structures and components with lead based paint can only be confirmed by comprehensive surveying.

LOCATION	SIDE	XRF READING	SURFACE	SUBSTRATE
410 CAPITOL AVENUE				
Garage parking lot	D	3.4	Yellow corner guards on concrete columns	Metal
Garage parking lot	Floor	4.5	Yellow parking lines	Concrete
Stockroom and copier	C	4.3	White corner guards on column	Concrete
Pump room	C	6.0	Red corner guards on brick columns	Metal
450 CAPITOL AVENUE				
Basement boiler corridor	C	1.4	Brown pipe	Metal
PBX room	D	1.9	White wall	Sheetrock
PBX room	A	1.9	White wall	Sheetrock
Electrical room	A	1.4	White wall	Concrete
Electrical room	B	3.3	White wall	Concrete
Electrical room	C	1.4	White wall	Concrete
Computer storage	B	1.8	White wall	Concrete

LOCATION	SIDE	XRF READING	SURFACE	SUBSTRATE
1 st level of corridor security center	C	3.4	White wall next to bathroom	Concrete
Loading hallway	C	1.4	White wall	Concrete
Mechanical room between Lead Department and IAQ Department	D	3.4	White wall	Concrete
2 nd level next to women's bathroom	Ceiling	2.2	White above stair door	Concrete
2 nd level next to women's bathroom	D	1.4	White wall	Concrete
Men's bathroom	D	2.4	White wall	Concrete
Service elevator	B	3.3	White wall	Concrete
Linda Decont office room	D	2.3	White wall	Concrete
Linda Decont office room	A	1.4	White wall	Concrete
Mechanical room	D	2.2	White wall	Concrete
Mechanical room	B	2.2	White wall	Concrete
3 rd level women's bathroom outside area	D	3.0	White wall	Concrete
3 rd level women's bathroom outside area	B	3.0	White wall	Concrete
Men's bathroom outside area	D	1.4	White wall	Concrete
Men's bathroom outside area	B	1.4	White wall	Concrete
Mechanical room	B	1.4	White wall	Concrete
Mechanical room	D	2.3	White wall	Concrete
Mechanical room	A	1.8	White column	Concrete
4 th level south office area	C	7.6	Tan column	Concrete
Women bathroom outside area	C	3.0	White wall	Concrete

LOCATION	SIDE	XRF READING	SURFACE	SUBSTRATE
Mechanical room	D	2.0	White wall	Concrete
5 th level mechanical room	A	2.9	White wall	Concrete
5 th level mechanical room	C	2.4	White wall	Brick
5 th level mechanical room	B	3.8	White wall	Brick
5 th level mechanical room	D	3.0	White wall	Brick
460 CAPITOL AVENUE				
Basement level hallway connector	A	8.4	Brown beam	Wood
Conference room	B	5.3	Brown beam	Wood
File storage room	Center room	8.8	Brown beam	Wood
Department of Public Health Storage room	D	1.9	White beam	Wood
DMR storage room	D	1.4	White beam	Wood
HVAC	Center	3.8	White beam	Wood
Health care	D	2.8	White beam	Wood
Janitor storage room	D	2.8	Light gray beam	Wood
Former bathroom	D	2.8	White beam	Wood
Mechanical room	D	3.7	White beam	Wood
Electrical room	D	3.8	White beam	Wood
470 CAPITOL AVENUE				
NO LEAD FOUND				
474 CAPITOL AVENUE				
Exterior	A	4.7	Yellow corner guards on walls	Metal
Exterior	A	1.4	Yellow posts	Metal
Interior steam room	B	5.3	Yellow stair system	Metal
Interior steam room	B	5.0	Yellow wall	Wood
Bathroom	B	1.4	Yellow wall	Brick

LOCATION	SIDE	XRF READING	SURFACE	SUBSTRATE
Steam room	Floor	5.4	Yellow column bases	Concrete
Staircase	C	2.9	Yellow stairs	Wood
Staircase	D	3.5	Yellow handrail	Wood
Hardware storage room	B	2.4	Yellow fasteners	Metal

In building 470 Capitol Avenue, all levels have plywood on floors. EnviroScience did not check under plywood so as to not cause damage to the floor. In all the buildings, chases were not opened due to possible damage to the building, as was the roof not sampled. All of the above areas will be assumed to have asbestos containing materials (ACM) until these areas are inspected.

Asbestos-containing materials identified during the building survey have been listed in Appendix A. Appendix A shows the location, ACM type, and quantity of ACM identified the survey.

Appendix B describes on the field sheets the location of painted surfaces tested for lead content and the instrument results. The table above in section 3.0 indicates lead content greater than 1.0 by XRF for representative materials tested.

4.0 CONCLUSION

The asbestos containing materials and lead based painted components must be abated by abatement contractor licensed in the State of Connecticut prior to general renovations.

The field data sheets and laboratory reports supporting these findings are presented in Appendices C and D.

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APPENDIX E1

LOCATION OF ASBESTOS CONTAINING MATERIALS

APPENDIX A
LOCATION OF ACM

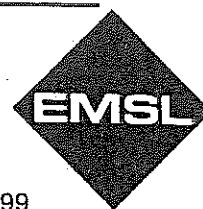
Location	ACM Type	Quantity
410 CAPITOL AVENUE		
Basement level stairway	Gray/brown 12"x12" floor tile and associated mastic	~175 SF
BASEMENT LEVEL		
Mechanical room #1	Mudded fittings – residual	Undetermined
1st FLOOR		
Electrical room and 2 janitors storage rooms	12"x12" white brown floor tile and mastic	~130 SF
Stairwells 1-6	12"x12" gray/brown floor tile and mastic	~500 SF
2nd FLOOR		
Electrical room and 2 janitor storage rooms	12"x12" white/brown floor tile and mastic	~130 SF
Stairwells 1-6	12"x12" gray/brown floor tile and mastic	~540 SF
#3rd FLOOR		
Electrical room and 2 janitor storage rooms	12"x12" white/brown floor tile and mastic	~130 SF
Stairwells 1-6	12"x12" gray/brown floor tile and mastic	~540 SF
4th FLOOR		
Electrical room and 2 janitor storage rooms	12"x12" white/brown floor tile and mastic	~130 SF
Stairwells 1-6	12"x12" gray/brown floor tile and mastic	~275 SF
470 CAPITOL AVENUE		
Exterior – east and west side doors (along brick wall)	8% Chrysotile	120 LF
474 CAPITOL AVENUE		
Bathroom	12"x12" red floor tile and mastic	50 SF

* The mudded fittings were found in the Mechanical Room #1 as residual material. These materials can also be found throughout the 410 Building.

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APPENDIX E2

LABORATORY REPORTS AND FIELD DATA SHEETS - ASBESTOS



Attn.: Michael Stewart
EnviroScience Consultants, Inc.
795 North Mountain Road
Newington, CT 06111

Saturday, September 18, 1999

Ref Number: NY995974

POLARIZED LIGHT MICROSCOPY (PLM)

Performed by EPA 600/R-93/116 Method*

Project: DPW 410 CAPITOL AVENUE TO 474 CAPITOL AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	% Fibrous	% Non-Fibrous
09-13-DC-01A	BSMT FLR PUMP RM / COMPOUND COOLING ON PIPES	Beige	Dissolved	None Detected		6% Glass	94% Matrix
09-13-DC-01B	BSMT FLR PUMP RM / COMPOUND COOLING ON PIPES	Beige	Dissolved	None Detected		15% Glass	85% Matrix
09-13-DC-01C	BSMT FLR PUMP RM / COMPOUND COOLING ON PIPES	Beige Fibrous Heterogeneous	Dissolved	None Detected		15% Glass	5% Ca Carbonate 80% Matrix
09-13-DC-02A	BSMT FLR PUMP RM / LARGE ELBOWS	Grey Fibrous Heterogeneous	Dissolved	None Detected		10% Glass 5% Min. Wool	85% Matrix
09-13-DC-02B	BSMT FLR PUMP RM / LARGE ELBOWS	Grey Fibrous Heterogeneous	Dissolved	None Detected		8% Glass 6% Min. Wool	86% Matrix
09-13-DC-02C	BSMT FLR PUMP RM / LARGE ELBOWS	Grey Fibrous Heterogeneous	Dissolved	None Detected		12% Glass 5% Min. Wool	83% Matrix

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

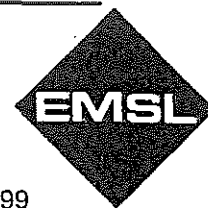
* NY samples analyzed by ELAP 198.1 Method.

Diane Demarinis
Analyst

Approved
Signatory

Disclaimers: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

Analysis performed by EMSL Manhattan (NVLAP Air and Bulk #101048-9, E-LAP #11506)



Attn.: Michael Stewart
EnviroScience Consultants, Inc.
795 North Mountain Road
Newington, CT 06111

Saturday, September 18, 1999

Ref Number: NY995974

POLARIZED LIGHT MICROSCOPY (PLM)

Performed by EPA 600/R-93/116 Method*

Project: DPW 410 CAPITOR AVENUE TO 474 CAPITOR AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	% Fibrous	% Non-Fibrous
09-13-DC-03A	BSMT FLR AND THROUGHOUT / PAPER WRAPPING OVER	Silver/Beige Fibrous Heterogeneous	Dissolved	None Detected		30% Cellulose	70% Matrix
09-13-DC-03B	BSMT FLR AND THROUGHOUT / PAPER WRAPPING OVER	Silver/Beige Fibrous Heterogeneous	Dissolved	None Detected		35% Cellulose	65% Matrix
09-13-DC-03C	BSMT FLR AND THROUGHOUT / PAPER WRAPPING OVER	Silver/Beige Fibrous Heterogeneous	Dissolved	None Detected		30% Cellulose	70% Matrix
09-13-DC-04A	THROUGHOUT BLDG / SHEETROCK	White/Tan Fibrous Heterogeneous	Teased	None Detected		8% Cellulose	25% Gypsum 67% Matrix
09-13-DC-04B	THROUGHOUT BLDG / SHEETROCK	White/Tan Fibrous Heterogeneous	Teased	None Detected		7% Cellulose	25% Gypsum 68% Matrix
09-13-DC-04C	THROUGHOUT BLDG / SHEETROCK	White/Tan Fibrous Heterogeneous	Teased	None Detected		8% Cellulose	25% Gypsum 67% Matrix

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

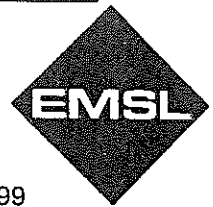
* NY samples analyzed by ELAP 198.1 Method.

Diane Demarinis
Analyst

Approved
Signatory

Disclaimers: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. EMSL suggests that samples reported as <1% or none detected be tested with either SEM or TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

Analysis performed by EMSL Manhattan (NVLAP Air and Bulk #101048-9, E-LAP #11506)



Attn.: Michael Stewart
EnviroScience Consultants, Inc.
795 North Mountain Road
Newington, CT 06111.

Saturday, September 18, 1999

Ref Number: NY995974

POLARIZED LIGHT MICROSCOPY (PLM)

Performed by EPA 600/R-93/116 Method*

Project: DPW 410 CAPITOL AVENUE TO 474 CAPITOL AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	% Fibrous	% Non-Fibrous
09-13-DC-05A	THROUGHOUT BLDG / JOINT COMPOUND	White Fibrous Heterogeneous	Crushed	None Detected		3% Cellulose	40% Quartz 20% Ca Carbonate 37% Matrix
09-13-DC-05B	THROUGHOUT BLDG / JOINT COMPOUND	White Fibrous Heterogeneous	Crushed	None Detected		5% Cellulose	45% Quartz 20% Ca Carbonate 30% Matrix
09-13-DC-05C	THROUGHOUT BLDG / JOINT COMPOUND	White Fibrous Heterogeneous	Crushed	None Detected		4% Cellulose	45% Quartz 20% Ca Carbonate 31% Matrix
09-13-DC-06A	BSMT LEVEL PBX ROOM / WHITE 12X12 FLOOR TILE	White Fibrous Heterogeneous	Crushed	None Detected		3% Cellulose	20% Quartz 5% Ca Carbonate 72% Matrix
09-13-DC-06B	BSMT LEVEL PBX ROOM / WHITE 12X12 FLOOR TILE	White Fibrous Heterogeneous	Crushed	None Detected		4% Cellulose	15% Quartz 4% Ca Carbonate 77% Matrix
09-13-DC-06C	BSMT LEVEL PBX ROOM / WHITE 12X12 FLOOR TILE	White Fibrous Heterogeneous	Crushed	None Detected		4% Cellulose	15% Quartz 5% Ca Carbonate 76% Matrix

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

* NY samples analyzed by ELAP 198.1 Method.

Diane Demarinis
Analyst

Approved
Signatory

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Analysis performed by EMSL Manhattan (NVLAP Air and Bulk #101048-9, E-LAP #11506)



Attn.: Michael Stewart
EnviroScience Consultants, Inc.
795 North Mountain Road
Newington, CT 06111

Saturday, September 18, 1999

Ref Number: NY995974

POLARIZED LIGHT MICROSCOPY (PLM)

Performed by EPA 600/R-93/116 Method*

Project: DPW 410 CAPITOR AVENUE TO 474 CAPITOR AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	%	Fibrous % Non-Fibrous
09-13-DC-07A	BSMT LEVEL PBX ROOM / ASSOCIATED MASTIC	Tan Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	100% Matrix
09-13-DC-07B	BSMT LEVEL PBX ROOM / ASSOCIATED MASTIC	Tan Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	100% Matrix
09-13-DC-07C	BSMT LEVEL PBX ROOM / ASSOCIATED MASTIC	Tan Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	100% Matrix
09-13-DC-08A	CONFERENCE ROOM / BROWN SELF - ADHESIVE	White Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	100% Matrix
09-13-DC-08B	CONFERENCE ROOM / BROWN SELF - ADHESIVE	White Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	100% Matrix
09-13-DC-08C	CONFERENCE ROOM / BROWN SELF - ADHESIVE	White Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	100% Matrix

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

* NY samples analyzed by ELAP 198.1 Method.

Diane Demarinis
Analyst

Approved
Signatory

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Analytic performed by EMSL, Manhattan (NVLAP Air and Bulk #101048, E-LAP #11506)



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Saturday, September 18, 1999

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POLARIZED LIGHT MICROSCOPY (PLM)

Performed by EPA 600/R-93/116 Method*

Project: DPW 410 CAPITOL AVENUE TO 474 CAPITOL AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	% Fibrous	% Non-Fibrous
09-13-DC-09A	CONFERENCE ROOM / TAN CARPET GLUE	Tan Fibrous Heterogeneous	Dissolved	None Detected		2% Synthetic	30% Matrix 68% Other
09-13-DC-09B	BASEMENT LEVEL / TAN CARPET GLUE	Tan Fibrous Heterogeneous	Dissolved	None Detected		3% Synthetic	40% Matrix 57% Other
09-13-DC-09C	BASEMENT LEVEL / TAN CARPET GLUE	Tan Fibrous Heterogeneous	Dissolved	None Detected		2% Synthetic	40% Matrix 58% Other
09-13-DC-10A	THROUGHOUT BUILDING / TEXTURE CEILING PAINT	Grey Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	30% Quartz 15% Ca Carbonate 55% Other
09-13-DC-10B	THROUGHOUT BUILDING / TEXTURE CEILING PAINT	Grey Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	35% Quartz 15% Ca Carbonate 50% Other
09-13-DC-10C	THROUGHOUT BUILDING / TEXTURE CEILING PAINT	Grey Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	35% Quartz 15% Ca Carbonate 50% Other

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

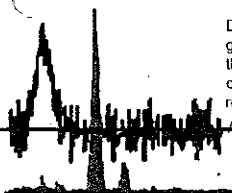
* NY samples analyzed by ELAP 198.1 Method.

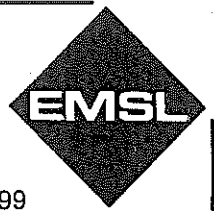
Diane Demarinis
Analyst

Approved
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Analysis performed by EMSL Manhattan (NVLAP Air and Bulk #101048.9, E-LAP #11506)





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Saturday, September 18, 1999

Ref Number: NY995974

POLARIZED LIGHT MICROSCOPY (PLM)

Performed by EPA 600/R-93/116 Method*

Project: DPW 410 CAPITOL AVENUE TO 474 CAPITOL AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	%	Fibrous % Non-Fibrous
09-13-DC-10D	THROUGHOUT BUILDING / TEXTURE CEILING PAINT	Grey Non-Fibrous Heterogeneous	Dissolved	None Detected	None Detected	28% Quartz 10% Ca Carbonate 62% Other	
09-13-DC-10E	THROUGHOUT BUILDING / TEXTURE CEILING PAINT	Grey Non-Fibrous Heterogeneous	Dissolved	None Detected	None Detected	30% Quartz 12% Ca Carbonate 58% Other	
09-13-DC-10F	THROUGHOUT BUILDING / TEXTURE CEILING PAINT	Grey Non-Fibrous Heterogeneous	Dissolved	None Detected	None Detected	32% Quartz 10% Ca Carbonate 58% Other	
09-13-DC-10G	THROUGHOUT BUILDING / TEXTURE CEILING PAINT	Grey Non-Fibrous Heterogeneous	Dissolved	None Detected	None Detected	30% Quartz 15% Ca Carbonate 55% Other	
09-13-DC-11A	1ST FLOOR ENTRANCE MAIN / GREEN CARPET GLUE	Green Fibrous Heterogeneous	Dissolved	None Detected	15% Cellulose	85% Matrix	
09-13-DC-11B	1ST FLOOR ENTRANCE MAIN / GREEN CARPET GLUE	Green Fibrous Heterogeneous	Dissolved	None Detected	20% Cellulose	80% Matrix	

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

* NY samples analyzed by ELAP 198.1 Method.

