

EASTERN CONNECTICUT STATE UNIVERSITY  
INVITATION TO BID PROJECT #ECSU-2016-9 (Phase II)

**SUBMISSION CHECK LIST**

- ( ) Bidder Information Cover Sheet
- ( ) Proposal/Project Data Sheet
- ( ) Bidder's Qualification Statement
- ( ) Standard Bid Bond or Certified Check in the amount of 10% of the bid
- ( ) Contract Compliance Monitoring Report (3 pages)
- ( ) Gift Affidavit (Form 1)
- ( ) Consulting Affidavit (Form 5)
- ( ) Receipt of State Ethics Law (Form 6)
- ( ) OPM Iran Certificate (Form 7)
- ( ) Nondiscrimination Certificate
- ( ) W9, Vendor Form and Small Business Certification (if applicable)
- ( ) Sub-Contractor Listing
- ( ) Set Aside Worksheet



State of Connecticut  
Eastern Connecticut State University  
**INVITATION TO BID**  
83 Windham Street  
Willimantic, CT 06226

Bid number	Mandatory Pre-Bid	Bid Opening Date	Bid Opening Time	Date Issued
ECSU-2016-9 (Phase II)	Date: March 23, 2018 Time: 9:00 am Place: Facilities conference room	April 6, 2018	2:00 PM	3/16/18

**Agency Contact:**

Cindy Hodis  
Associate Director for Acquisitions  
860-465-5148  
Email: hodisc@easternct.edu

**AFFIRMATION OF BIDDER: The undersigned bidder affirms and declares:**

1. That this proposal is executed and signed by said bidder with full knowledge and acceptance of the provisions of Form ECSU-02 (Standard Bid and Contract Terms and Conditions) of current issue and in effect on the date of bid issue.
2. The contractor is required to hold his bid price for sixty (60) days. In the event that the contract award is delayed beyond the sixty (60)-day period, the agency must obtain written confirmation from the contractor extending his bid.
3. Your written signature below indicates agreement of terms and conditions on page 2 and 3 of this document.

<b>BIDDER INFORMATION</b>				
<b>Complete</b> Company Name (Trade Name, DBA)			Social Security or Federal Employer ID <b>Number</b>	
Company Address:	Street	City	State	Zip Code
Contact Name (typed or printed)	Email address		Telephone Number	Fax Number
Signature of Person Authorized to Sign Bids on Behalf of the above named company				Date Executed
Is your business currently a Department of Administrative Services Certified Small Business Enterprise:				
<input type="checkbox"/> Yes (Attach Certificate to Bid) <input type="checkbox"/> No				
Is your business a:				
<input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation (Type & State of Incorporation) _____ <input type="checkbox"/> LLC – sole owner <input type="checkbox"/> LLC – Partnership <input type="checkbox"/> LLC - Corporation				
If you are a State Employee, indicate your position/ agency/ and address:				
Remittance Address (If different from above):				
<b>Total Bid Price:</b> \$				
<b>RETURN BID TO ECSU IN A SEALED ENVELOPE CLEARLY MARKED IN THE LOWER LEFT CORNER WITH THE BID NUMBER, DUE DATE AND TIME.</b> <b>(NOTE: FACSIMILE BIDS ARE <u>NOT</u> ACCEPTABLE)</b> ECSU PURCHASING DEPARTMENT EASTERN ROAD GELSI & YOUNG HALL, ROOM 344 WILLIMANTIC, CT 06226				

**THIS FORM AND REQUIRED PROPOSAL SCHEDULE FORMS MUST BE COMPLETED AND RETURNED WITH BID PROPOSAL**

**EXECUTIVE ORDERS:** This contract is subject to the provisions of Executive Order No Three of Governor Thomas J. Meskill, promulgated June 16, 1971, and, as such, this contract may be cancelled, terminated or suspended by the State Labor Commissioner for violation of noncompliance with said Executive Order No. Three, or any State or federal law concerning nondiscrimination, withstanding that the Labor Commissioner is not a party to this contract. The parties of this contract, as part of the consideration hereof, agree that said Executive Order No. Three is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the State Labor Commissioner shall have continuing jurisdiction in respect to contract performance in regard to nondiscrimination, until the contract is completed or terminated prior to completion. The contractor, agrees as part of consideration hereof, that this contract is subject to the Guidelines and Rules issued by the State Labor Commissioner to Implement Executive Order No. Three, and that he will not discriminate in his employment practices or policies, will file all reports as required, and will fully cooperate with the State of Connecticut and the Labor Commissioner. This contract is also subject to the provisions of Executive Order No. Seventeen of Governor Thomas J. Meskill promulgated February 15, 1973, and, as such, this contract may be cancelled, terminated or suspended by the contracting agency or the State Labor Commissioner for violation of or noncompliance with said Executive Order No. Seventeen, notwithstanding that the Labor Commissioner may not be a party to this contract. The parties of this contract, as a part of the consideration hereof, agree that Executive Order No. Seventeen is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the contracting agency and the State Labor Commissioner shall have joint and several continuing jurisdiction in respect to contract performance in regard to listing all employment openings with the Connecticut State Employment Service.

## NON-DISCRIMINATION

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

(a) The following subsections are set forth here as required by section 4a-60 of the Connecticut General Statutes:

- (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, mental retardation, 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. 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, mental retardation, 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;
  - (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) "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.
- (d) 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.
- (e) The contractor shall develop and maintain adequate documentation, in a manner prescribed by the commission, of its good faith efforts.
- (f) The contractor shall include the provisions of section A above 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.

(g) The following subsections are set forth here as required by section 4a-60a of the Connecticut General Statutes:

(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.

(h) The contractor shall include the provisions of section (g) above 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.

For the purposes of this entire Non-Discrimination 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 Conn. Gen. Stat. Section 1-120, (3) any other state, including but not limited to any federally recognized Indian tribal governments, as defined in Conn. Gen. Stat. Section 1-267, (4) the federal government, (5) a foreign government, or (6) an agency of a subdivision, agency, state or government described in the immediately preceding enumerated items (1), (2), (3), (4) or (5).

### **Insurance**

The contractor agrees that while performing services specified in this agreement that he shall carry sufficient insurance (liability and/or other) as applicable according to the nature of the service to be performed so as to "save harmless" the State of Connecticut from any insurable cause whatsoever. If requested, certificates of such insurance shall be filed with the contracting State Agency prior to the performance of services.

### **STATE LIABILITY**

The State of Connecticut shall assume no liability for payment for services under the terms of this agreement until the contractor is notified that this agreement has been accepted by the using agency and, if applicable, approved by the Office of Policy and Management (OPM), the Department of Administrative Services and by the Attorney General of the State of Connecticut.



# PROJECT MANUAL

## LOW RISE STAIR REPLACEMENT AND COURTYARD IMPROVEMENTS

EASTERN CONNECTICUT STATE UNIVERSITY  
WILLIMANTIC, CONNECTICUT 06226-2295

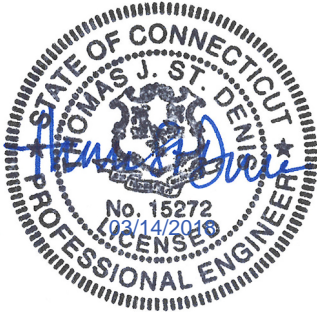
**PROJECT NUMBER: ECSU 2016-9 (Phase II)**

BID DOCUMENTS



Prepared by:

BVH  
206 West Newberry Road  
Bloomfield, Connecticut 06002  
(Stair Renovations)



and

Facilities Management and Planning  
Eastern Connecticut State University  
Willimantic, Connecticut 06226-2295  
(Site Renovations)



March 7th, 2018

**PROJECT MANUAL TABLE OF CONTENTS**

<b>TITLE</b>		
<b>DIVISION 0</b>	<b>BIDDING REQUIREMENTS, CONTRACT FORMS, AND CONDITIONS OF THE CONTRACT</b>	<b>Page Count</b>
	Proposal Form	<b>10</b>
	Objective Criteria for Evaluating Qualifications of Bidders	<b>2</b>
	Bidders Qualification Statement	<b>5</b>
	Notice To Bidders	<b>10</b>
	Wage rates	<b>27</b>
	Certificate of Insurance	<b>3</b>
	Contract	<b>1</b>
	Commission on Human Rights and Opportunities	<b>5</b>
	Compliance Regulations/Notification to Bidders	
	Amendment 1A	<b>1</b>
	Executive Order #14	<b>1</b>
	Form 1 – Gift & Campaign Contribution Certifications	<b>2</b>
	Affidavit	
	Campaign Contribution Restriction Provision	<b>5</b>
	Form 3 – Certification by Agency Official or Employee	<b>1</b>
	Authorized to Execute Contract	
	SEEC Requirements	<b>4</b>
	SEEC Form 11	<b>5</b>
	Nondiscrimination provision for contracts	<b>3</b>
	Nondiscrimination Instructions	<b>2</b>
	Nondiscrimination Certification Forms	<b>5</b>
	Form 5 – Consulting Agreement Affidavit	<b>1</b>
	Form 6 – Affirmation of Receipt of State Ethics Laws	<b>1</b>
	Summary	
	Form 7 – Iran Certification Form	<b>1</b>
	W9 Vendor Profile	<b>5</b>
	Inspection of Proposals and Confidential Information	<b>1</b>
	CSU Standard Terms & Conditions	<b>5</b>
	General Conditions of the Contract for Construction	<b>44</b>

**TECHNICAL SPECIFICATIONS**

<b>TITLE</b>		
<b>DIVISION 1</b>	<b>GENERAL REQUIREMENTS</b>	<b>Page Number</b>
<b>Section</b>		
<b>01000</b>	<b>Work Covered By Contract Documents</b>	<b>1</b>
<b>01001</b>	<b>Agency</b>	<b>1</b>
<b>01002</b>	<b>Architect and Engineer</b>	<b>1</b>
<b>01003</b>	<b>Construction Administrator</b>	<b>1-2</b>
<b>01010</b>	<b>Summary of Work</b>	<b>2 -3</b>
<b>01011</b>	<b>Examination of Site</b>	<b>3</b>
<b>01012</b>	<b>Project Documents</b>	<b>3</b>
<b>01013</b>	<b>Documents Furnished</b>	<b>3-4</b>
<b>01014</b>	<b>Contractor's Use of Premises</b>	<b>4</b>
<b>01015</b>	<b>Occupancy Requirements</b>	<b>4-5</b>
<b>01019</b>	<b>Contract Considerations</b>	<b>5-9</b>
<b>01027</b>	<b>Application for Payments</b>	<b>9-12</b>

01030	Supplemental Bids	12
01035	Modification Procedures	12-15
01040	Coordination	15-16
01045	Cutting and Patching	16 -17
01050	Field Engineering	17-18
01095	Reference Standards & Definitions	18
01120	Renovation/Demolition Project Procedures	18-20
01121	Salvageable Materials	20
01200	Project Meetings	20-22
01300	Submittals	22-28
01310	Construction Schedules	28-29
01380	Construction Photographs	29-30
01400	Quality Control	30-32
01505	Temporary Electricity and Lighting	32
01520	Temporary Water	33
01525	Temporary Sanitary Facilities	33
01530	Fire Protection	33
01535	Construction Equipment	33
01540	Barriers and Enclosures	33
01545	Protection	34
01550	Security	34
01555	Traffic Ways	34
01560	Temporary Controls	34-35
01565	Storm Water Control	35
01570	Cleaning	35
01575	Project Signs	35
01580	Field Offices and Sheds	35
01585	Identification Badges	35
01600	Materials & Equipment Controls	36
01631	Equals and Substitutions	36-38
01650	Starting of Systems	38-39
01700	Contract Closeout	39-43
01730	Operation & Maintenance Data	43-44
01740	Warranties & Bonds	44-46

---

**DIVISION 2 to 33**

**SPECIFICATIONS**

---

015713	Temporary Erosion and Sedimentation Control
033000	Cast-In-Place Concrete
051200	Structural Steel Framing
053100	Steel Decking
055116	Metal Floor Plate Stairs
055213	Pipe and Tube Railings
075323	Ethylene-Propylene-Diene-Monomer (EPDM) Roofing
099113	Exterior Painting
260010	General Conditions for Electrical
260519	Low-Voltage Electrical Power Conductors and Cables
260526	Grounding and Bonding for Electrical Systems
260529	Hangers and Supports for Electrical Systems
260533	Raceway and Boxes for Electrical Systems
260543	Underground Ducts and Raceways for Electrical Systems
260553	Identification for Electrical Systems

260923	Lighting Control Devices
265119	LED Interior Lighting
265213	Emergency and Exit Lighting
311000	Site Clearing
312000	Earth Moving
312001	Building Excavation and Backfill
321216	Bituminous Concrete Paving
321313	Concrete Paving
321640	Granite Curbing
329300	Plants
334016	Storm Drainage

---

**APPENDIX A**

---

**Utility Mark-Out Summary**

<b>LIST OF DRAWINGS</b>	
<b>Drawing Number</b>	<b>Sheet Title</b>
-	<b>Cover Sheet</b>
EX-1	<b>Topography Survey</b>
DM-1	<b>Demolition Plan</b>
SP-1	<b>Site Plan</b>
SP-2	<b>Layout Plan</b>
GR-1	<b>Grading and Utilities Plan</b>
LP-1	<b>Landscape Plan</b>
DN-1	<b>Detail Sheet</b>
G-1	<b>General Information</b>
A-1	<b>Stair A</b>
A-2	<b>Stair B</b>
A-3	<b>Stair C</b>
A-4	<b>Stair D</b>
A-5	<b>Stair E-WEST</b>
A-6	<b>Stair E-EAST</b>
A-7	<b>Stair AB</b>
A-8	<b>Stair CD</b>
C-1	<b>Stair Demo Plan</b>
C-2	<b>Stair Plan</b>
C-3	<b>Stair Plan</b>
C-4	<b>Stair Electrical Plan</b>
S-1	<b>General Notes, Abbreviations</b>
S-2	<b>Stair Demolition Plan</b>
S-3	<b>Stair 'A' Foundation and Framing Plans</b>
S-4	<b>Stair 'B' Foundation and Framing Plans</b>
S-5	<b>Stair 'C' Foundation and Framing Plans</b>
S-6	<b>Stair 'D' Foundation and Framing Plans</b>
S-7	<b>Stair 'E-WEST' Foundation and Framing Plans</b>
S-8	<b>Stair 'E-EAST' Foundation and Framing Plans</b>
S-9	<b>Stair 'AB' Foundation and Framing Plans</b>
S-10	<b>Stair 'CD' Foundation and Framing Plans</b>
S-11	<b>Typical Foundation Details</b>
S-12	<b>Typical Framing Details</b>
S-13	<b>Framing Details – Stair 'A,B,C,D'</b>
S-14	<b>Framing Details – Stair 'E-West &amp; E-East'</b>
S-15	<b>Framing Details – Stair 'AB &amp; CD'</b>
S-16	<b>Roof Framing Details</b>
E-1	<b>Electric Plan</b>
E-2	<b>Electric Plan</b>
E-3	<b>Electric Plan</b>
E-4	<b>Electric Plan</b>

**END OF TABLE OF CONTENTS**

3/8/18

3/8/18

**PROPOSAL FORM**  
EASTERN CONNECTICUT STATE UNIVERSITY  
FOR PROJECTS ESTIMATED NOT TO EXCEED \$2,000,000.00

DATE \_\_\_\_\_

PROPOSAL OF \_\_\_\_\_  
BIDDER'S NAME

\_\_\_\_\_  
BIDDER'S ADDRESS

To: Eastern Connecticut State University  
83 Windham Street  
Willimantic, Connecticut 06226

Dear Sir:

1. In accordance with **Section 4b-91** of the Connecticut General Statutes and pursuant to, and in compliance with your Invitation to Bid, the Notice to Bidders, the form of contract including the conditions thereto, the form of required bond, I (we) propose to furnish the labor and/or materials, installed as required for the project named and numbered on the PROJECT DATA SHEET of this Proposal, to the extent of the Proposal 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 specifications and/or drawings, together with all addenda issued by your authority and received prior to the scheduled closing time for the receipt of the bids, 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 the said PROJECT DATA SHEET, hereof.
2. The Lump Sum Base Bid by me (us) on the PROJECT DATA SHEET includes all work indicated on the drawings and/or described in the specifications, except:
  - A. Work covered by Supplemental Bids as may be listed on the PROJECT DATA SHEET.
3. This proposal is submitted subject to and in compliance with the foregoing and following conditions and/or information:
  - A. AWARD:

**The award shall be made on the lowest sum of the base bid amount and any accepted supplemental base bids(s). The supplemental bids must be accepted in sequential order as they are listed herein.** The Owner/Agency reserves the right to reject any or all bids, and to accept a bid in greater compliance with the materials, labor, and methods defined in this specification.

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.

The contractor is required to hold his bid price for sixty (60) days. In the event that the contract award is delayed beyond the (60) days, the Agency must obtain written confirmation from the contractor extending the bid.

**B. COMMENCEMENT AND COMPLETION OF WORK: (ARTICLE 6, GENERAL CONDITIONS)**

Commencement of work: The Contractor shall commence work within **five (5)** working days after receiving notice to begin work by the Agency.

Construction Start: On or before **May 16th, 2018.**

Substantial Completion\*: Shall be completed by **August 14th, 2018**

\*Stairs shall be fully constructed and operational as part of Substantial Completion.

Construction Duration: Construction Duration shall be **90** calendar days.

**C. LIQUIDATED DAMAGES: (ARTICLE 12, GENERAL CONDITIONS)**

Amount per calendar day: **N/A**

The parties agree that in the event of the contractor's failure to adhere to the schedule of the starting/completion dates, the harm to the university would be very difficult or impracticable to accurately estimate and that the amount fixed as liquidated damages is not a penalty, but a reasonable forecast of just compensation for said harm.

**D. CONTRACTOR PRE-QUALIFICATION**

In accordance with C.G.S §4a-100, all contractors must pre-qualify before they can bid on a contract or perform work pursuant to a contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or any other public work by the state or a municipality, estimated to cost more than \$500,000 and which is funded in whole or in part with state funds, except a public highway or bridge project or any other construction project administered by the Department of Transportation.

The prequalification classification for this project is:

**DEMOLITION  
GENERAL BUILDING CONSTRUCTION – GROUP “A”  
SITWORK  
ELECTRICAL**

Bidders are advised that both the DEPARTMENT OF ADMINISTRATIVE SERVICES PREQUALIFICATION CERTIFICATE and UPDATE (BID) STATEMENT must accompany the bid proposal for projects estimated to exceed Five Hundred

Thousand Dollars (\$500,000.00) (C.G.S. §4b-91 as amended). **Failure to supply them with the bid will result in rejection of the bid.**

- E. CONTRACTORS INSURANCE REQUIRED: (ARTICLE 47, GENERAL CONDITIONS)
- 1) The limits of liability for the Insurance required for this project shall be those listed in Article 47 of the General Conditions.
  - 2) SPECIAL HAZARDS INSURANCE REQUIRED WHEN SPECIFIED:  
  
Type "U" - Underground
  - 3) BUILDERS RISK INSURANCE: **The General Contractor shall maintain Builder's Risk insurance providing coverage for the entire work at the project site and shall also cover 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 it is for the benefit of and payable to the state of Connecticut work, as their interests may appear.**
- F. STATEMENT OF BIDDER'S QUALIFICATIONS: Essential information in regard to contractor's qualifications is submitted and is made part of this proposal.
- G. NONDISCRIMINATION AND LABOR RECRUITMENT: I (we) agree that the contract awarded for this project shall be subject to Executive Orders No. Three and Seventeen, promulgated June 16, 1971, and February 15, 1973, respectively and to the Guidelines and Rules of the State Labor Commissioner implementing Executive Order No. Three and further agree to submit reports of Compliance Staffing on Labor Department Form E.O. 3-1, when and as requested.
- H. NONVIOLENCE: I (we) agree that the contract awarded for this project shall be subject to Executive Order No. Sixteen, promulgated August 4, 1999.
- I. FEDERAL AND STATE WAGE DETERMINATIONS: The U.S. Secretary of Labor's latest decision and the State of Connecticut Wage Schedule are all incorporated in the documents as applicable. 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 scale as provided by the Connecticut Department of Labor as applicable.
- J. CERTIFICATION OF BIDDER REGARDING EQUAL EMPLOYMENT OPPORTUNITY AND NONSEGREGATED FACILITIES: The General Contractor and subcontractors are hereby advised that, upon acceptance of their bids, they are obligated to fill out, within seven (7) calendar days, the certification required pursuant to Executive Order No. 11246 and agree to certify to the compliance of non-segregated facilities.
4. For bids in the amount of \$50,000.00 or greater, the following must accompany this proposal:



- A. A CERTIFIED CHECK or a CASHIER'S CHECK drawn to the order of the EASTERN CONNECTICUT STATE UNIVERSITY in the amount of 10% of the bid or in the amount of:

\_\_\_\_\_ DOLLARS (\$) )

and drawn on the \_\_\_\_\_  
(STATE BANK & TRUST) (NATIONAL BANKING ASSOC.)

located at \_\_\_\_\_  
(CITY & STATE)

which it is understood shall be cashed and the proceeds thereof used so far as may be necessary to reimburse EASTERN CONNECTICUT STATE UNIVERSITY for losses and damages arising by virtue of my (our) failure to file the required Bonds and execute the required contract in the event that this proposal is accepted by the Awarding Authority.

OR

- B. A BID BOND having as surety thereto a Surety Company or Companies authorized to transact business in the State of Connecticut and made out in the penal sum of 10% of the bid, or in the amount of:

\_\_\_\_\_ DOLLARS (\$) )

5. I (we), the undersigned, hereby declare that I am (we are) the only person(s) interested in the proposal and that it is made without any connection with any other person making any bid for the same work. No person acting for, or employed by, the State of Connecticut is directly or indirectly interested in this proposal, or in any contract which may be made under it, or in expected profits to arise therefrom. This 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 of any other person or corporation. This 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 proposal is based solely on my (our) own investigations and research and not in reliance upon any representations of any employee, officer, or agent of the State.

6. The General Contractor on this project will be required to perform not less than 30% of the work with his own forces.
- A. The undersigned proposes to furnish all labor and materials required for \_\_\_\_\_ in \_\_\_\_\_, in accordance with the accompanying plans and specifications prepared by \_\_\_\_\_ for the contract price specified below subject to additions and deductions according to the terms of the specifications.
- B. This bid includes addenda numbered: \_\_\_\_\_
- C. The proposed Lump Sum Base Bid price is: \_\_\_\_\_ DOLLARS (\$) )

**SUPPLEMENTAL BID 1 – (Add Alternate#1)**

To provide all labor, material and equipment in accordance with Specifications, Div. 1, Section 01030.

ADD \_\_\_\_\_ Dollars \$ \_\_\_\_\_  
(Written)

- D. The undersigned understands that, because of the approvals required by the State of Connecticut, particularly the funding process, the Agency's identification of the low bidder does not constitute acceptance of the offer and no contract exists until all approvals for the proposal are received and a purchase order is let indicating acceptance of this bid.
- E. The undersigned certifies that at least fifty-one percent of the ownership of the bidding company is held by a person or persons who are active in the daily affairs of the business and have the power to direct the management and policies of the business.
- F. The undersigned understands that a contractor awarded a contract or portion of contract under the SMALL BUSINESS SET-ASIDE PROGRAM shall not subcontract with any business with which said contractor has interlocking ownership, management or employees.
- G. The undersigned further understands that this contract requires 25% Connecticut Registered Small Business Set-Aside subcontractor participation, of which 25% must be woman or minority owned. Participating contractor list may be obtained from the Department of Economic Development (860) 258-4254. List all such subcontractors in the "Additional Subcontractor" section on Page 10.
- H. 1. The undersigned further agrees and warrants that he has made good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials under such contract and will provide the Commission on Human Rights and Opportunities with such information as

is requested by the Commission concerning his employment practices and procedures as they relate to the provisions of the general statutes governing contract requirements (see Public Act 87-577).

2. The undersigned understands that the award of this contract is contingent upon the Commission on Human Rights and Opportunities approving the apparent lowest qualified Bidder's Affirmative Action Plan. (This section applies to projects over \$500,000 – Only)
- I. (a) For the purposes of this section, "minority business enterprise" means any small contractor or supplier of materials, of which fifty-one per cent or more of the capital stock, if any, or assets 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 Conn. Gen. Stat. Sec. 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.

For purposes of this Section, "Commission" means the Commission on Human Rights and Opportunities.

b) (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, mental retardation 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. If the contract is for a public works project, 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 project. 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, mental retardation, 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 worker's 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 Conn. Gen. Stat. Sec. 4a-62, 4b-95/96, 32-9e, 46a-56 and 46a-68b to 46a-68k, inclusive, and with each regulation or

relevant order issued by said commission pursuant to said sections; (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 related to the provisions of this Section and Section 46a-56.

(c) 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 minority business enterprises in public works projects.

(d) The contractor shall develop and maintain adequate documentation, in a manner prescribed by the commission, of its good faith efforts.

(e) The contractor shall include the provisions of subsection (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 this Section and Conn. Gen. Stat. Sec. 4a-62, 4b-95/96, 32-9e, 46a-56 and 46a-68b to 46a-68k, inclusive; 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. Please note that substitution of a subcontractor for one named is not permitted except for "**GOOD CAUSE**" as defined in Connecticut General Statutes 4b-95(c). Subcontracts must be executed in the format proscribed in Sec. 4b-96, Connecticut General Statutes.

(f) The contractor agrees to comply with the regulations referred to in this section as they exist on the date of this contract and as they may be adopted or amended from time to time during the term of this contract and any amendments thereto.

(g) After April 1, 1989, each contractor with fifty or more employees awarded a public works contract in excess of fifty thousand dollars, shall develop and file an affirmative action plan with the Commission on Human Rights subject to the conditions under P.A. 88-351. In addition, the successful bidder on contracts of \$500,000 or more must submit, for approval, an Affirmative Action Plan to the Commission of Human Rights and Opportunities. Upon notification from Eastern Connecticut State University, the successful bidder has 10 calendar days to submit their plan to Eastern Connecticut State University for preliminary review.

The undersigned understands that the award of this category of contract is contingent upon the Commission on Human Rights and Opportunities approving the apparent lowest qualified bidder's Affirmative Action Plan.

NOTE: All proposals must be live signed by a duly authorized representative of the firm. NO FACSIMILE SIGNATURES PERMITTED.

Signed on this \_\_\_\_\_ day of \_\_\_\_\_ 2018

Project Number \_\_\_\_\_

(TO BE FILLED IN AND SIGNED BY THE BIDDER)

Firm Name \_\_\_\_\_

Address \_\_\_\_\_

City, State \_\_\_\_\_

Telephone \_\_\_\_\_

Duly Authorized \_\_\_\_\_

SIGNATURE

TYPE NAME AND TITLE \_\_\_\_\_

**FOR "SMALL BUSINESS SET-ASIDE CONTRACTORS" ONLY**

The undersigned certifies that he is certified as a Small Business Set-Aside Contractor and has included a copy of that certification with this bid.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Dates of Certification: \_\_\_\_\_

Type of Certification (circle one):      Woman      Minority      Small

**NAMED SUBCONTRACTORS  
SUBCONTRACTOR LISTING**

Pursuant to Section 4b-95 of the State of Connecticut General Statutes, provide the names and bid totals of sub-contractors for the trades listed below: In addition to those required to be listed as defined by CGS 4b-95, list the name and bid amount of any trade that exceeds \$25,000.

<b>TRADE</b>	<b>NAME OF SUBCONTRACTOR</b>	<b>AMOUNT</b>
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

OBJECTIVE CRITERIA ESTABLISHED FOR  
EVALUATING QUALIFICATIONS OF GENERAL BIDDERS

The following items are established pursuant to Sections 4b-92 & 4b-94, 31-53aa, and 31-57b of the Connecticut General Statutes, as amended, and represent the criteria used for bid award.

THE BIDDER MUST:

1. Low bidders must demonstrate that they customarily employ supervisory personnel with expertise in the work for the bid specifications. Experience in the trade(s) for the project will be a factor.
2. Low bidders must demonstrate satisfactory past performance of work of a similar size, scope, and dollar value to that of the subject project on a continuous basis for the past three (3) years.
3. Low bidders must own or will rent/lease equipment necessary to perform the contract work needed for the project.
4. Low bidders must be financially responsible for performing the work as bid. If requested, additional financial information must be provided. (\$250,000 or over only)
5. For projects with a bid value of \$50,000 or more, furnish three (3) references from architects, owners, or owner's agents indicating satisfactory and timely completion of prior work (no older than 3 years).
6. Low bidders must demonstrate, if requested, that on previous state projects, the bidder complied in good faith with the requirements of listing subcontractors per Sections 4b-93 and 4b-95 of the Connecticut General Statutes.
7. Low bidders must demonstrate that all major required subcontractors, per Section 4b-95 of the Connecticut General Statutes, who are declared in the bid documents, are in compliance with the provisions of Section 20-341gg of the Connecticut General Statutes concerning licensure if work is to be performed on any structure that exceeds the threshold limits in Section 29-276b of the Connecticut General Statutes, as revised.
8. Low bidders must have demonstrated the skill, ability and integrity necessary for faithful performance on state and other projects relative to past honesty and sincerity in relationships with client agencies and other owners. Review of Agency files shall be included in the evaluation of bidders qualifications and anticipated future performance.
9. All serious or willful violations of OSHA regulations in the past three (3) years nor have received a criminal conviction related to the injury or death of any employee in the three (3) year period preceding the bid.
10. All legal or administrative proceedings, currently pending, as well as any which have concluded adversely within the last three years which relate to performance of any public or private construction contracts.

11. Have demonstrated a good track record of past performance on state or other projects relative to the quantity, quality, timeliness, cost, cooperation and harmonious working relationships with subcontractors, suppliers and client agencies. Prompt payment to subcontractors and suppliers is a critical factor to be considered.
12. Identify any situations where the bidder failed to complete a construction contract or situations where bonds were called during the past three years. If so, note when, where, and attach a separate sheet of explanation to this form.
13. Not have been found to be currently in major violation of tax law compliance requirements of the Department of Revenue Services.
14. Not have been found to be currently in major violation of labor laws as required through the Department of Labor including violations of prevailing wage laws in the past three years.



## BIDDERS' QUALIFICATION STATEMENT

PROJECT NO. \_\_\_\_\_

All bidders are required to file this form, properly completed, WITH THEIR PROPOSAL. Failure of a bidder to answer any question or provide required information may be grounds for the awarding authority to disqualify and reject their bid. If a question or request for information does not pertain to your organization in any way, use the symbol "NA" (Not Applicable). Use additional 8 1/2 x 11 sheets with your letterhead as necessary.

1. Indicate exactly the name by which this organization is known:  
Name \_\_\_\_\_.
2. How many years has this organization been in business under its present business name?  
Years \_\_\_\_\_.
3. How many years has this organization been in business as a General Contractor?  
Years \_\_\_\_\_.
4. If this organization has not always been a General Contractor, list the trade(s) that your firm customarily performed prior to the time that you became a General Contractor:
  1. \_\_\_\_\_,
  2. \_\_\_\_\_,
  3. \_\_\_\_\_.
5. Indicate all other names by which this organization has been known and the length of time known by each name:
  1. \_\_\_\_\_,
  2. \_\_\_\_\_,
  3. \_\_\_\_\_.
6. This firm is a : \_\_\_\_\_ Corporation, \_\_\_\_\_ Partnership,  
\_\_\_\_\_ Sole Proprietorship, \_\_\_\_\_ Joint Venture, \_\_\_\_\_ Other.
7. Attach resumes of all supervisory personnel, such as Principals, Project Managers, and Superintendents who will be directly involved with projects on which you are now a bidder. Indicate the number of years of construction experience and the number of years which were in a Supervisory capacity.
8. List all sub-trades which your firm customarily performs with own employees.
  1. \_\_\_\_\_,
  2. \_\_\_\_\_,
  3. \_\_\_\_\_.
9. Trade References: Names, addresses, and telephone numbers of several firms with whom your organization has regular business dealings:

(Attach Separate Sheet)

10. All Construction Projects your organization has in process:

<u>TITLE &amp; LOCATION</u>	<u>CONTRACT AMOUNT</u>	<u>OWNER</u>	<u>DESIGNER</u>	<u>START DATE</u>	<u>FINISH DATE</u>	<u>ANY COMPLAINT AS TO QUALITY OF MANAGEMENT</u>	<u>NAME &amp; PHONE OF OWNER'S REP</u>	<u>NAME &amp; PHONE OF DESIGNER'S REP</u>
---------------------------------	----------------------------	--------------	-----------------	-----------------------	------------------------	--	--	---

Please attach a separate sheet explaining any negative entry in the last three columns.

11. All Construction Projects your organization has completed in the past five years or the twenty projects most recently completed:

<u>TITLE &amp; LOCATION</u>	<u>CONTRACT AMOUNT</u>	<u>OWNER</u>	<u>DESIGNER</u>	<u>START DATE</u>	<u>FINISH DATE</u>	<u>ANY COMPLAINT AS TO QUALITY OF MANAGEMENT</u>	<u>NAME &amp; PHONE OF OWNER'S REP</u>	<u>NAME &amp; PHONE OF DESIGNER'S REP</u>
-----------------------------	------------------------	--------------	-----------------	-------------------	--------------------	--	--	---

Please attach a separate sheet explaining any negative entry in the last three columns.

**BIDDERS QUALIFICATION STATEMENT**

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

---

---

---

---

---

13. 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 OSHA violations which are called for elsewhere in this statement.)

1. \_\_\_ Attached                      2. \_\_\_ Not Applicable

14. List all willful or serious violations of any Occupational Safety and Health Act (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.

- 1.
- 2.
- 3.

15. Has your organization 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.

1.

2.

Dated at \_\_\_\_\_  
this \_\_\_\_\_ day of \_\_\_\_\_, 2018.

Name of Organization:  
\_\_\_\_\_

Signature \_\_\_\_\_  
Print Name \_\_\_\_\_  
Title \_\_\_\_\_

NOTARY STATEMENT:

Mr./Ms. \_\_\_\_\_ being duly sworn deposes and says that  
he/she is the \_\_\_\_\_ of  
(Position or Title)  
\_\_\_\_\_, and that the answers to the  
(Firm Name)  
foregoing questions and all statements therein contained are true and correct.

Subscribed and sworn before me this \_\_\_\_\_ day of \_\_\_\_\_, 2018

Notary Public: \_\_\_\_\_

My Commission expires \_\_\_\_\_, 2018.  
(Seal Required)

**NOTICE TO BIDDERS**  
EASTERN CONNECTICUT STATE UNIVERSITY

1. **BIDS AND REJECTION OF BIDS:** Bids shall be for the complete work as specified and shall include the names of any subcontractors for the four classes of work specified in subsection (a) of Section 4b-93 of the General Statutes of Connecticut as revised, and for each other class of work for which the awarding authority has required a separate section pursuant to said subsection and the dollar amounts of their subcontracts, and the contractor shall be selected on the basis of such bids. It shall be presumed that the bidder intends to perform with its own employees all work in such four classes and such other classes, for which no subcontractor is named. The bidder's qualifications for performing such work shall be subject to review under Section 4b-92 of the General Statutes of Connecticut, as revised.

Every general bid, which is on a form not completely filled in or which is incomplete, conditional or obscure, or which contains any addition not called for shall be invalid; and the awarding authority shall reject every such bid. The awarding authority shall be authorized to waive minor irregularities which he 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. 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 Section 4b-95 of the General Statutes of Connecticut, as revised, to be furnished in the bid form provided by the awarding authority.

Bids shall be publicly opened and read by the awarding authority forthwith. The awarding authority may require in the bid form that the contractor agree to perform a stated, minimum percentage of work with its own forces. 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. The awarding authority shall not permit substitution of a subcontractor for one named in accordance with the provisions of said Section 4b-95 or substitution of a subcontractor for any designated subtrade work bid to be performed by the contractor's own forces, except for good cause. The term "good cause" includes but is not limited to a subcontractor's or, where appropriate, a contractor'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; (7) failure to perform his agreement to execute a subcontract under Section 4b-96 of the General Statutes of Connecticut, as revised.

The bid price shall be the price set forth in the space provided on the bid form. No bid shall be rejected (1) because of error in setting forth the name of a subcontractor as long as the subcontractor or subcontractors designated are clearly identifiable, or (2) because the plans and specifications do not accompany the bid or are not submitted with the bid. Failure to correctly state a subcontractor's price shall be a cause for rejection of the bid.

Any contractor who violates any provision of said Section 4b-95 may be disqualified from bidding on other contracts that are subject to the provisions of Chapter 60 of the General Statutes of Connecticut, as revised, for a period not to exceed twenty-four months, commencing from the date on which the violation is discovered, for each violation. The

awarding authority shall periodically review the contractor's subcontracts to insure compliance with such provisions and shall, after each such review, prepare a written report setting forth his findings and conclusions.

Bids shall be submitted only on the forms furnished for the specific project. In no event will bids or changes in bids made by telephone, telegraph, or facsimile be considered. Any bid form omitting or adding items, altering the form, containing conditional or alternative bids, not filled in completely or without the original signature of the bidder or its authorized representative, will be rejected.

Any bid received after the scheduled closing time for the receipt of bids will be returned to the bidder unopened.

Any bid, once deposited with the agency, may only be withdrawn by letter of request, signed by the depositing bidder and presented to the Acquisitions Specialist, prior to the time of opening of any bid for the project designated or identified project.

2. BID SECURITY: Each bid must be accompanied by a certified check payable to the order of the University, or the bid may be accompanied by a bid bond, in the form required by the awarding authority, having as surety thereto such surety company or companies acceptable to the agency and as are authorized to do business in this State, for an amount not less than 10 percent of the bid. All checks submitted by unsuccessful bidders shall be returned to them after the contract has been awarded.
3. FORFEITURE OF BID SECURITY: Failure of the successful bidder to execute a contract awarded as specified and bid shall result in the forfeiture of the bid bond or certified check.
4. ADDENDA AND INTERPRETATIONS: No interpretations of the meaning of the plans, specifications or other contract documents will be made orally to any bidder. Every request for such interpretation should be in writing to the awarding authority and, to be given consideration, must be received at least ten (10) days prior 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 mailed to all prospective bidders (at the respective addresses furnished for such purposes) not later than five (5) days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not release any bidder from any obligations under his bid as submitted, provided notice has been sent to the address furnished by such prospective bidder for the transmittal of notices, addenda and interpretations. It shall be the bidder's responsibility to make inquiry as to, and to obtain, the addenda issued, if any.
5. EXECUTIVE ORDER NO. THREE:

This contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill promulgated June 16, 1971, and, as such, this contract may be canceled, terminated or suspended by the State Labor Commissioner for violation of or noncompliance with said Executive Order No. Three, or any state or federal law concerning nondiscrimination, notwithstanding that the Labor Commissioner is not a party to this contract. The parties to this contract, as part of the consideration hereof, agree that said Executive Order No. Three is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the State Labor Commissioner shall have continuing jurisdiction in respect to contract

performance in regard to nondiscrimination until the contract is completed or terminated prior to completion.

The contractor agrees, as part consideration hereof, that this contract is subject to the Guidelines and Rules issued by the State Labor Commissioner to implement Executive Order No. Three, and that he will not discriminate in his employment practices or policies, will file all reports as required, and will fully cooperate with the State of Connecticut and the State Labor Commissioner.

6. EXECUTIVE ORDER NO. SIXTEEN:

This contract is subject to the provisions of Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, and, as such, the contract may be canceled, terminated or suspended by the state for violation of or noncompliance with said Executive Order No. Sixteen. The parties to this contract, as part of the consideration hereof, agree that said Executive Order No. Sixteen is incorporated herein by reference and made a part hereof. The parties agree to abide by such Executive Order.

7. EXECUTIVE ORDER NO. SEVENTEEN:

This contract is subject to the provisions of Executive Order No. Seventeen of Governor Thomas J. Meskill promulgated February 15, 1973, and, as such, this contract may be canceled, terminated or suspended by the contracting agency or the State Labor Commissioner for violation of or noncompliance with said Executive Order No. Seventeen, notwithstanding that the Labor Commissioner may not be a party to this contract. The parties to this contract, as part of the consideration hereof, agree that Executive Order No. Seventeen is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the contracting agency and the State Labor Commissioner shall have joint and several continuing jurisdiction in respect to contract performance in regard to listing all employment openings with the Connecticut State Employment Service.

8. FOREIGN CORPORATIONS: A corporation not organized under the laws of this State 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 State.

9. SECURITY FOR FAITHFUL PERFORMANCE:

A. Performance Bond. On or before the contract award date the successful bidder, for any bid equal to or exceeding \$50,000, shall substitute for the certified check or bid bond accompanying his bid, an executed Performance Bond, in an 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 Agency and as are authorized to transact business in this State.

B. Labor and Material Bond. At this same time the successful bidder, for any bid equal to or exceeding \$50,000, shall submit a labor and material bond in an 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 Agency 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 Section 49-41 of the General Statutes of Connecticut, as revised. The following sections of the General Statutes of Connecticut, as revised, are inserted as information concerning this bond.

Sec. 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 percent, in any 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.

Section 49-42. Enforcement of right to payment on bond. Suit on bond; when

and how brought.

(a) Any person who performed work or supplied materials for which a requisition was submitted to, or for which an estimate was prepared by, the awarding authority and who does not receive full payment for such work or materials within sixty days of the applicable payment date provided for in Subsection (a) of Section 49-41a, or any person who supplied materials or performed subcontracting work not included on a requisition or estimate who has not received full payment for such materials or work within sixty days after the date such materials were supplied or such work was performed, may enforce his right to payment under the bond by serving a notice of claim on the surety that issued the bond and a copy of such notice to the contractor named as principal in the bond within one hundred eighty days of the applicable payment date provided for in Subsection (a) of Section 49-41a, or, in the case of a person supplying materials or performing subcontracting work not included on a requisition or estimate, within one hundred eighty days after the date such materials were supplied or such work was performed. The notice of claim shall state with substantial accuracy the amount claimed and the name of the party for whom the work was performed or to whom the materials were supplied, and shall provide a detailed description of the bonded project for which the work or materials were provided. If the content of a notice prepared in accordance with Subsection (b) of Section 49-41a complied with the requirements of this section, a copy of such notice, served within one hundred eighty days of the payment date provided for in Subsection (a) of Section 49-41a upon the surety that issued the bond and upon the contractor named as principal in the bond, shall satisfy the notice requirements of this section. Within ninety days after service of the notice of claim, the surety shall make payment under the bond and satisfy the claim, or any portion of the claim which is not subject to a good faith dispute, and shall serve a notice on the claimant denying liability for any unpaid portion of the claim. The notices required under this section shall be served by registered or certified mail, postage prepaid in envelopes addressed to any office at which the surety, principal or claimant conducts his business, or in any manner in which civil process may be served. If the surety denies liability on the claim, or any portion thereof, the claimant may bring action upon the payment bond in the superior court for such sums and prosecute the action to final execution and judgment. An action to recover on a payment bond under this section shall be privileged with respect to assignment for trial. The court shall not consolidate for trial any action brought under this section with any other action brought on the same bond unless the court finds that a substantial portion of the evidence to be adduced, other than the fact that the claims sought to be consolidated arise under the same general contract, is common to such actions and that consolidation will not result in excessive delays to any claimant whose action was instituted at a time significantly prior to the motion to consolidate. In any such proceeding, the court judgment shall award the prevailing party the costs for bringing such proceeding and allow interest at the rate of interest specified in the labor or materials contract under which the claim arises or, if no such interest rate is specified, at the rate of interest as provided in Section 37-3a upon the amount recovered, computed from the date of service of the notice of claim, provided, for any portion of the claim which the court finds was due and payable after the date of service of the notice of claim, such interest shall be computed from the date such portion became due and payable. The court judgment may award reasonable attorney's fees to either party if upon reviewing the entire record, it appears that either the original claim, the surety's denial of liability, or the defense interposed to the

claim is without substantial basis in fact or law. Any person having direct contractual relationship with a subcontractor but no contractual relationship express or implied with the contractor furnishing the payment bond shall have a right of action upon the payment bond upon giving written notice of claim as provided in this section.

(b) Every suit instituted under this section shall be brought in the name of the person suing, in the superior court for the judicial district where the contract was to be performed, irrespective of the amount in controversy in the suit, but no such suit may be commenced after the expiration of one year after the applicable payment date provided for in Subsection (a) of Section 49-41a, or, in the case of a person supplying materials or performing subcontracting work not included on a requisition or estimate, no such suit may be commenced after the expiration of one year after the date such materials were supplied or such work was performed.

(c) The word "material" as used in Section 49-41 to 49-43, inclusive, includes the rental of equipment used in the prosecution of work provided for in the contract.

10. CONNECTICUT SALES AND USE TAXES: All bidders shall familiarize themselves with the current regulations of the Department of Revenue Service. The tax on materials or supplies exempted by such statutes and regulations shall not be included as part of a bid.

Nonresident contractors must comply with the provisions of Connecticut General Statutes Section 12-430(7), bond requirement for nonresident contractors, and the regulations established pursuant to that section.

11. CONTRACTOR'S QUALIFICATIONS: All bidders shall file with their bids a statement of qualifications on the appropriate form.

12. SUBCONTRACTORS: (a) As required by the project data sheet, each bidder shall furnish with his submitted bid, and in the place on the bid form provided for such purpose, the names of responsible and qualified subcontractors who are actually to perform the work required by the division or portion of the specifications listed, for the base bid. Failure to so list a subcontractor for any division or portion of the specifications will result in rejection of the entire bid.

13. WORKING DAY: A working day is hereby defined as each consecutive day, including and following the date set for commencement of work, except Saturdays, Sundays and state legal holidays and except those days on which, in the opinion of the awarding authority, the Contractor is prevented by inclement weather from proceeding with work on the major items under construction at the then current stage of the work at least six (6) hours with the usual force employed on these major items, provided however, that in the event the State directs or permits work to be performed on a Saturday, Sunday or a state legal holiday, then such day shall be considered a working day.

14. NONDISCRIMINATION AND AFFIRMATIVE ACTION PROVISIONS:

This section is inserted in connection with Subsection (a) of Section 4a-60 of the General Statutes of Connecticut, as revised.

- A. For the purposes of this section, "minority business enterprise" means any small

contractor or supplier of materials, fifty-one percent 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 member of a minority, as such term is defined in Subsection (a) of Connecticut General Statutes, 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.

For the purpose of this section, "commission" means the Commission on Human Rights and Opportunities.

For the purpose of this section, "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, of which is financed in whole or in part by the state, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees.

- B. (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, mental retardation 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. 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, mental retardation, 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 Connecticut General Statutes Sections 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to Connecticut General Statutes Sections 46a-56, 46a-68e, and 46a-68f; (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 Connecticut General Statutes Section 46a-56. 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 projects.

- C. 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.
- D. The contractor shall develop and maintain adequate documentation, in a manner prescribed by the commission, of its good faith efforts.
- E. The contractor shall include the provisions of subsection (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 Connecticut General Statutes 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.
- F. The contractor agrees to comply with the regulations referred to in this section as they exist on the date of this contract and as they may be adopted or amended from time to time during the term of this contract and any amendments thereto.

15. NONDISCRIMINATION PROVISIONS REGARDING SEXUAL ORIENTATION:

This section is inserted in connection with Subsection (a) of Section 4a-60a of the General Statutes of Connecticut, as revised.

- A. (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 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 or understanding and each vendor 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 commitment 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 of the general statutes; (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 of the General Statutes.

- B. 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 of the General Statutes; 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.

16. AGREEMENT TO ARBITRATE: Any dispute arising out of the awarding of the contract for this project by the Agency, or performance thereunder, shall be submitted to arbitration under the rules of the American Arbitration Association. Hartford, Connecticut, shall be the locale where the Arbitration is to be held.

17. UNION LABOR: Attention is called to the fact that there may be construction work now being carried on at the site at which this construction is contemplated being done by union labor. This fact must be kept in mind by all bidders.

18. LABOR MARKET AREA:

All bidders shall have read Sections 31-52 and 31-52a of the Connecticut General Statutes, 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.

In order to avoid violations by the contractor and to cooperate with and assist the State in the implementation of the statutory mandates, any contractor bidder awarded a contract with the State shall be required to provide the State with the following information:

- A. The names and addresses of employees utilized by the contractor and by its subcontractors and how long each such employee has resided in Connecticut.
- B. 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 attached map.
- C. 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

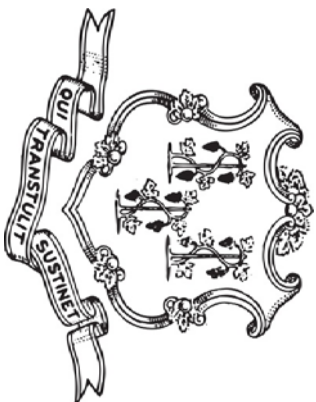
Employment Security Offices.

- D. In the same manner as Item (C) above, the statement shall indicate the steps taken to assure that the contractor and its subcontractors have sought out qualified residents of this state.
- E. The contractor shall cooperate with and provide information to the construction supervisor or inspector of the State 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.
- F. All such information gathered and compiled by the State shall be forwarded to the Labor Commissioner.

Pursuant to Section 31-52b of the Connecticut General Statutes, as revised: "The provisions of Sections 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." However, no exception shall be determined to be applicable unless stated in writing from the Agency.

CONNECTICUT PREVAILING  
WAGE RATES





# **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.

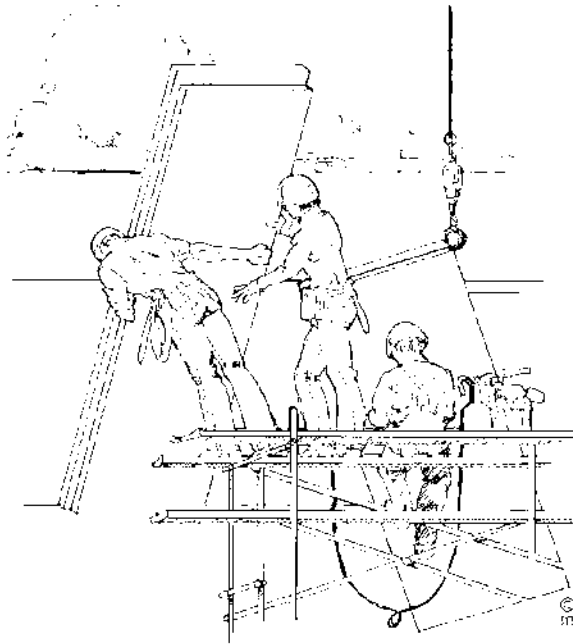
~NOTICE~

TO ALL CONTRACTING AGENCIES

Please be advised that Connecticut General Statutes Section 31-53, requires the contracting agency to certify to the Department of Labor, the total dollar amount of work to be done in connection with such public works project, regardless of whether such project consists of one or more contracts.

Please find the attached “Contracting Agency Certification Form” to be completed and returned to the Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit.

 Inquiries can be directed to (860)263-6543.



CONNECTICUT DEPARTMENT OF LABOR  
WAGE AND WORKPLACE STANDARDS DIVISION  
CONTRACT COMPLIANCE UNIT

*CONTRACTING AGENCY CERTIFICATION FORM*

I, \_\_\_\_\_, acting in my official capacity as \_\_\_\_\_,  
authorized representative title

for \_\_\_\_\_, located at \_\_\_\_\_,  
contracting agency address

do hereby certify that the total dollar amount of work to be done in connection with  
\_\_\_\_\_, located at \_\_\_\_\_,  
project name and number address

shall be \$\_\_\_\_\_, which includes all work, regardless of whether such project  
consists of one or more contracts.

*CONTRACTOR INFORMATION*

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Authorized Representative: \_\_\_\_\_

Approximate Starting Date: \_\_\_\_\_

Approximate Completion Date: \_\_\_\_\_

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Return To: Connecticut Department of Labor  
Wage & Workplace Standards Division  
Contract Compliance Unit  
200 Folly Brook Blvd.  
Wethersfield, CT 06109

Date Issued: \_\_\_\_\_

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):* \_\_\_\_\_

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.

**PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS  
WEEKLY PAYROLL**

Connecticut Department of Labor  
Wage and Workplace Standards Division  
200 Folly Brook Blvd.  
Wethersfield, CT 06109

CONTRACTOR NAME AND ADDRESS: \_\_\_\_\_ SUBCONTRACTOR NAME & ADDRESS: \_\_\_\_\_ WORKER'S COMPENSATION INSURANCE CARRIER: \_\_\_\_\_

PAYROLL NUMBER: \_\_\_\_\_ Week-Ending Date: \_\_\_\_\_ PROJECT NAME & ADDRESS: \_\_\_\_\_  
 POLICY # \_\_\_\_\_ EFFECTIVE DATE: \_\_\_\_\_  
 EXPIRATION DATE: \_\_\_\_\_

PERSON/WORKER, ADDRESS and SECTION	APPR RATE % AND RACE*	WORK CLASSIFICATION & Number - OSHA 10 Certification Number	DAY AND DATE							Total ST Hours	Total FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS			GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY					
			S	M	T	W	TH	F	S					FEDERAL WITH-HOLDING	STATE WITH-HOLDING	LIST OTHER							
											\$	1. \$											
											\$	2. \$											
											\$	3. \$											
											\$	4. \$											
											\$	5. \$											
											\$	6. \$											
											\$	1. \$											
											\$	2. \$											
											\$	3. \$											
											\$	4. \$											
											\$	5. \$											
											\$	6. \$											

Weekly Payroll Certification For  
Public Works Projects (Continued)

**PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS**

**WEEKLY PAYROLL**

Week-Ending Date:  
Contractor or Subcontractor Business Name:

PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE							Total ST Hours	BASE HOURLY RATE	TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS			GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY		
				S	M	T	W	TH	F	S						FEDERAL	STATE	OTHER				
				HOURS WORKED EACH DAY												O/T Hours						
											\$	1. \$										
											Base Rate	2. \$										
											\$	3. \$										
											Cash Fringe	4. \$										
											\$	5. \$										
											Cash Fringe	6. \$										
											\$	1. \$										
											Base Rate	2. \$										
											\$	3. \$										
											Cash Fringe	4. \$										
											\$	5. \$										
											Cash Fringe	6. \$										
											\$	1. \$										
											Base Rate	2. \$										
											\$	3. \$										
											Cash Fringe	4. \$										
											\$	5. \$										
											Cash Fringe	6. \$										

\*IF REQUIRED

12/9/2013  
WWS-CP2

NOTICE: THIS PAGE MUST BE ACCOMPANIED BY A COVER PAGE (FORM # WWS-CP1)

PAGE NUMBER \_\_\_\_\_ OF \_\_\_\_\_

**\*FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker’s compensation, income taxes, etc.).

Please specify the type of benefits provided:

- 1) Medical or hospital care \_\_\_\_\_ 4) Disability \_\_\_\_\_
- 2) Pension or retirement \_\_\_\_\_ 5) Vacation, holiday \_\_\_\_\_
- 3) Life Insurance \_\_\_\_\_ 6) Other (please specify) \_\_\_\_\_

**CERTIFIED STATEMENT OF COMPLIANCE**

For the week ending date of \_\_\_\_\_,

I, \_\_\_\_\_ of \_\_\_\_\_, (hereafter known as Employer) in my capacity as \_\_\_\_\_ (title) do hereby certify and state:

**Section A:**

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

- a) The records submitted are true and accurate;
- b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;
- c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);
- d) Each such person is covered by a worker’s compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;
- e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and
- f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such persons name first appears.

\_\_\_\_\_  
 (Signature) (Title) Submitted on (Date)

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

In accordance with Connecticut General Statutes, 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.

### PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

WEEKLY PAYROLL

Connecticut Department of Labor  
Wage and Workplace Standards Division  
200 Foley Brook Blvd.  
Wethersfield, CT 06109

CONTRACTOR NAME AND ADDRESS:  
Landon Corporation, 15 Connecticut Avenue, Northford, CT 06472

SUBCONTRACTOR NAME & ADDRESS  
XYZ Corporation  
2 Main Street  
Yantic, CT 06389

WORKERS COMPENSATION INSURANCE CARRIER  
Travelers Insurance Company  
POLICY # #BAC8888928  
EFFECTIVE DATE: 1/1/09  
EXPIRATION DATE: 12/31/09

PAYROLL NUMBER	Week-Ending Date	PROJECT NAME & ADDRESS	DAY AND DATE							Total ST Hours	BASE HOURLY RATE	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS			GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY	
			HOURS WORKED EACH DAY											TOTAL FRINGE BENEFIT PLAN CASH	FICA	FEDERAL STATE WITHHOLDING			LIST OTHER
			S	M	T	W	TH	F	S										
1	9/28/09	DOT 105-296, Route 82	20	21	22	23	24	25	26										

OSHA 10 ~ ATTACH CARD TO 1ST CERTIFIED PAYROLL



**\*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 Blue Cross 4) Disability \_\_\_\_\_
- 2) Pension or retirement \_\_\_\_\_ 5) Vacation, holiday \_\_\_\_\_
- 3) Life Insurance Utopia 6) Other (please specify) \_\_\_\_\_

**CERTIFIED STATEMENT OF COMPLIANCE**

For the week ending date of 9/26/09,

I, Robert Craft of XYZ Corporation, (hereafter known as

Employer) in my capacity as Owner (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 employee 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 employee 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 employee of the Employer 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 employee's name first appears.

Robert Craft      owner      10/2/09  
 (Signature)      (Title)      Submitted on (Date)

**Section B: Applies to CONNDOT Projects ONLY**

That pursuant to CONNDOT contract requirements for reporting purposes only, all employees listed under Section B who performed work on this project are not covered under the prevailing wage requirements defined in Connecticut General Statutes Section 31-53.

Robert Craft      owner      10/2/09  
 (Signature)      (Title)      Submitted on (Date)

Note: CTDOL will assume all hours worked were performed under Section A unless clearly delineated as Section B WWS-CP1 as such. Should an employee perform work under both Section A and Section B, the hours worked and wages paid must be segregated for reporting purposes.

**\*\*\*THIS IS A PUBLIC DOCUMENT\*\*\*  
\*\*\*DO NOT INCLUDE SOCIAL SECURITY NUMBERS\*\*\***

## 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.

*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.*

**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. RESILIENT 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.

- **CLEANING LABORER**

The clean up of any construction debris and the general cleaning, including sweeping, wash down, mopping, wiping of the construction facility, washing, polishing, dusting, etc., prior to the issuance of a certificate of occupancy falls under the *Labor classification*.

- **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/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 requires either a blended rate or 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 requires either a blended rate or equal composite workforce. Insulated metal and insulated composite panels are still installed by the Ironworker.

- **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. Past practice using the applicable licensed trades, Plumber, Sheet Metal, Sprinkler Fitter, and Electrician, is not inconsistent with the Insulator classification and would be permitted.

- **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), metal bridge handrail, and decorative security fence 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. (tear-off and/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, wall panel siding, 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. Insulated metal and insulated composite panels are still installed by the Iron Worker. 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.

- **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**

**Definitions:**

1) “Site of the work” (29 Code of Federal Regulations (CFR) 5.2(l)(b) is the physical place or places where the building or work called for in the contract will remain and any other site where a significant portion of the building or work is constructed, provided that such site is established specifically for the performance of the contract or project;

(a) Except as provided in paragraph (l) (3) of this section, job headquarters, tool yards, batch plants, borrow pits, etc. are part of the “site of the work”; provided they are dedicated exclusively, or nearly so, to the performance of the contract or project, and provided they are adjacent to “the site of work” as defined in paragraph (e)(1) of this section;

(b) Not included in the “site of the work” are permanent home offices, branch plant establishments, fabrication plants, tool yards etc, of a contractor or subcontractor whose location and continuance in operation are determined wholly without regard to a particular State or political subdivision contract or uncertain and indefinite periods of time involved of a few seconds or minutes duration and where the failure to count such time is due to consideration justified by industrial realities (29 CFR 785.47)

2) “Engaged to wait” is waiting time that belongs to and is controlled by the employer which is an integral part of the job and is therefore compensable as hours worked. (29 CFR 785.15)

3) “Waiting to be engaged” is waiting time that an employee can use effectively for their own purpose and is not compensable as hours worked. (29 CFR 785.16)

4) “De Minimus” is a rule that recognizes that unsubstantial or insignificant periods of time which cannot as a practical administrative matter be precisely recorded for payroll purposes, may be disregarded. This rule applies only where there are uncertain and indefinite periods of time involved of a short duration and where the failure to count such time is due to consideration justified by worksite realities. For example, with respect to truck drivers on prevailing wage sites, this is typically less than 15 minutes at a time.

**Coverage of Truck Drivers on State or Political subdivision Prevailing Wage Projects**

**Truck drivers are covered for payroll purposes under the following conditions:**

- Truck Drivers for time spent working on the site of the work.
- Truck Drivers for time spent loading and/or unloading materials and supplies on the site of the work, if such time is not de minimus

- Truck drivers transporting materials or supplies between a facility that is deemed part of the site of the work and the actual construction site.
- Truck drivers transporting portions of the building or work between a site established specifically for the performance of the contract or project where a significant portion of such building or work is constructed and the physical places where the building or work outlined in the contract will remain.