Diane Demarinis
Analyst

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Analysis performed by EMSL Manhattan (NY) AP Air and Bulk #101048-9, ELAP #11506



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POLARIZED LIGHT MICROSCOPY (PLM)

Performed by EPA 600/R-93/116 Method*

Project: DPW 410 CAPITOR AVENUE TO 474 CAPITOR AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	%	Fibrous % Non-Fibrous
09-13-DC-11C	1ST FLOOR ENTRANCE MAIN / GREEN CARPET GLUE	Green Fibrous Heterogeneous	Dissolved	None Detected		25% Cellulose	75% Matrix
09-13-DC-12A	UNISEX BATHROOM / 12X12 WHITE MOLDING FLOOR	Various Fibrous Heterogeneous	Dissolved	None Detected		5% Cellulose	20% Ca Carbonate 75% Matrix
09-13-DC-12B	WOMEN / 12X12 WHITE MOLDING FLOOR TILE	Various Fibrous Heterogeneous	Dissolved	None Detected		6% Cellulose	25% Ca Carbonate 69% Matrix
09-13-DC-12C	WOMEN / 12X12 WHITE MOLDING FLOOR TILE	Various Fibrous Heterogeneous	Dissolved	None Detected		7% Cellulose	20% Ca Carbonate 73% Matrix
09-13-DC-13A	WOMEN / ASSOCIATED MASTIC	Green Fibrous Heterogeneous	Dissolved	None Detected		10% Cellulose	90% Matrix
09-13-DC-13B	WOMEN / ASSOCIATED MASTIC	Green Fibrous Heterogeneous	Dissolved	None Detected		12% Cellulose	88% Matrix

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

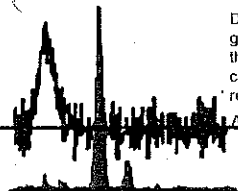
* NY samples analyzed by ELAP 198.1 Method.

Diane Demarinis
Analyst

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POLARIZED LIGHT MICROSCOPY (PLM)

Performed by EPA 600/R-93/116 Method*

Project: DPW 410 CAPITOR AVENUE TO 474 CAPITOR AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	% Fibrous	% Non-Fibrous
09-13-DC-13C	WOMEN / ASSOCIATED MASTIC	Green Fibrous Heterogeneous	Dissolved	None Detected		12% Cellulose	88% Matrix
09-13-DC-14A	SECURITY ROOM / BLACK CARPET GLUE	Black Fibrous Heterogeneous	Dissolved	None Detected		2% Hair 6% Cellulose	92% Matrix
09-13-DC-14B	SECURITY ROOM / BLACK CARPET GLUE	Black Fibrous Heterogeneous	Dissolved	None Detected		7% Cellulose 2% Hair	91% Matrix
09-13-DC-14C	SECURITY ROOM / BLACK CARPET GLUE	Black Fibrous Heterogeneous	Dissolved	None Detected		5% Cellulose 2% Hair	93% Matrix
09-13-DC-15A	SECURITY ROOM / BLACK SELF-ADHESIVE BASEBOARDS	Tan/Beige Fibrous Heterogeneous	Dissolved	None Detected		7% Cellulose	93% Matrix
09-13-DC-15B	SECURITY ROOM / BLACK SELF-ADHESIVE BASEBOARDS	Tan/Beige Fibrous Heterogeneous	Dissolved	None Detected		8% Cellulose	92% Matrix

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

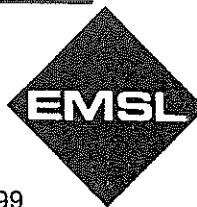
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Analyst

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Saturday, September 18, 1999

Ref Number: NY995974

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Performed by EPA 600/R-93/116 Method*

Project: DPW 410 CAPITOL AVENUE TO 474 CAPITOL AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	%	Fibrous % Non-Fibrous
09-13-DC-15C	SECURITY ROOM / BLACK SELF - ADHESIVE BASEBOARDS	Tan/Beige Fibrous Heterogeneous	Dissolved	None Detected		7% Cellulose	93% Matrix
09-13-DC-16A	DELIVERY ROOM 1ST FLOOR / 12X12 RED FLOOR TILE	Various Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	45% Quartz 55% Matrix
09-13-DC-16B	STAIRWELL THROUGHOUT / 12X12 RED FLOOR TILE	Various Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	50% Quartz 50% Matrix
09-13-DC-16C	BUILDING / ASSOCIATED MASTIC	Various Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	55% Quartz 45% Matrix
09-13-DC-17A	BUILDING / ASSOCIATED MASTIC	Black Fibrous Heterogeneous	Dissolved	2% Chrysotile		None Detected	93% Matrix 5% Quartz
09-13-DC-17B	BUILDING / ASSOCIATED MASTIC			Not Analyzed			

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

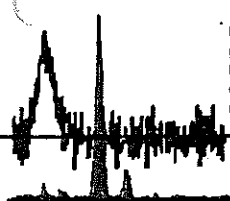
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Project: DPW 410 CAPITOR AVENUE TO 474 CAPITOR AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	%	Fibrous % Non-Fibrous
09-13-DC-17C	BUILDING / ASSOCIATED MASTIC			Not Analyzed			
09-13-DC-18A	2ND FLOOR CONF / GRAY SELF - ADHESIVE BASEBOARD	Beige Fibrous Heterogeneous	Dissolved	None Detected		6% Cellulose	94% Matrix
09-13-DC-18B	ROOM 2A / GRAY SELF-ADHESIVE BASEBOARD	Beige Fibrous Heterogeneous	Dissolved	None Detected		7% Cellulose	93% Matrix
09-13-DC-18C	ROOM 2A / GRAY SELF-ADHESIVE BASEBOARD	Beige Fibrous Heterogeneous	Dissolved	None Detected		5% Cellulose	95% Matrix
09-13-DC-19A	2ND FLOOR LOUNGE / 12X12 WHITE MOLDING LINED	White Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	30% Quartz 70% Matrix
09-13-DC-19B	2ND FLOOR LOUNGE / 12X12 FLOOR TILE	White Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	25% Quartz 75% Matrix

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

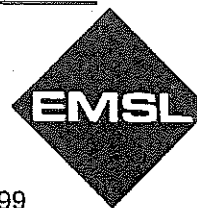
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Performed by EPA 600/R-93/116 Method*

Project: DPW 410 CAPITOL AVENUE TO 474 CAPITOL AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	%	Fibrous % Non-Fibrous
09-13-DC-19C	2ND FLOOR LOUNGE / 12X12 WHITE MOLDING LINED FLOOR	White Non-Fibrous Heterogeneous	Dissolved	None Detected		None Detected	25% Quartz 75% Matrix
09-13-DC-20A	2ND FLOOR LOUNGE / ASSOCIATED MASTIC	Tan Fibrous Heterogeneous	Dissolved	None Detected		10% Cellulose	90% Matrix
09-13-DC-20B	2ND FLOOR LOUNGE / ASSOCIATED MASTIC	Tan Fibrous Heterogeneous	Dissolved	None Detected		10% Cellulose	90% Matrix
09-13-DC-20C	2ND FLOOR LOUNGE / ASSOCIATED MASTIC	Tan Fibrous Heterogeneous	Dissolved	None Detected		10% Cellulose	90% Matrix
09-13-DC-21A	3RD FLOOR OFFICE AREA / RED CARPET GLUE	Tan Fibrous Heterogeneous	Dissolved	None Detected		3% Cellulose	97% Matrix
09-13-DC-21B	3RD FLOOR OFFICE AREA / RED CARPET GLUE	Tan Fibrous Heterogeneous	Dissolved	None Detected		5% Cellulose	95% Matrix

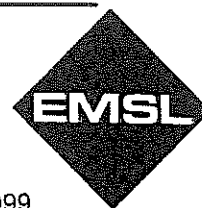
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Analyst

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Project: DPW 410 CAPITOL AVENUE TO 474 CAPITOL AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	% Fibrous	% Non-Fibrous
09-13-DC-21C	3RD FLOOR OFFICE AREA / RED CARPET GLUE	Tan Fibrous Heterogeneous	Dissolved	None Detected		4% Cellulose	96% Matrix
09-13-DC-22A	5TH FLOOR OFFICE / 2X2 CEILING TILES	Grey/White Fibrous Heterogeneous	Dissolved/Teased	None Detected		20% Cellulose 40% Glass 10% Min. Wool	30% Matrix
09-13-DC-22C	CONFERENCE ROOMS / 2X2 CEILING TILES	Grey/White Fibrous Heterogeneous	Dissolved/Teased	None Detected		20% Cellulose 40% Glass 10% Min. Wool	30% Matrix
09-13-DC-23A	1ST FLOOR OFFICE ROOM / 2X2 CEILING TILES TYPE 2	Beige/White Fibrous Heterogeneous	Dissolved/Teased	None Detected		45% Cellulose 10% Glass 5% Min. Wool	40% Matrix
09-13-DC-23B	AND CONFERENCE ROOM A / 2X2 CEILING TILES	Beige/White Fibrous Heterogeneous	Dissolved/Teased	None Detected		40% Cellulose 10% Glass 5% Min. Wool	45% Matrix
09-13-DC-23C	CONFERENCE ROOM B LEVEL 1 / 2X2 CEILING TILES TYPE 2	Beige/White Fibrous Heterogeneous	Dissolved/Teased	None Detected		45% Cellulose 8% Glass 5% Min. Wool	42% Matrix

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

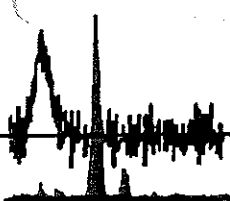
* NY samples analyzed by ELAP 198.1 Method.

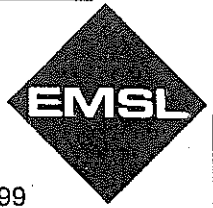
Diane Demarinis
Analyst

Approved
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Analysis performed by EMSL Manhattan (NVLAP Air and Bulk #101048-9, E-LAP #115051)





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795 North Mountain Road
Newington, CT 06111

Saturday, September 18, 1999

Ref Number: NY995974

POLARIZED LIGHT MICROSCOPY (PLM)

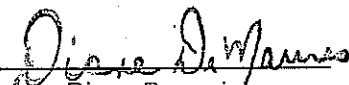
Performed by EPA 600/R-93/116 Method*

Project: DPW 410 CAPITOR AVENUE TO 474 CAPITOR AVE / #99-336.10

Sample	Location	Appearance	Sample Treatment	ASBESTOS		NON-ASBESTOS	
				%	Type	% Fibrous	% Non-Fibrous
09-13-DC-24A	EXTERIOR WINDOWS / WINDOW GLAZING	Black Non-Fibrous Heterogeneous	Dissolved	None Detected	None Detected	100% Matrix	
09-13-DC-24B	EXTERIOR WINDOWS / WINDOW GLAZING	Black Non-Fibrous Heterogeneous	Dissolved	None Detected	None Detected	100% Matrix	
09-13-DC-24C	EXTERIOR WINDOWS / WINDOW GLAZING	Black Non-Fibrous Heterogeneous	Dissolved	None Detected	None Detected	100% Matrix	

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

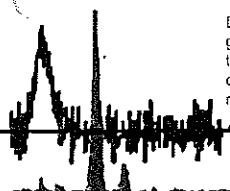
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Analyst


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Analysis performed by EMSL, Manhattan (NVLAP Air and Bulk #101048-9, E-LAP #11506)



#176



EnviroScience Consultants inc.

Environmental Engineering → Industrial Hygiene → Laboratory Services

Office Locations:
Newington, CT
Greenwich, CT
Boston, MA

SAMPLE LOG FOR ASBESTOS BULKS

NY995974

Sheet No. 1 of 7

Project Name: DPW 430 Capital Av. to 474 Capital Av.

Building: 430 Capital Av.

Project Number: 99-336.10

Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
09-13-DC-01A	Basement Floor - Pump Room	Compound Coating on Pipes	
09-13-DC-01B	↓	↓	
09-13-DC-01C	↓	↓	
09-13-DC-02A	↓	Large ELbows	
09-13-DC-02B	↓	↓	
09-13-DC-02C	↓	↓	
09-13-DC-03A	Basement Floor and	Paper Wrapping over insulation	
09-13-DC-03B	↓ Thruout	↓	
09-13-DC-03C	↓	↓	
09-13-DC-04A	Thruout building	Sheet Rock	
09-13-DC-04B	↓	↓	
09-13-DC-04C	↓	↓	

09-13-11 01:55:10

Analysis Method: PLM Other _____

Turnaround Time 24hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 9-17-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Dariusz Czarnota Date: 9-13-99 Time: Thruout Recy
 Samples Rec'd/Sent By: LH Date: 9-15 Time: PM
 Samples Received By: Shan C Date: _____ Time: _____

Shipped To: EMSL (State) NY Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

MC@EMSL 9/17 - 10 AM CAD c:\current\technical forms\06/98



N 4995974

SAMPLE LOG FOR ASBESTOS BULKS

Sheet No. 2 of 7

Project Name: DPW 410-474 Capitol Av.
Building: 450 Capitol Av.

Project Number: 99-336.10
Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
09-13-DC-05A	throughout Building	Joint Compound	
09-13-DC-05B	↓	↓	
09-13-DC-05C	↓	↓	
09-13-DC-06A	Basement level PBX Room	White 12x12 Floor Tile	
09-13-DC-06B	↓	↓	
09-13-DC-06C	↓	↓	
09-13-DC-07A		Associated Mastic	
09-13-DC-07B		↓	
09-13-DC-07C		↓	
09-13-DC-08A	Conference Room	Brown Self Adhesive	
09-13-DC-08B	↓	Baseboards	
09-13-DC-08C	↓	↓	

RECEIVED
09 SEP 16 AM 9:46

Analysis Method: PLM Other _____

Turnaround Time 24 hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 9-17-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Dariusz Garawa Date: 9-13-99 Time: throughout Day
Samples Rec'd/Sent By: Shu Date: _____ Time: _____
Samples Received By: _____ Date: _____ Time: _____

Shipped To: EMSL (State) NI Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

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EnviroScience Consultants inc.

Environmental Engineering → Industrial Hygiene → Laboratory Services

Office Locations:
Newington, CT
Greenwich, CT
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NY 99 5974

SAMPLE LOG FOR ASBESTOS BULKS

Sheet No. 3 of 7

Project Name: DPW 410-474 CAPITOL AV.

Building: 450 CAPITOL AV.

Project Number: 99-336.10

Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
09-13-DC-09A	Conference Room	Tan Carpet Blue	
09-13-DC-09B	Basement level	↓	
09-13-DC-09C	↓	↓	
09-13-DC-10A	Throughout Building	Texture Ceiling Paint	
09-13-DC-10B	↓	↓	99 SEP 16 AM 9:46
09-13-DC-10C	↓	↓	
09-13-DC-10D	↓	↓	
09-13-DC-10E	↓	↓	
09-13-DC-10F	↓	↓	
09-13-DC-10G	↓	↓	
09-13-DC-11A	1st Floor Entrance main	Green Carpet Blue	
09-13-DC-11B	↓	↓	

Analysis Method: PLM Other _____

Turnaround Time 24 hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 9-17-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Dariusz Garama Date: 9-13-99 Time: Throughout Day

Samples Rec'd/Sent By: [Signature] Date: _____ Time: _____

Samples Received By: _____ Date: _____ Time: _____

Shipped To: FEASL (State) NJ Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

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Environmental Engineering • Industrial Hygiene • Laboratory Services

Office Locations:
Newington, CT
Greenwich, CT
Boston, MA

NY 995974

SAMPLE LOG FOR ASBESTOS BULKLS

Sheet No. 4 of 7

Project Name: DPW 410-474 Capitol Av.

Building: 450 Capitol Av.

Project Number: 99-336.10

Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
09-13-DC-11C	1st Floor Entrance Main	Green Carpet Glue	
09-13-DC-12A	Unisex Bathroom,	12x12 White Marble Floor Tile	99 SEP 16 AM 9:51 11/11/99
09-13-DC-12B	Women	↓	
09-13-DC-12C	↓	↓	
09-13-DC-13A	↓	Associated Mastic	
09-13-DC-13B	↓	↓	
09-13-DC-13C	↓	↓	
09-13-DC-14A	Security Room	Black Carpet Glue	
09-13-DC-14B	↓	↓	
09-13-DC-14C	↓	↓	
09-13-DC-15A	↓	Black Self Adhesive Baseboards	
09-13-DC-15B	↓	↓	

Analysis Method: PLM Other _____

Turnaround Time 24 hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 9-17-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Dariusz Czarnota Date: 9-13-99 Time: Throughout Day

Samples Rec'd/Sent By: John Date: 1 Time: 1

Samples Received By: _____ Date: _____ Time: _____

Shipped To: EMSL (State) NY Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

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N4995974

SAMPLE LOG FOR ASBESTOS BULKLS

Sheet No. 5 of 7

Project Name: DPW 410-474 Capitol Av.

Building: 450 Capitol Av.

Project Number: 99-336.10

Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
09-13-DC-15C	Security Room 1st Floor	Black Self Adhesive Baseboard	99 SEP 16 AM 9:55
09-13-DC-16A	Delivery Room 1st Floor	12x12 Red Floor Tile	
09-13-DC-16B	Stairwells throughout building	↓	
09-13-DC-16C	↓	Associated Mosaic	
09-13-DC-17A	↓	↓	
09-13-DC-17B	↓	↓	
09-13-DC-17C	↓	↓	
09-13-DC-18A	2nd Floor - Conference Room 2A	Gray Self Adhesive Baseboard	
09-13-DC-18B	↓	↓	
09-13-DC-19A	2nd Floor Lounge	12x12 White Mosaic Lined	
09-13-DC-19B	↓	Floor tile	

Analysis Method: PLM Other _____

Turnaround Time 24 hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 9-17-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Dariusz Garank Date: 9-13-99 Time: Throughout Day

Samples Rec'd/Sent By: John C. Date: 1 Time: 1

Samples Received By: _____ Date: _____ Time: _____

Shipped To: EMSL (State) NJ Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

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EnviroScience Consultants inc.