*For example: Truck drivers delivering asphalt are covered under prevailing wage while “engaged to wait” on the site and when directly involved in the paving operation, provided the total time is not “de minimus”*

**Truck Drivers are not covered in the following instances:**

- Material delivery truck drivers while off “the site of the work”
- Truck Drivers traveling between a prevailing wage job and a commercial supply facility while they are off the “site of the work”
- Truck drivers whose time spent on the “site of the work” is de minimus, such as under 15 minutes at a time, merely to drop off materials or supplies, including asphalt.

*These guidelines are similar to U.S. Labor Department policies. The application of these guidelines may be subject to review based on factual considerations on a case by case basis.*

**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*



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.

## 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](http://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.**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

**Minimum Rates and Classifications  
for Building Construction**

ID# : B 24549

**Connecticut Department of Labor  
Wage and Workplace Standards Division**

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:

Project Town: Willimantic

State#:

FAP#:

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

<b>CLASSIFICATION</b>	<b>Hourly Rate</b>	<b>Benefits</b>
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
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**		
1c) Asbestos Worker/Heat and Frost Insulator	39.00	28.76

**As of: Friday, March 16, 2018**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut  
State University

2) Boilermaker	38.34	26.01
----------------	-------	-------

---

3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons	33.48	32.06 + a
---	-------	-----------

---

3b) Tile Setter	34.90	25.87
-----------------	-------	-------

---

3c) Terrazzo Mechanics and Marble Setters	31.69	22.35
---	-------	-------

---

3d) Tile, Marble & Terrazzo Finishers	26.70	21.75
---------------------------------------	-------	-------

---

3e) Plasterer	33.48	32.06
---------------	-------	-------

---

**As of: Friday, March 16, 2018**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

-----LABORERS-----

---

4) Group 1: Laborers (common or general), acetylene burners, carpenter tenders, concrete specialists, wrecking laborers, fire watchers.	29.25	19.50
---	-------	-------

---

4a) Group 2: Mortar mixers, plaster tender, power buggy operators, powdermen, fireproofers/mixer/nozzleman (Person running mixer and spraying fireproof only).	29.50	19.50
--	-------	-------

---

4b) Group 3: Jackhammer operators/pavement breaker, mason tender (brick), mason tender (cement/concrete), forklift operators and forklift operators (masonry).	29.75	19.50
--	-------	-------

---

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.	29.75	19.50
---	-------	-------

---

4d) Group 5: Air track operator, sand blaster and hydraulic drills.	29.75	19.50
---	-------	-------

---

**As of: Friday, March 16, 2018**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

4e) Group 6: Blasters, nuclear and toxic waste removal. 31.00 19.50

---

4f) Group 7: Asbestos/lead removal and encapsulation (except it's removal from mechanical systems which are not to be scrapped). 30.25 19.50

---

4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew. 28.38 19.50

---

4h) Group 9: Top men on open air caisson, cylindrical work and boring crew. 27.86 19.50

---

4i) Group 10: Traffic Control Signalman 16.00 19.50

---

5) Carpenter, Acoustical Ceiling Installation, Soft Floor/Carpet Laying, Metal Stud Installation, Form Work and Scaffold Building, Drywall Hanging, Modular-Furniture Systems Installers, Lathers, Piledrivers, Resilient Floor Layers. 32.60 25.34

---

**As of: Friday, March 16, 2018**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

5a) Millwrights 33.14 25.74

---

6) Electrical Worker (including low voltage wiring) (Trade License required: E1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9) 39.15 25.17+3% of gross wage

---

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

---

-----LINE CONSTRUCTION-----

---

Groundman 26.50 6.5% + 9.00

---

Linemen/Cable Splicer 48.19 6.5% + 22.00

---

**As of: Friday, March 16, 2018**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

8) Glazier (Trade License required: FG-1,2) 36.28 20.45 + a

---

9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection 35.47 33.39 + a

---

----OPERATORS----

---

Group 1: Crane handling or erecting structural steel or stone, hoisting engineer 2 drums or over, front end loader (7 cubic yards or over), work boat 26 ft. and over and Tunnel Boring Machines. (Trade License Required) 39.30 24.05 + a

---

Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required) 38.98 24.05 + a

---

Group 3: Excavator; Backhoe/Excavator under 2 cubic yards; Cranes (under 100 ton rated capacity), Grader/Blade; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade. (slopes, shaping, laser or GPS, etc.). (Trade License Required) 38.24 24.05 + a

---

**As of: Friday, March 16, 2018**



Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper).	37.85	24.05 + a
--	-------	-----------

---

Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" Mandrell)	37.26	24.05 + a
--	-------	-----------

---

Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller; Pile Testing Machine.	37.26	24.05 + a
--	-------	-----------

---

Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	36.95	24.05 + a
---	-------	-----------

---

Group 7: Asphalt roller, concrete saws and cutters (ride on types), vermeer concrete cutter, Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrell).	36.61	24.05 + a
--	-------	-----------

---

Group 8: Mechanic, grease truck operator, hydroblaster; barrier mover; power stone spreader; welding; work boat under 26 ft.; transfer machine.	36.21	24.05 + a
---	-------	-----------

---

**As of: Friday, March 16, 2018**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

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).	35.78	24.05 + a
--	-------	-----------

---

Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc.	33.74	24.05 + a
---	-------	-----------

---

Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	33.74	24.05 + a
--	-------	-----------

---

Group 12: Wellpoint operator.	33.68	24.05 + a
-------------------------------	-------	-----------

---

Group 13: Compressor battery operator.	33.10	24.05 + a
--	-------	-----------

---

Group 14: Elevator operator; tow motor operator (solid tire no rough terrain).	31.96	24.05 + a
--	-------	-----------

---

**As of: Friday, March 16, 2018**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator. 31.55 24.05 + a

---

Group 16: Maintenance Engineer/Oiler. 30.90 24.05 + a

---

Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator. 35.21 24.05 + a

---

Group 18: Power safety boat; vacuum truck; zim mixer; sweeper; (Minimum for any job requiring a CDL license). 32.79 24.05 + a

---

-----PAINTERS (Including Drywall Finishing)-----

---

10a) Brush and Roller 32.72 20.45

---

**As of: Friday, March 16, 2018**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

10b) Taping Only/Drywall Finishing	33.47	20.45
------------------------------------	-------	-------

---

10c) Paperhanger and Red Label	33.22	20.45
--------------------------------	-------	-------

---

10e) Blast and Spray	35.72	20.45
----------------------	-------	-------

---

11) Plumber (excluding HVAC pipe installation) (Trade License required: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2)	41.62	30.36
---	-------	-------

---

12) Well Digger, Pile Testing Machine	33.01	19.40 + a
---------------------------------------	-------	-----------

---

13) Roofer (composition)	35.67	19.28
--------------------------	-------	-------

---

**As of: Friday, March 16, 2018**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

14) Roofer (slate & tile)	36.17	19.28
---------------------------	-------	-------

---

15) Sheetmetal Worker (Trade License required for HVAC and Ductwork: SM-1,SM-2,SM-3,SM-4,SM-5,SM-6)	37.18	34.29
---	-------	-------

---

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)	41.62	30.36
---	-------	-------

---

-----TRUCK DRIVERS-----

---

17a) 2 Axle	29.13	22.32 + a
-------------	-------	-----------

---

17b) 3 Axle, 2 Axle Ready Mix	29.23	22.32 + a
-------------------------------	-------	-----------

---

As of: **Friday, March 16, 2018**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut  
State University

17c) 3 Axle Ready Mix	29.28	22.32 + a
-----------------------	-------	-----------

---

17d) 4 Axle, Heavy Duty Trailer up to 40 tons	29.33	22.32 + a
---	-------	-----------

---

17e) 4 Axle Ready Mix	29.38	22.32 + a
-----------------------	-------	-----------

---

17f) Heavy Duty Trailer (40 Tons and Over)	29.58	22.32 + a
--	-------	-----------

---

17g) Specialized Earth Moving Equipment (Other Than Conventional Type on-the-Road Trucks and Semi-Trailers, Including Euclids)	29.38	22.32 + a
---	-------	-----------

---

18) Sprinkler Fitter (Trade License required: F-1,2,3,4)	43.92	15.84 + a
--	-------	-----------

---

**As of: Friday, March 16, 2018**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut  
State University

19) Theatrical Stage Journeyman	25.76	7.34
---------------------------------	-------	------

---

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

*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](http://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, March 16, 2018**



Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

*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, March 16, 2018**

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

**Minimum Rates and Classifications  
for Heavy/Highway Construction**

**Connecticut Department of Labor  
Wage and Workplace Standards Division**

ID#: H 24549

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:

Project Town: Willimantic

FAP Number:

State Number:

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

**CLASSIFICATION**

**Hourly Rate**

**Benefits**

01) 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 5 and 7\*\*

---

1) Boilermaker	33.79	34% + 8.96
----------------	-------	------------

---

1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	33.48	31.66
---	-------	-------

---

2) Carpenters, Piledrivermen	32.60	25.34
------------------------------	-------	-------

---

As of:

Friday, March 16, 2018

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

2a) Diver Tenders	32.60	25.34
-------------------	-------	-------

---

3) Divers	41.06	25.34
-----------	-------	-------

---

03a) Millwrights	33.14	25.74
------------------	-------	-------

---

4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	48.55	20.45
--	-------	-------

---

4a) Painters: Brush and Roller	32.72	20.45
--------------------------------	-------	-------

---

4d) Painters: Blast and Spray	35.72	20.45
-------------------------------	-------	-------

---

4e) Painters: Tanks, Tower and Swing	34.72	20.45
--------------------------------------	-------	-------

---

*As of:*

Friday, March 16, 2018

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	39.15	25.17+3% of gross wage
--	-------	------------------------

---

6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	35.47	33.39 + a
--	-------	-----------

---

7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (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)	41.62	30.36
--	-------	-------

---

---LABORERS----

---

8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist	29.25	19.50
---	-------	-------

---

9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	29.50	19.50
---	-------	-------

---

10) Group 3: Pipelayers	29.75	19.50
-------------------------	-------	-------

---

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	29.75	19.50
--	-------	-------

---

12) Group 5: Toxic waste removal (non-mechanical systems)	31.25	19.50
---	-------	-------

---

13) Group 6: Blasters	31.00	19.50
-----------------------	-------	-------

---

Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	30.25	19.50
---	-------	-------

---

Group 8: Traffic control signalmen	16.00	19.50
------------------------------------	-------	-------

---

Group 9: Hydraulic Drills	29.30	18.90
---------------------------	-------	-------

---

---LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.---

---

*As of:*

Friday, March 16, 2018

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	32.22	19.50 + a
---	-------	-----------

---

13b) Brakemen, Trackmen	31.28	19.50 + a
-------------------------	-------	-----------

---

---CLEANING, CONCRETE AND CAULKING TUNNEL---

---

14) Concrete Workers, Form Movers, and Strippers	31.28	19.50 + a
--	-------	-----------

---

15) Form Erectors	31.60	19.50 + a
-------------------	-------	-----------

---

---ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:---

---

16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	31.28	19.50 + a
---	-------	-----------

---

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

17) Laborers Topside, Cage Tenders, Bellman 31.17 19.50 + a

---

18) Miners 32.22 19.50 + a

---

---TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----

---

18a) Blaster 38.53 19.50 + a

---

19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders 38.34 19.50 + a

---

20) Change House Attendants, Powder Watchmen, Top on Iron Bolts 36.41 19.50 + a

---

21) Mucking Machine Operator 39.11 19.50 + a

---

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

---TRUCK DRIVERS---(\*see note below)

---

Two axle trucks	29.13	22.32 + a
-----------------	-------	-----------

---

Three axle trucks; two axle ready mix	29.23	22.32 + a
---------------------------------------	-------	-----------

---

Three axle ready mix	29.28	22.32 + a
----------------------	-------	-----------

---

Four axle trucks, heavy duty trailer (up to 40 tons)	29.33	22.32 + a
--	-------	-----------

---

Four axle ready-mix	29.38	22.32 + a
---------------------	-------	-----------

---

Heavy duty trailer (40 tons and over)	29.58	22.32 + a
---------------------------------------	-------	-----------

---

*As of:*

Friday, March 16, 2018



Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	29.38	22.32 + a
---	-------	-----------

---

---POWER EQUIPMENT 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. & Over, Tunnel Boring Machines. (Trade License Required)	39.30	24.05 + a
---	-------	-----------

---

Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required)	38.98	24.05 + a
--	-------	-----------

---

Group 3: Excavator/Backhoe under 2 cubic yards; Cranes (under 100 ton rated capacity), Gradall; 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)	38.24	24.05 + a
---	-------	-----------

---

Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skoopier)	37.85	24.05 + a
--	-------	-----------

---

Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; 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)	37.26	24.05 + a
--	-------	-----------

---

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller. 37.26 24.05 + a

---

Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer). 36.95 24.05 + a

---

Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and Under Mandrel). 36.61 24.05 + a

---

Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine. 36.21 24.05 + a

---

Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder). 35.78 24.05 + a

---

Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc. 33.74 24.05 + a

---

Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment. 33.74 24.05 + a

---

*As of:*

Friday, March 16, 2018

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

Group 12: Wellpoint Operator. 33.68 24.05 + a

---

Group 13: Compressor Battery Operator. 33.10 24.05 + a

---

Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain). 31.96 24.05 + a

---

Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator. 31.55 24.05 + a

---

Group 16: Maintenance Engineer/Oiler 30.90 24.05 + a

---

Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator. 35.21 24.05 + a

---

Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license). 32.79 24.05 + a

---

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

\*\*NOTE: SEE BELOW

---

---LINE CONSTRUCTION---(Railroad Construction and Maintenance)---

---

20) Lineman, Cable Splicer, Technician	48.19	6.5% + 22.00
--	-------	--------------

---

21) Heavy Equipment Operator	42.26	6.5% + 19.88
------------------------------	-------	--------------

---

22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21
--	-------	--------------

---

23) Driver Groundmen	26.50	6.5% + 9.00
----------------------	-------	-------------

---

23a) Truck Driver	40.96	6.5% + 17.76
-------------------	-------	--------------

---

*As of:*

Friday, March 16, 2018

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

---LINE CONSTRUCTION---

---

24) Driver Groundmen	30.92	6.5% + 9.70
----------------------	-------	-------------

---

25) Groundmen	22.67	6.5% + 6.20
---------------	-------	-------------

---

26) Heavy Equipment Operators	37.10	6.5% + 10.70
-------------------------------	-------	--------------

---

27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
---	-------	--------------

---

28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45
--	-------	--------------

---

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

*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.

*~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work ~~*

*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](http://www.ct.gov/dol).*

*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, March 16, 2018

Project: Low Rise Stair Replacement And Courtyard Improvements At Eastern Connecticut State University

*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, March 16, 2018

**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 4<sup>th</sup>, 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.

**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.

# **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](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.**

STATE OF CONNECTICUT  
**CERTIFICATE OF INSURANCE**

This is to certify that the Company listed below has issued the policies listed below, that these policies are written in accordance with the Company's standard policies and endorsements, except as indicated below or as noted in the attachments hereto, which policies and endorsements will be made available to the Owner upon request, that they provide coverage and limits of liability shown with respect to the insurance indicated, that they are in force on this date, that all deductible amounts are indicated below, and that this Certificate is furnished in accordance with and for the purpose of satisfying the requirements of the State of Connecticut, and the Agency in connection with the award and performance of a contract or agreement with the State of Connecticut, and the Agency.

1. Name of insured \_\_\_\_\_

2. Address of insured \_\_\_\_\_

3. Location and Description of Work \_\_\_\_\_

\_\_\_\_\_

Project No. \_\_\_\_\_

Kind and Type of Insurance	Policy No.	Effective Date	Expiration Date	IN DOLLARS Coverage and limits of Liability			
				Bodily Injury Liability		Property Damage Liability	
				Single Limit	Each Accident	Aggregate	
A)	Protective Liability for and in the name of the State of CT			1,000,000	100,000	500,000	
B)	Contractor's Liability			1,000,000	100,000	500,000	
C)	Contractor Protective Liability			1,000,000	100,000	500,000	
D)	Contractual Liability See (1) & (2) Reverse Side			1,000,000	100,000	500,000	
E)	Worker's Compensation (if self-insured Compensation Comm's Certificate Required.)			STATUTORY			
F)	<u>Special Hazards Insurance</u> Type C – Collapse Structural Injury Type X – Explosion or Blast			1,000,000	100,000	500,000	
G)	<u>Type U – Undergraduate Damage</u>			1,000,000	100,000	500,000	
H)	<u>Auto Liability –</u> Owned Automobiles Hired Automobiles Non-owned Automobiles			Each Person	Each Accident		
I)	<u>Builders Risk</u> insurance (Fire Extended Coverage)			AS CALLED FOR ON PROJECT DATA SHEET			
J)	Umbrella Policy (as needed)						

1. Unless requested otherwise by the State, it is agreed that the above named insurance company waives governmental immunity as a defense and will not use the defense of governmental immunity in the adjustment of claims or in the defense of any suit brought against the State, and it is further agreed that the company will bill all premiums and audit charges earned under the protective liability policy to the above named contractor.
  
2. The contractor shall at all times indemnify and save harmless the State of Connecticut, the Agency, 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 Agency, or of the contractor, his subcontractors, or material men, 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 Agency) caused in whole or in part by the acts, omissions, or neglect of 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, material man, 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 ordered to start work or the actual start whichever occurs first until the completion as certified by the Owner.

Such insurance as is herein certified applies to all operations of the insured in connection with the work herein described at the locations stated.

In the event of any restrictive amendment to, any change in or cancellation of any one or more of said policies the

---

Insurance Company

will give not less than thirty days written notice to the party to whom the certificate is issued of such amendment, change or cancellation.

(Original and two copies to be submitted to the awarding Agency in the State of Connecticut. Copy to be furnished named insurance.)

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 2018  
 Insurance Company \_\_\_\_\_

Address \_\_\_\_\_

Authorized Agency \_\_\_\_\_

Authorized Agent \_\_\_\_\_



# AGREEMENT

BETWEEN  
**Eastern Connecticut State University**  
and  
**Contractor by Name**

This Agreement (“Contract”) is entered into by and between [Eastern Connecticut State University], a constituent unit of the State of Connecticut System of Higher Education, with an address of 83 Windham Street, Willimantic, CT 06226 (hereinafter the “Institution”), and [Name of Company] (hereinafter the “Contractor”) with a principal place of business at \_\_\_\_\_ to provide [name the service].

## I. GENERAL

Contractor shall provide [describe the service to be provided]

## II. TERM OF THE AGREEMENT

This Contract shall become effective only as of the date of signature by the Agency’s authorized officials and, the date of approval by the Office of the Attorney General (OAG), if applicable, and shall continue in effect until [insert end date] unless terminated earlier in accordance with the terms of Section 7 below. Work shall commence on [insert start date].

## III. COST [insert RFP/Bid costing details]

1. **MAXIMUM AMOUNT OF CONTRACT \$** [insert not to exceed amount]
2. **Notices:** All notices, demands or requests provided for or permitted to be given pursuant to this Contract must be in writing. All notices, demands and requests shall be deemed to have been properly served if given by personal delivery, or if transmitted by facsimile with confirmed receipt, or if delivered to Federal Express or other reputable express carrier for next business day delivery, charges billed to or prepaid by shipper; or if deposited in the United States mail, registered or certified with return receipt requested, proper postage prepaid, addressed as follows:

### MUST BE COMPLETED

If to the \_\_\_\_\_ Eastern Connecticut State University  
Institution\*: \_\_\_\_\_ 83 Windham Street  
\_\_\_\_\_ Willimantic, CT 06226  
Attn: Renee Theroux-Keech

If to the \_\_\_\_\_ [Contractor Name]  
Contractor\*: \_\_\_\_\_ [Contractor Street]

**\*Any party may change its Notice information in writing in accordance with this Section.**

#### **IV. GENERAL STATE CONTRACT PROVISIONS:**

1. **Statutory Authority.** Connecticut General Statutes §§ 10a-6, 10a-1b, 4a-52a, and/or 10a-151b provide the Institution with authority to enter into contracts in the pursuit of its mission.
2. **Claims Against the State.** The Contractor agrees that the sole and exclusive means for the presentation of any claim against the State of Connecticut or the Institution arising from this Contract shall be in accordance with Chapter 53 of the Connecticut General Statutes (Claims Against the State) and the Contractor further agrees not to initiate any legal proceedings in any state or federal court in addition to, or in lieu of, said Chapter 53 proceedings.
3. **Indemnification.** The Contractor agrees to indemnify, defend and hold harmless the State of Connecticut as well as all Departments, officers, agents, and employees of the State from and against any and all claims, losses or suits according to or resulting from any Contractors, Subcontractors, laborers, or any person, firm or corporation who may be directly or indirectly injured or damaged by the negligence or willful misconduct of the Contractor in the performance of the contract.
4. **Sovereign Immunity.** The parties acknowledge and agree that nothing in this contract shall be construed as a modification, compromise or waiver by the State of any rights or defenses of any immunities provided by Federal law or the laws of the State of Connecticut to the State or any of its officers and employees, which they may have had, now have or will have with respect to all matters arising out of this contract. To the extent that this section conflicts with any other section, this section shall govern.
5. **Insurance.** The Contractor agrees that while performing services specified in this contract that it shall carry sufficient insurance (liability and/or other) as applicable according to the nature of the service(s) to be performed so as to “save harmless” the State of Connecticut from any insurable cause whatsoever. If requested, certificates of such insurance shall be provided to the contracting state agency prior to the performance of services.
6. **Forum and Choice of Law.** The parties 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 Contractor 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.
7. **Termination.**

- a. Notwithstanding any provisions in this contract, the Institution, through a duly authorized employee, may terminate the Contract whenever the Institution makes a written determination that such termination is in the best interests of the State. The Institution shall notify the Contractor in writing of termination pursuant to this section, which notice shall specify the effective date of termination and the extent to which the Contractor must complete its performance under the contract prior to such date.
- b. Notwithstanding any provisions in this contract, the Institution, through a duly authorized employee, may, after making a written determination that the Contractor has breached the contract, terminate the contract in accordance with the following breach provision.
  - i. Breach. If either party breaches the contract in any respect, the non-breaching party shall provide written notice of the breach to the breaching party and afford the breaching party an opportunity to cure within ten (10) days from the date that the breaching party receives the notice. In the case of a Contractor breach, any other time period which the Institution sets forth in the notice shall trump the ten (10) days. The right to cure period shall be extended if the non-breaching party is satisfied that the breaching party is making a good faith effort to cure but the nature of the breach is such that it cannot be cured within the right to cure period. The notice may include an effective contract termination date if the breach is not cured by the stated date and, unless otherwise modified by the non-breaching party in writing prior to the termination date, no further action shall be required of any party to effect the termination as of the stated date. If the notice does not set forth an effective contract termination date, then the non-breaching party may terminate the contract by giving the breaching party no less than twenty four (24) hours' prior written notice. If the Institution believes that the Contractor has not performed according to the contract, the Institution may withhold payment in whole or in part pending resolution of the performance issue, provided that the Institution notifies the Contractor in writing prior to the date that the payment would have been due.
- c. The Institution shall send the notice of termination via certified mail, return receipt requested, to the Contractor at the most current address which the Contractor has furnished to the Institution for purposes of correspondence, or by hand delivery. Upon receiving the notice from the Institution, the Contractor shall immediately discontinue all services affected in accordance with the notice, undertake all Institution all records. The records are deemed to be the property of the Institution and the Contractor shall deliver them to the Institution no later than thirty (30) days after the termination of the contract or fifteen (15) days after the Contractor receives a written request from the Institution for the records. The Contractor shall deliver those records that exist in electronic, magnetic or other intangible form in a non-proprietary format, such as, but not limited to, ASCII or .TXT.
- d. Upon receipt of a written notice of termination from the Institution, the Contractor shall cease operations as the Institution directs in the notice, and take

all actions that are necessary or appropriate, or that the Institution may reasonably direct, for the protection, and preservation of the goods and any other property. Except for any work which the Institution directs the Contractor to perform in the notice prior to the effective date of termination, and except as otherwise provided in the notice, the Contractor shall terminate or conclude all existing subcontracts and purchase orders and shall not enter into any further subcontracts, purchase orders or commitments.

- e. The Institution shall, within forty-five (45) days of the effective date of termination; reimburse the Contractor for its performance rendered and accepted by the Institution in accordance with the terms of this contract, in addition to all actual and reasonable costs incurred after termination in completing those portions of the performance which the notice required the Contractor to complete. However, the Contractor is not entitled to receive and the Institution is not obligated to tender to the Contractor any payments for anticipated or lost profits. Upon request by the Institution, the Contractor shall assign to the Institution, or any replacement Contractor which the Institution designates, all subcontracts, purchase orders and other commitments, deliver to the Institution all records and other information pertaining to its performance, and remove from State premises, whether leased or owned, all of Contractor's property, equipment, waste material and rubbish related to its performance, all as the Institution may request.
- f. For breach or violation of any of the provisions in the section concerning representations and warranties, the Institution may terminate the contract in accordance with its terms and revoke any consents to assignments given as if the assignments had never been requested or consented to, without liability to the Contractor or Contractor parties or any third party.
- g. Upon termination of the contract, all rights and obligations shall be null and void, so that no party shall have any further rights or obligations to any other party, except with respect to the sections which survive termination. All representations, warranties, agreements and rights of the parties under the contract shall survive such termination to the extent not otherwise limited in the contract and without each one of them having to be specifically mentioned in the contract.
- h. Termination of the contract pursuant to this section shall not be deemed to be a breach of contract by the Institution.

8. **Entire Agreement and Amendment.** This written contract shall constitute the entire agreement between the parties and no other terms and conditions in any document, acceptance or acknowledgment shall be effective or binding unless expressly agreed to in writing by the Institution. This contract may not be changed other than by a formal written contract amendment signed by the parties hereto and approved by the Connecticut Attorney General.

9. **Nondiscrimination.**

- (a) For purposes of this Section, the following terms are defined as follows: (i) "Commission" means the Commission on Human Rights and Opportunities; (ii)

"Contract" and "contract" include any extension or modification of the Contract or contract; (iii) "Contractor" and "contractor" include any successors or assigns of the Contractor or contractor; (iv) "Gender identity or expression" means a person's gender-related identity, appearance or behavior, whether or not that gender-related identity, appearance or behavior is different from that traditionally associated with the person's physiology or assigned sex at birth, which gender-related identity can be shown by providing evidence including, but not limited to, medical history, care or treatment of the gender-related identity, consistent and uniform assertion of the gender-related identity or any other evidence that the gender-related identity is sincerely held, part of a person's core identity or not being asserted for an improper purpose; (v) "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations; (vi) "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; (vii) "marital status" means being single, married as recognized by the State of Connecticut, widowed, separated or divorced; (viii) "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; (ix) "minority business enterprise" means any small contractor or supplier of materials fifty-one percent 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 Connecticut General Statutes § 32-9n; and (x) "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.

For purposes of this Section, the terms "Contract" and "contract" do 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 Conn. Gen. Stat. § 1-120, (3) any other state, including but not limited to any federally recognized Indian tribal governments, as defined in Conn. Gen. Stat. § 1-267, (4) the federal government, (5) a foreign government, or (6) an agency of a subdivision, agency, state or government described in the immediately preceding enumerated items (1), (2), (3), (4) or (5).

(b) (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 the 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 the Contractor has a collective bargaining Agreement or other contract or understanding and each vendor with which the 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 Conn. Gen. Stat. §§ 46a-68e and 46a-68f and with each regulation or relevant order issued by said Commission pursuant to Conn. Gen. Stat. §§ 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 it relates to the provisions of this Section and Conn. Gen. Stat. § 46a-56. 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 projects.

(c) 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.

(d) The Contractor shall develop and maintain adequate documentation, in a manner prescribed by the Commission, of its good faith efforts.

(e) The Contractor shall include the provisions of subsection (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 Conn. Gen. Stat. § 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.

(f) The Contractor agrees to comply with the regulations referred to in this Section as they exist on the date of this Contract and as they may be adopted or amended from time to time during the term of this Contract and any amendments thereto.

(g) (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 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 Conn. Gen. Stat. § 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 Conn. Gen. Stat. § 46a-56.

(h) The Contractor shall include the provisions of the foregoing paragraph 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 Conn. Gen. Stat. § 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.

10. **Executive Orders.** This Contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all 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 may also be subject to Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services and to Executive Order No. 49 of Governor Dannel P. Malloy, promulgated May 22, 2015, mandating disclosure of certain gifts to public employees and contributions to certain candidates for office. If Executive Order 14 and/or Executive Order 49 are applicable, they are deemed to be incorporated into and are made a part of the Contract as if they had been fully set forth in it. At the Contractor's request, the Institution or DAS shall provide a copy of these orders to the Contractor.
11. **Force Majeure.** If the performance of obligations under this Contract are rendered impossible or hazardous or is otherwise prevented or impaired due to illness, accident, Act(s) of God, riots, strikes, labor difficulties, epidemics, earthquakes, and/or any other cause or event, similar or dissimilar, beyond the control of the Contractor, then each

party's obligations to the other under this Contract shall be excused and neither party shall have any liability to the other under or in connection with this Contract.

12. **Campaign Contribution Restrictions.** For all state contracts as defined in Connecticut General Statutes § 9-612(g)(2), as amended by Public Act 10-1 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 Election Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the Notice, referenced herein as Exhibit A.
13. **Contract Assignment.** No right or duty, in whole or in part, of the Contractor under this Agreement may be assigned or delegated without the prior written consent of the institution.
14. **Confidential Information.** The Contractor acknowledges that it may have access to Confidential Information (as hereinafter defined). The Contractor agrees that it will use the Confidential Information solely for the purpose of performing its duties as a consultant and agrees that it will not divulge, furnish, publish or use for its own benefit or for the direct or indirect benefit of any other person or entity, whether or not for monetary gain, any Confidential Information.  
  