Environmental Engineering → Industrial Hygiene → Laboratory Services

Office Locations:
Newington, CT
Greenwich, CT
Boston, MA

NY 995974

SAMPLE LOG FOR ASBESTOS BULK

Sheet No. 6 of 7

Project Name: DPW 410-474 Capitol Av.
Building: 450 Capitol Av.

Project Number: 99-336.10
Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
09-13-DC-19C	2nd Floor Lounge	12x12 white mottled lined floor tile	
09-13-DC-20A	↓	Red Carpet Blue Associated Mosaic	
09-13-DC-20B	↓	↓	
09-13-DC-20C	↓	↓	
09-13-DC-21A	3rd Floor Office Area	Red Carpet Blue	
09-13-DC-21B	↓	↓	
09-13-DC-21C	↓	↓	
09-13-DC-22A	5th Floor office +	2nd Ceiling Tiles	
09-13-DC-22B	Conference rooms	↓	
09-13-DC-22C	↓	↓	
09-13-DC-23A	1st Floor offices ^{office room}	2nd Ceiling Tiles Type 2	
09-13-DC-23B	and Conference Room A	↓	

Analysis Method: PLM Other _____

Turnaround Time 24 hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 9-17-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Dariusz Garna Date: 9-13-99 Time: throughout Day
Samples Rec'd/Sent By: She [unclear] Date: _____ Time: _____
Samples Received By: _____ Date: _____ Time: _____

Shipped To: EMSL (State) NJ Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

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SAMPLE LOG FOR ASBESTOS BULKS

Project Name: DPW 410-474 Capitol Av.
Building: 450 Capitol Av.

Sheet No. 7 of 7

Project Number: 99-33610
Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
0913DC-23C	Conference Room B Level 1	2nd Ceiling Tiles Type 2	
0913DC-24A	Exterior - Windows	Window Glazing	
0913DC-24B	↓	↓	
0913DC-24C	↓	↓	
			99 SEP 16 AM 9:55

Analysis Method: PLM Other _____ Turnaround Time 24hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 9-17-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Dariusz Garnota Date: 9-13-99 Time: Throughout Day
Samples Rec'd/Sent By: [Signature] Date: 1 Time: 1
Samples Received By: _____ Date: _____ Time: _____

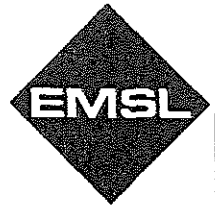
Shipped To: EMSL (State) NJ Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

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EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108



Client: EnviroScience Consultants, Inc.
 795 North Mountain Road
 Newington, CT 06111
 Fax: 860-953-1850 Phone: 860-953-2700
 Project: 99-366.10 DPW 410-474 Capitol, 410 Capitol Ave

Customer ID: ENVI54
 Customer PO:
 Received: 10/01/99 9:58 AM
 EMSL Order: 049935172
 EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	%	Fibrous	% Non-Fibrous
9-22-DC-01A 049935172-0001	Biological Room	Blue Fibrous Homogeneous	Dissolved	None Detected	2%	Cellulose	98% Non-fibrous (other)
9-22-DC-01B 049935172-0002	Biological Room	Blue Fibrous Homogeneous	Dissolved	None Detected	2%	Cellulose	98% Non-fibrous (other)
9-22-DC-01C 049935172-0003	Biological Room	Blue Fibrous Homogeneous	Dissolved	None Detected	2%	Cellulose	98% Non-fibrous (other)
9-22-DC-02A 049935172-0004	Biological Room	Tan/Gray Fibrous Heterogeneous	Dissolved	None Detected	8%	Cellulose	92% Non-fibrous (other)
9-22-DC-02B 049935172-0005	Biological Room	Tan/Gray Fibrous Heterogeneous	Dissolved	None Detected	5%	Cellulose	95% Non-fibrous (other)
9-22-DC-02C 049935172-0006	Biological Room	Tan/Gray Fibrous Heterogeneous	Dissolved	None Detected	5%	Cellulose	95% Non-fibrous (other)
9-22-DC-03A 049935172-0007	Electrical Room	Tan/White Fibrous Heterogeneous	Teased	None Detected	40%	Cellulose 40% Min. Wool	20% Non-fibrous (other)
9-22-DC-03B 049935172-0008	Electrical Room	Tan/White Fibrous Heterogeneous	Teased	None Detected	40%	Cellulose 40% Min. Wool	20% Non-fibrous (other)
9-22-DC-03C 049935172-0009	Electrical Room	Tan/White Fibrous Heterogeneous	Teased	None Detected	40%	Cellulose 40% Min. Wool	20% Non-fibrous (other)
9-22-DC-04A 049935172-0010	Mechanical Room #1	White/Tan Fibrous Heterogeneous	Dissolved	2% Anthophyllite	3%	Cellulose	95% Non-fibrous (other)
9-22-DC-04B 049935172-0011	Mechanical Room #1			Not Analyzed			

Analyst *Linda Price*

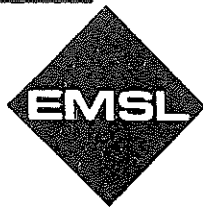
Approved Signatory

Users: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. Samples reported as
 or none detected should be tested with either SEM or TEM. The above test report relates only to the items tested. This report may only be reproduced in part with written approval
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 logo must contain at least one signature to be valid. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

Analysis performed by EMSL Westmont (NVLAP #101048-0), NY ELAP 10872

EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108



Client: EnviroScience Consultants, Inc.
 795 North Mountain Road
 Newington, CT 06111
 Fax: 860-953-1850 Phone: 860-953-2700
 Project: 99-366.10 DPW 410-474 Capitol, 410 Capitol Ave

Customer ID: ENVI54
 Customer PO:
 Received: 10/01/99 9:58 AM
 EMSL Order: 049935172
 EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	% Fibrous	% Non-Fibrous	
9-22-DC-04C 049935172-0012	Mechanical Room #1			Not Analyzed			
9-22-DC-05A 049935172-0013	1st Level Elevator Lobby Lounge	Tan Fibrous Heterogeneous	Dissolved	None Detected	5% Synthetic	95% Non-fibrous (other)	
9-22-DC-05B 049935172-0014	1st Level Elevator Lobby Lounge	Tan Fibrous Heterogeneous	Dissolved	None Detected	5% Synthetic	95% Non-fibrous (other)	
9-22-DC-05C 049935172-0015	1st Level Elevator Lobby Lounge	Tan Fibrous Heterogeneous	Dissolved	None Detected	5% Synthetic	95% Non-fibrous (other)	
9-22-DC-06A 049935172-0016	Open Offices, 1st Level	Blue Fibrous Heterogeneous	Dissolved	None Detected	3% Synthetic	97% Non-fibrous (other)	
9-22-DC-06B 049935172-0017	Open Offices, 1st Level	Blue Fibrous Heterogeneous	Dissolved	None Detected	5% Synthetic	95% Non-fibrous (other)	
9-22-DC-06C 049935172-0018	Open Offices, 1st Level	Blue Fibrous Heterogeneous	Dissolved	None Detected	8% Synthetic	92% Non-fibrous (other)	
9-22-DC-07A 049935172-0019	1st Level Electrical Room	White/Gray Non-Fibrous Homogeneous	Dissolved	None Detected		100% Non-fibrous (other)	
9-22-DC-07B 049935172-0020	1st Level Electrical Room	White/Gray Non-Fibrous Homogeneous	Dissolved	None Detected		100% Non-fibrous (other)	
9-22-DC-07C 049935172-0021	1st Level Electrical Room	White/Gray Non-Fibrous Homogeneous	Dissolved	None Detected		100% Non-fibrous (other)	
9-22-DC-08A 049935172-0022	1st Level Electrical Room	Tan Fibrous Heterogeneous	Dissolved	None Detected	10% Cellulose	90% Non-fibrous (other)	

Analyst Linda Price

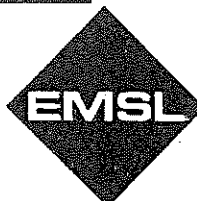
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Note: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. Samples reported as
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Analysis performed by EMSL Westmont (NVLAP #101048-0), NY ELAP 10872

EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108



Client: EnviroScience Consultants, Inc.
 795 North Mountain Road
 Newington, CT 06111
 Fax: 860-953-1850 Phone: 860-953-2700
 Project: 99-366.10 DPW 410-474 Capitol, 410 Capitol Ave

Customer ID: ENVI54
 Customer PO:
 Received: 10/01/99 9:58 AM
 EMSL Order: 049935172
 EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	% Fibrous	% Non-Fibrous	
9-22-DC-08B 049935172-0023	1st Level Electrical Room	Tan Fibrous Heterogeneous	Dissolved	None Detected	8% Cellulose	92% Non-fibrous (other)	
9-22-DC-08C 049935172-0024	1st Level Electrical Room	Tan Fibrous Heterogeneous	Dissolved	None Detected	8% Cellulose	92% Non-fibrous (other)	
9-22-DC-09A 049935172-0025	1st Level Electrical Room	White Fibrous Homogeneous	Dissolved	5% Chrysotile		95% Non-fibrous (other)	
9-22-DC-09B 049935172-0026	1st Level Electrical Room			Not Analyzed			
9-22-DC-09C 049935172-0027	1st Level Electrical Room			Not Analyzed			
9-22-DC-10A 049935172-0028	1st Level Electrical Room	Black Fibrous Homogeneous	Dissolved	10% Chrysotile	5% Cellulose	85% Non-fibrous (other)	
9-22-DC-10B 049935172-0029	1st Level Electrical Room			Not Analyzed			
9-22-DC-10C 049935172-0030	1st Level Electrical Room			Not Analyzed			
9-22-DC-11A 049935172-0031	2nd Level Computer Room	White/Blue Fibrous Homogeneous	Dissolved	None Detected	2% Cellulose	98% Non-fibrous (other)	
9-22-DC-11B 049935172-0032	2nd Level Computer Room	White/Blue Fibrous Homogeneous	Dissolved	None Detected	1% Cellulose	99% Non-fibrous (other)	
9-22-DC-11C 049935172-0033	2nd Level Computer Room	White/Blue Fibrous Homogeneous	Dissolved	None Detected	1% Cellulose	99% Non-fibrous (other)	
9-22-DC-12A 049935172-0034	2nd Level Computer Room	Yellow Fibrous Homogeneous	Dissolved	None Detected	5% Cellulose	95% Non-fibrous (other)	

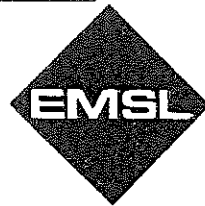
Analyst *Linda Price*

Approved Signatory

Notes: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. Samples reported as not detected should be tested with either SEM or TEM. The above test report relates only to the items tested. This report may only be reproduced in part with written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. All "NVLAP" reports with NVLAP logo must contain at least one signature to be valid. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.
 Analysis performed by EMSL Westmont (NVLAP #101048-0), NY ELAP 10872

EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108

EnviroScience Consultants, Inc.
795 North Mountain Road
Newington, CT 06111

Fax: 860-953-1850 Phone: 860-953-2700

Project: 99-366.10 DPW 410-474 Capitol, 410 Capitol Ave

Customer ID ENVI54

Customer PO:

Received: 10/01/99 9:58 AM

EMSL Order: 049935172

EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	% Fibrous	% Non-Fibrous	
9-22-DC-12B 049935172-0035	2nd Level Computer Room	Yellow Fibrous Homogeneous	Dissolved	None Detected	8% Cellulose	92% Non-fibrous (other)	
9-22-DC-12C 049935172-0036	2nd Level Computer Room	Yellow Fibrous Homogeneous	Dissolved	None Detected	8% Cellulose	92% Non-fibrous (other)	
9-22-DC-13A 049935172-0037	2nd Level Computer Room	Gray Fibrous Heterogeneous	Dissolved	None Detected	10% Cellulose	90% Non-fibrous (other)	
9-22-DC-13B 049935172-0038	2nd Level Computer Room	Gray Fibrous Heterogeneous	Dissolved	None Detected	10% Cellulose	90% Non-fibrous (other)	
9-22-DC-13C 049935172-0039	2nd Level Computer Room	Gray Fibrous Heterogeneous	Dissolved	None Detected	10% Cellulose	90% Non-fibrous (other)	
9-22-DC-14A 049935172-0040	Basement	White Fibrous Heterogeneous	Teased	None Detected	90% Cellulose	10% Non-fibrous (other)	
9-22-DC-14B 049935172-0041	Basement	White Fibrous Heterogeneous	Teased	None Detected	90% Cellulose	10% Non-fibrous (other)	
9-22-DC-14C 049935172-0042	Basement	White Fibrous Heterogeneous	Teased	None Detected	90% Cellulose	10% Non-fibrous (other)	
9-22-DC-15A 049935172-0043	SW Corner Elect. Room, Stock Room Office	White/Black Fibrous Homogeneous	Dissolved	None Detected	10% Cellulose	90% Non-fibrous (other)	
9-22-DC-15B 049935172-0044	SW Corner Elect. Room, Stock Room Office	White/Black Fibrous Homogeneous	Dissolved	None Detected	12% Cellulose	88% Non-fibrous (other)	
9-22-DC-15C 049935172-0045	SW Corner Elect. Room, Stock Room Office	White/Black Fibrous Homogeneous	Dissolved	None Detected	12% Cellulose	88% Non-fibrous (other)	

Analyst Linda Price

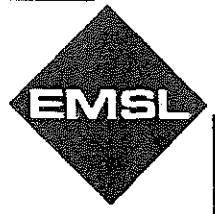
Approved Signatory

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Analysis performed by EMSL Westmont (NVLAP #101048-0), NY ELAP 10872

EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108



Client: EnviroScience Consultants, Inc.
795 North Mountain Road
Newington, CT 06111
Fax: 860-953-1850 Phone: 860-953-2700
Project: 99-366.10 DPW 410-474 Capitol, 410 Capitol Ave

Customer ID: ENVI54
Customer PO:
Received: 10/01/99 9:58 AM
EMSL Order: 049935172
EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	% Fibrous	% Non-Fibrous	% Non-Fibrous
9-22-DC-16A 049935172-0046		Yellow Fibrous Heterogeneous	Dissolved	None Detected	8% Cellulose	92% Non-fibrous (other)	
9-22-DC-16B 049935172-0047		Yellow Fibrous Heterogeneous	Dissolved	None Detected	5% Cellulose	95% Non-fibrous (other)	
9-22-DC-16C 049935172-0048		Yellow Fibrous Heterogeneous	Dissolved	None Detected	8% Cellulose	92% Non-fibrous (other)	

Samples 16A Through 16C Not On C.O.C.

Analyst *Linda Price*

Approved Signatory

Users: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. Samples reported as none detected should be tested with either SEM or TEM. The above test report relates only to the items tested. This report may only be reproduced in part with written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. All "NVLAP" reports with NVLAP logo must contain at least one signature to be valid. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

Analysis performed by EMSL Westmont (NVLAP #101048-0), NY ELAP 10872



45

SAMPLE LOG FOR ASBESTOS BULKES

Project Name: DPW 410-474 Capitol
Building: 410 Capitol Ave

Sheet No. _____ of _____
Project Number: 99-366.10
Project Manager: SWC

UPS

Sample ID Number	Sample Location	Material Type	Result (%)
9-22-DC-01A	Biological Room	Blue 12x12 floor tile	
01B	↓	↓	
01C	↓	↓	
02A	↓	Associated mastic	
02B	↓	↓	
02C	↓	↓	
03A	Electrical Room	2x4 ceiling tile	
03B	↓	↓	
03C	↓	↓	
04A	Mechanical Room #1	Residual elbows	
04B	↓	↓	
04C	↓	↓	

00011-1 AM 9:53

Analysis Method: PLM Other _____

Turnaround Time 24 hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10/2 Please call the EnviroScience Laboratory at 860-853-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-853-1850

Special Instructions: Swab analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: DC Date: 9/22/99 Time: PM
 Samples Rec'd/Sent By: JL Date: 9/30 Time: PM
 Samples Received By: Hoffman Date: 10/1 Time: _____

Shipped To: EMSL (State) NO Other _____
 Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

CAD consultant/technical forms:06/98

CSF ✓ 10-2-99



SAMPLE LOG FOR ASBESTOS BULKES

Sheet No. _____ of _____

Project Name: DPW 410-474 Capitol

Building: 410 Capitol Ave

Project Number: 99-366.10

Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
9-22-DC-05A	1st level elevator lobby lounge	Tan Carpet Glue	
05B	↓	↓	
05C	↓	↓	
06A	Open offices, 1st level	Blue carpet glue	
06B	↓	↓	
06C	↓	↓	
07A	1st level electrical room	12x12 white/gray speckle floor tile	
07B	↓	↓	
07C	↓	↓	
08A		Associated mastic	
08B	↓	↓	
08C	↓	↓	

Analysis Method: PLM Other _____

Turnaround Time 24

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10/2 Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Spot analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: DC Date: 9/22/99 Time: PM

Samples Rec'd/Sent By: JL Date: 9/30 Time: PM

Samples Received By: JHoffman Date: 10/1 Time: _____

Shipped To: EMSL (State) NT Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

CAD document/technical forms/08/98

Handwritten signature and date: 10-2-99



SAMPLE LOG FOR ASBESTOS BULK

Project Name: DPW 410-474 Capitol
Building: 410 Capitol Ave

Sheet No. _____ of _____
Project Number: 99-366,10
Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
9-22-DC-09A	1st level electrical room	12x12 white/brown speckle	
09B	↓	floor tile	
09C	↓	↓	
10A	↓	Associated mastic	00001 - 1
10B	↓	↓	MI 9:53
10C	↓	↓	
11A	2nd level computer room	Blue/white speckled 12x12	
11B	↓	floor tile	
11C	↓	↓	
12A	↓	Associated yellow mastic	
12B	↓	↓	
12C	↓	↓	

Analysis Method: PLM Other _____

Turnaround Time: 24 hr.