For purposes of this Agreement, the term "Confidential Information" shall mean (i) all information related to the business operations, marketing plans, financial position and (ii) other business information and any other information disclosed to the Contractor. Confidential Information shall not include information which (i) is or becomes part of the public domain through no act or omission attributable to the Contractor, (ii) is released after prior written authorization or (iii) the Contractor receives from any third party who is unrelated to it and who is not under any obligation to maintain the confidentiality of such information.
15. **Family Educational Rights and Privacy Act (FERPA).** In all respects, Contractor shall comply with the provisions of the Family Educational Rights and Privacy Act (FERPA). For purposes of this contract, FERPA includes any amendments or other relevant provisions of federal law, as well as all requirements of Chapter 99 of Title 34 of the Code of Federal Regulations, as amended from time to time. Nothing in this agreement may be construed to allow Contractor to maintain, use, disclose or share student information in a manner not allowed by federal law or regulation or by this contract. Contractor agrees that it shall not provide any student information obtained under this contract to any party ineligible to receive data protected by FERPA. This section shall survive the termination, cancellation or expiration of the contract.
16. **Summary of State Ethics Laws.** Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes, the summary of State ethic laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes is incorporated by reference into and made a part of the contract as if the summary had been fully set forth in the contract.



17. **Whistleblower.** This contract may be subject to the provisions of Section 4-61dd of the Connecticut General Statutes. In accordance with this statute, if an officer, employee or appointing authority of the 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 any employee of the contracting state or quasi-public agency or the Auditors of Public Accounts or the Attorney General under the provisions of subsection (a) of such statute, 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 percent (20%) of the value of this 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 State may request that the Attorney General bring a civil action in the Superior Court for the Judicial District of Hartford to seek imposition and recovery of such civil penalty. In accordance with subsection (f) of such statute, each large state contractor, as defined in the statute, shall post a notice of the provisions of the statute relating to large state contractors in a conspicuous place which is readily available for viewing by the employees of the contractor.
18. **Disclosure of Records.** This Contract may be subject to the provisions of section 1-218 of the Connecticut General Statutes. In accordance with this statute, each contract in excess of two million five hundred thousand dollars between a public agency and a person for the performance of a governmental function shall (a) provide that the public agency is entitled to receive a copy of records and files related to the performance of the governmental function, and (b) indicate that such records and files are subject to the Freedom of Information Act (FOIA) and may be disclosed by the public agency pursuant to FOIA. No request to inspect or copy such records or files shall be valid unless the request is made to the public agency in accordance with FOIA. Any complaint by a person who is denied the right to inspect or copy such records or files shall be brought to the Freedom of Information Commission in accordance with the provisions of sections 1-205 and 1-206 of the Connecticut General Statutes.
19. **Audit Requirements for State Grants.** For purposes of this clause, the word "Contractor" shall be read to mean "nonstate entity," as that term is defined in Conn. Gen. Stat. § 4-230. The Contractor shall provide for an annual financial audit acceptable to the Institution for any expenditure of State-awarded funds made by the Contractor. Such audit shall include management letters and audit recommendations. The State Auditors of Public Accounts shall have access to all records and accounts for the fiscal year(s) in which the award was made. The Contractor will comply with federal and State single audit standards as applicable.
20. **Audit Requirements for Federal Grants.** For U.S. based, non-profit Contractors expending \$500,000 or more of federal awards in one year: The Contractor agrees to comply with the requirements of Office of Management and Budget (OMB) Circular A-133. Contractor further agrees to provide the Institution with copies of all independent auditors' reports which cover the period of performance of this contract. Contractor will provide a copy of its response to auditors' reports and, in instances of non-compliance, a plan for corrective action. All records and reports prepared in accordance with the requirements of OMB Circular A-133 shall be made available for review or audit by appropriate officials of the Federal agency, Institution, or the General Accounting Office (GAO) during normal business hours.

For U.S. based, non-profit Contractors expending less than \$500,000 of Federal awards in one year: Contractor agrees that all records pertaining to this agreement will be made available for review or audit by appropriate officials of the Federal agency, Institution, or the GAO during normal business hours.

21. **Professional Standards.** In rendering services under this contract, the Contractor shall conform to high professional standards of work and business ethic. The Contractor warrants that the services shall be performed: 1) in a professional and workmanlike manner; and 2) in accordance with generally and currently accepted principles and practices. During the term of this contract, the Contractor agrees to provide to Institution in a good and faithful manner, using its best efforts and in a manner that shall promote the interests of Institution, such services as Institution requests, provided in the contract.

22. **Contractor's Standards of Conduct.**

- (a) In order to insure the orderly and efficient performance of duties and services at the Institution and to protect the health, safety and welfare of all members of Institution's community the Contractor agrees that the following items are strictly prohibited while performing services under this Agreement:
- i. Use or possession of drugs or alcohol;
  - ii. Possession of firearms or illegal weapons anywhere on campus property including vehicles;
  - iii. Smoking in buildings;
  - iv. Harassment (sexual, racial or otherwise) or intimidation of anyone on the premises of the campus;
  - v. Violation of applicable traffic or public safety regulations or of Institution rules and procedures;
  - vi. Unauthorized use of Institution vehicles, equipment or property;
  - vii. Use of University telephones for personal business;
  - viii. Removal or theft of University property;
  - ix. Unauthorized duplication or possession of University keys;
  - x. Transfer of personal identification card or of parking pass to unauthorized personnel;
  - xi. Conduct or behavior that endangers the health, safety and welfare of any member of the public or of the University community;
  - xii. Interference with the work of other employees;
  - xiii. Work attire other than the specified uniform; and
  - xiv. Loud, vulgar behavior or the use of profanity.
- (b) Violation of Standards: Contractor will require its employees to comply with the standards listed in Professional Standards and 22 (a) above. The Institution may, at its discretion, recommend discharge of any employee of the Contractor found to be in

violation of the standards listed in 1.1(i) or 1.2(a) above, or in violation of any law or standards adopted by the Institution from time to time, as required, to protect the health, safety and welfare of the Institution's community. Upon request of the Institution, Contractor shall remove any of its employees that violate said standards from assignments to be performed under this Agreement.

**V. ACCEPTANCE OF AGREEMENT**

IN WITNESS WHEREOF, the parties have executed this Contract by their duly authorized representatives with full knowledge of and agreement with its terms and conditions.

**[Eastern Connecticut State University**

**[Enter Contractor Business Name]**

By: \_\_\_\_\_

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

**By the Connecticut Attorney General**

This contract template, having been reviewed and approved as to form by the Connecticut Attorney General, is exempt from review pursuant to a Memorandum of Agreement between the Connecticut State Colleges and Universities, Board of Regents for Higher Education and the Connecticut Attorney General dated December 30, 2015. Therefore, no signature is required below.

# CONNECTICUT STATE ELECTIONS ENFORCEMENT COMMISSION

## EXHIBIT A - SEEC NOTICE



Rev. 1/11

---

### NOTICE TO EXECUTIVE BRANCH STATE CONTRACTORS AND PROSPECTIVE STATE CONTRACTORS OF CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

This notice is provided under the authority of Connecticut General Statutes §9-612(g)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (*italicized words are defined below*):

---

#### CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

---

*No state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor*, with regard to a *state contract* or *state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly solicit** contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor* or *principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

---

#### DUTY TO INFORM

---

---

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

---

### **PENALTIES FOR VIOLATIONS**

---

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

**Civil penalties** - Up to \$2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of up to \$2,000 or twice the amount of the prohibited contributions made by their principals.

**Criminal penalties** - Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than \$5,000 in fines, or both.

---

### **CONTRACT CONSEQUENCES**

---

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may result in the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information may be found on the website of the State Elections Enforcement Commission, [www.ct.gov/seec](http://www.ct.gov/seec). Click on the link to “Lobbyist/Contractor Limitations.”

---

### **DEFINITIONS**

---

---

“State contractor” means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. “State contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

“Prospective state contractor” means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. “Prospective state contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

“Principal of a state contractor or prospective state contractor” means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

“State contract” means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. “State contract” does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan, a loan to an individual for other than commercial purposes or any agreement or contract between the state or any state agency and the United States Department of the Navy or the United

“State contract solicitation” means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

“Managerial or discretionary responsibilities with respect to a state contract” means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

“Dependent child” means a child residing in an individual’s household who may legally be claimed as a dependent on the federal income tax of such individual.

“Solicit” means (A) requesting that a contribution be made, (B) participating in any fund-raising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

“Subcontractor” means any person, business entity or nonprofit organization that contracts to perform part or all of the obligations of a state contractor's state contract. Such person, business entity or nonprofit organization shall be deemed to be a subcontractor until December thirty first of the year in which the subcontract terminates. “Subcontractor” does not include (i) a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or (ii) an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

“Principal of a subcontractor” means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a subcontractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a subcontractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a subcontractor, which is not a business entity, or if a subcontractor has no such officer, then the officer who duly possesses comparable powers

---

and duties, (iv) an officer or an employee of any subcontractor who has managerial or discretionary responsibilities with respect to a subcontract with a state contractor, (v) the spouse or a dependent child who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the subcontractor.



**COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES  
CONTRACT COMPLIANCE REGULATIONS**

**IMPORTANT**

All bidders are required to file an acknowledgement of receipt of the "NOTIFICATION TO BIDDERS" form with their proposal.

Before a contract award can be made for this project, the successful low bidder will be required to file the following forms, developed by The Commission on Rights and Opportunities pursuant to Connecticut General Statutes Section 4-114a.

1) Contractors Minority Business Enterprises Utilization Form

2) Affidavit (when applicable)

3) CHRO Certificate of Compliance - Pursuant to section 46a-68c of the Connecticut General Statutes, each contractor with fifty or more employees awarded a public works contract in excess of fifty thousand dollars in any fiscal year, but not subject to the provisions of section 46a-68d, shall develop and file with the commission an affirmative action plan which shall comply with regulations adopted by said commission. Failure to develop an approved an approved affirmative action plan pursuant to this section shall act as a bar to bidding on or the award of future contracts until such requirement has been met. When the commission approves an affirmative action plan pursuant to this section, it shall issue a certificate of compliance to the contractor. This certificate shall be prima facie proof of the contractor's eligibility to bid or be awarded contracts for a period of two years from the date of the certificate.

# Form of Proposal - Set Aside Worksheet

(for \$500k+ projects)

Project Number: ECSU 2016-9 (Phase II)

Project Name: LOW RISE STAIR REPLACEMENT & COURTYARD IMPROVEMENTS

	Subcontractor Name	Class of work	SBE	MBE/WBE	Prime Contractor self performing \$	Subcontract amounts
1						\$
2						\$
3						\$
4						\$
5						\$
6						\$
7						\$
8						\$
9	Prime Contractor Total	Bidder is the Prime Contractor			\$	
10	SBE Subtotal	Add SBE subcontract amounts from above list and enter total at right				\$
11	MBE/WBE Subtotal	Add MBE/WBE subcontract amounts from the list and enter total to the right				\$
12	Lump Sum base bid	Enter total lump sum base bid from bid submittal form				\$
13	Bidding Prime Contractor % and \$ (Divide line 9 by line 12)				%	\$
14	Remaining value subject to SBE/MBE = lump sum line 12 minus prime contractor total					\$
15	SBE Percentage	Divide line 10 by line 12. Enter % to the right				%
16	MBE/WBE Percentage	Divide line 11 by line 12. Enter % to the right.				%
17	<b>Total SBE/MBE/WBE %</b>	Add lines 15+16 for total % (must be 25% or greater)				%

In determining and ensuring compliance with CHRO requirements this worksheet ***must*** be submitted as part of the bid submittal package. Failure to do so shall be grounds for disqualification of the bid. Compliance determination shall initially be based on the base bid sum. However, for bid solicitations requiring acceptance of Alternates or Supplemental bids, a revised worksheet shall be required prior to issuance of contract.

**The SBE requirement is 25% of the entire bid total with 6.25% to an MBE/WBE.**

Each bidder shall submit, as part of their proposal, copies of Certificates of Eligibility for each set aside subcontractor or "screen shots" from the State of Connecticut Supplier Diversity web site for each set aside subcontractor showing name and address, certification type and certificate expiration date.

Vendor Company Name (Prime Contractor) \_\_\_\_\_

Authorized signature \_\_\_\_\_ Date \_\_\_\_\_

**COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES  
CONTRACT COMPLIANCE REGULATIONS  
NOTIFICATION TO BIDDERS**

(Revised 09/17/07)

The contract to be awarded is subject to contract compliance requirements mandated by Sections 4a-60 and 4a-60a of the Connecticut General Statutes; and, when the awarding agency is the State, Sections 46a-71(d) and 46a-81i(d) of the Connecticut General Statutes. There are Contract Compliance Regulations codified at Section 46a-68j-21 through 43 of the Regulations of Connecticut State Agencies, which establish a procedure for awarding all contracts covered by Sections 4a-60 and 46a-71(d) of the Connecticut General Statutes.

According to Section 46a-68j-30(9) of the Contract Compliance Regulations, 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." "Minority business enterprise" is defined in Section 4a-60 of the Connecticut General Statutes as a business wherein fifty-one percent or more of the capital stock, or assets belong to a person or persons: "(1) Who are active in 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." "Minority" groups are defined in Section 32-9n of the Connecticut General Statutes as "(1) Black Americans . . . (2) Hispanic Americans . . . (3) persons who have origins in the Iberian Peninsula . . . (4) Women . . . (5) Asian Pacific Americans and Pacific Islanders; (6) American Indians . . ." An individual with a disability is also a minority business enterprise as provided by Section 4a-60g of the Connecticut General Statutes. The above definitions apply to the contract compliance requirements by virtue of Section 46a-68j-21(11) of the Contract Compliance Regulations.

The awarding agency will consider the following factors when reviewing the bidder's qualifications under the contract compliance requirements:

- (a) the bidder's success in implementing an affirmative action plan;
- (b) the bidder's success in developing an apprenticeship program complying with Sections 46a-68-1 to 46a-68-17 of the Administrative Regulations of Connecticut State Agencies, inclusive;
- (c) the bidder's promise to develop and implement a successful affirmative action plan;
- (d) the bidder's submission of employment statistics contained in the "Employment Information Form", indicating that the composition of its workforce is at or near parity when compared to the racial and sexual composition of the workforce in the relevant labor market area; and
- (e) the bidder's promise to set aside a portion of the contract for legitimate minority business enterprises. See Section 46a-68j-30(10)(E) of the Contract Compliance Regulations.

---

**INSTRUCTIONS AND OTHER INFORMATION**

The following BIDDER CONTRACT COMPLIANCE MONITORING REPORT must be completed in full, signed, and submitted with the bid for this contract. The contract awarding agency and the Commission on Human Rights and Opportunities will use the information contained thereon to determine the bidders compliance to Sections 4a-60 and 4a-60a CONN. GEN. STAT., and Sections 46a-68j-23 of the Regulations of Connecticut State Agencies regarding equal employment opportunity, and the bidder's  good faith efforts to include minority business enterprises as subcontractors and suppliers for the work of the contract.

1) **Definition of Small Contractor**

Section 4a-60g CONN. GEN. STAT. defines a small contractor as a company that has been doing business under the same management and control and has maintained its principal place of business in Connecticut for a one year period immediately prior to its application for certification under this section, had gross revenues not exceeding ten million dollars in the most recently completed fiscal year, and at least fifty-one percent of the ownership of which is held by a person or persons who are active in the daily affairs of the company, and have the power to direct the management and policies of the company, except that a nonprofit corporation shall be construed to be a small contractor if such nonprofit corporation meets the requirements of subparagraphs (A) and (B) of subdivision 4a-60g CONN. GEN. STAT.

**MANAGEMENT:** Managers plan, organize, direct, and control the major functions of an organization through subordinates who are at the managerial or supervisory level. They make policy decisions and set objectives for the company or departments. They are not usually directly involved in production or providing services. Examples include top executives, public relations managers, managers of operations specialties (such as financial, human resources, or purchasing managers), and construction and engineering managers.

**BUSINESS AND FINANCIAL OPERATIONS:** These occupations include managers and professionals who work with the financial aspects of the business. These occupations include accountants and auditors, purchasing agents, management analysts, labor relations specialists, and budget, credit, and financial analysts.

**MARKETING AND SALES:** Occupations related to the act or process of buying and selling products and/or services such as sales engineer, retail sales workers and sales representatives including wholesale.

**LEGAL OCCUPATIONS:** In-House Counsel who is charged with providing legal advice and services in regards to legal issues that may arise during the course of standard business practices. This category also includes assistive legal occupations such as paralegals, legal assistants.

**COMPUTER SPECIALISTS:** Professionals responsible for the computer operations within a company are grouped in this category. Examples of job titles in this category include computer programmers, software engineers, database administrators, computer scientists, systems analysts, and computer support specialists

**ARCHITECTURE AND ENGINEERING:** Occupations related to architecture, surveying, engineering, and drafting are included in this category. Some of the job titles in this category include electrical and electronic engineers, surveyors, architects, drafters, mechanical engineers, materials engineers, mapping technicians, and civil engineers.

**OFFICE AND ADMINISTRATIVE SUPPORT:** All clerical-type work is included in this category. These jobs involve the preparing, transcribing, and preserving of written communications and records; collecting accounts; gathering and distributing information; operating office machines and electronic data processing equipment; and distributing mail. Job titles listed in this category include telephone operators, bill and account collectors, customer service representatives, dispatchers, secretaries and administrative assistants, computer operators and clerks (such as payroll, shipping, stock, mail and file).

**BUILDING AND GROUNDS CLEANING AND MAINTENANCE:** This category includes occupations involving landscaping, housekeeping, and janitorial services. Job titles found in this category include supervisors of landscaping or housekeeping, janitors, maids, grounds maintenance workers, and pest control workers.

**CONSTRUCTION AND EXTRACTION:** This category includes construction trades and related occupations. Job titles found in this category include boilermakers, masons (all types), carpenters, construction laborers, electricians, plumbers (and related trades), roofers, sheet metal workers, elevator installers, hazardous materials removal workers, paperhangers, and painters. Paving, surfacing, and tamping equipment operators; drywall and ceiling tile installers; and carpet, floor and tile installers and finishers are also included in this category. First line supervisors, foremen, and helpers in these trades are also grouped in this category..

**INSTALLATION, MAINTENANCE AND REPAIR:** Occupations involving the installation, maintenance, and repair of equipment are included in this group. Examples of job titles found here are heating, ac, and refrigeration mechanics and installers; telecommunication line installers and repairers; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; security and fire alarm systems installers; electric/electronic repair, industrial, utility and transportation equipment; millwrights; riggers; and manufactured building and mobile home installers. First line supervisors, foremen, and helpers for these jobs are also included in the category.

**MATERIAL MOVING WORKERS:** The job titles included in this group are Crane and tower operators; dredge, excavating, and lading machine operators; hoist and winch operators; industrial truck and tractor operators; cleaners of vehicles and equipment; laborers and freight, stock, and material movers, hand; machine feeders and offbearers; packers and packagers, hand; pumping station operators; refuse and recyclable material collectors; and miscellaneous material moving workers.

**PRODUCTION WORKERS:** The job titles included in this category are chemical production machine setters, operators and tenders; crushing/grinding workers; cutting workers; inspectors, testers sorters, samplers, weighers; precious stone/metal workers; painting workers; cementing/gluing machine operators and tenders; etchers/engravers; molders, shapers and casters except for metal and plastic; and production workers.

3) Definition of Racial and Ethnic Terms (as used in Part IV Bidder Employment Information) (Page 3)

<p><u>White</u> (not of Hispanic Origin)- All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East.</p> <p><u>Black</u>(not of Hispanic Origin)- All persons having origins in any of the Black racial groups of Africa.</p> <p><u>Hispanic</u>- All persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.</p>	<p><u>Asian or Pacific Islander</u>- All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes China, India, Japan, Korea, the Philippine Islands, and Samoa.</p> <p><u>American Indian or Alaskan Native</u>- All persons having origins in any of the original peoples of North America, and who maintain cultural identification through tribal affiliation or community recognition.</p>
---	---

**BIDDER CONTRACT COMPLIANCE MONITORING REPORT**

**PART I - Bidder Information**

<p>Company Name Street Address City &amp; State Chief Executive</p>	<p>Bidder Federal Employer Identification Number _____ Or Social Security Number _____</p>
<p>Major Business Activity (brief description)</p>	<p>Bidder Identification (response optional/definitions on page 1)</p> <p>-Bidder is a small contractor. Yes__ No__ -Bidder is a minority business enterprise Yes__ No__ (If yes, check ownership category) Black__ Hispanic__ Asian American__ American Indian/Alaskan Native__ Iberian Peninsula__ Individual(s) with a Physical Disability__ Female__</p>
<p>Bidder Parent Company (If any)</p>	<p>- Bidder is certified as above by State of CT Yes__ No__</p>
<p>Other Locations in Ct. (If any)</p>	<p>- DAS Certification Number _____</p>

**PART II - Bidder Nondiscrimination Policies and Procedures**

<p>1. Does your company have a written Affirmative Action/Equal Employment Opportunity statement posted on company bulletin boards? Yes__ No__</p>	<p>7. Do all of your company contracts and purchase orders contain non-discrimination statements as required by Sections 4a-60 &amp; 4a-60a Conn. Gen. Stat.? Yes__ No__</p>
<p>2. Does your company have the state-mandated sexual harassment prevention in the workplace policy posted on company bulletin boards? Yes__ No__</p>	<p>8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? Yes__ No__</p>
<p>3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? Yes__ No__</p>	<p>9. Does your company have a mandatory retirement age for all employees? Yes__ No__</p>
<p>4. Do your company advertisements contain a written statement that you are an Affirmative Action/Equal Opportunity Employer? Yes__ No__</p>	<p>10. If your company has 50 or more employees, have you provided at least two (2) hours of sexual harassment training to all of your supervisors? Yes__ No__ NA__</p>
<p>5. Do you notify the Ct. State Employment Service of all employment openings with your company? Yes__ No__</p>	<p>11. If your company has apprenticeship programs, do they meet the Affirmative Action/Equal Employment Opportunity requirements of the apprenticeship standards of the Ct. Dept. of Labor? Yes__ No__ NA__</p>
<p>6. Does your company have a collective bargaining agreement with workers? Yes__ No__ 6a. If yes, do the collective bargaining agreements contain non-discrimination clauses covering all workers? Yes__ No__ 6b. Have you notified each union in writing of your commitments under the nondiscrimination requirements of contracts with the state of Ct? Yes__ No__</p>	<p>12. Does your company have a written affirmative action Plan? Yes__ No__ If no, please explain.</p> <p>13. Is there a person in your company who is responsible for equal employment opportunity? Yes__ No__ If yes, give name and phone number.</p>

1. Will the work of this contract include subcontractors or suppliers? Yes\_\_ No\_\_

1a. If yes, please list all subcontractors and suppliers and report if they are a small contractor and/or a minority business enterprise. (defined on page 1 / use additional sheet if necessary)

1b. Will the work of this contract require additional subcontractors or suppliers other than those identified in 1a. above?

Yes\_\_ No\_\_

PART IV - Bidder Employment Information

Date:

JOB CATEGORY *	OVERALL TOTALS	WHITE (not of Hispanic origin)		BLACK (not of Hispanic origin)		HISPANIC		ASIAN or PACIFIC ISLANDER		AMERICAN INDIAN or ALASKAN NATIVE	
		Male	Female	Male	Female	Male	Female	Male	Female	male	female
Management											
Business & Financial Ops											
Marketing & Sales											
Legal Occupations											
Computer Specialists											
Architecture/Engineering											
Office & Admin Support											
Bldg/ Grounds Cleaning/Maintenance											
Construction & Extraction											
Installation , Maintenance & Repair											
Material Moving Workers											
Production Occupations											
TOTALS ABOVE											
Total One Year Ago											
FORMAL ON THE JOB TRAINEES (ENTER FIGURES FOR THE SAME CATEGORIES AS ARE SHOWN ABOVE)											
Apprentices											
Trainees											

\*NOTE: JOB CATEGORIES CAN BE CHANGED OR ADDED TO (EX. SALES CAN BE ADDED OR REPLACE A CATEGORY NOT USED IN YOUR COMPANY)

1. Which of the following recruitment sources are used by you? (Check yes or no, and report percent used)				2. Check (X) any of the below listed requirements that you use as a hiring qualification  (X)		3. Describe below any other practices or actions that you take which show that you hire, train, and promote employees without discrimination
SOURCE	YES	NO	% of applicants provided by source			
State Employment Service					Work Experience	
Private Employment Agencies					Ability to Speak or Write English	
Schools and Colleges					Written Tests	
Newspaper Advertisement					High School Diploma	
Walk Ins					College Degree	
Present Employees					Union Membership	
Labor Organizations					Personal Recommendation	
Minority/Community Organizations					Height or Weight	
Others (please identify)					Car Ownership	
					Arrest Record	
					Wage Garnishments	

Certification (Read this form and check your statements on it CAREFULLY before signing). I certify that the statements made by me on this BIDDER CONTRACT COMPLIANCE MONITORING REPORT are complete and true to the best of my knowledge and belief, and are made in good faith. I understand that if I knowingly make any misstatements of facts, I am subject to be declared in non-compliance with Section 4a-60, 4a-60a, and related sections of the CONN. GEN. STAT.

(Signature)	(Title)	(Date Signed)	(Telephone)
-------------	---------	---------------	-------------

AMENDMENT NO. 1-A

.....

1. PREVAILING WAGE RATES

Notwithstanding the amount of the proposal or ECSU's estimated cost for this project, prevailing wages are required on this project, in accordance with the schedule provided in the proposal documents, pursuant to Connecticut General Statutes Section 31-53 (a-f,h), as amended.

2. SET-ASIDE / MINORITY BUSINESS ENTERPRISE PARTICIPATION

This project requires set-aside and minority business enterprise participation as stated in Section 7 (f,g,h,i) on the Project Data Sheet / Proposal Form. The contractor who is selected to perform this state project must file and receive an approved Affirmative Action Plan by the Commission on Human Rights and Opportunities.

This project is subject to the State SET ASIDE goals and **NEW STATUTORY CHANGES TO 4a-60g effective 10/1/13** as it relates to new self- performance and subcontracting requirements.



Executive Order No. 14: This Agreement is subject to the provisions of Executive Order No. 14 of Governor M. Jodi Rell, promulgated on April 17, 2006. Pursuant to this Executive Order, the Contractor shall use cleaning and/or sanitizing products having properties that minimize potential impacts on human health and the environment, consistent with maintaining clean and sanitary facilities.



## STATE OF CONNECTICUT GIFT AND CAMPAIGN CONTRIBUTION CERTIFICATION

*Written or electronic certification to accompany a State contract with a value of \$50,000 or more in a calendar or fiscal year, pursuant to C.G.S. §§ 4-250 and 4-252(c); Governor M. Jodi Rell's Executive Orders No. 1, Para. 8, and No. 7C, Para. 10; and C.G.S. §9-612(g)(2)*

### INSTRUCTIONS:

Complete all sections of the form. Attach additional pages, if necessary, to provide full disclosure about any lawful campaign contributions made to campaigns of candidates for statewide public office or the General Assembly, as described herein. Sign and date the form, under oath, in the presence of a Commissioner of the Superior Court or Notary Public. Submit the completed form to the awarding State agency at the time of initial contract execution and if there is a change in the information contained in the most recently filed certification, such person shall submit an updated certification either (i) not later than thirty (30) days after the effective date of such change or (ii) upon the submittal of any new bid or proposal for a contract, whichever is earlier. Such person shall also submit an accurate, updated certification not later than fourteen days after the twelve-month anniversary of the most recently filed certification or updated certification.

**CHECK ONE:**     Initial Certification     12 Month Anniversary Update (Multi-year contracts only.)  
                    Updated Certification because of change of information contained in the most recently filed certification or twelve-month anniversary update.

### GIFT CERTIFICATION:

As used in this certification, the following terms have the meaning set forth below:

- 1) "Contract" means that contract between the State of Connecticut (and/or one or more of its agencies or instrumentalities) and the Contractor, attached hereto, or as otherwise described by the awarding State agency below;
- 2) If this is an Initial Certification, "Execution Date" means the date the Contract is fully executed by, and becomes effective between, the parties; if this is a twelve-month anniversary update, "Execution Date" means the date this certification is signed by the Contractor;
- 3) "Contractor" means the person, firm or corporation named as the contractor below;
- 4) "Applicable Public Official or State Employee" means any public official or state employee described in C.G.S. §4-252(c)(1)(i) or (ii);
- 5) "**Gift**" has the same meaning given that term in C.G.S. § 4-250(1);
- 6) "Principals or Key Personnel" means and refers to those principals and key personnel of the Contractor, and its or their agents, as described in C.G.S. §§ 4-250(5) and 4-252(c)(1)(B) and (C).

I, the undersigned, am a Principal or Key Personnel of the person, firm or corporation authorized to execute this certification on behalf of the Contractor. I hereby certify that, no gifts were made by (A) such person, firm, corporation, (B) any principals and key personnel of the person firm or corporation who participate substantially in preparing bids, proposals or negotiating state contracts or (C) any agent of such, firm, corporation, or principals or key personnel who participates substantially in preparing bids, proposals or negotiating state contracts, to (i) any public official or state employee of the state agency or quasi-public agency soliciting bids or proposals for state contracts who participates substantially in the preparation of bid solicitations or request for proposals for state contracts or the negotiation or award of state contracts or (ii) any public official or state employee of any other state agency, who has supervisory or appointing authority over such state agency or quasi-public agency.

I further certify that no Principals or Key Personnel know of any action by the Contractor to circumvent (or which would result in the circumvention of) the above certification regarding **Gifts** by providing for any other Principals, Key Personnel, officials, or employees of the Contractor, or its or their agents, to make a **Gift** to any Applicable Public Official or State Employee. I further certify that the Contractor made the bid or proposal for the Contract without fraud or collusion with any person.

**CAMPAIGN CONTRIBUTION CERTIFICATION:**

I further certify that, on or after December 31, 2006, neither the Contractor nor any of its principals, as defined in C.G.S. § 9-612(g)(1), has made any **campaign contributions** to, or solicited any contributions on behalf of, any exploratory committee, candidate committee, political committee, or party committee established by, or supporting or authorized to support, any candidate for statewide public office, in violation of C.G.S. § 9-612(g)(2)(A). I further certify that **all lawful campaign contributions** that have been made on or after December 31, 2006 by the Contractor or any of its principals, as defined in C.G.S. § 9-612(g)(1), to, or solicited on behalf of, any exploratory committee, candidate committee, political committee, or party committee established by, or supporting or authorized to support any candidates for statewide public office or the General Assembly, are listed below:

**Lawful Campaign Contributions to Candidates for Statewide Public Office:**

<u>Contribution Date</u>	<u>Name of Contributor</u>	<u>Recipient</u>	<u>Value</u>	<u>Description</u>

**Lawful Campaign Contributions to Candidates for the General Assembly:**

<u>Contribution Date</u>	<u>Name of Contributor</u>	<u>Recipient</u>	<u>Value</u>	<u>Description</u>

Sworn as true to the best of my knowledge and belief, subject to the penalties of false statement.