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10/2 Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1853

Special Instructions: Spot analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: DC Date: 9/22/99 Time: PM
 Samples Rec'd/Sent By: JC Date: 9/30 Time: PM
 Samples Received By: JHoffman Date: 10/1 Time: _____

Shipped To: EMSL (State) NJ Other _____
 Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

CAD environment/technical forms:06/98

USP 10-2-99



SAMPLE LOG FOR ASBESTOS BULK

Sheet No. _____ of _____

Project Name: DPW 410-474 Capitol
Building: 410 Capitol Ave

Project Number: 99-366,10
Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
9-22-DC-13A	2nd level computer room	Gray leveling compound	
13B	↓	↓	
13C	↓	↓	
14A	Basement	Cloth wrapping	00
14B	↓	↓	00
14C	↓	↓	00
15A	SW corner elect. room, stairs	White/black speckled	AM 9:53
15B	room office ↓	12x12 floor tile and	
15C	↓	ASSOC. mastic	

Analysis Method: PLM Other _____

Turnaround Time 24 hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10/2 Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1853

Special Instructions: Send analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: DC Date: 9/22/99 Time: PM
 Samples Rec'd/Sent By: SR Date: 9/30 Time: PM
 Samples Received By: J Hoffman Date: 10/1 Time: _____

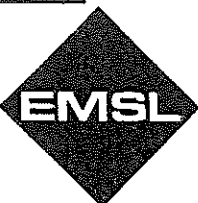
Shipped To: EMSL (State) NJ Other _____
 Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

CAD document/technical forms 06/98

LS PM 10-2-99

EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108



Client: EnviroScience Consultants, Inc.
 795 North Mountain Road
 Newington, CT 06111
 Fax: 860-953-1850 Phone: 860-953-2700
 Project: 99-366.10 Dpw 410-474 Capitol Ave., 460 Capitol

Customer ID: ENVI54
 Customer PO:
 Received: 10/01/99 9:54 AM
 EMSL Order: 049935180
 EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	%	Fibrous	% Non-Fibrous
9-27-DC-01A 049935180-0001	C203 Electrical Room	Gray Fibrous Heterogeneous	Teased	None Detected	10% 35%	Cellulose Min. Wool	55% Non-fibrous (other)
9-27-DC-01B 049935180-0002	C203 Electrical Room	Gray Fibrous Heterogeneous	Teased	None Detected	10% 35%	Cellulose Min. Wool	55% Non-fibrous (other)
9-27-DC-01C 049935180-0003	C203 Electrical Room	Gray Fibrous Heterogeneous	Teased	None Detected	10% 45%	Cellulose Min. Wool	45% Non-fibrous (other)
9-27-DC-02A 049935180-0004	Mechanical	Gray Fibrous Heterogeneous	Teased	None Detected	5% 45%	Cellulose Min. Wool	50% Non-fibrous (other)
9-27-DC-02B 049935180-0005	Mechanical	Gray Fibrous Heterogeneous	Teased	None Detected	5% 45%	Cellulose Min. Wool	50% Non-fibrous (other)
9-27-DC-02C 049935180-0006	Mechanical	Gray Fibrous Heterogeneous	Teased	None Detected	5% 45%	Cellulose Min. Wool	50% Non-fibrous (other)
9-27-DC-03A 049935180-0007	Mechanical	Gray Fibrous Heterogeneous	Teased	None Detected	5% 65%	Cellulose Min. Wool	30% Non-fibrous (other)
9-27-DC-03B 049935180-0008	Mechanical	Gray Fibrous Heterogeneous	Teased	None Detected	5% 65%	Cellulose Min. Wool	30% Non-fibrous (other)
9-27-DC-03C 049935180-0009	Mechanical	Gray Fibrous Heterogeneous	Teased	None Detected	5% 55%	Cellulose Min. Wool	40% Non-fibrous (other)
9-27-DC-04A 049935180-0010	1st Floor Office Areas	Various Fibrous Heterogeneous	Teased Dissolved	None Detected	5%	Synthetic	95% Non-fibrous (other)
9-27-DC-04B 049935180-0011	1st Floor Office Areas	Various Fibrous Heterogeneous	Teased Dissolved	None Detected	10%	Synthetic	90% Non-fibrous (other)
9-27-DC-04C 049935180-0012	1st Floor Office Areas	Various Fibrous Heterogeneous	Teased Dissolved	None Detected	10%	Synthetic	90% Non-fibrous (other)

Heather Wilkins

Analyst Heather Wilkins

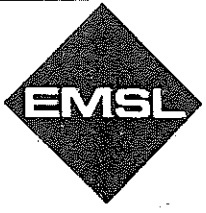
[Signature]

Approved Signatory

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EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108



Client: EnviroScience Consultants, Inc.
 795 North Mountain Road
 Newington, CT 06111
 Fax: 860-953-1850 Phone: 860-953-2700
 Project: 99-366.10 Dpw 410-474 Capitol Ave., 460 Capitol

Customer ID: ENVI54
 Customer PO:
 Received: 10/01/99 9:54 AM
 EMSL Order: 049935180
 EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	% Fibrous	% Non-Fibrous	
9-27-DC-05A 049935180-0013	1st Floor Office Areas	White Fibrous Heterogeneous	Teased Dissolved	None Detected	3% Synthetic	97%	Non-fibrous (other)
9-27-DC-05B 049935180-0014	1st Floor Office Areas	White Fibrous Heterogeneous	Teased Dissolved	None Detected	2% Synthetic	98%	Non-fibrous (other)
9-27-DC-05C 049935180-0015	1st Floor Office Areas	White Fibrous Heterogeneous	Teased Dissolved	None Detected	2% Synthetic	98%	Non-fibrous (other)
9-27-DC-06A 049935180-0016	2nd Floor - SE Storage Room	Brown Fibrous Heterogeneous	Teased Dissolved	None Detected	25% Cellulose	75%	Non-fibrous (other)
9-27-DC-06B 049935180-0017	2nd Floor - SE Storage Room	Brown Fibrous Heterogeneous	Teased Dissolved	None Detected	15% Cellulose	85%	Non-fibrous (other)
9-27-DC-06C 049935180-0018	2nd Floor - SE Storage Room	Brown Fibrous Heterogeneous	Teased Dissolved	None Detected	15% Cellulose	85%	Non-fibrous (other)

An Heather Wilkins

Approved Signatory

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Analysis performed by EMSL Westmont (NVLAP #101048-0), NY ELAP 10872



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SAMPLE LOG FOR ASBESTOS BULK

Project Name: DPW 410-474 Capitol Ave
Building: 460 Capitol

Sheet No. _____ of _____

Project Number: 99-366.10
Project Manager: SWC

UP
S
wall

Sample ID Number	Sample Location	Material Type	Result (%)
9-27-DC-01A	C203 Electrical Room	Spray on fireproofing #1	
01B	↓	↓	
01C	↓	↓	
02A	Mechanical Room	Large elbow	00
02B	↓	↓	00
02C	↓	↓	00
03A		Spray on fireproofing #2	00
03B	↓	↓	00
03C	↓	↓	00
04A	1st floor office areas	Yellow carpet glue	00
04B	↓	↓	00
04C	↓	↓	00

00 OCT - 1 AM 9:54

Analysis Method: PLM Other _____

Turnaround Time 24 hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10/2 Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1853

Special Instructions: Scop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: DC Date: 9/27/99 Time: pm
Samples Rec'd/Sent By: JC Date: 9/30 Time: pm
Samples Received By: Stoffman Date: 10/1 Time: _____

Shipped To: EMSL (State) _____ Other _____
Method of Shipment: Fed Ex. UPS Overnight UPS Ground Other _____

CAO current/technical forms:06/96



SAMPLE LOG FOR ASBESTOS BULK

Sheet No. _____ of _____

Project Name: DPW 410-474 Capitol Ave
Building: 460 Capitol

Project Number: 99-366.10
Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
9-27-DC-05A	1st floor office areas	Light blue S.A.B.	
05B	↓	↓	00001
05C	↓	↓	10001
06A	2nd floor-SE storage room	Brown carpet glue	1
06B	↓	↓	NI 9:54
06C	↓	↓	19:54

Analysis Method: PLM Other _____ Turnaround Time 24 hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10/2 Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: See analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

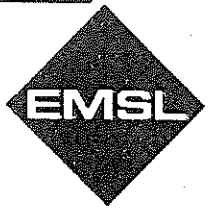
Samples Collected By: DC Date: 9/27/99 Time: PM
 Samples Rec'd/Sent By: JZ Date: 9/30 Time: PM
 Samples Received By: JH Gorman Date: 10/1 Time: _____

Shipped To: EMSL (State) NJ Other _____
 Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

CAD environment/technical forms/06/98

EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108

Attn: EnviroScience Consultants, Inc.
795 North Mountain Road
Newington, CT 06111

Fax: 860-953-1850

Phone: 860-953-2700

Project: 99-366.10

Customer ID ENVI54

Customer PO:

Received: 10/09/99 10:54 AM

EMSL Order: 049935575


EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	%	Fibrous	% Non-Fibrous
10-07-DC-01A 049935575-0001	474 Capitol	Black/Gray/Beige Fibrous Heterogeneous	Teased	None Detected	8%	Cellulose 2% Glass 3% Synthetic	87% Non-fibrous (other)
10-07-DC-01B 049935575-0002	474 Capitol	Black/Gray/Beige Fibrous Heterogeneous	Teased	None Detected	8%	Cellulose 2% Glass 3% Synthetic	87% Non-fibrous (other)
10-07-DC-01C 049935575-0003	474 Capitol	Black/Gray Fibrous Heterogeneous	Teased	None Detected	8%	Cellulose 2% Glass 5% Synthetic	85% Non-fibrous (other)

Essie Spencer

At


 Approved Signatory

Disclaimers: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. Samples reported as <1% or none detected should be tested with either SEM or TEM. The above test report relates only to the items tested. This report may only be reproduced in part with written approval by EMSL. This above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. All "NVLAP" reports with NVLAP logo must contain at least one signature to be valid. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

Analysis performed by EMSL Westmont (NVLAP #101048-0), NY ELAP 10872



SAMPLE LOG FOR ASBESTOS BULK

Project Name: 410-474 Capitol Avenue.
 Building: 474 Capitol Av.

Sheet No. 1 of 1

Project Number: 99-36610
 Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
10-D7-DC-01A	474 Capitol Av. Doors	Door Caulking	
01B	↓	↓	
01C	↓	↓	

Analysis Method: PLM Other _____ Turnaround Time 24hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10-10-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Dariusz Czarnota Date: 10-7-99 Time: AM
 Samples Rec'd/Sent By: AG Jones Date: 10-9-99 Time: 1
 Samples Received By: _____ Date: _____ Time: _____

Shipped To: EMSL (State) NJ Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108



Attn: Margaret Flanagan
 EnviroScience Consultants, Inc.
 795 North Mountain Road
 Newington, CT 06111

Fax: 860-953-1850 Phone: 860-953-2700

Project: 99-366.10/DPW 410-474 CAPITOL AVE

Customer ID: ENV154
 Customer PO:
 Received: 10/08/99 9:51 AM
 EMSL Order: 049935379
 EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	% Fibrous	% Non-Fibrous	% Non-Fibrous
09-30-DC-01A 049935379-0001	470 Capitol dining rm.	Blue Fibrous Heterogeneous	Dissolved	None Detected	5% Synthetic	95% Non-fibrous (other)	
09-30-DC-01B 049935379-0002	470 Capitol dining rm.	Blue Fibrous Heterogeneous	Dissolved	None Detected	5% Synthetic	95% Non-fibrous (other)	
09-30-DC-01C 049935379-0003	470 Capitol dining rm.	Blue Fibrous Heterogeneous	Dissolved	None Detected	5% Synthetic	95% Non-fibrous (other)	
09-30-DC-02A 125376-0004	460 Capitol 1st floor	Tan/White Fibrous Heterogeneous	Teased	None Detected	25% Cellulose 50% Min. Wool	25% Non-fibrous (other)	
09-30-DC-02B 049935379-0005	450 Capitol 1st floor	Tan/White Fibrous Heterogeneous	Teased	None Detected	25% Cellulose 50% Min. Wool	25% Non-fibrous (other)	
09-30-DC-02C 049935379-0006	450 Capitol 1st floor	Tan/White Fibrous Heterogeneous	Teased	None Detected	20% Cellulose 50% Min. Wool	30% Non-fibrous (other)	
09-30-DC-03A 049935379-0007	474 Capitol steam room	Gray/White Fibrous Heterogeneous	Teased	None Detected	10% Cellulose	90% Non-fibrous (other)	
09-30-DC-03B 049935379-0008	474 Capitol steam room	Gray/White Fibrous Heterogeneous	Teased	None Detected	10% Cellulose	90% Non-fibrous (other)	
09-30-DC-03C 049935379-0009	474 Capitol steam room	White/Gray Fibrous Heterogeneous	Teased	None Detected	10% Cellulose	90% Non-fibrous (other)	
09-30-DC-04A 049935379-0010	Bathroom	Red/Tan Fibrous Heterogeneous	Dissolved	8% Chrysotile		92% Non-fibrous (other)	
09-30-DC-04B 049935379-0011	Bathroom		Not Analyzed				

Linda Price
 Analyst

Post-it* Fax Note 7671

To	Project	Date	# of pages
Co./Dept.	99-366.10	From	Sorry for mix up
Phone #		Phone #	
Fax #		Fax #	

See recorded as written approval with NVLAP

Disclaimer: PLM has been known to miss asbestos in a <1% of none detected should be tested with either SEM or by EMSL. The above test must not be used by the client to determine responsibility for the accuracy of results when requested to physically separate and analyze layered samples.

EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108



Attn: Margaret Flanagan
 EnviroScience Consultants, Inc.
 795 North Mountain Road
 Newington, CT 06111

Fax: 860-953-1850 Phone: 860-953-2700

Project: 99-366.10/DPW 410-474 CAPITOL AVE

Customer ID: ENV154
 Customer PO:
 Received: 10/06/99 9:51 AM
 EMSL Order: 046935379
 EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	% Fibrous	% Fibrous	% Non-Fibrous
09-30-DC-04C 49935379-0012	Bathroom			Not Analyzed			
09-30-DC-05A 49935379-0013	474 steam room	Gray/White Fibrous Heterogeneous	Teased	None Detected	5% Synthetic	95% Non-fibrous (other)	
09-30-DC-05B 49935379-0014	474 steam room	Gray/White Fibrous Heterogeneous	Teased	None Detected	5% Synthetic	95% Non-fibrous (other)	
09-30-DC-05C 35379-0015	474 steam room	Gray/White Fibrous Heterogeneous	Teased	None Detected	5% Synthetic	95% Non-fibrous (other)	
09-30-DC-06A 49935379-0016	474 Capitol exterior	Brown Fibrous Heterogeneous	Dissolved	None Detected	2% Cellulose	98% Non-fibrous (other)	
09-30-DC-06B 49935379-0017	474 Capitol exterior	Brown Fibrous Heterogeneous	Dissolved	None Detected	1% Cellulose	99% Non-fibrous (other)	
09-30-DC-06C 49935379-0018	474 Capitol exterior	Brown Fibrous Heterogeneous	Dissolved	None Detected	1% Cellulose	99% Non-fibrous (other)	
09-30-DC-07A 49935379-0019	470 Capitol ext.	Brown Non-Fibrous Heterogeneous	Dissolved	None Detected		100% Non-fibrous (other)	
09-30-DC-07B 49935379-0020	470 Capitol ext.	Brown Non-Fibrous Heterogeneous	Dissolved	None Detected		100% Non-fibrous (other)	
09-30-DC-07C 49935379-0021	470 Capitol ext.	Brown Non-Fibrous Heterogeneous	Dissolved	None Detected		100% Non-fibrous (other)	
0-5-DC-01A 49935379-0022	410 capitol Ave stairwells	Gray Fibrous Homogeneous	Dissolved	8% Chrysotile		92% Non-fibrous (other)	

Linda Price

analyst

Approved Signatory

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Analyst: Linda Price, EMSL Westmont (NVLAP #101048-0), NY ELAP #0872

EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108



Attn: Margaret Flanagan
 EnviroScience Consultants, Inc.
 795 North Mountain Road
 Newington, CT 06111

Fax: 860-953-1850 Phone: 860-953-2700

Project: 89-366.10/DPW 410-474 CAPITOL AVE

Customer ID: ENV154

Customer PO:

Received: 10/06/99 9:51 AM

EMSL Order: 048935379

EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	% Fibrous	% Fibrous	% Non-Fibrous
10-5-DC-01B 48935379-0022	410 Capitol Ave stairwells			Not Analyzed			
10-5-DC-01C 48935379-0024	410 Capitol Ave			Not Analyzed			
10-5-DC-02A 48935379-0025	410 Capitol Ave stairwells	Black Fibrous Heterogeneous	Dissolved	10% Chrysotile	5% Cellulose	85% Non-fibrous (other)	
10-5-DC-02B 48935379-0026	410 Capitol Ave stairwells			Not Analyzed			
10-5-DC-02C 48935379-0027	410 Capitol Ave stairwells			Not Analyzed			
10-5-DC-03A 48935379-0028	throughout floors	Tan/Black Fibrous Heterogeneous	Teased	None Detected	5% Cellulose	95% Non-fibrous (other)	
10-5-DC-03B 48935379-0029	throughout floors	Tan/Black Fibrous Heterogeneous	Teased	None Detected	3% Cellulose	97% Non-fibrous (other)	
10-5-DC-03C 48935379-0030	throughout floors	Tan/Black Fibrous Heterogeneous	Teased	None Detected	3% Cellulose	97% Non-fibrous (other)	
10-5-DC-04A 48935379-0031	throughout floors	White/Brown Fibrous Heterogeneous	Teased	None Detected	25% Cellulose	75% Non-fibrous (other)	
10-5-DC-04B 48935379-0032	throughout floors	White/Brown Fibrous Heterogeneous	Teased	None Detected	20% Cellulose	80% Non-fibrous (other)	
10-5-DC-04C 48935379-0033	throughout floors	White/Brown Fibrous Heterogeneous	Teased	None Detected	25% Cellulose	75% Non-fibrous (other)	

Linda Price

Analyst

Approved Signatory

Disclaimer: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. Samples reported as <1% chrysotile should be tested with either SEM or TEM. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. All "NVLAP" reports with NVLAP logo must contain at least one signature to be valid. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

Analyst: [Signature] EMSL Westmont (NVLAP #101048-01, NY ELAP 10672)

EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108



Attn: Margaret Flanagan
 EnviroScience Consultants, Inc.
 795 North Mountain Road
 Newington, CT 06111
 Fax: 860-953-1850 Phone: 860-953-2700
 Project: 99-386.10/DPW 410-474 CAPITOL AVE

Customer ID: ENV154
 Customer PO:
 Received: 10/06/99 9:51 AM
 EMSL Order: 049935379
 EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	% Fibrous	% Non-Fibrous	% Non-Fibrous
10-5-DC-05A 49935379-0034	410 Capitol Ave	White Fibrous Heterogeneous	Teased	None Detected	2% Cellulose	98% Non-fibrous (other)	
10-5-DC-05B 49935379-0035	410 Capitol Ave	White Fibrous Heterogeneous	Teased	None Detected	5% Cellulose	95% Non-fibrous (other)	
10-5-DC-06A 49935379-0036	410 Capitol Ave	Tan Non-Fibrous Heterogeneous	Teased	None Detected		100% Non-fibrous (other)	
10-5-DC-06B 35379-0037	410+450 Capitol Ave	Tan Non-Fibrous Heterogeneous	Teased	None Detected		100% Non-fibrous (other)	
10-5-DC-06C 49935379-0038	410+450 Capitol Ave	Tan Non-Fibrous Heterogeneous	Teased	None Detected		100% Non-fibrous (other)	
10-5-DC-07A 49935379-0039	460 Capitol Ave	Tan/White Fibrous Heterogeneous	Teased	None Detected	30% Cellulose 5% Glass	65% Non-fibrous (other)	
10-5-DC-07B 49935379-0040	460 Capitol Ave	Tan/White Fibrous Heterogeneous	Teased	None Detected	20% Cellulose 5% Glass	75% Non-fibrous (other)	
10-5-DC-07C 49935379-0041	460 Capitol Ave	Tan/White Fibrous Heterogeneous	Teased	None Detected	25% Cellulose 5% Glass	70% Non-fibrous (other)	
10-5-DC-08A 49935379-0042	460 Capitol Ave	White Fibrous Heterogeneous	Teased	None Detected	2% Cellulose	98% Non-fibrous (other)	
10-5-DC-08B 49935379-0043	460 Capitol Ave	White Fibrous Heterogeneous	Teased	None Detected	2% Cellulose	98% Non-fibrous (other)	
10-5-DC-09A 49935379-0044	470 Capitol Ave ceilings	White/Brown Fibrous Heterogeneous	Teased	None Detected	25% Cellulose 10% Glass	65% Non-fibrous (other)	

Linda Price

Analyst

Approved Signatory

Disclaimer: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. Samples reported as <1% or none detected should be tested with either SEM or TEM. The above test report relates only to the items tested. This report may only be reproduced in part with written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. All "NVLAP" reports with NVLAP logo must contain at least one signature to be valid. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

Approved by: [Signature] EMSL Westmont (NVLAP #101048-0), NY ELAP #0872

EMSL Analytical, Inc.

107 Haddon Ave., Westmont, NJ 08108



Attn: Margaret Flanagan
 EnviroScience Consultants, Inc.
 795 North Mountain Road
 Newington, CT 06111

Fax: 860-953-1850 Phone: 860-953-2700

Project: 99-365.10/DPW 410-474 CAPITOL AVE

Customer ID ENVI54

Customer PO:

Received: 10/06/99 9:51 AM

EMSL Order: 049935379

EMSL Project ID:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

Sample	Location	Appearance	Treatment	Asbestos		Non-Asbestos	
				% Type	%	Fibrous	% Non-Fibrous
0-5-DC-09B 49936379-0045	470 Capitol Ave ceilings	White/Brown Fibrous Heterogeneous	Teased	None Detected	25% 10%	Cellulose Glass	65% Non-fibrous (other)
0-5-DC-09C 49936379-0046	470 Capitol Ave ceilings	White/Brown Fibrous Heterogeneous	Teased	None Detected	25% 10%	Cellulose Glass	65% Non-fibrous (other)
0-5-DC-010A 49936379-0047	470 Capitol Ave ceilings	White Fibrous Heterogeneous	Teased	None Detected	5%	Cellulose	95% Non-fibrous (other)
0-5-DC-010B 935379-0049	470 Capitol Ave ceilings	White Fibrous Heterogeneous	Teased	None Detected	2%	Cellulose	98% Non-fibrous (other)
0-5-DC-011A 49936379-0049	480 Capitol Ave Exter.	Brown Fibrous Heterogeneous	Dissolved	None Detected	5%	Cellulose	95% Non-fibrous (other)
0-5-DC-011B 49936379-0050	460 Capitol Ave Exter.	Brown Fibrous Heterogeneous	Dissolved	None Detected	5%	Cellulose	95% Non-fibrous (other)
0-5-DC-011C 49936379-0051	480 Capitol Ave Exter.	Brown Fibrous Heterogeneous	Dissolved	None Detected	5%	Cellulose	95% Non-fibrous (other)
0-5-DC-012A 49936379-0052	410 Capitol Ave Exter.	Brown Fibrous Heterogeneous	Dissolved	None Detected	3%	Cellulose	97% Non-fibrous (other)
0-5-DC-012B 49936379-0053	410 Capitol Ave Exter.	Brown Fibrous Heterogeneous	Dissolved	None Detected	5%	Cellulose	95% Non-fibrous (other)
0-5-DC-012C 49936379-0054	410 Capitol Ave Exter.	Brown Fibrous Heterogeneous	Dissolved	None Detected	2%	Cellulose	98% Non-fibrous (other)

Linda Price

Analyst

Approved Signatory

Disclaimer: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. Samples reported as <1% or none detected should be tested with either SEM or TEM. The above test report relates only to the items tested. This report may only be reproduced in part with written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. All "NVLAP" reports with NVLAP logo must contain at least one signature to be valid. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. Any samples tested by EMSL pursuant to NVLAP #101048-01, NY ELAP #0472



EnviroScience Consultants inc.

Environmental Engineering • Industrial Hygiene • Laboratory Services

Office Locations:
Newington, CT
Greenwich, CT
Boston, MA

SAMPLE LOG FOR ASBESTOS BULKLS

Project Name: DPW 410-474 Capitol Av.
Building: 410-474 Capitol Av.

Sheet No. 81 of 5
Project Number: 99-250-10
Project Manager: SWC

LOOKS LIKE ZERO

Sample ID Number	Sample Location	Material Type	Result (%)
09-30-DC-01A	470 Capitol ^{Vinyl Room} Carpet	Dark Blue Carpet	0.00
09-30-DC-01B	↓	↓	0.00
09-30-DC-01C	↓	↓	0.00
09-30-DC-02A	450 Capitol 1st Floor	1x1 Ceiling Tiles	0.00
09-30-DC-02B	↓	↓	0.00
09-30-DC-02C	↓	↓	0.00
09-30-DC-03A	474 Capitol ^{Steam Room} Brick wall	White Mastic	0.00
09-30-DC-03B	↓	↓	0.00
09-30-DC-03C	↓	↓	0.00
09-30-DC-04A	Bathroom	12x12 Red Floor tile/mastic	0.00
09-30-DC-04B	↓	↓	0.00
09-30-DC-04C	↓	↓	0.00

Analysis Method: PLM Other _____

Turnaround Time 24hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10-7-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Darius Cox Date: 9-30-99 Time: Throughout Day
 Samples Rec'd/Sent By: CH Date: 10-5-99 Time: PM
 Samples Received By: AG Jones Date: 10-6-99 Time: 9:18 AM

Shipped To: EMSL (State) VT Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

CAD cr:environmental forms 06/99



EnviroScience Consultants Inc.
 Environmental Engineering → Industrial Hygiene → Laboratory Services

Office Locations:
 Newington, CT
 Greenwich, CT
 Boston, MA

SAMPLE LOG FOR ASBESTOS BULKS

Project Name: DPW 410-474 Capitol Av. Sheet No. 2 of 5
 Building: 410-474 Capitol Av. Project Number: 99-366110
 Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
09-30-DC-05A	474 Steam Room	Boiler Insulations	
09-30-DC-05B	↓	↓	
09-30-DC-05C	↓	↓	
09-30-DC-06A	474 Capitol Exterior	Window Caulking	
06B	↓	↓	
06C	↓	↓	
07A	470 Capitol Exterior	↓	
07B	↓	↓	
07C	↓	↓	
			09-01-99

Analysis Method: PLM Other _____ Turnaround Time 24 hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10-7-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Dariusz Pzarnski Date: 9-30-99 Time: Throughout Day
 Samples Recd/Sent By: _____ Date: _____ Time: _____
 Samples Received By: 16 Jones Date: 10-6-99 Time: 10

Shipped To: EMSL (State) NE Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

CAO or parent technical forms 08/98



EnviroScience Consultants inc.

Environmental Engineering • Industrial Hygiene • Laboratory Services

Office Locations:
Newington, CT
Greenwich, CT
Boston, MA

SAMPLE LOG FOR ASBESTOS BULKS

Project Name: DPW 410-474 CAPITAL AV. Sheet No. 3 of 5
 Building: 410-474 CAPITAL AV. Project Number: 99-36610
 Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
10-5-DC-01A	410 Capital Av. Stairwells	Gray/Brown 12x12 Floor Tile	
01B			
01C			
02A		Mosaic	
02B			
02C	throughout floor		
03A	throughout floor	light tan ceramic tile floor	
03B			
03C			
04A		Sheet Rock / Joint Compound	
04B			
04C			

Analysis Method: PLM Other _____ Turnaround Time 24hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10-7-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Darius Szamala Date: 10-5-99 Time: Throughout Day
 Samples Rec'd/Sent By: _____ Date: _____ Time: _____
 Samples Received By: Al Jones Date: 10-6-99 Time: _____

Shipped To: EMSL (State) NT Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

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EnviroScience Consultants Inc.
 Environmental Engineering • Industrial Hygiene • Laboratory Services

Office Locations:
 Newington, CT
 Greenwich, CT
 Boston, MA

SAMPLE LOG FOR ASBESTOS BULKS

Project Name: DPW 410-474 Capitol Av. Sheet No. 4 of 5
 Building: 410-474 Capitol Av. Project Number: 99366140
 Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
10-5-DC-05A	410 Capitol Av. ^{throughout} floors	Joint Compound	
10-5-DC-05B		↓	
10-5-DC-06A	410+450 Capitol Av.	Blue Ceramic Tile Glue	
10-5-DC-06B	throughout	↓	
10-5-DC-06C	↓	↓	
10-5-DC-07A	460 Capitol Av. ^{throughout}	Sheet Rock Joint Compound	
10-5-DC-07B	↓	↓	
10-5-DC-08A	↓	↓	
10-5-DC-08B	↓	Joint Compound	
10-5-DC-08C	↓	↓	
10-5-DC-09A	470 Capitol Av. ^{celling throughout}	Sheet Rock Joint Compound	
10-5-DC-09B	↓	↓	

Analysis Method: PLM Other _____ Turnaround Time 24 hr.

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10-7-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Darius Gasnata Date: 10-5-99 Time: AM
 Samples Rec'd/Sort By: _____ Date: _____ Time: _____
 Samples Received By: AG Jones Date: 10-6 Time: _____

Shipped To: EMSL (State) NY Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____



EnviroScience Consultants inc

Environmental Engineering • Industrial Hygiene • Laboratory Services

Office Locations:
Newington, CT
Greenwich, CT
Boston, MA

SAMPLE LOG FOR ASBESTOS BULKLS

Project Name: DPW 410-474 Capitol Av Sheet No. 5 of 5
 Building: 410-474 Capitol Av Project Number: 99-36-10
 Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
10-5-DC-09C	470 Capitol Av. ^{Ceilings} throughout	Sheet Rock / Paint / Compound	
10-5-DC-10A	↓	Compound ^{Paint Compound}	
10-5-DC-10B	↓	↓	
10-5-DC-11A	460 Capitol Av. Exterior	Window Caulking	
10-5-DC-11B	↓	↓	
10-5-DC-11C	↓	↓	
10-5-DC-12A	410 Capitol Av. Exterior	↓	
10-5-DC-12B	↓	↓	
10-5-DC-12C	↓	↓	
			10-5-11-9-1100
			10-5-11-9-1100
			10-5-11-9-1100
			10-5-11-9-1100

Analysis Method: FILM Other _____ Turnaround Time 24 hr

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10-7-99. Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1850

Special Instructions: Stop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: Darius Czarnota Date: 10-5-99 Time: AM
 Samples Rec'd/Sent By: _____ Date: _____ Time: _____
 Samples Received By: AG Jones Date: 10-6 Time: _____

Shipped To: EMSL (State) _____ Other _____
 Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

CAD concurrent/technical forms 05/98

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

WDC
SWC
10/2
EMSL

Client: EnviroScience Consultants, Inc.

Logged: 10/1/99

TAT: 24 Hour

Address: 795 North Mountain Road
Newington, CT 06111

Date/Time Due: 10/2/99 8:58:00 AM

Fax: (860) -95-3-1850

Project: 99-388.10 DPW 410-474 Capitol, 410 Capitol Ave

Special Instructions
Stop Analysis: Composite/Conditional

Order Number
049935172

Appearance		Treat	Asbestos Results		Fibrous		Non-Fibrous		Optical Properties									
1 Brown 2 Gray 3 Tan 4 White 5 Red	6 Various 7 Black 8 Silver 9 Blue 10 Yellow	1 Teased 2 Crushed 3 Dissolved 4 Ashed	1 Chrysotile 2 Amosite 3 Anthophyllite 4 Tremolite 5 Actinolite 6 Crocidolite	7 Cellulose 8 Glass 9 Min. wool 10 Synthetic 11 Other 12 Wollastonite 13 Hair	14 Quartz 15 Mica 16 Gypsum 17 Cal. Carbonate 18 Matrix 19 Perlite 20 Other	1. Wavy 2. Parallel 3. Sprinkled 4. L. Y 5. H 6. L. L 7. M 8. H 9. Fiber Color 10. 1. Parallel 2. Unoriented 3. Other												
1 Fibrous 2 Non-Fibrous 3 Other	1 Homogeneous 2 Heterogeneous		Asbestos Results	% of Asbestos	Other Fibrous Type	%	Non-Fibrous Type	%	Non-Asb. Char.	Optical Properties								
Sample	Appearance	Treatment																
7-22-DC-01A	9	3	ND		7	20	98											
	1																	
	1																	
B	9	3			7	20	98											
	1																	
	1																	
C	9	3			7	20	98											
	1																	
	1																	
2A	3,2	3			7	8	20	92										
	1																	
	2																	
B	3,2	3			7	5	20	95										
	1																	
	2																	
C	3,2	3			7	5	20	95										
	1																	
	2																	
3A	3,4	1			7	40	20	20										
	1					9	40											
	2																	
B	3,4	1			7	40	20	20										
	1					9	40											
	2																	



LSP

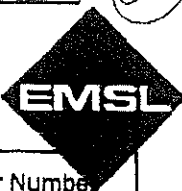
Date: 10-2-99

Computer:

Date:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

(2)



Client: EnviroScience Consultants, Inc.

Logged: 10/1/99

TAT: 24 Hour

Address: 795 North Mountain Road
Newington, CT 06111

Date/Time Due: 10/2/99 8:58:00 AM

Fax: (860) -95-3-1850

Project: 99-366.10 DPW 410-474 Capitol, 410 Capitol Ave

Special Instructions
Stop Analysis: Composite/Conditional

Order Number
049935172

Appearance		Treat	Asbestos Results		Fibrous		Non-Fibrous		Optical Properties				
1 Brown	6 Various	1 Teased	1 Chrysotile	7 Cellulose	14 Quartz								
2 Gray	7 Black	2 Crushed	2 Amosite	8 Glass	15 Mica								
3 Tan	8 Silver	3 Dissolved	3 Anthophyllite	9 Min. Wool	16 Gypsum								
4 White	9 Blue	4 Ashed	4 Tremolite	10 Synthetic	17 Cal. Carbonate								
5 Red	10 Yellow		5 Actinolite	11 Other	18 Matrix								
			6 Crocidolite	12 Wollastonite	19 Perlite								
				13 Hair	20 Other								
1 Fibrous	2 Non-Fibrous	3 Other											
1 Homogeneous	3 Other												
2 Heterogeneous	4 Layers (#)												

Sample	Appearance	Treatment	Asbestos Results	% of Asbestos	Other Fibrous Type	%	Non-Fibrous Type	%	Non-Asb. Char.	Optical Properties			
3C	3, 4	1	N/D		7	60	20	20	1/5				
	1				9	80							
	2												
4A	4, 3	3	3	2	7	3	20	95	1				
	1												
	2												
4B, C N/A	3	3	N/D		10	5	20	95	7				
	1												
	2												
6A	3	3			10	5	20	95	7				
	1												
	2												
B	3	3			10	5	20	95	7				
	1												
	2												
C	3	3			10	5	20	95	7				
	1												
	2												
6A	3	3			10	3	20	97	7				
	1												
	2												
B	3	3			10	5	20	95	7				
	1												
	2												
C	3	3			10	8	20	92	7				
	1												
	2												

* N/A = NOT ANALYZED



Date: 10-2-99 Computer:

Date:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

3



Client: EnviroScience Consultants, Inc.