\_\_\_\_\_  
Printed Contractor Name

\_\_\_\_\_  
**Printed Name of Authorized Official**

\_\_\_\_\_  
**Signature of Authorized Official**

Subscribed and acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
**Commissioner of the Superior Court (or Notary Public)**

\_\_\_\_\_  
**My Commission Expires**



## **CAMPAIGN CONTRIBUTION RESTRICTION PROVISION**

1. Campaign Contribution Restrictions. This section (the “CCR Section”) is included here pursuant to Conn. Gen. Stat. § 9-333n and, without limiting its applicability, is made applicable to State Contracts, bid solicitations, request for proposals and prequalification certificates, as the context requires. This CCR Section, without limiting its applicability, is also made applicable to State Agencies, Quasi-public Agencies, the General Assembly, State Contractors, Prospective State Contractors and the holders of valid prequalification certificates, as the context requires.

(a) For purposes of this CCR Section only:

(1) "Quasi-public Agency" means the Connecticut Development Authority, Connecticut Innovations, Incorporated, Connecticut Health and Educational Facilities Authority, Connecticut Higher Education Supplemental Loan Authority, Connecticut Housing Finance Authority, Connecticut Housing Authority, Connecticut Resources Recovery Authority, Connecticut Hazardous Waste Management Service, Capital City Economic Development Authority, Connecticut Lottery Corporation, or as this definition may otherwise be modified by Title 1, Chapter 12 of the Connecticut General Statutes concerning quasi-public agencies.

(2) "State Agency" means any office, department, board, council, commission, institution or other agency in the executive, legislative or judicial branch of State government, or as this definition may otherwise be modified by Title 9, Chapter 150 of the Connecticut General Statutes concerning campaign financing.

(3) "State Contract" means an agreement or contract with the State or any State Agency or any Quasi-public Agency, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a fiscal year, for (A) the rendition of personal services, (B) the furnishing of any material, supplies or equipment, (C) the construction, alteration or repair of any public building or public work, (D) the acquisition, sale or lease of any land or building, (E) a licensing arrangement, or (F) a grant, loan or loan guarantee, or as this definition may otherwise be modified by Title 9, Chapter 150 of the Connecticut General Statutes concerning campaign financing.

(4) "State Contractor" means a person, business entity or nonprofit organization that enters into a State Contract. Such person, business entity or nonprofit organization shall be deemed to be a State Contractor until the termination of said contract. "State contractor" does not include a municipality or any other political subdivision of the State or an employee in the executive, legislative or judicial branch of State government or a Quasi-public Agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a State or Quasi-

public Agency employee, or as this definition may otherwise be modified by Title 9, Chapter 150 of the Connecticut General Statutes concerning campaign financing.

(5) "Prospective State Contractor" means a person, business entity or nonprofit organization that (A) submits a bid in response to a bid solicitation by the State, a State Agency or a Quasi-public Agency, or a proposal in response to a request for proposals by the State, a State Agency or a Quasi-public Agency, until the State Contract has been entered into, or (B) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under Section 4a-100 of the Connecticut General Statutes. "Prospective State Contractor" does not include a municipality or any other political subdivision of the State or an employee in the executive, legislative or judicial branch of State government or a Quasi-public Agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a State or Quasi-public Agency employee. Title 9, Chapter 150 of the Connecticut General Statutes concerning campaign financing may modify this definition, which modification shall control.

(6) "Principal of a State Contractor or Prospective State Contractor" (collectively referred to in this CCR Section as "Principal") means (A) an individual who is a member of the board of directors of, or has an ownership interest in, a State Contractor or Prospective State Contractor, which is a business entity, except for an individual who (i) owns less than five per cent of the shares of any such State Contractor or Prospective State Contractor that is a publicly traded corporation, or (ii) is a member of the board of directors of a nonprofit organization qualified under Section 501(c)(3) of the Internal Revenue Code of 1986, or any subsequent corresponding internal revenue code of the United States, as from time to time amended, (B) an individual who is employed by a State Contractor or Prospective State Contractor, which is a business entity, as president, treasurer or executive or senior vice president, (C) an individual who is the chief executive officer of a State Contractor or Prospective State Contractor, which is not a business entity, (D) an employee of any State Contractor or Prospective State Contractor who has managerial or discretionary responsibilities with respect to a State Contract, (E) the spouse or a dependent child of an individual described in this subparagraph, or (F) a political committee established by or on behalf of an individual described in this subparagraph, or as this definition may otherwise be modified by Title 9, Chapter 150 of the Connecticut General Statutes concerning campaign financing.

(b) No State Contractor, Prospective State Contractor or Principal, with regard to a State Contract, bid solicitation or request for proposals with or from a State Agency in the executive branch or a Quasi-public Agency, and no Principal of a holder of a valid prequalification certificate, shall make a contribution to, or solicit contributions on behalf of (1) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (2) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (3) a party committee.

(c) No State Contractor, Prospective State Contractor or Principal, with regard to a State Contract, bid solicitation or request for proposals with or from the General Assembly, and no Principal of a holder of a valid prequalification certificate, shall make a contribution to, or solicit contributions on behalf of (1) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (2) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (3) a party committee.

(d) If a State Contractor or a Principal of a State Contractor makes or solicits a contribution prohibited under this CCR Section, the contracting State Agency or Quasi-public Agency may void the existing contract with said contractor, and no State Agency or Quasi-public Agency shall award the State Contractor a State Contract or an extension or an amendment to a State Contract for one year after the election for which such contribution is made or solicited.

(e) If a Prospective State Contractor or a Principal of a Prospective State Contractor makes or solicits a contribution prohibited under this CCR Section, no State Agency or Quasi-public Agency shall award the Prospective State Contractor the contract described in the bid solicitation or request for proposals, or any other State Contract for one year after the election for which such contribution is made or solicited.

(f) The chief executive officer of each State Contractor and Prospective State Contractor, or if a State Contractor or Prospective State Contractor has no such officer then the officer who duly possesses and exercises comparable powers and duties, shall certify, in the form of an affidavit executed subject to the penalties of false statement, that: (1) such officer has informed each individual described in subsection (a)(6) of this CCR Section with regard to said State Contractor or Prospective State Contractor concerning the provisions of subsection (b) or (c) of this CCR Section, whichever is applicable, and this subsection (f), (2) no such individual will make or solicit a contribution in violation of the provisions of subsection (b) or (c) of this CCR Section, whichever is applicable, and this subsection (f), and (3) if any such contribution is made or solicited, the State Contractor or Prospective State Contractor, as the context requires, shall not be awarded the contract described in the bid solicitation or request for proposals and shall not be awarded any other State Contract for one year after the election for which such contribution is made or solicited. Such officer shall submit the affidavit to the contracting State Agency or Quasi-public Agency prior to, in the case of an RFP, executing a negotiated contract or prior to, in the case of an ITB, the award and acceptance of a contract. In the case of an application for prequalification to the Connecticut Department of Administrative Services (“DAS”), the application shall not be deemed to be complete until DAS receives the affidavit. The State Contractor or Prospective Contractor shall submit the affidavit on a form which the State Elections Enforcement Commission (“SEEC”) prescribes.

(g) The person executing the affidavit referenced in subsection (f) shall submit to the SEEC a list of Principals in accordance with the requirements set forth on a form that the

SEEC shall have prescribed for this purpose. The complete list of Principals shall be submitted to the SEEC at the same time that the affidavit is submitted to the State Agency, Quasi-public Agency or, in the case of a prequalification application, DAS. Notwithstanding any other provision in any applicable document or instrument, no party to the Contract, or a contract awarded pursuant to a non-competitive procurement, may begin performing in any way until the contracting State Agency or Quasi-public Agency has received the affidavit referenced in subsection (f) and the SEEC has received the Principals list.

(h) Notwithstanding any other provision in the Contract, invitation to bid, request for proposals and prequalification application:

(1) The State Contractor and Prospective State Contractor shall report to the SEEC, on a form which the SEEC prescribes, any changes in Principals occurring from and after the date of the previous Principals list by submitting and delivering such form to the SEEC no later than the fifteenth day of each month following the month when a change in Principals occurs, or the next succeeding business day, whichever is later. If the Contractor or Prospective State Contractor fail to submit and deliver the appropriately completed form by its due date, then the SEEC shall notify the State Agency or Quasi-public Agency and the Contractor of the failure in writing. The State Agency or Quasi-public Agency shall then review all relevant information and determine whether such failure constitutes a breach of this Contract. If the State Agency or Quasi-public Agency determines that a breach of this Contract has occurred, then the State Agency or Quasi-public Agency shall deliver a notice of breach to the Contractor, affording the Contractor an opportunity to cure the breach within ten (10) days from the date that the Contractor receives the notice. The State Agency or Quasi-public Agency may extend the right to cure period if, and continuing so long as, the State Agency or Quasi-public Agency is satisfied that the Contractor is making a good faith effort to cure the breach but the nature of the breach is such that it cannot be cured within the right to cure period. The SEEC may, if it deems it to be appropriate, send to the Contractor electronic reminders of the Contractor's obligation to report changes in Principals. The undertaking of this reminder is permissive and shall not be construed to be a condition precedent to the Contractor's obligation to submit and deliver the form timely.

(2) If the State Agency or Quasi-public Agency determines that the Contractor has breached the Contract by failing to comply with the requirements of this CCR provision, then the State Agency or Quasi-public Agency may, after expiration of the right to cure period, direct all appropriate State entities using the Contract to withhold any payment, in whole or in part, that may be due and owing to the Contractor under this Contract until such time as the Contractor submits and delivers an appropriately completed form to the SEEC.

(3) If the Contractor fails to submit and deliver the Principals list form timely three times in any 12-month period, then the SEEC may recommend to the State Agency or Quasi-public Agency that it take these failures into account for purposes of evaluating

the Contractor's responsibility in future procurements. The SEEC may recommend that the State Agency or Quasi-public Agency make a determination that the Contractor is not responsible.

(4) The Contractor's failure to submit and deliver the Principals list form timely for the third time in any 12-month period shall, upon the SEEC's recommendation, entitle the State Agency or Quasi-public Agency to Cancel the Contract. Accordingly, the third notice of breach to the Contractor from the State Agency or Quasi-public Agency in any 12-month period may include an effective Contract Cancellation date, in which case no further action shall be required of any party to effect the Cancellation of the Contract as of the stated date. If the notice does not set forth an effective Contract Cancellation date, then the State Agency or Quasi-public Agency may Cancel the Contract by giving the Contractor no less than twenty four (24) hours' prior written notice.

(5) Noting the absence of the SEEC's signature on the Contract, the State Agency or Quasi-public Agency represents that the SEEC has previously agreed in writing to assume the rights and responsibilities attaching to the SEEC and set forth in this CCR section. The State Agency or Quasi-public Agency shall provide a copy of that document to the Contractor upon request.





## Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

This notice is provided under the authority of Connecticut General Statutes §9-612(g)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (*italicized words are defined on the reverse side of this page*).

### CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No *state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor*, with regard to a *state contract* or *state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly solicit** contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor* or *principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

### DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

### PENALTIES FOR VIOLATIONS

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

**Civil penalties**—Up to \$2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of up to \$2,000 or twice the amount of the prohibited contributions made by their principals.

**Criminal penalties**—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than \$5,000 in fines, or both.

### CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may result in the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information may be found on the website of the State Elections Enforcement Commission, [www.ct.gov/seec](http://www.ct.gov/seec). Click on the link to "Lobbyist/Contractor Limitations."



## DEFINITIONS

“State contractor” means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. “State contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

“Prospective state contractor” means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. “Prospective state contractor” does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

“Principal of a state contractor or prospective state contractor” means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

“State contract” means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. “State contract” does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan, a loan to an individual for other than commercial purposes or any agreement or contract between the state or any state agency and the United States Department of the Navy or the United States Department of Defense.

“State contract solicitation” means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

“Managerial or discretionary responsibilities with respect to a state contract” means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

“Dependent child” means a child residing in an individual's household who may legally be claimed as a dependent on the federal income tax of such individual.

“Solicit” means (A) requesting that a contribution be made, (B) participating in any fund-raising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

“Subcontractor” means any person, business entity or nonprofit organization that contracts to perform part or all of the obligations of a state contractor's state contract. Such person, business entity or nonprofit organization shall be deemed to be a subcontractor until December thirty first of the year in which the subcontract terminates. “Subcontractor” does not include (i) a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or (ii) an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

“Principal of a subcontractor” means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a subcontractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a subcontractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a subcontractor, which is not a business entity, or if a subcontractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any subcontractor who has managerial or discretionary responsibilities with respect to a subcontract with a state contractor, (v) the spouse or a dependent child who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the subcontractor.

1. Non-discrimination. References in this section to "contract" shall mean this Contract and references to "contractor" shall mean the Contractor.
  - (a) The following subsections are set forth here as required by section 4a-60 of the Connecticut General Statutes:
    - (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, mental retardation, 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. 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, mental retardation, 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; (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) "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.

- (d) 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.
- (e) The contractor shall develop and maintain adequate documentation, in a manner prescribed by the commission, of its good faith efforts.
- (f) The contractor shall include the provisions of sections (a) and (b) above 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.
- (g) The following subsections are set forth here as required by section 4a-60a of the Connecticut General Statutes:
  - (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.
- (h) The contractor shall include the provisions of section (g) above 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.

- (i) For the purposes of this entire Non-Discrimination 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 Conn. Gen. Stat. Section 1-120, (3) any other state, including but not limited to any federally recognized Indian tribal governments, as defined in Conn. Gen. Stat. Section 1-267, (4) the federal government, (5) a foreign government, or (6) an agency of a subdivision, agency, state or government described in the immediately preceding enumerated items (1), (2), (3), (4) or (5).

## **NON DISCRIMINATION**

1. Non-discrimination. References in this section to "contract" shall mean this Contract and references to "contractor" shall mean the Contractor.
- (a) The following subsections are set forth here as required by section 4a-60 of the Connecticut General Statutes:
  - (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, mental retardation, 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. 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, mental retardation, 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; (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) "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.

- (d) 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.
- (e) The contractor shall develop and maintain adequate documentation, in a manner prescribed by the commission, of its good faith efforts.
- (f) The contractor shall include the provisions of sections (a) and (b) above 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.
- (g) The following subsections are set forth here as required by section 4a-60a of the Connecticut General Statutes:
  - (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.
- (h) The contractor shall include the provisions of section (g) above 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.

For the purposes of this entire Non-Discrimination 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 Conn. Gen. Stat. Section 1-120, (3) any other state, including but not limited to any federally recognized Indian tribal governments, as defined in Conn. Gen. Stat. Section 1-267, (4) the federal government, (5) a foreign government, or (6) an agency of a subdivision, agency, state or government described in the immediately preceding enumerated items (1), (2), (3), (4) or (5).

**EXECUTIVE ORDERS** Nos. 3, 17, 16, and 7C:

**Executive Orders.** The Contract is subject to the provisions of Executive Order No. 7C of Governor M. Jodi Rell, promulgated July 13, 2006, concerning contracting reforms, Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, all of which are incorporated into and are made a part of the Contract as if they had been fully set forth in it. At the Contractor's request, CCSU shall provide a copy of these orders to the Contractor.





**STATE OF CONNECTICUT**  
**NONDISCRIMINATION CERTIFICATION – Representation**  
**By Individual**  
**For All Contract Types Regardless of Value**

*Written representation that complies with the nondiscrimination agreements and warranties under Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended*

---

**INSTRUCTIONS:**

For use by an individual who is not an entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut, regardless of contract value. Submit to the awarding State agency prior to contract execution.

**REPRESENTATION OF AN INDIVIDUAL:**

I, \_\_\_\_\_, of \_\_\_\_\_,  
Signatory Business Address

represent that I will comply with the nondiscrimination agreements and warranties of Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended.

\_\_\_\_\_  
Signatory

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name



**STATE OF CONNECTICUT**  
**NONDISCRIMINATION CERTIFICATION – Representation**  
**By Entity**  
**For Contracts Valued at Less Than \$50,000**

*Written representation that complies with the nondiscrimination agreements and warranties under Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended*

---

**INSTRUCTIONS:**

For use by an entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at less than \$50,000 for each year of the contract. Complete all sections of the form. Submit to the awarding State agency prior to contract execution.

**REPRESENTATION OF AN ENTITY:**

I, \_\_\_\_\_, \_\_\_\_\_, of \_\_\_\_\_,  
Authorized Signatory Title Name of Entity

an entity duly formed and existing under the laws of \_\_\_\_\_,  
Name of State or Commonwealth

represent that I am authorized to execute and deliver this representation on behalf of

\_\_\_\_\_ and that \_\_\_\_\_  
Name of Entity Name of Entity

has a policy in place that complies with the nondiscrimination agreements and warranties of Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended.

\_\_\_\_\_  
Authorized Signatory Date

\_\_\_\_\_  
Printed Name



**STATE OF CONNECTICUT**  
**NONDISCRIMINATION CERTIFICATION – Affidavit**  
**By Entity**  
**For Contracts Valued at \$50,000 or More**

*Documentation in the form of an affidavit signed under penalty of false statement by a chief executive officer, president, chairperson, member, or other corporate officer duly authorized to adopt corporate, company, or partnership policy that certifies the contractor complies with the nondiscrimination agreements and warranties under Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended*

**INSTRUCTIONS:**

For use by an entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at \$50,000 or more for any year of the contract. Complete all sections of the form. Sign form in the presence of a Commissioner of Superior Court or Notary Public. Submit to the awarding State agency prior to contract execution.

**AFFIDAVIT:**

I, the undersigned, am over the age of eighteen (18) and understand and appreciate the obligations of an oath. I am \_\_\_\_\_ of \_\_\_\_\_, an entity

Signatory's Title

Name of Entity

duly formed and existing under the laws of \_\_\_\_\_.

Name of State or Commonwealth

I certify that I am authorized to execute and deliver this affidavit on behalf of \_\_\_\_\_ and that \_\_\_\_\_

Name of Entity

Name of Entity

has a policy in place that complies with the nondiscrimination agreements and warranties of Connecticut General Statutes §§ 4a-60(a)(1)and 4a-60a(a)(1), as amended.

\_\_\_\_\_  
Authorized Signatory

\_\_\_\_\_  
Printed Name

Sworn and subscribed to before me on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Commissioner of the Superior Court/  
Notary Public

\_\_\_\_\_  
Commission Expiration Date



**STATE OF CONNECTICUT**  
**NONDISCRIMINATION CERTIFICATION – New Resolution**  
**By Entity**  
**For Contracts Valued at \$50,000 or More**

*Documentation in the form of a corporate, company, or partnership policy adopted by resolution of the board of directors, shareholders, managers, members or other governing body of a contractor that certifies the contractor complies with the nondiscrimination agreements and warranties under Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended*

**INSTRUCTIONS:**

For use by an entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at \$50,000 or more for any year of the contract. Complete all sections of the form. Submit to the awarding State agency prior to contract execution.

**CERTIFICATION OF RESOLUTION:**

I, \_\_\_\_\_ , \_\_\_\_\_ , of \_\_\_\_\_ ,  
Authorized Signatory Title Name of Entity

an entity duly formed and existing under the laws of \_\_\_\_\_ ,  
Name of State or Commonwealth

certify that the following is a true and correct copy of a resolution adopted on the \_\_\_\_\_ day of \_\_\_\_\_ , 20\_\_\_\_ by the governing body of \_\_\_\_\_ ,  
Name of Entity

in accordance with all of its documents of governance and management and the laws of \_\_\_\_\_ , and further certify that such resolution has not been modified  
Name of State or Commonwealth

or revoked, and is in full force and effect.

RESOLVED: That the policies of \_\_\_\_\_ comply with the  
Name of Entity  
nondiscrimination agreements and warranties of Connecticut General Statutes  
§§ 4a-60(a)(1) and 4a-60a(a)(1), as amended.

The undersigned has executed this certificate this \_\_\_\_\_ day of \_\_\_\_\_ , 20\_\_\_\_ .

\_\_\_\_\_  
Authorized Signatory Date

\_\_\_\_\_  
Printed Name



**STATE OF CONNECTICUT**  
**NONDISCRIMINATION CERTIFICATION – Prior Resolution**  
**By Entity**  
**For Contracts Valued at \$50,000 or More**

*Documentation in the form of a corporate, company, or partnership policy adopted by a prior resolution of the board of directors, shareholders, managers, members or other governing body of a contractor that certifies the contractor complies with the nondiscrimination agreements and warranties under Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended*

**INSTRUCTIONS:**

For use by an entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut valued at \$50,000 or more for any year of the contract. Complete all sections of the form. Attach copy of previously adopted resolution (*State of CT, Nondiscrimination Certification, Form D: New Resolution*). Submit all documentation to the awarding State agency prior to contract execution.

**CERTIFICATION OF PRIOR RESOLUTION:**

I, the undersigned, am a duly authorized corporate officer or member of \_\_\_\_\_  
Name of Entity

I have reviewed the attached prior resolution. I certify that:

- (1) the attached prior resolution complies with the nondiscrimination agreements and warranties of Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended; and
- (2) the prior resolution remains in full force and effect on the date this documentation is submitted to the awarding State agency.

\_\_\_\_\_  
Authorized Signatory

\_\_\_\_\_  
Title

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Date

**RESERVED FOR STATE USE**

I, the undersigned head of the awarding State agency, or designee, certify that the attached prior resolution complies with the nondiscrimination agreements and warranties of Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended.

\_\_\_\_\_  
Signature of Agency Head (or designee)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Awarding State Agency



# STATE OF CONNECTICUT CONSULTING AGREEMENT AFFIDAVIT

*Affidavit to accompany a bid or proposal for the purchase of goods and services with a value of \$50,000 or more in a calendar or fiscal year, pursuant to Connecticut General Statutes §§ 4a-81(a) and 4a-81(b). For sole source or no bid contracts the form is submitted at time of contract execution.*

### INSTRUCTIONS:

**If the bidder or vendor has entered into a consulting agreement, as defined by Connecticut General Statutes § 4a-81(b)(1):** Complete all sections of the form. If the bidder or contractor has entered into more than one such consulting agreement, use a separate form for each agreement. Sign and date the form in the presence of a Commissioner of the Superior Court or Notary Public. **If the bidder or contractor has not entered into a consulting agreement, as defined by Connecticut General Statutes § 4a-81(b)(1):** Complete only the shaded section of the form. Sign and date the form in the presence of a Commissioner of the Superior Court or Notary Public.

Submit completed form to the awarding State agency with bid or proposal. For a sole source award, submit completed form to the awarding State agency at the time of contract execution.

This affidavit must be amended if there is any change in the information contained in the most recently filed affidavit not later than (i) thirty days after the effective date of any such change or (ii) upon the submittal of any new bid or proposal, whichever is earlier.

**AFFIDAVIT:** [Number of Affidavits Sworn and Subscribed On This Day: \_\_\_\_\_]

I, the undersigned, hereby swear that I am a principal or key personnel of the bidder or contractor awarded a contract, as described in Connecticut General Statutes § 4a-81(b), or that I am the individual awarded such a contract who is authorized to execute such contract. I further swear that I have not entered into any consulting agreement in connection with such contract, **except for the agreement listed below:**

\_\_\_\_\_ Consultant's Name and Title \_\_\_\_\_ Name of Firm (if applicable)

\_\_\_\_\_ Start Date \_\_\_\_\_ End Date \_\_\_\_\_ Cost

Description of Services Provided: \_\_\_\_\_  
\_\_\_\_\_

Is the consultant a former State employee or former public official?  YES  NO

If YES: \_\_\_\_\_  
Name of Former State Agency Termination Date of Employment

Sworn as true to the best of my knowledge and belief, subject to the penalties of false statement.

\_\_\_\_\_  
Printed Name of Bidder or Contractor **Signature of Principal or Key Personnel** **Date**  
\_\_\_\_\_  
Printed Name (of above) \_\_\_\_\_ Awarding State Agency

Sworn and subscribed before me on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
**Commissioner of the Superior Court  
or Notary Public**

\_\_\_\_\_  
**My Commission Expires**



## STATE OF CONNECTICUT

### AFFIRMATION OF RECEIPT OF STATE ETHICS LAWS SUMMARY

*Written or electronic affirmation to accompany a large State construction or procurement contract, having a cost of more than \$500,000, pursuant to Connecticut General Statutes §§ 1-101mm and 1-101qq*

#### INSTRUCTIONS:

Complete all sections of the form. Submit completed form to the awarding State agency or contractor, as directed below.

#### CHECK ONE:

- I am a person seeking a large State construction or procurement contract. I am submitting this affirmation to the awarding State agency with my bid or proposal. [Check this box if the contract will be awarded through a competitive process.]
- I am a contractor who has been awarded a large State construction or procurement contract. I am submitting this affirmation to the awarding State agency at the time of contract execution. [Check this box if the contract was a sole source award.]
- I am a subcontractor or consultant of a contractor who has been awarded a large State construction or procurement contract. I am submitting this affirmation to the contractor.
- I am a contractor who has already filed an affirmation, but I am updating such affirmation either (i) no later than thirty (30) days after the effective date of any such change or (ii) upon the submittal of any new bid or proposal, whichever is earlier.

#### IMPORTANT NOTE:

Within fifteen (15) days after the request of such agency, institution or quasi-public agency for such affirmation contractors shall submit the affirmations of their subcontractors and consultants to the awarding State agency. Failure to submit such affirmations in a timely manner shall be cause for termination of the large State construction or procurement contract.

#### AFFIRMATION:

I, the undersigned person, contractor, subcontractor, consultant, or the duly authorized representative thereof, affirm (1) receipt of the summary of State ethics laws\* developed by the Office of State Ethics pursuant to Connecticut General Statutes § 1-81b and (2) that key employees of such person, contractor, subcontractor, or consultant have read and understand the summary and agree to comply with its provisions.

\* The summary of State ethics laws is available on the State of Connecticut's Office of State Ethics website.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Firm or Corporation (if applicable)

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
City

\_\_\_\_\_  
State

\_\_\_\_\_  
Zip

\_\_\_\_\_  
Awarding State Agency



STATE OF CONNECTICUT

Written or electronic PDF copy of the written certification to accompany a large state contract pursuant to P.A. No. 13-162 (Prohibiting State Contracts With Entities Making Certain Investments In Iran)

Respondent Name: \_\_\_\_\_

INSTRUCTIONS:

- CHECK ONE: [ ] Initial Certification. [ ] Amendment or renewal.

A. Who must complete and submit this form. Effective October 1, 2013, this form must be submitted for any large state contract, as defined in section 4-250 of the Connecticut General Statutes. 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.

Pursuant to P.A. No. 13-162, upon submission of a bid or prior to executing a large state contract, the certification portion of this form must be completed by any corporation, general partnership, limited partnership, limited liability partnership, joint venture, nonprofit organization or other business organization whose principal place of business is located outside of the United States. United States subsidiaries of foreign corporations are exempt. For purposes of this form, a "foreign corporation" is one that is organized and incorporated outside the United States of America.

Check applicable box:

- [ ] Respondent's principal place of business is within the United States or Respondent is a United States subsidiary of a foreign corporation. Respondents who check this box are not required to complete the certification portion of this form, but must submit this form with its Invitation to Bid ("ITB"), Request for Proposal ("RFP") or contract package if there was no bid process. [ ] Respondent's principal place of business is outside the United States and it is not a United States subsidiary of a foreign corporation. CERTIFICATION required. Please complete the certification portion of this form and submit it with the ITB or RFP response or contract package if there was no bid process.

B. Additional definitions.

- 1) "Large state contract" has the same meaning as defined in section 4-250 of the Connecticut General Statutes; 2) "Respondent" means the person whose name is set forth at the beginning of this form; and 3) "State agency" and "quasi-public agency" have the same meanings as provided in section 1-79 of the Connecticut General Statutes.

C. Certification requirements.

No state agency or quasi-public agency shall enter into any large state contract, or amend or renew any such contract with any Respondent whose principal place of business is located outside the United States and is not a United States subsidiary of a foreign corporation unless the Respondent has submitted this certification.

Complete all sections of this certification and sign and date it, under oath, in the presence of a Commissioner of the Superior Court, a Notary Public or a person authorized to take an oath in another state.

CERTIFICATION:

I, the undersigned, am the official authorized to execute contracts on behalf of the Respondent. I certify that:

- [ ] Respondent has made no direct investments of twenty million dollars or more in the energy sector of Iran on or after October 1, 2013, as described in Section 202 of the Comprehensive Iran Sanctions, Accountability and Divestment Act of 2010. [ ] Respondent has either made direct investments of twenty million dollars or more in the energy sector of Iran on or after October 1, 2013, as described in Section 202 of the Comprehensive Iran Sanctions, Accountability and Divestment Act of 2010, or Respondent made such an investment prior to October 1, 2013 and has now increased or renewed such an investment on or after said date, or both.

Sworn as true to the best of my knowledge and belief, subject to the penalties of false statement.