Logged: 10/1/99

TAT: 24 Hour

Address: 795 North Mountain Road
Newington, CT 06111

Date/Time Due: 10/2/99 8:58:00 AM

Special Instructions
Slip Analysis; Composite/Conditional

Order Number
049935172

Fax: (860) -95-3-1850

Project: 99-368.10 DPW 410-474 Capitol, 410 Capitol Ave

Appearance		Treat	Asbestos Results		Fibrous		Non-Fibrous		Optical Properties				
1 Brown	5 Various	1 Teased	1 Chrysotile	7 Cellulose	14 Quartz								
2 Gray	7 Black	2 Crushed	2 Amosite	8 Glass	15 Mica								
3 Tan	9 Silver	3 Dissolve	3 Anthophyllite	9 Min. Wool	16 Gypsum								
4 White	5 Blue	4 Ashed	4 Tremolite	10 Synthetic	17 Cal. Carbonate								
5 Red	10 Yellow		5 Actinolite	11 Other	18 Metrix								
			6 Crocidolite	12 Wollastonite	19 Perlite								
				13 Hair	20 Other								
1 Fibrous	2 Non-Fibrous	3 Other											
1 Homogeneous	3 Other												
2 Heterogeneous	4 Layers (#)												
Sample	Appearance	Treatment	Asbestos Results	% of Asbestos	Other Fibrous Type	%	Non-Fibrous Type	%	Non-Asb. Char.	Optical Properties			
7A	4, 2	3	NA				20	100		I			I
	7									M			S
	1									P	B	Fiber Color	E
8	4, 2	3					20	100		I			I
	2									M			S
	1									P	B	Fiber Color	E
C	4, 2	3					20	100		I			I
	2									M			S
	1									P	B	Fiber Color	E
8A	3	3				10	20	90		I			II
	1									M			S
	2									P	B	Fiber Color	E
B	3	3				8	20	92		I			II
	1									M			S
	2									P	B	Fiber Color	E
C	3	3				8	20	92		I			II
	1									M			S
	2									P	B	Fiber Color	E
9A	4	3	1	5			20	95		1.552	1.558		II
	1									M			S
	1									P	B	Fiber Color	E
9B, C N/A	7	3	1	10	7	5	20	85		1.550	1.557		II
	1									M			S
	1									P	B	Fiber Color	E
10A	1	3											
	1									M			S
	1									P	B	Fiber Color	E

10B, C N/A



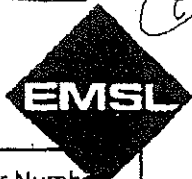
Date: 10-2-99

Computer:

Date:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-95/116 Method

CE



Client: EnviroScience Consultants, Inc.

Logged: 10/1/99

TAT: 24 Hour

Address: 795 North Mountain Road
Newington, CT 06111

Date/Time Due: 10/2/99 8:58:00 AM

Fax: (860) -95-3-1850

Project: 99-386.10 DPW 410-474 Capitol, 410 Capitol Ave

Special Instructions
Stop Analysis: Composite/Conditional

Order Number:
049935172

Appearance		Treat	Asbestos Results		Fibrous		Non-Fibrous		Optical Properties				
1 Brown 2 Gray 3 Tan 4 White 5 Red	6 Various 7 Black 8 Silver 9 Blue 10 Yellow	1 Tossed 2 Crushed 3 Dissolve 4 Ashed	1 Chrysotile 2 Amosite 3 Anthophyllite 4 Tremolite 5 Actinolite 6 Crocidolite	7 Cellulose 8 Glass 9 Min. Wool 10 Synthetic 11 Other 12 Wollastonite 13 Hair	14 Quartz 15 Mica 16 Gypsum 17 Cal. Carbonate 18 Matrix 19 Perlite 20 Other			1. Wave 2. Width 3. Spacing 1. Low 2. High 3. Dip Fiber Color 1. Parallel 2. Perpendicular 3. Other					
Sample	Appearance	Treatment	Asbestos Results	% of Asbestos	Other Fibrous Type	%	Non-Fibrous Type	%	Non-Asb. Char.	Optical Properties			
11A	4, 9	3	MD	7	2	20	98	1	1	I	II		
	1									M	S		
	P									B	Fiber Color	E	
B	8, 9	3		7	1	20	97	1	1	I	II		
	1									M	S		
	P									B	Fiber Color	E	
C	4, 9	3		7	1	20	95	1	1	I	II		
	1									M	S		
	P									B	Fiber Color	E	
12A	10	3		7	5	20	85	1	1	I	II		
	1									M	S		
	P									B	Fiber Color	E	
B	10	3		7	8	20	92	1	1	I	II		
	1									M	S		
	P									B	Fiber Color	E	
C	10	3		7	8	20	92	1	1	I	II		
	1									M	S		
	P									B	Fiber Color	E	
13A	2	3		7	10	20	90	1	1	I	II		
	1									M	S		
	P									B	Fiber Color	E	
B	2	3		7	10	20	90	1	1	I	II		
	1									M	S		
	P									B	Fiber Color	E	

Date: 10-2-99

Computer:

Date:

Polarized Light Microscopy (PLM) Performed by EPA 600/R-93/116 Method

5

Client: ~~AMC Technology, Inc.~~

Logged: ~~3/30/99~~

TAT: ~~24 Hour~~

Address: ~~P.O. Box 413~~

Date/Time Due: ~~01/1999 9:15:00 AM~~

~~Stratford, CT 06615~~

Fax: ~~(203)-375-7344~~

Project: ~~ASB009920~~

Special Instructions

Order Number

~~049935108~~

35132

Appearance		Treat	Asbestos Results	Fibrous		Non-Fibrous		Optical Properties			
1 Brown	6 Varicous	1 Teased	1 Chrysotile	7 Cellulose	14 Quartz	1. Type 2. Length 3. Aspect			1. Color 2. Standard 3. Reference		
2 Gray	7 black	2 Crushed	2 Amphibole	8 Glass	15 Halca						
3 Tan	8 silver	3 Dissolve	3 Anthophyllite	9 Man. Wool	16 Gypsum	1. Type 2. Length 3. Aspect			1. Color 2. Standard 3. Reference		
4 White	9 blue	4 Ashed	4 Tremolite	10 Synthetic	17 Cal. Carbonate						
5 Red	10 yellow		5 Actinolite	11 Other	18 Matrix	1. Type 2. Length 3. Aspect			1. Color 2. Standard 3. Reference		
			6 Crocidolite	12 Nollestonite	19 Perlite						
1 Fibrous	2 Non-Fibrous	3 Other		13 Hair	20 Other	1. Type 2. Length 3. Aspect			1. Color 2. Standard 3. Reference		
1 Homogeneous	3 Other										
2 Heterogeneous	4 Layers (1)					1. Type 2. Length 3. Aspect			1. Color 2. Standard 3. Reference		
Sample	Appearance	Treatment	Asbestos Results	% of Asbestos	Other Fibrous Type	%	Non-Fibrous Type	%	Non-Asb. Char.	Optical Properties	
13C	2	3	MD		7	10	20	90	1	I	II
	1									M	S
	2									P	B
14A	4	1			7	90	20	10	1	I	II
	1									M	S
	2									P	B
B	4	1			7	90	20	10	1	I	II
	1									M	S
	2									P	B
C	4	1			7	90	20	10	1	I	II
	1									M	S
	2									P	B
15A	4,5	3			7	10	20	90	1	I	II
	1									M	S
	1									P	B
B	4,5	3			7	12	20	88	1	I	II
	1									M	S
	1									P	B
C	4,5	3			7	10	20	90	1	I	II
	1									M	S
	1									P	B
16A	10	3			7	8	20	92	1	I	II
	1									M	S
	2									P	B

* NOT ON COC, LOOKS LIKE MASTIC TO 15A-C

Analyst: ISP Date: 10-2-99 Computer: _____ Date: _____



EnviroScience Consultants Inc.

Environmental Engineering • Industrial Hygiene • Laboratory Services

45

Office Locations:
Newington, CT
Greenwich, CT
Boston, MA

SAMPLE LOG FOR ASBESTOS BULK

Project Name: DPW 410-474 Capitol
Building: H10 Capitol Ave

Sheet No. _____ of _____
Project Number: 99-366.10
Project Manager: SWC

UPS

Sample ID Number	Sample Location	Material Type	Result (%)
9-22-DC-01A	Biological Room	Blue 12x12 floor tile	CONTAMINATED
01B	↓	↓	
01C	↓	↓	
02A	↓	Associated mastic	
02B	↓	↓	
02C	↓	↓	
03A	Electrical Room	2x4 ceiling tile	
03B	↓	↓	
03C	↓	↓	
04A	Mechanical Room #1	Residual elbows	
04B	↓	↓	
04C	↓	↓	

Analysis Method: EPA Other _____ Turnaround Time 24 hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10/2 Please call the EnviroScience Laboratory at 860-253-2700 if analyses will be late.

Fax Results To: EnviroScience Consultants Inc. Laboratory at 860-253-1850

Special Instructions: Scop analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: DC Date: 9/22/99 Time: PM
 Samples Rec'd/Sent By: JL Date: 9/30 Time: PM
 Samples Received By: JHoffman Date: 10/1 Time: _____

Shipped To: ES&S (State) NO Other _____
 Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

CAO or interdepartmental forms 06/88

795 North Mountain Road, Newington, Connecticut 06111
Phone: 860-253-2700 Fax: 860-253-3203

CSF 10-2-99



EnviroScience Consultants Inc.

Environmental Engineering • Industrial Hygiene • Laboratory Services

Office Locations:
Newington, CT
Greenwich, CT
Boston, MA

SAMPLE LOG FOR ASBESTOS BULK

Project Name: DPW 410-474 Capitol Sheet No. _____

Building: 410 Capitol Ave Project Number: 99-366.10

Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
9-22-DC-09A	1st level electrical room	12x12 white/cream speckle	
09B	↓	floor tile	
09C	↓	↓	
10A	↓	Associated mastic	
10B	↓	↓	
10C	↓	↓	
11A	2nd level computer room	Blue/white speckles 12x12	
11B	↓	floor tile	
11C	↓	↓	
12A	↓	Associated yellow mastic	
12B	↓	↓	
12C	↓	↓	

Analysis Method: PLM Other _____ Turnaround Time: 24 hr.

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10/2 Please call the EnviroScience Laboratory at 860-953-2700 if analyses will be late.

For Results To: EnviroScience Consultants Inc. Laboratory at 860-953-1255

Special Instructions: See analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: DC Date: 9/22/99 Time: PM

Samples Rec'd/Sent By: JC Date: 9/25 Time: PM

Samples Received By: J Hoffman Date: 10/1 Time: _____

Shipped To: EMSL (State NJ) Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

755 North Mountain Road, Newington, Connecticut 06111
Phone: 860-953-2700 Fax: 860-953-3203

QAD 01/11/99/technical/Forms/05/98

USP 10-2-99



EnviroScience Consultants Inc.

Environmental Engineering - Industrial Hygiene - Laboratory Services

Office Locations:
Newington, CT
Greenwich, CT
Boston, MA

SAMPLE LOG FOR ASBESTOS BULKX

Project Name: DPW 410-474 Capitol Sheet No. 01
 Building: 410 Capitol Ave Project Number: 99-366.10
 Project Manager: SWC

Sample ID Number	Sample Location	Material Type	Result (%)
9-22-DC-13A	2nd level computer room	Gray leveling compound	
13B	↓	↓	
13C	↓	↓	
14A	Basement	Cloth wrapping	E
14B	↓	↓	E
14C	↓	↓	E
15A	SW corner elect. room, stairs	White/black speckled	E
15B	room office	12x12 floor tile and	E
15C	↓	assoc. mastic	E

Analysis Method: PLM Other _____ Turnaround Time 24 hour

Based on the turnaround time indicated above, analyses are due to EnviroScience on or before this date: 10/2 Please call the EnviroScience Laboratory at 860-253-2700 if analyses will be late.

For Results To: EnviroScience Consultants Inc. Laboratory at 860-253-1850

Special Instructions: Send analysis on first positive sample in each homogeneous set of samples unless otherwise noted.

Samples Collected By: DC Date: 9/22/99 Time: PM
 Samples Rec'd/Sent By: SWC Date: 9/30 Time: PM
 Samples Received By: JHoffman Date: 10/1 Time: _____

Shipped To: EMSL (State) NT Other _____

Method of Shipment: Fed Ex UPS Overnight UPS Ground Other _____

CAO 02/19/97/Technical Form 06/98

735 North Mountain Road, Newington, Connecticut 06111
 Phone: 860-253-2700 Fax: 860-253-3203

Handwritten signature and date: 10-2-99

APPENDIX E3

SURVEY SAMPLING, AND ANALYTICAL PROTOCOLS - ASBESTOS

SURVEY, SAMPLING AND ANALYTICAL PROTOCOL

SURVEY PROTOCOL

The scope of survey work includes the details of how the survey was to be conducted, the information to be gathered and the form and content of the report.

The survey was conducted by one or more EPA-certified EnviroScience surveyors. The specifics of the survey included the following:

- Accessible building areas were visually inspected to determine the location of ACM.
- Impacted materials, including both friable and non-friable suspect ACM, were quantified.
- Suspect ACM was sampled following the protocol detailed in the following section, Bulk Sampling Protocol.
- Information concerning locations, quantities and types of material impacting the planned renovation work was gathered during the survey.

BULK SAMPLING PROTOCOL

During the survey of this facility, bulk samples of suspect ACM were collected for laboratory analysis. The bulk samples were collected and categorized according to the homogeneous building material being evaluated. The designation of a homogeneous material was made by the EnviroScience surveyor. Once suspect homogeneous materials were identified, bulk samples were collected based upon collecting additional samples to bring the sampling in line with the EPA protocols. The number of these additional samples collected was based upon the number of existing samples of a homogeneous material collected from past surveys. If a single sample of a homogeneous material was found to contain asbestos, then that homogeneous material was identified as containing asbestos throughout the building. Homogeneous material were determined by similarity of size, color, and age if determinable. Sampling techniques generally involved collecting one full thickness sample of materials such as pipe insulation collected by core boring or breaking off an end piece of the material.

All samples were given a unique sample number which included the project number and placed in sample containers for transportation to our laboratory for analysis. The location of each sample was noted on the building drawing. Information regarding the sample location was also entered onto EnviroScience's chain-of-custody form.

ANALYTICAL PROTOCOL

Samples collected during this facility asbestos survey were transported to an accredited laboratory for microscopic analysis. The EMSL Analytical Laboratory is accredited by the National Institute for Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) for bulk asbestos analysis as required under EPA regulations. EnviroScience's laboratory is also accredited by the American Industrial Hygiene Association (AIHA) for asbestos air sample analysis. Chain-of-custody was maintained by the laboratory through the use of EnviroScience chain-of-custody forms. These forms are available for your use upon request. After being logged in by the laboratory and prepared for analysis, samples were then analyzed following the EPA-recommended method of bulk sample analysis by polarized light microscopy with dispersion staining. A description of this analytical method is contained in Appendix C of this document.

In preparing the bulk materials for analysis, a small representative portion of the sample was selected from the bulk material collected in the field and mounted on a glass slide. If the bulk material appeared to have a uniform consistency, a minimum of two separate slides were prepared for viewing. If, however, the bulk material appeared to contain layers, a separate set of slides was prepared for each layer and results for each layer determined independently. Analytical results for layered samples were reported as an average of the asbestos composition of the material as a whole. In some situations multiple slides were prepared from particularly complex samples which were suspected to contain low percentages of asbestos. In cases where replicate samples of a homogeneous material were collected they were analyzed until one was found to be positive (which meant the entire homogeneous area was deemed positive) or until each sample was analyzed to prove a negative result.

Sample results were reported either as "none detected" (ND) if no asbestos was found, or by type and percent composition if any form of asbestos was observed. EPA recognizes a level of greater than one percent asbestos by weight content as the minimum level for requiring a material to be treated as asbestos-containing. The identification of the presence or absence of asbestos in a material involves several specific analytical procedures. The percentage composition, on the other hand, is simply a visual approximation on the part of the analyst and may vary based on the way the sample slide was prepared and the specific analyst performing the identification. Estimating an accurate percentage composition of low level asbestos-containing materials is very difficult. Therefore, if an analyst identified and confirmed the presence of asbestos, but at a percentage composition of less than five percent (5%), it was reported as being one to five percent (1-5%) asbestos.

It should be noted here that the analysis of a debris sample is a qualitative analysis of the presence or absence of asbestos in that particular sample. The EPA interim PLM method for analyzing bulk samples was intended to be utilized for analyzing asbestos-containing manufactured products or materials with near uniform concentrations of asbestos and not for the analysis of debris or other possibly contaminated materials which are not uniform in nature. Therefore, percentage composition for soils, debris, or dust samples is not indicated in this report. Further, a negative finding in these samples indicates only that the debris

actually sampled was not found to contain asbestos. No inference should be made from any negative result concerning other debris which was not specifically sampled.

After the completion of both analytical procedures, samples are stored in EnviroScience's sample storage area files and are maintained there for at least 90 days. At the end of 90 days EnviroScience will offer State of Connecticut the opportunity to either have the samples properly disposed of by EnviroScience or have them returned for retention by the State of Connecticut.