Printed Respondent Name

Printed Name of Authorized Official

Signature of Authorized Official

Subscribed and acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Commissioner of the Superior Court (or Notary Public)

My Commission Expires




# STATE OF CONNECTICUT - AGENCY VENDOR FORM

**IMPORTANT: ALL parts of this form must be completed, signed and returned by the vendor.**

**READ & COMPLETE CAREFULLY**

SP-26NB-IPDF Rev. 4/10

COMPLETE VENDOR LEGAL BUSINESS NAME		Taxpayer ID # (TIN): <input type="checkbox"/> SSN <input type="checkbox"/> FEIN	
		WRITE/TYPE SSN/FEIN NUMBER ABOVE	
BUSINESS NAME, TRADE NAME, DOING BUSINESS AS (IF DIFFERENT FROM ABOVE)			
BUSINESS ENTITY: <input type="checkbox"/> CORPORATION <input type="checkbox"/> LLC CORPORATION <input type="checkbox"/> LLC PARTNERSHIP <input type="checkbox"/> LLC SINGLE MEMBER ENTITY <input type="checkbox"/> NON-PROFIT <input type="checkbox"/> PARTNERSHIP <input type="checkbox"/> INDIVIDUAL/SOLE PROPRIETOR <input type="checkbox"/> GOVERNMENT			
<b>NOTE:</b> IF INDIVIDUAL/SOLE PROPRIETOR, INDIVIDUAL'S NAME (AS OWNER) MUST APPEAR IN THE LEGAL BUSINESS NAME BLOCK ABOVE.			
BUSINESS TYPE: A. SALE OF COMMODITIES      B. MEDICAL SERVICES      C. ATTORNEY FEES      D. RENTAL OF PROPERTY (REAL ESTATE & EQUIPMENT)			
E. OTHER (DESCRIBE IN DETAIL)			
UNDER THIS TIN, WHAT IS THE PRIMARY TYPE OF BUSINESS YOU PROVIDE TO THE STATE? (ENTER LETTER FROM ABOVE) →			
UNDER THIS TIN, WHAT OTHER TYPES OF BUSINESS MIGHT YOU PROVIDE TO THE STATE? (ENTER LETTER FROM ABOVE) →			
<b>NOTE:</b> IF YOUR BUSINESS IS A <i>PARTNERSHIP</i> , YOU MUST ATTACH THE NAMES AND TITLES OF ALL PARTNERS TO YOUR BID SUBMISSION.			
<b>NOTE:</b> IF YOUR BUSINESS IS A <i>CORPORATION</i> , IN WHICH STATE ARE YOU INCORPORATED?			
VENDOR ADDRESS		STREET	CITY STATE ZIP CODE
Add Additional Business Address & Contact information on back of this form.			
VENDOR E-MAIL ADDRESS		VENDOR WEB SITE	
<b>REMITTANCE INFORMATION:</b> INDICATE BELOW THE REMITTANCE ADDRESS OF YOUR BUSINESS. <input type="checkbox"/> SAME AS VENDOR ADDRESS ABOVE.			
REMIT ADDRESS		STREET	CITY STATE ZIP CODE
CONTACT INFORMATION: NAME (TYPE OR PRINT)			
1 <sup>ST</sup> BUSINESS PHONE:	Ext. #	HOME PHONE:	
2 <sup>ND</sup> BUSINESS PHONE:	Ext. #	1 <sup>ST</sup> PAGER:	
CELLULAR:		2 <sup>ND</sup> PAGER:	
1 <sup>ST</sup> FAX NUMBER:		TOLL FREE PHONE:	
2 <sup>ND</sup> FAX NUMBER:		TELEX:	
WRITTEN SIGNATURE OF PERSON AUTHORIZED TO SIGN PROPOSALS ON BEHALF OF THE ABOVE NAMED VENDOR			DATE EXECUTED
			
TYPE OR PRINT NAME OF AUTHORIZED PERSON		TITLE OF AUTHORIZED PERSON	
IS YOUR BUSINESS CURRENTLY A DAS CERTIFIED SMALL BUSINESS ENTERPRISE? <input type="checkbox"/> YES (ATTACH COPY OF CERTIFICATE) <input type="checkbox"/> NO			
IS YOUR BUSINESS CURRENTLY A CT DOT CERTIFIED DISADVANTAGED BUSINESS ENTERPRISE (DBE)? <input type="checkbox"/> YES <input type="checkbox"/> NO			
IF YOU ARE A <b>STATE EMPLOYEE</b> , INDICATE YOUR POSITION, AGENCY & AGENCY ADDRESS			
<b>PURCHASE ORDER DISTRIBUTION:</b> (E-MAIL ADDRESS)			
<b>NOTE: THE E-MAIL ADDRESS INDICATED IMMEDIATELY ABOVE WILL BE USED TO FORWARD PURCHASE ORDERS TO YOUR BUSINESS.</b>			

**ADD FURTHER BUSINESS ADDRESS, E-MAIL & CONTACT INFORMATION ON SEPARATE SHEET IF REQUIRED**

# Request for Taxpayer Identification Number and Certification

**Give Form to the  
 requester. Do not  
 send to the IRS.**

<b>Print or type See Specific Instructions on page 2.</b>	<b>1</b> Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.	
	<b>2</b> Business name/disregarded entity name, if different from above	
	<b>3</b> Check appropriate box for federal tax classification; check only <b>one</b> of the following seven boxes: <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ <b>Note.</b> For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner. <input type="checkbox"/> Other (see instructions) ▶ _____	
	<b>4</b> Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____ <small>(Applies to accounts maintained outside the U.S.)</small>	
	<b>5</b> Address (number, street, and apt. or suite no.)	
	Requester's name and address (optional)	
	<b>6</b> City, state, and ZIP code	
<b>7</b> List account number(s) here (optional)		

## Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

**Note.** If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

<b>Social security number</b>	
[ ] [ ] [ ] [ ]	- [ ] [ ] [ ] [ ] - [ ] [ ] [ ] [ ]
<b>or</b>	
<b>Employer identification number</b>	
[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]	- [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

## Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

<b>Sign Here</b>	Signature of U.S. person ▶ _____	Date ▶ _____
------------------	----------------------------------	--------------

## General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.  
**Future developments.** Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at [www.irs.gov/fw9](http://www.irs.gov/fw9).

### Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)

- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
  - Form 1099-C (canceled debt)
  - Form 1099-A (acquisition or abandonment of secured property)
- Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.
- If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding? on page 2.*
- By signing the filled-out form, you:
1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
  2. Certify that you are not subject to backup withholding, or
  3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
  4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

**Note.** If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

**Definition of a U.S. person.** For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

**Special rules for partnerships.** Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States:

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

**Foreign person.** If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

**Nonresident alien who becomes a resident alien.** Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

**Example.** Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

## Backup Withholding

**What is backup withholding?** Persons making certain payments to you must under certain conditions withhold and pay to the IRS 28% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

**Payments you receive will be subject to backup withholding if:**

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),

3. The IRS tells the requester that you furnished an incorrect TIN,

4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or

5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code* on page 3 and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships* above.

## What is FATCA reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code* on page 3 and the Instructions for the Requester of Form W-9 for more information.

## Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

## Penalties

**Failure to furnish TIN.** If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

**Civil penalty for false information with respect to withholding.** If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

**Criminal penalty for falsifying information.** Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

**Misuse of TINs.** If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

## Specific Instructions

### Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account, list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

**Note. ITIN applicant:** Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C Corporation, or S Corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as a entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

**Line 2**

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

**Line 3**

Check the appropriate box in line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box in line 3.

**Limited Liability Company (LLC).** If the name on line 1 is an LLC treated as a partnership for U.S. federal tax purposes, check the "Limited Liability Company" box and enter "P" in the space provided. If the LLC has filed Form 8832 or 2553 to be taxed as a corporation, check the "Limited Liability Company" box and in the space provided enter "C" for C corporation or "S" for S corporation. If it is a single-member LLC that is a disregarded entity, do not check the "Limited Liability Company" box; instead check the first box in line 3 "Individual/sole proprietor or single-member LLC."

**Line 4, Exemptions**

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space in line 4 any code(s) that may apply to you.

**Exempt payee code.**

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

- 1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)
- 2—The United States or any of its agencies or instrumentalities
- 3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities
- 4—A foreign government or any of its political subdivisions, agencies, or instrumentalities
- 5—A corporation
- 6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession
- 7—A futures commission merchant registered with the Commodity Futures Trading Commission
- 8—A real estate investment trust
- 9—An entity registered at all times during the tax year under the Investment Company Act of 1940
- 10—A common trust fund operated by a bank under section 584(a)
- 11—A financial institution
- 12—A middleman known in the investment community as a nominee or custodian
- 13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over \$600 required to be reported and direct sales over \$5,000 <sup>1</sup>	Generally, exempt payees 1 through 5 <sup>2</sup>
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

<sup>1</sup> See Form 1099-MISC, Miscellaneous Income, and its instructions.

<sup>2</sup> However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

**Exemption from FATCA reporting code.** The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

- A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)
  - B—The United States or any of its agencies or instrumentalities
  - C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities
  - D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)
  - E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)
  - F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state
  - G—A real estate investment trust
  - H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940
    - I—A common trust fund as defined in section 584(a)
    - J—A bank as defined in section 581
    - K—A broker
    - L—A trust exempt from tax under section 664 or described in section 4947(a)(1)
    - M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

**Note.** You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

**Line 5**

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns.

**Line 6**

Enter your city, state, and ZIP code.

**Part I. Taxpayer Identification Number (TIN)**

**Enter your TIN in the appropriate box.** If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on this page), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

**Note.** See the chart on page 4 for further clarification of name and TIN combinations.

**How to get a TIN.** If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at [www.ssa.gov](http://www.ssa.gov). You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at [www.irs.gov/businesses](http://www.irs.gov/businesses) and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting [IRS.gov](http://IRS.gov) or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

**Note.** Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

**Caution:** A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

**Part II. Certification**

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 4, or 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code* earlier.

**Signature requirements.** Complete the certification as indicated in items 1 through 5 below.

**1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983.** You must give your correct TIN, but you do not have to sign the certification.

**2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983.** You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

**3. Real estate transactions.** You must sign the certification. You may cross out item 2 of the certification.

**4. Other payments.** You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

**5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions.** You must give your correct TIN, but you do not have to sign the certification.

**What Name and Number To Give the Requester**

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account <sup>1</sup>
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor <sup>2</sup>
4. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee <sup>1</sup>  The actual owner <sup>1</sup>
5. Sole proprietorship or disregarded entity owned by an individual	The owner <sup>2</sup>
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	Give name and EIN of:
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity <sup>4</sup>
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

<sup>1</sup> List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

<sup>2</sup> Circle the minor's name and furnish the minor's SSN.

<sup>3</sup> You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

<sup>4</sup> List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 2.

\*Note. Grantor also must provide a Form W-9 to trustee of trust.

**Note.** If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

**Secure Your Tax Records from Identity Theft**

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

**Protect yourself from suspicious emails or phishing schemes.** Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to [phishing@irs.gov](mailto:phishing@irs.gov). You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: [spam@uce.gov](mailto:spam@uce.gov) or contact them at [www.ftc.gov/idtheft](http://www.ftc.gov/idtheft) or 1-877-IDTHEFT (1-877-438-4338).

Visit [IRS.gov](http://IRS.gov) to learn more about Identity theft and how to reduce your risk.

**Privacy Act Notice**

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.



EASTERN CONNECTICUT STATE UNIVERSITY

83 WINDHAM STREET • WILLIMANTIC, CONNECTICUT 06226 • 860-465-5000

## **INSPECTION OF PROPOSALS AND CONFIDENTIAL INFORMATION**

Proposals may be available for public inspection upon notice of award and shall be available for public inspection after the contract is signed by all parties. Information marked as “confidential” in any proposal shall be honored as such, to the extent allowable under the Freedom of Information Act.

The University treats Proposals as confidential until after the award is issued. At that time they become subject to disclosure under the Freedom of Information Act. If a respondent wishes to supply any information, which it believes is exempt from disclosure under the Act that respondent should summarize such information in a separate envelope and each page submitted should clearly state “Confidential”, but otherwise be presented in the same manner as the Proposal. However, any such information is provided entirely at the respondent’s own risk and the University assumes no liability for any loss or damage which may result from the University’s disclosure at any time of any information provided by the respondent in connection with its proposal.

# Connecticut State University System



**Central Connecticut State University  
Eastern Connecticut State University  
Southern Connecticut State University  
Western Connecticut State University  
System Office**

## STANDARD TERMS AND CONDITIONS

### I. DEFINITIONS

The following words, when used herein, shall have the following meanings:

1. "Contract" shall mean any agreement negotiated by and between CSU and the contractor selected by CSU as the result of a request for proposal, request for quotation, or request for bid, including, but not limited to, a personal service agreement or purchase order.
2. "CSU" shall refer to the Connecticut State University System, which is comprised of Central Connecticut State University, Eastern Connecticut State University, Southern Connecticut State University, Western Connecticut State University and the System Office, collectively and individually, as the context requires.
3. "Person" shall mean an individual, partnership, corporation or other business entity, as the context requires.
4. "Proposal" shall mean a response to a request for proposal, request for bid, or request for quotation.
5. "Proposer" shall mean a contractor that submits a response to a request for proposal, request for bid, or request for quotation.
6. "RFP" shall mean a request or invitation for proposal, bid, or quotation, as applicable.

### II. TERMS AND CONDITIONS RELATED TO REQUESTS FOR PROPOSALS

#### A. General Conditions

1. CSU reserves the right to amend or cancel an RFP prior to the date and time for the opening of proposals. CSU, in its sole discretion, reserves the right to accept or reject any and all proposals, in whole or in part, and to waive any technicality in any proposal submitted, and to accept any part of a proposal deemed to be in the best interest of CSU.
2. Proposals received from proposers debarred by the State of Connecticut will not be considered for award.
3. CSU does not commit to specific volumes of activity, nor does it guarantee the accuracy of statistical information provided in the RFP. Such information is supplied to proposers for reference only.
4. All responses to the RFP shall be and remain the sole property of CSU.
5. Each proposer shall bear all costs associated with proposer's response to an RFP, including, but not limited to, the costs of any presentation and/or demonstration required by CSU. In addition, answers or clarifications sought by CSU arising out of or in connection with the proposal shall be furnished by the proposer at the proposer's expense.

6. CSU reserves the right to negotiate, as it may deem necessary, with any or all of the proposers that submit proposals.
7. Any alleged oral agreement or arrangement made by any proposer with CSU or any employee thereof shall not be binding.

#### B. Submission of Proposals

1. Proposals must be submitted on forms supplied by CSU. Telephone, facsimile, or email proposals will not be accepted in response to an RFP.
2. The time and date proposals are to be received and opened are stated in each RFP issued by CSU. Proposals received in the applicable CSU purchasing department after the date and time specified in the RFP will be returned to the proposer unopened. Proposal amendments received by CSU after the time specified for opening of proposals shall not be considered.
3. All proposals must be addressed to the location designated in the RFP. Proposal envelopes must clearly state the proposal number as well as the date and time of the opening of the proposals, as stated in the RFP. The name and address of the proposer must appear in the upper left hand corner of the envelope.
4. Proposals must be computer prepared, typewritten or handwritten in ink. Proposals submitted in pencil will be rejected.
5. Proposers must answer all the questions set forth in the RFP using the outline and numbering scheme set forth therein. Proposers must furnish all information requested in the RFP and supply all materials required for consideration. Failure of the proposer to answer all questions and supply all information and materials requested may be grounds for rejection of the proposal.
6. All proposals must be signed by a person duly authorized to sign proposals on behalf of the proposer. All signatures on the proposal must be original. Proposals bearing stamp signatures will be rejected. Unsigned proposals will be rejected.
7. Alterations or corrections to the proposal must be initialed by the person signing the proposal or his or her authorized designee. All initials on alterations or corrections to the proposal must be original. In the event that an authorized designee initials an alteration or correction, the proposer must submit a written authorization from the proposal's signatory to the authorized designee, authorizing the designee to make the alteration or correction. Failure to submit such an authorization shall result in rejection of proposal as to those items altered or corrected and not initialed.



8. Conditional proposals are subject to rejection in whole or in part, in the sole discretion of CSU. A conditional proposal is defined as one that limits, modifies, expands or supplements any of the terms and conditions and/or specifications of the RFP.
9. Alternate proposals will not be considered by CSU, unless otherwise noted on the RFP or on the proposal form. An alternate proposal is defined as one that is submitted in addition to the proposer's primary response to the RFP.
10. CSU does not sponsor any one manufacturer's products, but lists equipment by name and model number to designate the quality and performance level desired. Proposers may propose substitutes similar in nature to the equipment specified. The substitute must, in the sole determination of CSU, be equal in quality, durability, appearance, strength and design to the equipment or product specified in the RFP, or offer a clear advantage to CSU because of improved or superior performance. All proposals including equipment or product substitutes must be accompanied with current descriptive literature on, and data substantiating, the equal or superior nature of the substitute. All final decisions concerning substitutes will be made by CSU prior to any award. The word substitute shall not be construed to permit substantial departure from the detailed requirements of the specifications.
11. Each proposer's prices must be firm for a period up to 120 days from date of the opening of proposals. Prices must be extended in decimal, not fraction, must be net, and must include transportation and delivery charges, fully prepaid by the contractor, to the destination specified in the proposal, and subject only to cash discount.
12. Pursuant to Section 12-412 of the Connecticut General Statutes, the State of Connecticut is exempt from the payment of excise, transportation and sales taxes imposed by the Federal Government and/or the State. Accordingly, such taxes must not be included in proposal prices.
13. If there is a discrepancy between a unit price and an extended price, the unit price will govern.
14. By submitting a proposal, the proposer asserts that the offer and information contained therein is in all respects fair and without collusion or fraud and was not made in connection with any competing proposer's submission of a separate response to the RFP. By submitting a proposal, the proposer further asserts that it neither participated in the formation of CSU's solicitation development process nor had any knowledge of the specific contents of the RFP prior to its issuance, and that no employee of CSU participated directly or indirectly in the preparation of the proposer's proposal.
15. It is the proposer's responsibility to check the website of the State of Connecticut Department of Administrative Services ([www.das.state.ct.us/Purchase/Portal/Portal\\_Home.asp](http://www.das.state.ct.us/Purchase/Portal/Portal_Home.asp)) for changes prior to the proposal opening. It is the responsibility of the proposer to obtain all information related to proposal submission including, without limitation, any and all addenda or supplements required.
16. Any person contemplating submitting a proposal who is in doubt as to the true meaning of, or is in need of clarification of, any part of the RFP or the specifications set forth therein, must submit a written request for clarification to CSU. The proposer may rely only upon a response to a request for clarification set forth in writing by CSU.
17. Proposals for the provision of services must include the cost of obtaining all permits, licenses, and notices

required by the city or town in which the services is to be provided, and the State and Federal governments..

18. Each proposer must complete and submit with its proposal the following non-discrimination and affirmative action forms: the Notification to Proposers, Contract Compliance, and EEO-1. It shall not be sufficient to declare or state that such forms are on file with the State of Connecticut. Failure to include the required forms shall result in rejection of the proposal.

**C. Samples**

1. Samples, when required by the RFP, must be submitted strictly in accordance with the requirements of the RFP.
2. Any and all required samples shall be furnished by the proposer at no cost to CSU. All samples, unless otherwise indicated, will become the property of CSU and will not be returned to the proposer unless the proposer states in the proposal that the sample's return is requested. A sample will be returned on the request of the proposer if the sample has not been rendered useless or beyond its useful life. The proposer must pay the costs associated with the return of any sample. Samples may be held by CSU for comparison with actual product deliveries.
3. The making of chemical and physical tests of samples submitted with proposals shall be made in the manner prescribed by CSU.

**D. Bonding Requirements / Guaranty or Surety**

1. If required by this RFP, the proposal must be accompanied by a bid bond or a certified check in an amount that is ten percent (10%) of the bid amount. The bid bond must be executed by an insurance company licensed to do business in the State of Connecticut. Certified checks must be made payable to CSU or the appropriate CSU University.
2. The proposal bond must be executed by the proposer as follows:
  - (a) If the proposer is a corporation - must be signed by an official of the corporation above his or her official title, and the corporate seal must be affixed over the signature;
  - (b) If the proposer is a partnership - must be signed by a general partner;
  - (c) If the proposer is an individual - must be signed by the individual and indicate that he or she is "doing business as . . . ."
3. The surety company executing the bond or countersigning must be licensed in Connecticut and the bond must be signed by an official of the surety company with the corporate seal affixed over his or her signature. Signatures of two witnesses for both the principal and the surety must appear on the bond.

**III. CONTRACT AWARD**

1. All proposals properly submitted will be opened and read publicly. Upon award, the proposals are subject to public inspection. CSU will not prepare abstracts of proposals received for distribution, nor will information concerning the proposals received be conveyed by telephone.
2. Award will be made to the lowest responsible qualified proposer who complies with the proposal requirements. Price alone need not be the sole determining factor for an award. Other criteria, listed in the RFP, may be considered by CSU in the award determination.
3. CSU reserves the right to grant an award and/or awards by item, or part thereof, groups of items, or all items of the proposal and to waive minor irregularities and



omissions if, in CSU's judgment, the best interests of CSU or the State of Connecticut will be served.

4. CSU reserves the right to correct inaccurate awards resulting from its administrative errors.
5. The Award Notice and Offer (to enter into a formal contract) shall be sent to the awarded proposer by first class certified mail, return receipt requested, to the address provided in the awarded proposal, or by overnight courier. The Notice and Offer shall constitute an offer by CSU to enter into negotiations to come to a formal contract agreement. If the proposer, within ten (10) business days of receipt of said Notice and Offer, declines to begin contract negotiations, then the offer to negotiate a contract may be withdrawn and an offer to negotiate a contract extended to the next lowest responsible qualified proposer, and so on until a contract is negotiated and executed.
6. Each proposal submitted shall constitute an offer by the proposer to furnish any or all of the commodities or services described therein at the prices given and in accordance with conditions set forth in the proposal, the RFP, and these "Standard Terms and Conditions." Acceptance and resulting contract formation shall be in a formal written document authorized by CSU's Purchasing Department and where applicable, approved by the Attorney General, and shall comprise the entire agreement between the proposer and CSU.

#### **IV. TERMS AND CONDITIONS RELATED TO CONTRACT WITH SUCCESSFUL PROPOSER**

By submitting a response to the RFP, the proposer agrees that any contract negotiated between it (if the successful proposer), as contractor, and CSU may contain the following provisions, as deemed applicable by CSU:

##### **A. General Conditions**

1. Any product developed and accepted by CSU under a contract awarded as a result of an RFP shall be sole property of CSU, unless stated otherwise in the contract.
2. Data collected or obtained by the contractor in connection with the performance of the contract shall not be shared with any third party without the express written approval of CSU.
3. The contractor shall defend, indemnify and hold harmless CSU, its officers and employees, against any and all suits, actions, legal or administrative proceedings, claims, demands, damages, liabilities, monetary loss, interest, attorney's fees, costs and expenses of whatsoever kind or nature arising out of the performance of the agreement, including those arising out of injury to or death of contractor's employees or subcontractors, whether arising before, during or after completion of the services thereunder and in any manner directly or indirectly caused, occasioned or contributed to in whole or in part, by reason of any act, omission, fault or negligence of contractor or its employees, agents or subcontractors. Without limiting the foregoing, the contractor shall defend, indemnify and hold CSU and the State of Connecticut harmless from liability of any kind for the use of any copyright or un-copyrighted composition, secret process, patented or unpatented invention furnished or used in the performance of the contract. This indemnification shall be in addition to the warranty obligations of the contractor and shall survive the termination or cancellation of the contract or any part thereof.
4. The contractor shall: (i) guarantee its products against defective materials and workmanship; (ii) repair

damage of any kind, for which it is responsible, to CSU's premises or equipment, to its own work or to the work of other contractors; (iii) obtain and pay for all applicable licenses, permits, and notices; (iv) give all notices and comply with all requirements of the municipality in which the service is to be provided and of the State and federal governments; and (v) carry proper and sufficient insurance to protect the State from loss.

5. The contract shall be interpreted and governed by the laws of the State of Connecticut, without regard to its principles of conflicts of laws.
6. The contractor agrees that it shall be subject to and abide by all applicable federal and state laws and regulations.
7. The contractor agrees that it shall comply with Section 4a-60 of the Connecticut General Statutes and with Executive Orders Nos. 3, 16, 17 and 7C.
8. The contractor agrees that the sole and exclusive means for the presentation of any claim against the State of Connecticut, the Connecticut State University or the Board Of Trustees arising from a contract with CSU, shall be in accordance with the provisions of Chapter 53 of the Connecticut General Statutes (Claims Against the State) and that no additional legal proceedings will be initiated in any state or federal court in addition to, or in lieu of, said Chapter 53 proceedings.
9. The contractor agrees that CSU shall have and retain sole and exclusive right and title in and to the forms, maps, and/or materials produced for CSU pursuant to the contract, including all rights to use, distribute, sell, reprint, or otherwise dispose of same. The contractor further agrees that it shall not copyright, register, distribute, or claim any rights in or to said maps and/or materials or the work produced under the contract.
10. The contractor or subcontractor, as applicable, shall offer and agree to assign to CSU all rights, title and interest in and to all causes of action it may have under Section 4 of the Clayton Act, 15 U.S.C. 15, or under Chapter 624 of the general statutes, arising from the purchase of services, property or intangibles of any kind pursuant to a public purchase contract or subcontract; such assignment shall be made and become effective at the time the contract is executed by the parties, without further acknowledgment by them.
11. The contractor shall not assign or otherwise dispose of the contract or its right, title or interest therein, or its power to execute such contract, to any other person without the prior written consent of CSU.
12. CSU reserves the right to inspect commodities for conformance with proposal specifications. When commodities are rejected by CSU, said commodities shall be removed by the contractor, at the contractor's expense, from the CSU premises within forty-eight (48) hours after notification of such rejection, unless public health and safety require immediate destruction or other disposal of such rejected delivery. Rejected items left longer than forty-eight (48) hours shall be considered abandoned by the contractor and CSU shall have the right to dispose of them as its own property.
13. If any provision, term or condition of the contract is prohibited, invalid, or unenforceable then that provision, term or condition shall be ineffective to the extent of the prohibition, invalidity, or prohibition without invalidating the remaining provisions, terms and conditions unless it materially alters the nature or intent thereof.
14. Should the terms of any purchase order or invoice issued in connection with the contract conflict with the

terms of the contract, the terms of the contract shall prevail.

15. Failure of the contractor to deliver commodities or perform services as specified in the contract will constitute authority for CSU to purchase these commodities or services on the open market. The contractor shall promptly reimburse CSU for excess costs incurred by CSU due to these purchases, and these purchases shall be deducted by CSU from the quantities contracted for.
16. No right or duty, in whole or in part, of the contractor under the contract may be assigned or delegated without the prior written consent of CSU. The subcontracting or assignment of any of contractor's obligations under the contract to a subcontractor shall require the prior written approval of CSU.
17. Upon termination of the contract by CSU, the contractor shall both immediately discontinue all services (unless the notice directs otherwise) and deliver to CSU all data, drawings, specifications, reports, estimates, summaries, and such other information and materials as may have been accumulated by the contractor in performing its duties under the contract, whether completed or in progress. All such documents, information, and materials shall become the property of CSU.
18. The State of Connecticut shall assume no liability for payment for services under the terms of the contract until the contractor is notified that the contract has been accepted by CSU and, if applicable, approved by the Office of Policy and Management ("OPM") or the Department of Administrative Services ("DAS") and by the Attorney General of the State of Connecticut.

#### **B. Insurance**

1. Before commencing to perform services pursuant to the contract, the contractor shall obtain, at its own cost and for the duration of the contract, the following insurance:
  - (a) Commercial General Liability: \$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage. Coverage shall include Premises and Operations, Independent Contractors, Products and Completed Operations, Contractual Liability and Broad Form Property Damage coverage. If a general aggregate is used, the general aggregate limit shall apply separately to the project or the general aggregate limit shall be twice the occurrence limit.
  - (b) Automobile Liability: \$1,000,000 combined single limit per accident for bodily injury. Coverage extends to owned, hired and non-owned automobiles. If the contractor does not own an automobile, but one is used in the execution of the contract, then only hired and non-owned coverage is required. If a vehicle is not used in the execution of the contract then automobile coverage is not required.
  - (c) Professional Liability: \$1,000,000 limit of liability.
  - (d) Workers' Compensation and Employers Liability: Statutory coverage in compliance with the laws of the State of Connecticut. Coverage shall include Employer's Liability with minimum limits of \$100,000 each accident, \$500,000 Disease – Policy limit, \$100,000 each employee.  
An Excess Liability/Umbrella Policy may be used to meet the minimum limit guidelines.
2. The contractor shall provide copies of its Certificates of Insurance to CSU, if requested to do so. The Certificates shall include the following:

- (a) The certificate shall clearly identify the State of Connecticut, its officers, officials, employees, agents, boards and commissions as Additional Insured. The coverage shall contain no special limitations on the scope of protection afforded to the State.

- (b) The certificate shall clearly indicate the project name and project number or some easily identifiable reference to the relationship to the State.

3. The Certificates shall be signed by a person authorized by that insurer to execute contracts on its behalf. The certificate Accord Form 25 Certificate shall indicate a minimum thirty (30) day endeavor to notify requirement in the event of cancellation or non-renewal of coverage.
4. The contractor shall assume responsibility for payment of any and all deductibles applicable to the insurance policies described in Section IV.B.1 above.
5. The contractor's insurer shall have no right of recovery or subrogation against the State and the described insurance shall be primary coverage.
6. Each required policy of insurance shall provide that it shall not be suspended, voided, cancelled or reduced except after thirty (30) days' prior written notice sent by certified mail to CSU.
7. "Claims Made" coverage shall be unacceptable, with the exception of Professional Liability.

#### **C. Bonds**

The successful proposer shall submit the following bonds, at the request of CSU, within ten (10) days of the date of receipt of the Award Notice and Offer:

1. A Performance Bond in the amount of one hundred percent (100%) of the total proposal price; and
2. A Labor and Material Payment Bond in the amount of one hundred percent (100%) of the total proposal price.

A company authorized to transact business in the State of Connecticut shall execute the bonds. Checks shall be made payable to CSU or the appropriate CSU University.

#### **D. Delivery**

1. Unless otherwise specified in the proposal, all products and equipment delivered pursuant to the contract shall be new and shall include any and all manufacturer's warranties.
2. Delivery shall be to the point specified in the contract.
3. All deliveries shall display, in plain sight, any related Purchase Order or Reference/Delivery Number. Failure to display said number may cause the shipment to be rejected and returned at the contractor's expense.
4. All deliveries shall be in compliance with Sections 22a-194 to 22a-194g of the Connecticut General Statutes related to product packaging.
5. Deliveries shall be subject to reweighing on official sealed scales designated by the State and payment shall be made on the basis of net weight of materials received.
6. Payment terms are net forty-five (45) days after receipt of goods or invoice, whichever is later. State of Connecticut certified small or minority contractors are payable under terms net thirty (30) days.
7. Monies owed to CSU or the Department of Revenue Services (DRS) by the contractor shall be deducted from current obligations.

**E. Inspection and Tests**

1. The inspection of all commodities and the making of chemical and physical tests of samples of deliveries to determine whether or not the contract specifications are being complied with shall be made in the manner prescribed by CSU.
2. Any item that fails in any way to meet the terms or specifications set forth in the contract is subject to be paid for at an adjusted price or rejected, in the discretion of CSU.
3. After delivery and installation of any equipment provided pursuant to the contract, the contractor shall certify to CSU that the equipment has been properly installed and is ready for use. Thereafter, for a test period of sixty (60) days, CSU shall operate the system in accordance with its normal operating practices. The acceptance test shall determine if the equipment's operating characteristics meet the performance standards set forth in the contract.

**F. Advertising**

Reference by the contractor to sales to CSU for advertising and promotional purposes without the prior approval of CSU shall be expressly prohibited.

**General Conditions of the Contract for Construction  
 Eastern Connecticut State University  
 Willimantic, Connecticut**

**Table of Contents**

<b>Article Number /Title</b>	<b>Page</b>		
1. Definitions .....	2	28. Starting Systems.....	29
2. References and Standards.....	5	29. Guarantees and Warranties.....	30
3. Conditions of Work .....	5	30. Cutting, Fitting, Patching, and Digging ...	30
4. Correlation of Contract Documents .....	6	31. Cleaning Up.....	30
5. Supplemental Bids.....	7	32. All Work Subject to Control of the Agency .....	30
6. Commencement and Progress of Work.....	7	33. Construction Administrator .....	31
7. Project Meetings.....	8	34. Schedule of Values: Application for Payment .....	31
8. Submittals, Product Data, Shop Drawings and Samples.....	9	35. Application for Payment: General .....	32
9. Equals and Substitution .....	15	36. Partial Payments .....	33
10. Separate Contracts .....	17	37. Application for Payment: Substantial Completion.....	33
11. Cooperation of Trades .....	17	38. Application for Payment: Final.....	34
12. Damages .....	17	39. Delivery of Statement Showing Amounts Due for Wages, Materials, and Supplies.....	34
13. Minimum Wage Rates .....	18	40. Contract Closeout .....	35
14. Posting Minimum Wage Rates .....	18	41. Operation and Maintenance Data .....	39
15. Construction Schedules.....	18	42. Completion and Acceptance .....	40
16. Preference in Employment.....	19	43. Final Payment .....	41
17. Modification Procedures .....	20	44. Agency's Right to Withhold Payments.....	41
18. Compensation for Changes in the Work .....	22	45. Agency's Right to Stop Work or Terminate Contract.....	42
19. Deleted Work.....	24	46. Subletting or Assigning of Contract.....	43
20. Materials: Standards .....	24	47. Contractor's Insurance.....	43
21. Quality Control .....	25	48. Foreign Materials.....	44
22. Inspection and Tests .....	27	49. Materials and Equipment Controls .....	45
23. Royalties and Patents .....	27	50. Identification Badges.....	45
24. Surveys, Permits, and Regulations .....	27	51. Hours of Work.....	45
25. Protection of the Work, Persons and Property .....	28	52. Days of Work .....	45
26. Temporary Utilities .....	28	53. Contract Time.....	46
27. Correction of Work.....	28	54. Calendar Day.....	46

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

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

**1.3 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.

**1.4 ARCHITECT OR ENGINEER:** An individual, partnership, firm, corporation or other business organization under contract with the Agency, commissioned to prepare Contract Drawings and specifications, to advise the Agency and in certain cases, to perform regular inspections during construction and when authorized to perform the duties of the Construction Administrator.

**1.5 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.

**1.6 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.

**1.7 BIDDER:** An individual, partnership, firm, corporation or other business organization submitting a Bid on the Bid Proposal Form for the Work contemplated.

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

**1.9 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.

**1.10 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.

**1.11 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.

**1.12 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.

**1.13 CERTIFICATE of COMPLETION:** A document is-sued by the Construction Administrator to the Agency stating that the Contractor has met all contractual obligations.

**1.14 CERTIFICATE of COMPLETION and ACCEPTANCE:** A document issued by the Agency to the Contractor stating that all Work has been completed and that the Work is accepted by the Agency.

**1.15 CERTIFICATE of COMPLIANCE:** A document is-sued to the Agency by the design professional 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

**1.16 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.

**1.17 CERTIFICATE OF SUBSTANTIAL COMPLETION:** A document prepared by the Architect and approved by the Agency on the basis of an inspection stating:

**1.17.1** That the Work, or a designated portion thereof, is determined to be Substantially Complete;

**1.17.2** The date of Substantial Completion;

**1.17.3** The responsibilities of the Agency and the Contractor for security maintenance, heat, utilities, damage to the Work and insurance; and

**1.17.4** The time within which the Contractor shall complete the remaining work.

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

**1.19 COMMISSIONER:** The State of Connecticut, Department of Public Works (DPW) Commissioner acting directly or through specifically authorized DPW personnel or agent(s) having authority to perform duties defined in Article 25.

**1.20 CONSTRUCTION ADMINISTRATOR:** An individual, partnership, firm, corporation or other business organization, under contract or employed by the Agency commissioned and/or authorized to oversee the fulfillment of all requirements of the Contract Documents.

**1.21 CONSTRUCTION CHANGE DIRECTIVE:** A written authorization signed by the Agency, directing a modification in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum, Contract Time or both.

**1.22 CONTRACT DOCUMENTS OR CONTRACT:** The Agreement between Agency 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.

**1.23 CONTRACTOR OR GENERAL CONTRACTOR:** An individual, partnership, firm or Corporation, under direct contract with the Agency, 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.

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

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

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

**1.27 CONTRACT TIME:** The period of time allotted in the Contract Documents for Substantial Completion of the Work, including authorized adjustments thereto. The days specified, calendar or working days, are stipulated in the Bidding Documents.

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

**1.29 PROJECT MANAGER:** The individual employed by the Agency, to be responsible for the overall manage-

ment and oversight of the Project, and to represent the Agency.

**1.30 EQUAL(S):** A replacement for the specified material, device, procedure, equipment, etc., which has been determined by the Architect and the Agency to be substantially identical to the first listed manufacturer or first listed procedure specified in terms of cost, quality and performance for the Project. 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.

**1.31 FINAL ACCEPTANCE:** The Agency's written approval and acceptance of the Work issued to the Contractor upon written certification by the Architect of Final Completion.

**1.32 FINAL COMPLETION:** A written statement by the Architect to the Owner that the Work has been completed in accordance with the terms and conditions of the Contract Documents.

**1.33 FINAL INSPECTION:** Review of the Work by the Architect and Agency to determine whether Final Completion has been achieved.

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

**1.35 GENERAL CONDITIONS:** The General Conditions of the Contract for Construction, part of Division 0 of the Specifications.

**1.36 GENERAL REQUIREMENTS:** That part of the Contract Documents entitled General Requirements, which is Division 1.

**1.37 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 Agency due to the Contractor's failure to complete the Work within the Contract Time.

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

**1.39 MINOR CHANGES IN THE WORK:** Changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time and not inconsistent with the intent of the Contract Documents, which shall be affected by written order issued by the Architect.

**1.40 MODIFICATION OR AMENDMENT:**

**1.40.1** A written change to the Contract Documents.

**1.40.2** A Change Order.

**1.40.3** A Construction Change Directive.

**1.40.4** Supplemental Instructions for minor changes in the Work and/or additional instructions to the Work.

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

**1.42 NOTICE TO PROCEED:** Written notice, issued by the Agency to the Contractor authorizing the Contractor to proceed with the Work and establishing the date for commencement of the Contract Time.

**1.43 OWNER OR AGENCY:** Eastern Connecticut State University, Willimantic, Connecticut or specifically authorized Agency personnel or agent.

**1.44 PAYMENT BOND, LABOR BOND OR MATERIAL BOND:** A bond in which the Contractor and the Contractor's surety guarantee to the Agency 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.

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

**1.46 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.

**1.47 PLANS OR DRAWINGS:** All drawings or reproductions of drawings pertaining to the construction of the Work contemplated and its appurtenances.

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

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

**1.50 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 Agency.

**1.51 RECORD DOCUMENTS OR AS-BUILT DRAWINGS:** Construction Drawings revised to show all significant Modifications made during the construction process.

**1.52 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 and their relationship to Substantial Completion and Final Completion of the Work, rendered in a form permitting determination of the optimum sequence and duration of each operation.

**1.53 SCHEDULE OF VALUES:** A document furnished by the Contractor to the Architect and Agency 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.

**1.54 SECONDARY SUBCONTRACTOR:** An individual, partnership, firm or Corporation under direct contract with the Subcontractor to the General Contractor.

**1.55 SHOP DRAWINGS:** Drawings provided to Architect and Agency 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.

**1.56 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.

**1.57 SUBCONTRACTOR:** A person, 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.

**1.58 SUBMITTALS:** Documents including, but not limited to, samples, manufacturer's data, shop drawing, or other such items submitted to the Agency and Architect by the Contractor for the purpose of approval or other action, as required by the Contract Documents.

**1.59 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 so the Agency can occupy or utilize the Work for its intended use.

**1.60 SUBSTITUTION:** A material, device, procedure, equipment, etc., which has been determined by the Architect and the Agency to be not an Equal to the first manufacturer or procedure listed in the Specification in terms of cost, quality and performance but which may be used in place of that item specified. . The Substitution constitutes a modification in the Work, the Schedule or the Architect/Engineer's design intent of the specified material, device, procedure, equipment, etc.

**1.61 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.

**1.62 SUPPLEMENTARY CONDITIONS:** An extension of the General Conditions applicable to any and all portions of Work under the Contract Documents.

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

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

**1.65 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**

### **REFERENCE STANDARDS AND DEFINITIONS**

**2.1** For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

**2.2** References to standard specifications and codes refer to the editions current at the bid due date. An exception is, buildings exceeding the threshold limit must be in substantial compliance with the requirements of the effective code at the time of receipt of completed application to the Office of State Building Inspector (OSBI). References include their addenda and errata, if any, and shall be considered a part of these specifications as if they were printed herein in full.

**2.3** The manufacturers' standard warranties or guarantees shall apply when their products are used on this project.

**2.4** Flame Spread Ratings - all materials that are required or obligated to meet specified standards shall be submitted to the owner for their records as part of the shop drawing submittal process for their construction records.

## **Article 3**

### **CONDITIONS OF WORK**

**3.1** 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 Agency 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.

**3.2** The Contractor shall report to the Construction Administrator all errors, inconsistencies or omissions discovered. The Contractor shall not be liable to the Agency 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.

**3.3** 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.

**3.4** 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.

**3.5** It is not the intent of the Documents to show all existing conditions. All contractors are advised and required to visit and examine the site with the Construction Administrator prior to submitting bids. If conflicts are noted the Contractor shall notify the Agency as soon as possible prior to bid date. If a conflict appears during construction notify the Construction Administrator, in writing, as soon as possible -  
- Do not proceed without direction from the Construction Administrator.

**3.6** Where existing objects or conditions are uncovered and exposed, subsequent to the issuance of the Contract, the Contractor and the Construction Administrator will jointly inspect these conditions and their findings will be recorded in writing by the Contractor. All corrective measures jointly agreed upon will be recorded in detail sufficient to prevent confusion and conflict at a later date.

**3.7** The Contractor will proceed with the Work in these areas, taking into consideration these newly exposed conditions, and will adjust its working procedures to compensate for these conditions.

**3.8** Contractors should investigate and satisfy themselves 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.

**3.9** If applicable to this Project a review of Geo-Technical Reports, Boring Logs Asbestos, Hazardous Materials and Confined Space parameters are contained in a separate Volume of this Project Manual, the Boring Location Plans are in the Contract Documents.

**3.10** A Pre-Bid Conference and tour of the site will be conducted as scheduled in the Notice to Bidders. This scheduled conference is the only official opportunity for the bidders to tour the site with the Agency, Architect, Engineer, Construction Administrator, and Consultants.

**3.11** 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 Institution or Agency operating at the site.

**3.12** 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.

**3.13** The Contractor shall perform the Work in accordance with the Contract Documents and approved submittals pursuant to Article 8.

#### **Article 4** **CORRELATION OF CONTRACT DOCUMENTS**

**4.1** The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all. The Specifications and Drawings are intended to describe and illustrate the materials and labor necessary for the work of this Project. Where discrepancies of conflict occur in the Contract Documents the following order of precedence shall be utilized:

- 4.1.1** Amendments and addenda shall take precedence over previously issued Contract Documents.
- 4.1.2** The General Requirements take precedence over the Supplementary Conditions.
- 4.1.3** The Supplementary Conditions take precedence over the General Conditions.
- 4.1.4** The General Requirements take precedence over the General Conditions.
- 4.1.5** The Specifications shall take precedence over the Plans.
- 4.1.6** Stated dimensions shall take precedence over scaled dimensions.
- 4.1.7** Large-scale detail drawings shall take precedence over small-scale drawings.
- 4.1.8** The schedules contained in the Contract Documents shall take precedence over other data on the Plans.

**4.2** 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 Agency 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.

**4.3** 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.

**4.4** 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.

**4.5** 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.

**4.6** Throughout the Technical Specifications, the Connecticut Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction Form 816, current addition including any interim and supplemental specifications may be 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.

#### **Article 5** **SUPPLEMENTAL BID**

**5.1** Definition: A Supplemental Bid is an amount proposed by bidders and stated on the Bid Proposal Form for certain work defined in the Bidding Documents that may be added to the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

**5.2** The cost for each supplemental bid is the net addition to the Contract Sum to incorporate the Supplemental Bid into the Work. Supplemental Bids are only accepted in the numerical order that they are listed on the Bid Proposal Form and never accepted out of numerical sequence. No other adjustments are made to the Contract Sum.

**5.3** Coordination: Modify or adjust affected adjacent Work as necessary to completely and fully integrate that Work into the Project.

**5.4** Include as part of each Supplemental Bid, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the Supplemental Bid.

**5.5** Execute accepted Supplemental Bids under the same conditions as other Work of this Contract.

**5.6** Schedule: A "Schedule of Supplemental Bids" is included within the Supplementary General Requirements (Section 01030 Supplemental Bids. Specification Sections referenced in the Schedule contain requirements for materials necessary to achieve the Work described under each Supplemental Bid.

#### **Article 6** **COMMENCEMENT AND PROGRESS OF WORK**

**6.1** The Work shall start upon the date given in the Notice to Proceed. The Contractor shall complete all the Work necessary for Final Completion, 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 Bidding Document.

**6.2** 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.

**6.3** The Contractor's early completion schedule notwithstanding, the Agency reserves the right to order Modifications to the Work in accordance with Article 13 at any time during the Contract Time.

**6.4** The Contractor shall not be entitled to costs for delay due to Agency 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. Costs include, but are not limited to, delays extended home or field office costs, supervisory and management costs incurred in performance of the Work. Early completion of the Work shall not merit additional compensation.

**6.5** 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 Agency'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 Agency 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 Agency.

**6.6** 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.

**6.7** 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.

**6.8** Any extension of the Contract Time shall be by Change Order pursuant to Article 17 and Article 18.

### **Article 7** **PROJECT MEETINGS**

**7.1** Pre-construction Conference: The Contractor will attend a Pre-construction Conference before starting construction, as scheduled by the Construction Administrator convenient to the Agency, the Construction Administrator, Architect, and Contractor. This meeting will take place within seven (7) Calendar Days after the written Notice to Proceed and before the Contract 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. NOTE: Amplify the paragraph below as necessary to suit project requirements.

**7.1.1** Attendees: Authorized representatives of the Construction Administrator, Agency, 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.

**7.1.2** Agenda: Discuss items of significance that could affect progress, including the following:

- a. Tentative construction schedule.
- b. Critical work sequencing.
- c. Progress meeting schedule.
- d. Designation of responsible personnel.
- e. Procedures for processing field decisions and Change Orders.
- f. Procedures for processing Applications for Payment.
- g. Distribution of Contract Documents.
- h. Submittal of Shop Drawings, Product Data, and Samples.
- i. Preparation of record documents.
- j. Use of the premises.
- k. Parking availability.
- l. Office, work, and storage areas.
- m. Equipment deliveries and priorities.
- n. Safety procedures.
- o. First aid.
- p. Security.
- q. Housekeeping.
- r. Plan of Use
- s. Substitutions
- t. Safety – Conn OSHA
- u. Working hours.
- v. Coordination with Audio-Visual and Telecommunications.

**7.2** Progress Meetings: The Construction Administrator will conduct progress meetings, weekly, at the Project Site or at regular intervals as agreed upon at the Pre-construction Conference. The Construction Administrator will notify the Agency, the Architect, and the Contractor of the scheduled Progress Meeting dates. Coordinate dates of Progress Meetings with preparation of Application for Payment requests.

**7.2.1** Attendees: In addition to representatives of the Contractor, Construction Administrator, Agency and the Architect, subcontractor, supplier, or other entity concerned with current progress or in-

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.

**7.2.2 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.

**7.2.3 Construction Schedule:** Review progress since the last Progress Meeting. Determine where each activity is in relation to the required Contractor's "Construction 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.

**7.2.4** Review the present and future needs of each entity present.

**7.2.5 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.

**7.2.6** A schedule of regular Project Meetings will be established at the Pre-construction Conference.

### **Article 8** **SUBMITTALS, PRODUCT DATA, SHOP** **DRAWINGS AND SAMPLES**

**8.1** Contractor shall review, approve and submit to the Construction Administrator/Agency all submittals including but not limited to Product Data, Shop Drawing and Sample Manufacturers, with such promptness as to cause no delay in the Work.

**8.2** Correction or approval of such submittals, Shop Drawings, Product Data sample will be made with reasonable promptness by the Architect. 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 Docu-

ments unless such departure has received the Agency's written approval.

**8.3** No Work governed by such drawings, schedules or samples shall be fabricated, delivered or installed until approved by the Architect.

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

**8.5 Summary:** This Section includes administrative and procedural requirements for submittals required for performance of the Work, including but not limited to the following:

- a. Submittal schedule.
- b. Shop Drawings.
- c. Product Data.
- d. Samples.
- e. Quality assurance submittals.
- f. Proposed "Substitutions Request" form.
- g. Warrantee samples.
- h. Coordination Drawings.
- i. O & M Manuals
- j. Plan of Use

**8.6 Administrative Submittals:** Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:

- a. Permits.
- b. Applications for Payment.
- c. Performance and payment bonds.
- d. Contractor's construction schedule.
- e. Daily construction reports.
- f. Construction Photographs.
- g. Insurance certificates.
- h. List of subcontractors.
- i. Subcontractors/Suppliers FEIN numbers and Connecticut tax registration number.

**8.7** Coordination Drawings are to 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 within the Contract Documents.

**8.7.1** Preparation of Coordination Drawings is specified in Division 1 Section "Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.

**8.7.2** Field samples are full-size physical examples erected on-site to illustrate finishes, coatings, or finish materials. Field samples are used to estab-

lish the standard by which the Work will be judged.

**8.7.3 Submittal Procedures:** 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.

**8.7.4** Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that requires sequential activity.

**8.7.5** 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.

**8.7.6** The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

**8.7.7** The Architect reserves the right to reject incomplete submitted packages.

**8.7.8 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 resubmittals.

- a. Allow (2) two weeks 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 (2) two 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.

**8.9 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.

**8.9.1** The minimum number of copies required for each submittal shall be at a minimum 7 copies or

as determine otherwise at the pre-construction conference or by the Construction Administrator.

**8.9.2** 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.

**8.9.3** 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".

**8.10 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 and one copy of the submittal. The Architect will return submittals to the Contractor after action is taken with a complete copy of the submittal package to the Construction Administrator.

**8.10.1** 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.

**8.11 Submittal Schedule:** After development and review by the Construction Administrator and Architect acceptance of the Contractor's Construction Schedule prepare a complete Schedule of Submittals. Submit the schedule to the Construction Administrator within seven (7) days of Contract Award.

**8.11.1** Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction Schedule.

**8.11.2** Prepare the schedule in chronological order. Provide the following information:

- a. Related section number.
- b. Schedule date for the initial submittal.
- 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.

**8.11.3** Distribution: Following response to the initial submittal schedule, print and distribute copies to the Construction Administrator, Architect, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

**8.11.4** 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.

**8.11.5** 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.

**8.12** Daily Construction Reports: 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:

- a. List of subcontractors at the site.
- b. Approximate count of personnel at the site.
- c. High and low temperatures, general weather conditions.
- d. Accidents and unusual events.
- e. Meetings and significant decisions.
- f. Stoppages, delays, shortages, and losses.
- g. Meter readings and similar recordings.
- h. List of equipment on site and identify if idle or in use.
- i. Orders and requests of governing authorities.
- j. Change Orders received, start and end dates.
- k. Services connected, disconnected.
- l. Equipment or system tests and startups.

- m. Partial Completion's, occupancies.
- n. Substantial Completion's authorized.
- o. Equals or Substitutions approved or rejected.
- p. Sub-Contractors meeting minutes.
- q. Safety Meeting minutes.

**8.13** Shop Drawings: 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.

**8.13.1** Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:

- a. Dimensions:
- b. Identification of products and materials included by sheet and detail number.
- c. Compliance with specified standards.
- d. Notation of coordination requirements.
- e. Notation of dimensions established by field measurement.
- f. 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.
- g. Submit one (1) reproducible media and seven (7) prints as directed by the Construction Administrator. The Contractor's submittal shall identify the specification section and/or drawing number applicable to the submittal.
- h. Details shall be large scale and/or full size.

**8.13.2** 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.

**8.13.3** 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. 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.

**8.13.4** 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.

**8.13.5** Upon final review submit four (4) additional prints, same as submitted, to the Construction Administrator for his use.

**8.13.6** 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.

**8.13.7** Only final reviewed shop drawings are to be used on the project site.

**8.13.8** 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. Final reviewed shop drawings shall not replace or be used as a vehicle to issue or incorporate change orders.

**8.14** Product Data: 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.

**8.14.1** 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.

**8.14.2** Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

**8.14.3** Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.

**8.14.4** Submittals: Submit 7 copies of each required submittal; submit an additional 3 copies where required for maintenance manuals. The Architect will retain one and will return the others marked with action taken and corrections or modifications required.

**8.14.5** Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

**8.14.6** 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.

**8.14.7** Do not proceed with installation until a copy of Product Data is in the Installer's possession.

**8.14.8** Do not permit use of unmarked copies of Product Data in connection with construction.

**8.15** Samples: 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.

**8.15.1** 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.

**8.15.2** 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 be-

tween 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 are the property of the Contractor and shall be removed from the site prior to Substantial Completion.

**8.15.3 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.

**8.15.4 Submittals:** Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit three (3) sets. The Architect will return one set marked with the action taken.

**8.15.5 Maintain sets of Samples,** as returned, at the Project Site, for quality comparisons throughout the course of construction.

**8.15.6 Unless noncompliance with Contract Document provisions is observed,** the submittal may serve as the final submittal.

**8.15.7 Sample sets may be used to obtain final acceptance of the construction associated with each set.**

**8.15.8 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.

**8.15.9 Field samples are full-size examples erected on-site to illustrate finishes, coatings, or finish materials and to establish the Project standard.**

**8.16 Quality Assurance Submittals:** 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.

**8.16.1 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.

**8.16.2 Signature:** Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

**8.16.3 Inspection and Test Reports:** Requirements for submittal of inspection and test reports from independent testing agencies are specified in Division 1 Section "Quality Control".

**8.17 Architect's Action:** 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.

- a. Compliance with specified characteristics is the Contractor's responsibility.

**8.17.1 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:

- a. **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.
- b. **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.
- c. 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; re-submit without delay. Repeat if necessary to obtain different action mark.

**8.17.2 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."

**8.17.3 Unsolicited Submittals:** The Architect will discard unsolicited submittals without action.

**8.18** 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.

**8.19** The Contractor shall allow a minimum of two weeks for the Agency 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 Agency and its agents.

## **Article 9**

### **EQUALS AND SUBSTITUTIONS**

Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.

**9.1** 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.

**9.2** Equal: 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 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.

**9.3** 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 and may be rejected or approved by the Agency. The Substitution is not equal to the specified requirement in comparison to the first manufacture 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.

**9.3.1** The following are not considered to be requests for Equals or Substitutions:

- a. Revisions to the Contract Documents requested by the Agency or Architect.
- b. Specified options of products and construction methods included in the Contract Documents.
- c. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities having jurisdiction.

**9.4** Submittals: Equals and Substitution Request Submittals: The Owner will consider requests for equals or substitutions if received within time period of thirty (30) calendar days from the contract award. Requests received more than the days specified will be rejected.

**9.4.1** The Contractor is required to prepare and submit 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 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 Agency and Architect/Engineer to determine that the proposed Equal

or Substitution is or is not substantially equal to the first listed manufacturer or procedure.

**9.4.2** The Contractor is required to identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.

**9.4.3** The Contractor is required to provide complete documentation showing compliance with the requirements for equals or substitutions, and the following information, as appropriate on a "Substitution Request" form as required by the Agency:

- h. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Agency and separate contractors, that will be necessary to accommodate the proposed Equal or Substitution.
- h. 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.
- h. Product Data, including Shop Drawings and descriptions of products and fabrication and installation procedures.
- h. Samples, where applicable or requested.
- h. A statement indicating the effect on the Contractor's Construction Schedule compared to the schedule without approval of the Equal or Substitution. Indicate the effect on overall Contract Time.
- h. Cost information, broken down, including a proposal of the net change, if any in the Contract Sum.
- h. 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.

**9.5** Architect's/Engineer's Action: If necessary, the Architect/Engineer will request additional information or documentation for evaluation within one week of receipt of the original request for equal or substitution request. The Architect/Engineer will notify the Construction Administrator who will notify the Agency of recommended acceptance or rejection of the proposed equal or substitution, within two (2) weeks of receipt of the request, or one (1) week of receipt of additional information or documentation, whichever is later. The Construction Administrator will give final acceptance or rejection by the Agency not less than one (1) week after notification.

**9.6** Any request deemed an "Equal" and accepted by the Construction Administrator, Architect, and Agency will result in written notification to the Contractor and will not be in the form of a change order for an "Equal".

**9.7** Any request deemed a "Substitution" and rejected or approved by Construction Administrator, Architect, and Agency may result in written notification to the Contractor and may be in the form of a change order if the "Substitution" is approved.

**9.8 Equal or Substitutions:** 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.

- a. The proposed request does not require extensive revisions to the Contract Documents.
- b. The proposed request is in accordance with the general intent of the Contract Documents.
- c. The proposed request is timely, fully documented, and/or properly submitted. 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.
- d. The proposed request will offer the Agency a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Agency must assume. However, if the pro-

posed 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.

- e. The proposed request can receive the necessary approvals, in a timely manner, required by governing authorities having jurisdiction.
- f. The proposed request can be provided in a manner that is compatible with the Work as certified by the Contractor.
- g. The proposed request can be coordinated with the Work as certified by the Contractor.
- h. The proposed request can uphold the warranties required by the Contract Documents as certified by the Contractor.

**9.9** 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.

#### **Article 10** **SEPARATE CONTRACTS**

**10.1** The Agency reserves the right to perform Work in connection with the Contract with the Agency'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.

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

**10.3** The Contractor shall assume all liability, financial or otherwise, in connection with this Contract and shall protect

and hold harmless the Agency 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 Agency and the Contractor, the Contractor shall bear such loss.

**10.4** 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.

**10.5** In no event shall the Agency be responsible for any claim or damages that are the result of the Contractor's failure to coordinate the work with any Contractor or Subcontractor.

#### **Article 11** **COOPERATION OF TRADES**

**11.1** 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.

**11.2** 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 12** **DAMAGES**

**12.1** The Liquidated Damages, provided in the Bidding Documents, will be assessed for each day beyond the date given for Substantial Completion of the Contract according to the Contract Time.

**12.2** The Liquidated Damages or any portion thereof may be waived at the sole discretion of the Agency.

**12.3** No payment by the Agency, either partial or final, shall be construed to waive the Agency's right to seek liquidated damages.

**12.4** 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 over-

head or anticipated profits, against the Agency and the Agency shall not be liable for any damages which Contractor may incur as a result of such decision. In addition, if the court enjoins the Agency from entering into or proceeding with the contract herein, the Agency 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 13**  
**MINIMUM WAGE RATES**

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 mechanic, laborer or workman employed upon the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such employee to any employee welfare fund, as defined in subsection (h) of section 31-53 of the general statutes, 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 employees to any such employee welfare fund shall pay to each employee as part of his wages the amount of payment or contribution for his classification on each pay day."

**Article 14**  
**POSTING MINIMUM WAGE RATES**

**14.1** 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.

**14.2** The Contractor shall provide weekly certified payrolls to the Agency for all persons working on the site.

**Article 15**  
**CONSTRUCTION SCHEDULES**

**15.1** Unless otherwise specified in the Contract Documents, within seven (7) calendar days from the contract start date, the Contractor shall submit the following to the Agency for approval:

- a. A comprehensive Schedule of Activities. Said schedule shall include Submittal dates, required approval dates and date material must be on site.

**15.2** Within seven (7) days of the Agency's issuance of a Contract, the Contractor shall submit to the Construction Administrator **three (3) copies** of a Construction Schedule

for this Project. The Schedule shall be in bar chart form and shall include all aspects of the work, the interrelationship of the various trades, and the critical path of the job. The schedule shall include a timeline for the submission, review and approval of shop drawings for critical path items, and delivery and installation dates for those same critical path, or long lead time items, (such as electrical transformers and elevator). The Schedule shall coincide with the Contractor's approved Schedule of Values. The Schedule shall indicate a completion date in advance of the date established for Substantial Completion. The Schedule shall be acceptable to the Architect/Engineer and the Construction Administrator. It shall be revised and reissued at the beginning of every month for the duration of the project. This monthly update progress Schedule shall include a summary comparison of the original schedule and the latest updated schedule (previous month) showing all activity description and dates. These comparison schedules shall be in the form of a summary bar chart, an activity listing report, and actual to target comparisons. The reports shall include critical activities, float time, duration of each activity, dates of each activity, and the network logic (including successors and predecessors of each activity). Included with the written report and copy of the schedule submission, there also shall be a 3- 1/2" computer diskette noting the above referenced requirements. Failure to provide the Architect/Engineer, or the Construction Administrator with an acceptable, revised Schedule, within **seven (7) days** of the receipt of a written request, may result in the withholding of the Contractor's monthly progress payments until such a Schedule is received.

**15.3** Phasing: The Contractor shall include, as part of the Construction Schedule, all proposed phasing for execution of the work. The phasing must incorporate all aspects of the work and shall reflect coordination with any concurrent projects undertaken by Agency, and any partial occupancy requirements of the Agency.

**15.4** Project Schedule Format:

- a. 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.
- b. Program: Use Microsoft Project, latest version.
- c. Sequence of Listings: Utilize the Table of Contents of this Project Manual and the chronological order of the start of each item of work.
- d. Scale and Spacing: Provide space for notations and revisions.
- e. Sheet Size: To be coordinated with Construction Administrator.

**15.5** Quality Assurance: The Contractor's Consultant: Retain a knowledgeable person and/or consultant to provide

planning, evaluating, and reporting by CPM scheduling. The Agency 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.

**15.6** Computer Program for Project Schedules: Use "Microsoft Project" compatible, latest version.

**15.7** Standards: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

**15.8** Content: Provide the following:

- 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 number.
- c. Identify work of separate phases other 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 Agency furnished products and any products identified as under Allowances.
- g. Coordinate content with Schedule of Values.

**15.8.1** Submittals And Revisions To Schedules: Provide the following:

- a. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
- b. Identify activities modified since previous submittal, major changes in scope, other identifiable changes.
- c. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.