APPENDIX E4

POLARIZED LIGHT MICROSCOPIC ANALYTICAL METHOD

POLARIZED LIGHT MICROSCOPIC ANALYTICAL METHOD

Polarized light microscopy is the only analytical method for asbestos identification which depends upon the unique optical crystallographic properties of the various crystal phases in the sample. These properties--refractive indices, dispersion of refractive indices, birefringence, sign of elongation and extinction angle are unique to the crystalline state and, therefore, unequivocally identify chrysotile, lizardite, antigorite, anthophyllite, tremolite, actinolite, grunerite, cummingtonite, and riebeckite whether fibrous or non-fibrous.

Polarized Light Microscopy (PLM) includes the classical optical crystallographic methods and the more recent dispersion staining procedures. Dispersion staining is, in effect, just a way of using optical crystallography for the study of transparent particles. It supplements the classical methods and, in some cases, makes the use of PLM for the study of crystals easier. For example, with one polar isotropic, substances show a single characteristic dispersion staining color, but, anisotropic substances show different colors corresponding to the different refractive indices in different orientations. Chrysotile, for example, shows blue and blue-magenta colors, crosswise and lengthwise, respectively, for each fibrous crystal when mounted in Cargille high dispersion liquid $n_D=1.550$ and observed by central stop dispersion staining (DS). The actual analysis begins by adding a Cargille refractive index liquid ($n_D=1.550$, high dispersion) to a 0.5-1 mg slide sample. The particles should be dispersed in this liquid by teasing aggregates apart using two fine needles before covering with a coverslip.

A. Chrysotile

In liquid $n_D=1.550$, chrysotile has distinctive fine flexible fibrils (often curly) plus straight bundles of such fibrils and distinctive dispersion staining colors usually blue-magenta parallel to the fiber axis and blue perpendicular (central stop colors). Different samples of chrysotile, however, may vary somewhat in the wavelength at which particle and liquid have the same refractive index. Parallel to the length ranges from about 440 to 560 nm and perpendicular to the length from about 560 to 66 nm.

The presence of chrysotile and other fibrous particles is sometimes secured by tiny particles of mortar. This is especially troublesome because most of these particles are so different in refractive index from the mounting liquid, they appear bright white and central stop dispersion staining. Trying to see the asbestos is like trying to see while driving at night with an oncoming stream of cars with high beam headlights.

Often one can be confident the particles are covering obscured fibers because of their pattern - the milky way effect. Sometimes a stray fibril may poke its way out into the liquid to show dispersion staining colors. It is always helpful in situations like this to examine the "milky way" with crossed polars since the underlying fibers often then become visible and recognizable as fibers. Crossed polars also help to locate smaller fibers and small

percentages of fibers. Each sample should be quickly scanned with crossed polars as well as dispersion staining before reporting the absence of asbestos fibers.

A mortar coating can sometimes be removed from the fibers by holding one end on the slide with one needle (lying flat) and scraping with a second needle along a fiber bundle, either before or after adding the mounting fluid. IT may also be possible to remove enough mortar to see some dispersion staining colors by pressing the coverslip down hard on the particles (in the liquid) with a pencil eraser and sliding the coverslip in circular pattern with the eraser. Another technique is to tease and scrape a fiber bundle out straight, cover with a coverslip and add the liquid so that it runs down the length of the fiber washing away much of the loosened mortar.

B. Amosite and Crocidolite

Amosite and crocidolite both very pale yellow to white borders by central stop DS in liquid $n_D=1.550$ HD because their refractive indices are so much higher. Crocidolite usually shows a blue absorption color. If no anisotropic fibers with refractive indices much higher than 1.550 are present, no asbestos other than chrysotile can be present.

If higher index particles are observed in liquid $n_D=1.55$ HD a second sample is mounted in $n_D=1.605$ HD. Likely compounds visible in this liquid include tremolite, anthophyllite, actinolite, and wallstonite.

If even higher-index anisotropic fibers are present in liquid 1.605, a third sample is mounted in Cargille liquid $n_D=1.680$ and examined with DS. Most amosites used in buildings will show a wavelength of about 460nm (golden yellow) parallel to the length and about 600 nm (blue-magenta) to >660 nm (pale blue) perpendicular to the length, depending on fiber orientation. A perpendicular λ_0 of >600 nm corresponds to the alpha vibration direction, which usually shows parallel extinction; a $\lambda_0=660$ nm perpendicular to the length corresponds to beta (also on a parallel extinction view). As with most silicate minerals substitutional solid solution, in this case Fe^{2+} with Mg^{2+} , can cause alpha, beta, and gamma to vary. Higher or lower values of refractive index for any one of the three vibration directions will mean correspondingly higher or lower values for all three.

Although the refractive indices of amosite and other amphiboles may vary over a wide range, most are not from commercial sources. Nearly all amosite used commercially in insulation has the optical properties given above.

If, in liquid $n_D=1.680$, low birefringent fibers show λ_0 colors close together in the yellow to golden magenta, crocidolite is strongly indicated. If they show a negative sign of elongation (higher λ_0 parallel to the length), and blue absorption colors with pleochroism (blue parallel and gray-blue perpendicular to the fiber length) crocidolite is present. Further confirmation can be obtained by mounting a third sample in Cargille refractive index liquid $n_D=1.70$. Crocidolite will show central stop colors close to 600 nm

(blue magenta) parallel to the length and about 520 (red magenta) perpendicular. Again, some parallel movement of the alpha, beta, and gamma colors should be expected for crocidolites from different sources.

We should emphasize that DS is a method for rapid refractive index determination. To be certain the observed colors mean a particular asbestos is present, one must be certain the DS data are consistent with particle orientation, i.e., the relationship between the optical properties and the crystallographic axes.

C. Other Asbestiform Minerals

When analyzing insulation, one usually skips the $n_D=1.605$ liquid, but if during examination, anomalous results are observed with the 1.55 and 1.68 liquids, that is, highly fibrous fibers with lambda colors in other than the prescribed ranges for chrysotile, amosite and crocidolite, then fibrous tremolite, actinolite, or anthophyllite may be present. These are rarely found, however, in insulation. When these anomalous results are obtained, you should characterize the fibers in those liquids as to refractive indices relative to those liquids and extinction angles. If all of the fibers show parallel extinction and pale blue colors in 1.680, they are anthophyllite (if the possibility of organic fibers is first eliminated). Amosite shows parallel extinction as well, but good lambda colors in the visible in 1.680 identify this asbestos mineral. Tremolite will show strong colors in all orientations in $n_D=1.605$ high dispersion liquid.

Actinolite has morphology and optics similar to tremolite except that the indices are all higher. Actinolite may also show pleochroism (green to colorless). It is best studied in high dispersion liquid $n_D=1.630HD$ in which alpha and gamma on the oblique extinction view show magenta and golden yellow, respectively. On the parallel extinction view, gamma (lengthwise) shows 0 ca. 495 nm also golden magenta although with more red. Ferroactinolites have been higher iron content and correspondingly higher refractive indices.

Tremolite, actinolite, and ferroactinolite are portions or a continuous solid solution series in the same manner as the amosite minerals, cummingtonite and grunerite. The name to use for a given amphibole, therefore, depends directly on the optical properties. An unusually asbestiform mineral is picrolite described as a fibrous form of antigorite. Its refractive indices are higher than chrysotile which it closely resembles.

D. Interfering Substances

A few common substances show dispersion staining colors similar to those of chrysotile and some are elongated as well. These include two polymorphs of chrysotile: Antigorite and lizardite, quartz, talc, paper fibers and hairs. All of these show dispersion staining colors in 1.550 and all except talc and paper fibers show colors somewhat similar to chrysotile.

Quartz, although usually glassy flakes, shows blue and magenta central stop colors very

similar to chrysotile in the 1.550 liquid. The shape is very different, however, and only a few views are oriented to show the magenta color.

Animal hairs, including human, also have refractive indices in the same range as chrysotile and, if finely fibrillated by electric razor for example, can be confusingly similar. Such fibrillated fibers are, however, rare; they also usually show melanin pigmented particles and indices sufficiently different from chrysotile to avoid confusion. Paper fibers also show a crosswise index close to 1.55 (but lower) and the lengthwise index is much higher, hence shows a yellow central stop color. The morphology of paper fibers is also distinctive unless they are very tiny slivers broken away from larger fibers.

APPENDIX F
LEAD BASED PAINT SURVEY

Toxic levels of lead in paint were identified on surfaces included for this screening survey.

APPENDIX F-1
FIELD DATA SHEETS - LEAD

LEAD INSPECTION COVER SHEET

Inspector's Information

Inspector's Name: Dariusz Czarnota License Number: IN001861A
 XRF Model: RMD Serial Number: -1395
 Date of Inspection: 9-24-99 Project Number: 99-33810

Property Information

Address: 410 Capitol Av. (Unit / apartment number) _____ (floor) _____
 _____ (city) _____ (state) _____ Age of Property: _____

Describe Structure: _____

- Is there an EBL child present? Yes No Are there lead hazards present? Yes No
 Is there a child under six years of age in the dwelling unit? Yes No Were lead dust wipes taken? Yes No
 Is there a child under six years of age in the building? Yes No Were soil samples collected? Yes No

XRF Calibration Check

- Calibration Paint Film Used: NIST 1.02 mg/cm² Manufacturer's Standard 1.0 mg/cm²
 Calibration Check Limits Used: RMD (0.7 to 1.3 mg/cm² inclusive)
 PGT (0.5 to 2.3 mg/cm² inclusive)
 Scitec MAP4 (0.6 to 1.2 mg/cm² inclusive)

	Hour	First Reading	Second Reading	Third Reading	Average
First Check	9:30	1.0	1.4	1.0	1.1
Second Check					
Third Check					
Fourth Check					

330/curren/blead/inscovr

Hand
Biological Room
Mechanical Room
Garage
Stock Room
Elevator Room
Pump Room
Storage Room

SIDE	SURFACE	X.R.F. READINGS	DEFECTIVE	SUBSTRATE		CLC	RESULT		PAINT CHIP	
				TYPE	SEL		POS	INC	SAMPLE #	RESULT
B	Handrail ³⁰⁰⁰	-0.1		M						
D	wall white	-0.3		C						
A	upper part green	0.2		M						
A	Door	0.3		M						
A	Casing	0.2		M						
B	yellow Handrail	-0.1		M						
D	wall	0.2		C						
A	Door Casing brown	0.3		M						
D	light green wall	-0.1		M						
D	yellow fasteners on concrete columns	3.4		M		yl height	on 4 sides of column			
A	yellow pipe	6.4		M						
D	white wall	0.2		M						
D	white wall	0.4		C						
Floor	yellow parking lines	4.5	yes	C						
D	Black pipe	0.0		M						
Floor	parking lines yellow	4.1	yes	C						
B	yellow fasteners	3.2		M						
Ceiling	perimeter black panel	0.0		M						
B	Lower white trim	0.0		C						
Ceiling	metal white fasteners	4.3		M		P.S.F.				
C	white wall	0.2		B						
A		0.2		S						
Floor	gray	-0.1		C						
A	white wall	0.1		C						
Floor	gray	-0.1		C						
C	white wall	0.1		C						
C	red fasteners on brick column	6.0		M		10	P.S.F.			
C	pipe	0.1		M						
A	Door brown	0.0		M						
A	red pipe	6.5		M						
A	white wall	0.1		C						
C	red fasteners	6.5		M						

Substrate Type: Metal=M Wood=W Plaster=P Sheetrock=S Concrete=C Brick=B

Notes: All fasteners can be assumed to have positive readings as well as parking lines.

Office Areas
Electrical Room
Mechanical Room
Lobby
Kitchen Area
Reception Area

SIDE	SURFACE	X.R.F. READINGS	DEFECTIVE	SUBSTRATE		CLC	RESULT		PAINT CHIP	
				TYPE	SEL		POS	INC	SAMPLE #	RESULT
A	White wall	0.11		S						
C	Door casing light blue columns	0.2		M						
B	Window sill light blue	0.1		W						
C	White wall	0.1		W						
D	area floor white wood	0.2 -0.1		C S						
A	chair rail	0.3		W						
A	White wall	0.3		S						
B	Door knob	0.5		M						
B	Window Trim	0.0		M						
C	glass tile	0.0		M						

Substrate Type: Metal=M Wood=W Plaster=P Sheetrock=S Concrete=C Brick=B

Notes: _____

LEAD INSPECTION COVER SHEET

Inspector's Information

Inspector's Name: Darius Czarnota License Number: IN001P61A
 XRF Model: RMD Serial Number: -1395
 Date of Inspection: 9-21-99 Project Number: 99-

Property Information

Address: 450 Capital Av. (Unit / apartment number) _____ (floor) _____
 Age of Property: _____
 Describe Structure: 3 story ~~stone~~ 5 story brick building

Is there an EBL child present? Yes No Are there lead hazards present? Yes No
 Is there a child under six years of age in the dwelling unit? Yes No Were lead dust wipes taken? Yes No
 Is there a child under six years of age in the building? Yes No Were soil samples collected? Yes No

XRF Calibration Check

Calibration Paint Film Used: NIST 1.02 mg/cm² Manufacturer's Standard 1.0 mg/cm²
 Calibration Check Limits Used: RMD (0.7 to 1.3 mg/cm² inclusive)
 PGT (0.5 to 2.3 mg/cm² inclusive)
 Scitec MAP4 (0.6 to 1.2 mg/cm² inclusive)

	Hour	First Reading	Second Reading	Third Reading	Average
First Check	9:00	1.0	1.0	1.0	1.0
Second Check					
Third Check					
Fourth Check					

and/or current block is an scover

SIDE	SURFACE	K.P.F. READING	DEFECTIVE	SUBSTRATE		CO.	RESULT		PAINT CHIP	
				TYPE	SEL.		PC	NC	SAMPLE #	RESULT
B	Door brown	0.0		M						
B	Casing	10.0		M						
C	Casing brown	0.0		M						
A	Wall	0.5		Concr						
C	Wall	0.0		C						
C	Pipes brown	1.4		M						
D	White Column	0.9		C						
D	blue wall	0.0		tile						
D	aluminum frame	0.1								
D	Pipes white	0.1		M						
	Floor blue	0.1		C						
B	Pipe black	0.0		M						
C	Pipes orange	0.1		M						
C	↓ blue	-0.2		M						
D	Wall	0.0		S						
	Ceiling white	-0.1		C						
C	Light blue pipe	-0.1		M						
A	Paint brown pipe	-0.1		M						
C	Iron Column	0.1		C						
A	Window casing	-0.1		M						
D+A	wall white	1.9		C						250 S.F.
B	wall white	0.1		S						
	Ceiling pipe brown	0.4		M						
D	Counter black	-0.2		M						
A	wall white	0.3		C						
A	White wall	0.8		C						
A	brown radiator	0.4		M						
B	white wall	0.1		C						
Ceiling	Vent Green	0.1		M						
A	wall white	0.9		S						
A	Door brown	0.0		M						
A	White wall	1.4		C						
B	White wall	2.3		C						
C	↓	1.4		C						
B	↓	3.0		Concr						
D	Vertical Doors blue	0.0		M						
	Ceiling white	0.1		S						
B	White wall	1.8		C						100 S.F.

Substrate Type: Metal=M Wood=W Paint=P Sheetrock=S Concrete=C Brick=B

Notes: Womens Lockerroom same components Green + Brown piping found throughout lower level (Basement)

Note: Tested Base Concrete where white paint was off and read 2.0mg/cm²

Basement
 Boiler Corridor
 Pipe entrance
 Hallway
 Mechanical Room
 2
 Main Hallway
 PBV
 Main Hall
 Break room
 Conference Room
 Electrical Room
 elevator room
 Mens Locker room
 Computer storage
 next to window frame

1st level

Main entrance area
 ↓
 elevator hallway
 ↓
 Corridor of Security Center
 ↓
 Security Room
 Loading hallway
 ↓
 Loading Dock
 ↓
 Electrical room
 ↓
 Lead Dept
 ↓
 mechanical room between
 2nd Dept + IAR
 ↓
 IAR Dept
 ↓
 near boiler room
 ↓
 electrical room
 ↓
 IAR Dept

SIDE	SURFACE	KLF READING	DEFECTIVE	SUBSTRATE		RESULT	PAINT CHIP	
				TYPE	SEL		DOC	INC
A	Window Casing	0.11		M				
D	Green wood tower	0.10		W				
D	Whit wall	0.1		S				
D	elevator frame white	0.1		M				
D	Column white	0.0		C				
C	White wall ^{peel} to bathroom	3.4		C				
C	white wall ^{peel}	0.11		C				
C	to unisex bathroom							
A	white wall	0.0		S				
A	white wall	0.1		Cinder				
C	white wall	1.4		C				
C	Service elevator shaft	0.1		M				
B	fan wall	0.11		S				
D	white wall	0.5		C				
B	Blue wall	0.2		W				
D	White wall	0.2		S				
D	white wall	0.6		C				
A	White pipe	0.0		M				
D	white wall	0.6		M				
A	white wall	0.1		C				
D	↓	3.4		C				
D	White wall	0.1		C				
B	↓	0.0		C				
D	White wall	0.1		S				
C	blue wall	0.1		W				
D	white ↓	0.2		C				
Center	White Column	0.0		C				

Substrate Type: Metal=M Wood=W Plaster=P Sheetrock=S Concrete=C Brick=B

Notes: _____

SIDE	SURFACE	XRF READING	DEFECTIVE	SUBSTRATE		RESULT		PAINT CHIP
				TYPE	SEL	PC	WC	
	C: White wall	0.6		C				
	Ceilings white	2.2		C				
	D: white wall	1.4		C				
	D: ↓	2.4		C				
	C: ↓	0.1		C				
	B: ↓	3.3		C				
	A: ↓	0.2		C				
	D: tan columns	0.1		C				
	C: white wall	0.0		C				
	D: white wall	2.3		C				
	A: white wall	1.1		C				
	D: white wall	2.2		C				
	A: ↓	0.1		C				
	B: ↓	2.0		C				
	C: Green Vent	0.3		M				
	D: brown metal framing	0.1		M				

Walls
H. Hallways
above stair door
L
Mens Bathroom
service elevator
off area south
Cots room
Linda DeWitt
Mechanical Room
off area north

Substrate Type: METAL WOOD PAPER SHEETROCK CONCRETE BRICK

Notes: BB Mechanical Room has some type color pipes as basement. Blue, orange, light blue. Green vent throughout

3rd Floor
 men's Bathroom
 outside stairs
 mens ↓

Mechanical Room

open area north

open area south

SIDE	SURFACE	XRF READING	DEFECTIVE	SUBSTRATE		RESULT			PAINT CHIP	
				TYPE	SEL	PC	INC	SAMPLE #	RESULT	
D	White wall	3.0		C						
B	↓	3.0		C						
B	↓	1.4		C						
D	↓	1.4		C						
C	↓	0.3		C						
B	White wall	1.4		C						
A	↓	0.10		C						
D	↓	2.3		C						
D	↓	3.0		C						
FLOOR	light blue	0.1		C						
A	White column	1.8		C						
C	White wall	0.10		S						
	White wall	0.10		S						
A	White wall	0.1		S						
	White column	0.2		C						

Substrate Type: Mergim Wood Dry Painted Sheetrock Concrete Enc #5

Notes: Same green + colored pipes + vents as other levels.

SIDE	SURFACE	X.F.F. READINGS	DEFECTIVE	SUBSTRATE		RESULT			PAINT CHIP	
				TYPE	SEL.	PC	INC	SAMPLE #	RESULT	
South Open Area	A	tan columns	2.0		C					
		tan columns	0.2		C					
		tan columns	7.6		C					
	B	tan columns	0.2		C					
Women Bathroom men & Mechanical Room	C	white w/air	3.0		C					
			0.3		C					
	D	white w/air white pipe	2.0		C					
			0.4		M					
throughout area	B	white w/air	0.0		S					
		Green pipes	0.6		M					
5th level										
Open Office Area	A	tan w/air	0.0		S					
	D	DOOR frames	0.5		M					
Kitchen Mechanical Room	A	whitewall	0.0		C					
	A	white w/air around Pakia Entrance	2.9		B					
	A	white wall	0.2		C					
	B		2.4		B					
			3.9		B					7 1,000 sq. ft.
			3.0		B					
Thermal unit room	D	white w/air	0.2		S					
	B	Grey w/air	0.0		C					
Staircase	A	plaster mudding rails	0.2		M					
			0.1		M					
Coffer level		floor tile	0.0		C					
	A	yellow w/air	0.1		Cinder					
		ceilings	0.1		S					
	ceilings	white cross beam	0.0		M					

Substrate Type: Metal=M Wood=W Plaster=P Sheetrock=S Concrete=C Brick=B

Notes: Majority of tan columns have lead. Mechanical Room has same colored piping as others.

SIDE	SURFACE	X.R.F. READINGS	DEFECTIVE	SUBSTRATE		CLC	RESULT		PAINT CHIP	
				TYPE	SEL		POS	INC	SAMPLE #	RESULT
A	WALL <i>White</i>	<i>0.2</i>		<i>C</i>						
B	WALL <i>White</i>	<i>0.0</i>		<i>C</i>						
C	WALL									
D	WALL									
	FLOOR <i>gray</i>	<i>0.0</i>		<i>C</i>						
	TREAD									
<i>D</i>	RISER	<i>0.1</i>		<i>M</i>						
	STRINGER									
<i>B</i>	BASEBOARD <i>brown</i>	<i>0.0</i>		<i>M</i>						
	LOWER RAILING									
	BALUSTER									
	RAILING CAP									
	NEWEL POST									
<i>C</i>	HANDRAIL	<i>0.0</i>		<i>M</i>						
	DOOR	<i>0.2</i>		<i>M</i>						
<i>A</i>	CASING	<i>0.1</i>		<i>M</i>						
	JAMB	<i>0.3</i>		<i>M</i>						
	WINDOW TRIM									
	SILL									
	SASH									
	WELL									
	RADIATOR									

Substrate Type: Metal=M Wood=W Plaster=P Sheetrock=S Concrete=C Brick =B

Notes: _____

COMMON AREA East Side Stairwell

SIDE	SURFACE	X.R.F. READINGS	DEFECTIVE	SUBSTRATE		CLC	RESULT		PAINT CHIP	
				TYPE	SEL		POS	INC	SAMPLE #	RESULT
A	WALL									
B	WALL									
C	WALL									
D	WALL									
	FLOOR <i>Bray</i>	<i>0.5</i>		<i>C</i>						
	TREAD									
<i>B</i>	RISER	<i>0.3</i>		<i>M</i>						
	STRINGER									
	BASEBOARD									
	LOWER RAILING									
<i>A</i>	BALUSTER <i>Bray</i>	<i>0.0</i>		<i>M</i>						
	RAILING CAP									
	NEWEL POST									
<i>C</i>	HANDRAIL	<i>0.5</i>		<i>M</i>						
	DOOR	<i>0.3</i>		<i>M</i>						
<i>A</i>	CASING	<i>0.1</i>		<i>M</i>						
	JAMB	<i>0.2</i>		<i>M</i>						
	WINDOW TRIM									
	SILL									
	SASH									
	WELL									
	RADIATOR									

Substrate Type: Metal=M Wood=W Plaster=P Sheetrock=S Concrete=C Brick =B

Notes: _____

SIDE	SURFACE	X.R.F. READINGS	DEFECTIVE	SUBSTRATE		CLC	RESULT		PAINT CHIP	
				TYPE	SEL		POS	INC	SAMPLE #	RESULT
A	WALL									
B	WALL <i>white</i>	<i>0.3</i>			<i>C</i>					
C	WALL									
D	WALL									
	FLOOR									
	TREAD									
	RISER									
	STRINGER									
<i>D</i>	BASEBOARD <i>light green/blue</i>	<i>0.2</i>			<i>W</i>					
	LOWER RAILING									
	BALUSTER									
	RAILING CAP									
	NEWEL POST									
<i>D</i>	HANDRAIL <i>red</i>	<i>-0.1</i>			<i>M</i>					
	DOOR									
	CASING									
	JAMB									
	WINDOW TRIM									
	SILL									
	SASH									
	WELL									
<i>B</i>	RADIATOR <i>tan</i>	<i>0.1</i>			<i>M</i>					

Substrate Type: Metal=M Wood=W Plaster=P Sheetrock=S Concrete=C Brick =B

Notes:

Utility
meets

optical
room

intake
stage room

absent
pan

stage
room

le stage
room

present
corridor

PM stage
room

if stage

Dark stage

rental
with stage

AKC

SIDE	SURFACE	X.R.F. READINGS	DEFECTIVE	SUBSTRATE		CLC	RESULT		PAINT CHIP	
				TYPE	SEL		POS	INC	SAMPLE #	RESULT
A	Brown hand rail	0.4		M						
A	down beam	8.4		W						
	↓	5.8		W						
C	white wall	0.1		S						
D	brown door	0.10		M						
Ceiling	brown vents	0.2		M						
D	White Wall	0.2		C						
A	↓	0.1		B						
Ceiling	white	0.1		S						
	glass gray	0.1		C						
D	white wall	0.8		B						
A	↓	0.8		B						
D	white wall	0.1		S						
Ceiling	brown cross beam	0.1		W						
B	brown beam	5.3		W						
B	White wall	0.6		B						
C	↓	0.2		Cinder						
D	brown beam	8.8		W						
	White Wall	-0.4		S						3 beams
B	white wall	0.1		Cinder						
C	white beam	0.2		W						
	white wall	0.7		Cinder						
D	white wall	0.6		Brick						
Ceiling	white vent	0.1		M						
A	white wall	0.2		Cinder						
B	↓	0.3		B						
Ceiling	white wood	0.3		W						
↓	white cross beam	0.3		W						
D	wood beam white	1.4		W						4 beams
D	white beam	1.4		W						2 beams
B	white wall	-0.1		B						
B	lower ↓	0.4		Cinder						
A	White beam	0.7		W						
D	white wall	0.4		B						
A+D	white beam	3.8		W						2 beams
	white wall	0.1								

Substrate Type: Metal=M Wood=W Plaster=P Sheetrock=S Concrete=C Brick=B

Notes: _____

Address: 460 Capitol

Apt. _____

Floor _____ Room Basement level

Page _____ of _____

bath
 care
 epistolical
 storage
 DPH
 storage
 room
 ?
 former
 bathroom
 mechanical
 room
 technical
 room

SIDE	SURFACE	X.R.F. READINGS	DEFECTIVE	SUBSTRATE		CLC	RESULT		PAINT CHIP	
				TYPE	SEL		POS	INC	SAMPLE #	RESULT
	D white beam	2.8		W						
	B white wall	0.7		B						
	D light beam	2.8		W						
	Ceiling case beam	0.1		W						
	B white wall	0.7		B						
	B white beams	0.3		W						
		0.3		W						
	C white wall	0.3		Cinder						
	D ↓	0.3		B						
	D ↓	0.3		C						
	B metal pipe white	0.3		M						
	B brown light door	0.0		M						
	A white wall	0.1		S						
	B ↓	0.4		Cinder						
	D white beam	2.8		W						
	D white beam	3.7		W						
	X floor grey	0.0		C						
	floor light green	0.1		C						
	D white wall	0.2		S						
	B green wall	0.4		C						
	D white beam	3.8		W						
	D white wall	0.2		S						
	D ↓	0.0		Cinder						
	E ↓	0.8		C						
	floor green	0.1		C						

Substrate Type: Metal=M Wood=W Plaster=P Sheetrock=S Concrete=C Brick=B

Notes: _____

Address:

460 Capitol Av.

Apt.

Floor

Room

9

Page

of

SIDE	SURFACE	X.R.F. READINGS	DEFECTIVE	SUBSTRATE		CLC	RESULT		PAINT CHIP	
				TYPE	SEL		POS	INC	SAMPLE #	RESULT
Level	A Window trim	0.3		W						
	B wall	0.1		S						
	B light blue trim	0.3		W						
	wood area									
	B Door Casings	0.2		M						
	Ceiling Green vents	0.4		M						
nd wel	B Window trim	0.2		W						
	C White wall	0.1		S						
	B light blue trim	0.1		W						
	C Door Casings	0.3		M						
	Ceiling Green vents	0.3		M						
nd wel	D Window trim	0.1		W						
	C White wall	0.0		S						
	D light blue trim	0.0		W						
	Ceiling Green vents	0.4		M						
	D Door Casings	0.4		M						

Substrate Type: Metal=M Wood=W Plaster=P Sheetrock=S Concrete=C Brick=B

Notes:

The ceiling is consisted throughout all floors with unpainted wood joists. Floors are unpainted wood.

Address: 470 Capitol N.

Apt. _____

Floor 1st Room _____

Page _____ of _____

hallway
 Landing
 Dining Room
 Living Room
 Kitchen
 Hallway
 Dining Room
 Bathroom
 Bed Room

SIDE	SURFACE	X.R.F. READINGS	DEFECTIVE	SUBSTRATE		CLC	RESULT		PAINT CHIP	
				TYPE	SEL		POS	INC	SAMPLE #	RESULT
C	Handrail, brown	0.9		M						
D	white wall	0.2		M						
A	Window trim brown	0.1		M						
B	Window trim green	0.2		M						
B	Door to wall	0.1		M						
D	Radiator brown	0.1		M						
B	tile blue wall	0.0		ceramic						
B	Door casing brown	0.0		M						
A	ceiling white	0.0		S						
A	White ceramic wall	0.0		ceramic						
D	white wall	0.1		linoleum						
A	Gray baseboard	0.0		W						
A	White column	0.0		C						
A	White wall	0.0		S						
A	Lower wall green	0.0		W						
B	blue paint	0.0		M						
A	vent green	0.2		M						
A	pipe brown	0.7		M						

Substrate Type: Metal=M Wood=W Plaster=P Sheetrock=S Concrete=C Brick=B

Notes: _____

17 years old abatement was done, new pipes & tanks put in

Exterior

Front

Interior

Bedroom

Office

Master Room

Hardware Storage

Backside

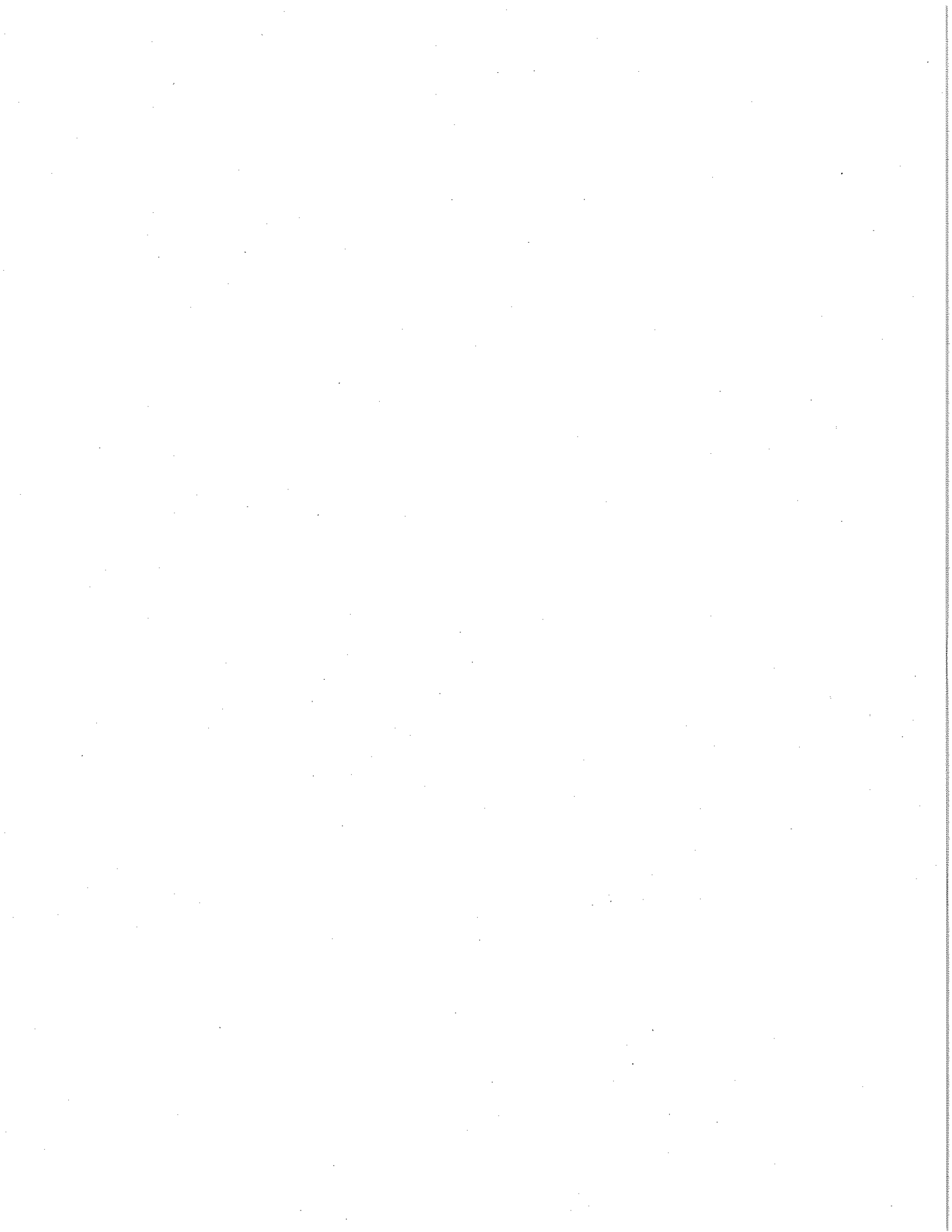
Wardrobe

Rear Room

SIDE	SURFACE	X.R.F. READINGS	DEFECTIVE	SUBSTRATE		CLC	RESULT		PAINT CHIP	
				TYPE	SEL		POS	INC	SAMPLE #	RESULT
A	Yellow Kitchens on Wall	4.7	NO	M						
A	Window sill white yellow spots	0.5 1.4	partial	C						
B	stained yellow	5.3	NO	M						
B	yellow wall	5.0	NO	W						
B	green wall	0.4		B						
B	red floor	0.0		C						
B	green floor	0.0		C						
Ceiling	Wood crossbeams	0.0		W						
Ceiling	Yellow wall	0.2		S						
Floor	red flooring	0.4		tile						
B	blue door	0.2		W						
B	green wall	0.1		W						
B	yellow baseboard	0.2		W						
B	yellow wall	1.4		B						
C	yellow wall	0.0		Plaster						
Floor	Yellow platforms for blue beams	5.4	partial	C						
C	yellow stairs	2.9	partial	W						
D	yellow handrail	3.5	NO	W						
D	red stairs	0.0		W						
D	red floor	0.1		M						
D	orange pipes	0.1		M						
D	blue pipes	0.0		M						
C	yellow rails	0.2		M						
B	yellow fasteners	2.4	NO	M						
D	yellow lower wall of ramp	0.0		C						
D	yellow handrail	0.4		M						
D	gray baseboard	0.2		M						
H	gray wall	0.2		B						
H	white	0.5		B						
H	red beams	0.0		M						
H	yellow platforms	0.2		C						
H	gray floor	0.0		C						
H	yellow beam	0.0		M						
H	blue boilers	0.0		M						
H	Fluor light gray	0.0		C						
Ceiling	gray	0.0		W						
Ceiling	Door	0.0		M						

Substrate Type: Metal=M Wood=W Plaster=P Sheetrock=S Concrete=C Brick=B

Notes: _____



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