**15.9** Unless otherwise specified under the Contract Documents, the Contractor shall provide a monthly update of the Construction Schedule in the format required by the Agency as well as a disk of the updated Schedule and program. If, in the opinion of the Agency, 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.

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

#### **Article 16**

#### **PREFERENCE IN EMPLOYMENT**

**16.1** 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.

**16.2** Should this Contract be for a public works project other than for the construction, remodeling or repairing of public buildings covered by Connecticut General Statutes Section 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 not such person is available then to residents of other states.

**16.3** The provisions of this Article shall not apply where the state or any sub-division 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 17**

#### **MODIFICATION PROCEDURES**

**17.1** Summary: This Section specifies administrative and procedural requirements for handling and processing contract modifications.

**17.2** Minor Changes in the Work: The Architect, through the Construction Administrator, may 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 Agency.

**17.3** Proposal Request: The following is the outlined procedure:

- a. Architect/Agency-Initiated Requests For Proposals: The Architect or Agency 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 Agency.
- b. "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.
- c. Within Seven (7) Calendar Days of receipt of a "Proposal Request", submit an "Change Order Proposal" with the required information necessary to execute the change to the Construction Administrator for the Architect's/Agency's review.
- d. 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.
- e. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
- f. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

**17.4** The Agency is tax exempt. All Contractor and Sub-contractor services provided under your contract with the State of Connecticut may not be exempt from taxes. The State of Connecticut, Department of Revenue Services can guide you as to which services are exempt and which are not.

- a. The State of Connecticut construction contract has the following tax exemptions:
- b. Purchasing of materials which will be physically incorporated and become a permanent part of the project.
- c. Tools, supplies and equipment used in fulfilling the construction contract are not exempt.
- d. Services that are resold by the contractor are exempt, i.e. if a General Contractor hires a plumber, to be integral and inseparable component parts of the building contract.

- 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.

**17.5 Requests for Information:** In the event that the contractor, subcontractor or Construction Administrator, determines that some portion of the drawings, specifications, existing site conditions or other contract documents requires clarification or interpretation by the Architect, then they shall submit a "Request for Information" in writing to the Architect via Construction Administrator. "Requests for Information" shall be submitted on the "Request for Information" forms as required by the Agency. The "Request for Information", shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed from the Architect. The following shall apply:

- a. In the "Request for Information", the writer shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.
- b. The Agency acknowledges that this is a complex project. Based upon the Agency's past experience with projects of similar complexity, the Agency anticipates that there will probably be some "Requests for Information" on this project.
- c. The Architect will review all "Requests for Information" to determine whether they are "Requests for Information" within the meaning of this term. If it is determined that the document is not a "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.
- d. A "Requests for Information Response" shall be issued within seven (7) Calendar Days of receipt of the request unless the Agency determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Agency, the Agency will, within seven (7) Calendar Days of receipt of the request, notify the writer of the anticipated response time. If the contractor submits a "Request for Information" on an activity with seven (7) Calendar 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) Calendar Days set forth above.

- e. A "Requests for Information Response" from Architect will not change any requirement of the contract documents. In the event the contractor believes that the "Requests for Information Response" will cause a change to the requirements of the contract document, the contractor shall immediately give written notice to the Construction Administrator stating that the contractor believes the "Requests for Information Response" will result in "Change Order" and the Contractor intends to submit a "Change Order Proposal" request. Failure to give such written notice immediately shall waive the contractor's right to seek additional time or cost under the requirement these Requirements.

**17.6 Change Order Proposal:** When either a "Request for Information" from the Contractor or a "Proposal Request" from the Architect or Agency 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 Agency. These forms shall also include "Change Order Proposal Worksheets" as required by the Agency. The following shall apply:

- a. 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.
- b. 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.
- c. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
- d. Comply with requirements in Equals and Substitutions if the proposed change requires an equal or substitution of one product or system for a product or system specified.

**17.7 "Change Order Request" Forms:** Use "Change Order Proposal" and "Change Order Proposal Worksheets" forms as required by Agency.

**17.8 Construction Change Directive:** When the Agency 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” as authorized by the Agency on the form required by the Agency. The “Construction Change Directive” instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a “Change Order”.

**17.8.1** 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. The Contractor shall maintain detailed records on a time and material basis of work required by the “Construction Change Directive”. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract. The final value shall be negotiated based on the supporting data to determine the value of the work.

**17.9** Change Order Procedures: Upon the Agency’s approval of a Contractor’s “Change Order Proposal”, the Construction Administrator will issue a “Change Order” for signatures of the Architect, Agency and the Contractor on “Change Order” form as required by the Agency.

### **Article 18** **COMPENSATION FOR CHANGES** **IN THE WORK**

**18.1** At any time, without invalidating the Contract and by a written order and without notice to the sureties, the Agency, 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.

**18.2** Modifications to the Work will be authorized by a written Change Order, or if necessary to expedite the Work, a written Construction Change Directive. 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.

**18.3** If such Change Orders make 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 18.

**18.4** The Contractor and the Agency agree that the Contract Time specified for the performance of the Contract shall include not only the Work of the original Contract but also any Additional Work ordered by the Agency by Change Order. No extension of time will be granted if it is the

opinion of the Agency that the additional Work can be performed concurrently with the original Work.

**18.5** The Contractor may request, and the Agency may grant additional contract time when, in the opinion of the Agency, the Contractor has demonstrated that such additional work cannot be performed concurrently with the original Work.

**18.6** 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:

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

**18.6.1.1** Unit Price: As stated in the Contract Documents.

**18.6.1.2** Unit Price: As subsequently agreed upon by the Contractor and Agency.

**18.6.1.3** Lump Sum: Agreed upon sum by the Agency and the Contractor. The Lump Sum must be based upon the following itemized costs:

**18.6.1.3.1** Labor (Contractor’s or Subcontractor’s own forces).

**18.6.1.3.2** Material (Used by Contractor’s or Subcontractor’s own forces).

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

**18.6.1.3.3.1** Workers Compensation.

**18.6.1.3.3.2** Federal Social Security.

**18.6.1.3.3.3** Connecticut Unemployment Compensation.

**18.6.1.3.3.4** Fringe Benefits.

**18.6.1.3.4** Rented Equipment (Used directly on the Work and by the Contractor’s or Subcontractor’s own forces).

**18.6.1.3.5** 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.

**18.6.1.3.6** Trade related equipment, hand tools and power tools, normally



supplied with the labor are not compensable.

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

**18.6.2.1** Contractor's markup for Work performed by their own forces:

<b>Change Order Amount</b>	<b>Overhead and Profit</b>
\$0 to \$ 5,000	20%
\$5,001 to \$15,000	17%
\$15,001 to \$25,000	15%
\$25,000 and greater	12%

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

**18.6.3.1** Contractor's markup for Work performed by their Subcontractors forces:

<b>Change Order Amount</b>	<b>Overhead and Profit</b>
\$0 and greater	6%

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

**18.6.4.1** Subcontractor's markup for Work performed by their own forces:

<b>Change Order Amount</b>	<b>Overhead and Profit</b>
\$0 to \$ 5,000	20%
\$5,001 to \$15,000	17%
\$15,001 to \$25,000	15%
\$25,000 and greater	12%

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

**18.6.5.1** Subcontractor's markup for Work performed by their Secondary Subcontractor's forces.

<b>Change Order Amount</b>	<b>Overhead and Profit</b>
\$0 and greater	6%

**18.7** Actual additional bonding costs associated with the value of the Change Order will be compensable only when supported by a written documentation by the bonding company that the Change Order requires an increase to the original Performance, Payment, Labor or Material Bond. Such claims shall be held and calculated at the end of construction activities and to be included under Final Payment.

**18.8** If Unit Prices are not applicable and the parties cannot agree upon a lump sum, then the Agency, through the Construction Administrator take the following action(s):

**18.8.1** 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 based upon the following:

**18.8.1.1** Labor (Contractor's or Subcontractor's own forces).

**18.8.1.2** Material (Used by Contractor's or Sub-contractor's own forces).

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

**18.8.1.3.1** Workers Compensation.

**18.8.1.3.2** Federal Social Security.

**18.8.1.3.3** Connecticut Unemployment Compensation.

**18.8.1.3.4** Fringe Benefits.

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

**18.8.1.5** 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.

**18.8.2** Issue a Change Order adjusting the Contract Sum in the amount as determined by the Agency.

**18.9** 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 Agency 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 Agency reserves the right to access and make copies of the Contractor's records at any time upon written request to the Contractor.

**18.10** If the Contractor wishes to make a claim for an increase in the Contract Sum for any damages sustained as a result of Additional Work, then the Contractor shall give the Agency, through the Construction Administrator, written notice thereof within seven (7) calendar days after the occurrence of the event giving rise to such claims.

**18.11** No such claims shall be valid if the written notice is submitted after the required seven (7) calendar days. In addition, the Contractor shall file with the Agency, through the Construction Administrator, daily or weekly itemized statements of the details and cost of such Work performed or damage sustained as may be required by the Agency.

**18.12** Failure of the Contractor to negotiate in good faith issues of time and costs and failure to provide requested documentation within (14) fourteen calendar days, or a time period accepted by the Agency, shall constitute a waiver by the Contractor of any claim. In such cases the Agency may elect to issue a unilateral Change Order in an amount deemed to be fair and equitable by the Agency. 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 Agency, through the Construction Administrator, shall issue a written order for such amount as the Agency finds to be reasonable cost of such Work.

**Article 19**  
**DELETED WORK**

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

**19.2** 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 than by the value as estimated by the Agency.

**Article 20**  
**MATERIALS: STANDARDS**

**20.1** 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.

**20.2** 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 Agency 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 Agency as an exception.

**20.3** Each request for an Equal or Substitution shall be submitted, with the appropriate documentation, as detailed in the Contract Documents, to the Construction Administrator. All requests will be compared to the first manufacturer or first procedure listed in the specific Specification 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 and cost. All submissions must include all the required data for the first listed manufacturer or procedure as specified, as well as the proposed Equal or Substitution. The submission of all Equals or Substitutions to those specified must be made within the days listed below after the contract start date. After that time period, the Contractor shall provide what is specified unless otherwise allowed within the sole discretion of the Agency.

**20.3.1** 30 days for projects having a Contract Time duration of 180 days or less.

**20.3.2** 60 days for projects having a Contract Time duration of 181 days to 360 days.

**20.3.3** 90 days for projects having a Contract Time duration of 361 days or greater.

**20.4** Contractor shall submit each request for Equal or Substitution to the Architect who shall review each request and make the following recommendations to the Agency:

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

**20.4.2** Determination of the category of the request for Substitution or Equal, and

**20.4.3** 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 Agency.

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

**20.6** 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 Agency when a Contractor submits a request for Substitution or Equal, whether such request be approved or denied.

**20.7** 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.

**20.8** The Contractor shall purchase no materials or supplies for the Work which are 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.

**20.9** All Products and systems supplied to the State as 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 21** **QUALITY CONTROL**

**21.1 Contractor Responsibilities:** Unless otherwise indicated as the responsibility of another identified entity, the Agency, 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 forty-eight (48) hours in advance to the test/inspection as applicable.

**21.2** 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.

**21.3** Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Agency's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services. Such services include Special Inspections as required by the latest adoption of the "Connecticut State Building Code".

**21.4** Where the Agency 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 Agency will engage the services of a qualified Special Inspector for this project. The Special Inspector, as a representative of the Agency, shall document and confirm compliance with the provisions of the Connecticut State Building Code for Special Inspections.

**21.5** Materials and assemblers 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.

**21.6** The Agency 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 Codes.

**21.7 Retesting:** The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.

**.7.1** The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.

**21.7.2** The Agency will issue a credit change order to cover all costs incurred related to all re-tests/re-inspection due to non-compliance to the contract documents, including but not limited to the Agency's costs and the Consultants costs.

**21.8 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:

- a. Provide access to the Work.
- b. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
- c. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
- d. Provide facilities for storage and curing of test samples.
- e. Deliver samples to testing laboratories.
- f. Provide an approved design mix proposed for use for material mixes that require control by the testing agency.
- g. Provide security and protection of samples and test equipment at the Project Site.

**21.9** 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.

**21.9.1** 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.

**21.9.2** 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.

**21.9.3** The testing agency shall not perform any duties of the Contractor.

**21.10** Agency 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:

- a. When the Contractor notifies the Construction Administrator and/or Testing Agency less than twenty-four (24) hours before the expected time of testing.
- b. When the Contractor requires testing for his own convenience.
- c. When the Contractor schedules a test and is not ready for the required test.

**21.11** Fire Alarm/Acceptance Testing Procedures: The Contractor shall follow the "Acceptance Testing Procedures" as provided by the Agency prior to Acceptance Testing.

**21.11.1** Submittals: 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.

**21.11.2** Submit additional copies of each written report directly to the governing authority, when the authority so directs.

**21.11.3** 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.

**21.12** Quality Assurance: 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.

**21.12.1** 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.

**21.13** Repair and Protection: 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 1 Section "Cutting and Patching."

**21.13.1** Protect construction exposed by or for quality-control service activities, and protect repaired construction.

**21.13.2** Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

## **Article 22** **INSPECTION AND TESTS**

**22.1** 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 Agency, and any authorities have jurisdiction.

**22.2** All material and workmanship, if not otherwise designated by the Specifications, shall be subject to inspection, examination and test by the Agency 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 Agency 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 Agency 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 Agency.

**22.3** Without additional cost to the Agency, the Contractor shall promptly furnish facilities, labor and materials necessary to coordinate and perform operational tests and check-out of the Work. The Contractor shall furnish promptly all reasonable facilities, labor and materials necessary to make all such testing safe and convenient.

**22.4** If, at any time before Final Completion and Final Acceptance of the Work, the Agency 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

Agency, 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 Agency or its representatives (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 Agency's and the Construction Administrator's administrative costs, and other costs for services of other consultants.

## **Article 23** **ROYALTIES AND PATENTS**

**23.1** 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 Agency.

**23.2** The Contractor shall indemnify and hold harmless the Agency 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 Completion of the Work.

## **Article 24** **SURVEYS, PERMITS AND REGULATIONS**

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

**24.2** 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.

**24.3** 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.

**24.4** If underground utilities may involve part of the Work, the Contractor shall obtain the services of a qualified underground utility locating firm, at no cost to the Agency, to verify locations of underground utilities, to provide safety, protect the Work and protect the workmen as necessary to perform the Work.

## **Article 25** **PROTECTION OF THE WORK, PERSONS AND PROPERTY**

**25.1** 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 Agency.

**25.2** 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.

**25.3** 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", and the standards of the Connecticut Labor Department and Occupational Safety and Hazard Association (OSHA).

**25.4** 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.

**25.5** 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 Agency by the Contractor at the commencement of the Contract.

**25.6** The Contractor shall at all times protect excavation, 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.

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

**25.8** 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.

**25.9** 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.

**25.10** 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 Agency.

#### **Article 26** **TEMPORARY UTILITIES**

**26.1** Unless expressly provided for otherwise in the Contract Documents, the Contractor shall include in the bid 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 27** **CORRECTION OF WORK**

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

**27.2** 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.

**27.3** If the Contractor, after receipt of notice from the Agency, 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.

**27.4** 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 Agency 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 Doc-

uments, the Contract sum shall be reduced by such amount as, in the judgment of the Agency, shall be equitable.

**27.5** 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 Agency, shall be completed within 60 days of established Substantial Completion date.

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

**27.7** 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 28**  
**STARTING SYSTEMS**

**28.1** General: The Contractor shall provide the following:

- a. Coordinate schedule for start-up of various equipment and systems with the Construction Administrator and Agency.
- b. Provide written notification to the Construction Administrator fourteen (14) Calendar 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 in 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 that the equipment or system has been properly installed and is functioning properly.

**28.2** Demonstration and Instructions: The Contractor shall provide the following:

- a. Demonstrate operation and maintenance of Products to Architect/Engineer and Agency Personnel two (2) weeks prior to substantial completion. Provide a VHS type video record of all demonstrations.
- 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 Architect/Engineer 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.

**28.3 Testing Adjusting, and Balancing:** The Contractor will employ and pay for the testing services of an independent consultant to verify the testing, adjusting, and balancing.

**28.3.1** 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.

**28.3.2** The Agency may employ and pay for the services of an independent consultant to verify testing, adjusting, and balancing which was performed by the Contractor.

#### **Article 29** **GUARANTEES and WARRANTIES**

**29.1** 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.

**29.2** 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 Agency's recourse.

#### **Article 30** **CUTTING, FITTING, PATCHING AND DIGGING**

**30.1** 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 Agency and in accordance with the Plans and Specifications.

**30.2** 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 Agency, neither the

Contractor nor any of its Subcontractors shall cut or alter the Work of any other Contractor or Subcontractor.

#### **Article 31** **CLEANING UP**

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

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

#### **Article 32** **ALL WORK SUBJECT TO CONTROL OF THE AGENCY**

**32.1** The Agency hereby declares that only authorized representatives may act in matters involving the Agency's or Architect'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 Agency. In all such matters, the provisions of Articles 13 and 14 herein shall guide the Agency.

**32.2** In no event may the Contractor act on any instruction of the Agency without written consent of the Agency. 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 Agency.

**32.3** In the performance of the work, The Contractor shall abide by all orders, directions, and requirements of the Agency at such time and places and by such methods and in such manner and sequence as the Agency may require.

**32.4** The Agency 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.

**32.5** The Contractor shall employ no plant, equipment, materials, methods or persons to which the Agency objects and shall remove no plant materials, equipment or other facilities from the site of the Work without the permission of the Agency.



**Article 33**  
**CONSTRUCTION ADMINISTRATOR**

**33.1** The Construction Administrator employed by the Agency 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.

**33.2** 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 Agency in any way, nor releasing the Contractor from the fulfillment of the terms of the Contract.

**33.3** 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 noncompliant portion of the Work until the dispute can be referred to and decided by the Agency.

**33.4** The Construction Administrator is referred to in the Contract Documents as "Construction Administrator" or "Construction Manager" or by pronouns which imply it. All communications concerning the project will be directed through the Construction Administrator or a designated representative(s).

**33.5** The Construction Administrator is the Agency's Agent who will, among other things, monitor the Project including Contractor's performance, scheduling and construction, process shop drawings, material, and equipment submittals, review and process periodic billings, review and recommend cost changes.

**33.6** 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 to the Contractor. All such requests and replies shall be in writing.

**Article 34**  
**SCHEDULE OF VALUES,**  
**APPLICATION FOR PAYMENT**

**34.1** Immediately after the signing of the Contract, the Contractor shall furnish for the use of the Agency 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 Agency. 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 Agency, the Contractor shall supply copies of signed Contracts, vendor quotations, etc. as back up to the Schedule of Values.

**34.2** Submit the "Schedule of Values" to the Construction Administrator at the earliest possible date but no later than (7) seven Calendar Days after the Contract Award. The Schedule of Values is the basis for estimating partial payments. The Contractor shall furnish for the approval of the Construction Administrator and Architect, an accurate and certified Schedule of Values, broken down into quantities and unit costs for the various parts of the Work. The breakdown shall include a complete definition of all activities, systems and components that form the project. The use of lump sum or grouping of activities shall not be allowed without the written consent of the Construction Administrator. It shall be CAD generated, in a format provided by the Construction Administrator, divided as may be directed and it shall aggregate the total sum of the Contract. Also include a 3-1/2" computer diskette of the original and revised schedule to the Construction Administrator. If requested, the Contractor shall submit evidence supporting this Schedule.

**34.3** A separate "Schedule of Value" shall be provided for each Phase as identified in the Supplementary General Conditions and General Requirements - Section 01010 Summary of Work, Work Sequence - Phase(s).

**34.4** 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 of the Specification Section on electronic media printout.

**34.5** 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.

**34.6** Arrange the "Schedule of Values" in tabular format as required by the Agency, 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.
- d. Name of subcontractor.
- e. Name of manufacturer or fabricator.
- f. Name of supplier.
- g. Retainage.
- h. Contract sum in sufficient detail.

**34.7** Provide for the Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. 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.

**34.8** Round amounts to nearest whole dollar; the total shall equal the Contract Sum.

**34.9** 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.

**34.10** 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 shall be shown as separate line items in the Schedule of Values.

**Article 35**  
**APPLICATION OF PAYMENTS: GENERAL**

**35.1** Applications for Payment - General: 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 Agency.

**35.1.1** The initial "Application for Payment", the "Application for Payment", at time of "Substantial Completion", and the final "Application for Payment", involve additional requirements.

**35.1.2** Payment-Application Terms: The Agency will process monthly progress payments. The Contractor may submit applications for payment on a monthly basis.

**35.1.3** Payment-Application Forms: Use the "Application for Payment" form as required by the Agency. Present the required information on electronic media printout in the approved Agency Form, multiple pages should be used if required.

**35.1.4** 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

**35.2** Application Preparation: Complete every entry on the form. Include final payment only and execution by a person authorized to sign legal documents on behalf of the Contractor. The Construction Administrator will return incomplete applications without action. Verify that entries match data on the "Schedule of Values" and include amounts of Change Orders.

**35.3** Approval of the Schedule of Values by the Agency is required prior to any payment by the Agency.

**35.4** The Schedule of Values shall include a breakdown of the Contractor's general condition costs.

**35.4.1** Non-recurring costs, (i.e. mobilization costs, utility hook-ups, temporary heat) will be paid at the time of occurrence.

**35.4.2** Reoccurring costs will be paid in proportion to the percent of completion of the project.

**35.5** The Schedule of Values shall include a breakdown of Contract closeout costs including systems certification test-

ing and acceptance, training, warranties, guarantees, as-builts and attic stock.

**35.6** 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 Agency.

**35.7** 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:

- a. List of subcontractors and suppliers' name, FEIN/Social Security numbers, and Connecticut Tax Registration Numbers.
- b. List of principal suppliers and fabricators.
- c. Schedule of Values.
- d. Contractor's Construction Schedule.
- e. Schedule of principal products.
- f. Submittal Schedule.
- g. List of Contractor's staff assignments.
- h. List of Contractor's principal consultants.
- i. Copies of all applicable permits.
- j. Copies of authorizations and licenses from governing authorities for performance of the Work.
- k. Initial as-built survey and damage report, if required.
- l. Certified Payrolls.

### **Article 36** **PARTIAL PAYMENTS**

**36.1** The Agency and their representatives will examine the Contractor's applications for payments to determine, in the opinion of the Agency, the amounts that properly represent the value of the Work completed and for the materials suitably stored on the site.

**36.2** In making such Application For Payment for the Work, there shall be deducted **(10%) ten percent** of the amount of each payment to be retained by the Agency until Final Completion.

**36.3** At the sole discretion of the Agency, and after completion and acceptance of (90%) ninety percent of the value of the Work, and if the character and progress of the Work remain satisfactory, the retained portion of the Application for Payments may be reduced to five percent (5%) of total payments. The minimum total amount of payment retained, prior to the Final Payment shall not be less than five percent (5%) of the Contract Sum.

**36.4** The decision of the Agency to reduce the retainage rate will be based upon the Contractor's performance for completed portions of the Work as set out below and other factors the Agency may find appropriate:

**36.4.1** 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 Agency's and/or Architect's comments on the submitted material resulting in an appropriate basis for progress of the Work.

**36.4.2** The Contractor's timely and proper submission of all Contract required submissions: including but not limited to shop drawings, material certificates and material samples and the prompt resolution of the Agency's and/or Architect's comments on the submitted material resulting in an appropriate progress of the Work.

**36.4.3** The Contractor's provision of proper and adequate supervision and home office support of the Project and any Subcontractor Work resulting in coordinated progress and proper quality control for the Work.

**36.4.4** The Work completed to date has been installed or finished in an acceptable manner which is satisfactory to the agency.

**36.4.5** The progress of the Work is consistent with the approved CPM Schedule or Construction Schedule.

**36.5** No payments will be made for improperly stored or protected materials or unacceptable Work.

### **Article 37** **APPLICATION FOR PAYMENT at SUBSTANTIAL COMPLETION**

**37.1** 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 Agency. Present the required information on electronic media printout.

**37.1.1** This application shall reflect Certificates of Partial Substantial Completion issued previously for Agency occupancy of designated portions of the Work.

**37.2** Administrative actions and submittals that shall precede or coincide with this application include, but are not limited to, the following:

- a. Occupancy permits and similar approvals.
- b. Warranties (guarantees) and maintenance agreements.
- c. Test/adjust/balance records.
- d. Maintenance instructions.
- e. Meter readings.
- f. Startup performance reports.
- g. Changeover information related to Owner's occupancy, use, operation, and maintenance.
- h. Final cleaning.
- i. Consent of surety.
- j. Advice on shifting insurance coverage.
- k. Final progress photographs.
- l. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.
- m. Change of door locks to Owner's access.

### **Article 38**

#### **FINAL APPLICATION FOR PAYMENT**

**38.1** 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:

- a. Completion of Project Closeout requirements.
- b. Completion of list of items remaining to be completed as indicated on the attachment to the Certificate of Substantial Completion.
- c. Ensure that unsettled claims will be settled.
- d. Ensure that incomplete Work is not accepted and will be completed without undue delay.
- e. Transmittal of required Project construction records to the Owner.
- f. Certified property survey.
- g. Proof that taxes, fees, and similar obligations were paid.
- h. Removal of temporary facilities and services.
- i. Removal of surplus materials, rubbish, and similar elements.
- j. The requirements of the General Conditions and Supplementary Conditions for Final Acceptance, Final Completion, Final Inspection, and Final Payment.
- k. Asbestos, Lead or other hazardous material manifests.
- l. Completion of "Building Contractor Reporting Form" for all Contractors, Subcontractors, Vendors, Suppliers, etc. who work on the Contract. The form includes the following information:
  - m. Contractor/Subcontractor name, FEIN/Social Security Numbers, Connecticut Tax Registration Numbers, Type of work, Name of business and address, Remittance address.

### **Article 39**

#### **DELIVERY OF STATEMENT SHOWING AMOUNTS DUE FOR WAGES, MATERIALS AND SUPPLIES**

**39.1** For each Application for Payment under this Contract, the Agency reserves the right to require the Contractor and every Subcontractor to submit a written verified statement, in a form satisfactory to the Agency, showing in detail all amounts then due and unpaid by such Contractor or Subcontractor for daily or weekly wages to all laborers em-

ployed by him for the performance of the Work or to other persons for materials, equipment or supplies delivered at the site.

**39.2** The term laborers as used herein shall include workmen, workwomen, and mechanics.

**39.3** Failure to comply with this requirement may result in the Agency withholding the application for payment pursuant to Article 28.

**Article 40**  
**CONTRACT CLOSEOUT**

**40.1** Substantial Completion: Before requesting inspection for Certification of Substantial Completion, complete the following. List exceptions in the request.

- a. 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.
  - i. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
  - ii. 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.
- b. Advise the Agency of pending insurance changeover requirements.
- c. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
- d. Obtain and submit releases enabling the Agency unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
- e. Submit record drawings, maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
- f. Deliver tools, spare parts, extra stock, and similar items.
- g. Make final changeover of permanent locks and transmit keys to the Agency.

Advise the Agency's personnel of changeover in security provisions.

- h. Demonstration, through operation and testing, the functions of all systems and/or equipment to the satisfaction of the Agency for compliance to the contract. Complete testing of systems, and instruction of the Agency's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
- i. Complete final cleanup requirements, including touchup painting.
- j. Touch up and otherwise repair and restore marred, exposed finishes.

**40.1.1** 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, there are extensive punchlist items and as the items listed above are not complete, the Construction Administrator, Architect, and Agency will determine the inspection has failed.

**40.1.2** The Contractor is responsible for all costs to re-inspect due to a failed inspection. The Agency will issue a deduct change order to cover all costs for re-inspection.

- a. The Architect will repeat inspection when requested and assured that the Work is substantially complete.
- b. Results of the completed inspection will form the basis of requirements for final acceptance.

**40.2** Final Acceptance: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

- a. 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.
- b. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
- c. 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.
- d. 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 Agency took possession of and assumed responsibility for corresponding elements of the Work.
- e. Submit consent of surety to Final Payment.
- f. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

**40.2.1** Reinspection 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 Agency.

**40.2.2** Upon completion of reinspection, the Construction Administrator will prepare a certificate of final 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.

**40.3** Record Document Submittals: Do not use record documents for construction purposes. Protect Record Documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Architect's reference during normal working hours. Keep documents current; do not permanently conceal any work until required information has been recorded. Failure to keep documents current is sufficient cause to withhold progress payments.

**40.3.1** 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.

**40.3.2** 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.

**40.4** Record Drawings: The Contractor shall maintain one 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. The Contractor shall provide the following:

- a. Mark record sets with erasable pencil to distinguish between variations in separate categories of the Work.
- b. Mark all new information that is not shown on Contract Drawings.
- c. Note related change-order numbers where applicable.
- d. 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.
- e. Upon completion of the work, the Contractor shall submit Record Drawings to the Construction Administrator for the Agency's Records who will pass them on to the Architect or Engineer for transferring the changes to the Record Drawing Mylar Tracings.
- f. Submit electronic format data of all revised drawings on CD-ROM format and in AutoCAD (latest version) compatible format.

**40.5 Record Specifications:** The Contractor shall maintain one complete copy of the Project Manual, including Addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction. The Contractor shall provide the following:

- a. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
- b. 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.
- c. Note related record drawing information and Product Data.
- d. Upon completion of the Work, submit record Specifications to the Construction Administrator for the Agency's records.

**40.6 Record Product Data:** The Contractor shall maintain one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications. The Contractor shall provide the following:

- a. 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.
- b. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
- c. Upon completion of markup, submit complete set of Record Product Data to the Construction Administrator for the Agency's records.

**40.7 Record Sample Submitted:** Immediately prior to Substantial Completion, the Contractor shall meet with the Construction Administrator, Architect and the Agency's personnel at the Project Site to determine which Samples are to be transmitted to the Agency for record purposes. Comply with the Agency's instructions regarding delivery to the Agency's Sample storage area.

**40.8 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 Agency's records.

**40.9 Maintenance Manuals:** Organize operation and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual, heavy-duty, 2-inch (51-mm), 3-ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder according to section 01730. Included but not limited to the following types of information:

- a. Emergency instructions.
- b. Spare parts list.
- c. Copies of warranties.
- d. Wiring diagrams.
- e. Recommended "turn-around" cycles.
- f. Inspection procedures.
- g. Shop Drawings and Product Data.
- h. Fixture lamping schedule.
- i. MSDS Sheets for all material used and or placed within the Project.

**40.10 Closeout Procedures:** Arrange for each Installer of equipment that requires regular maintenance to meet with the Agency'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:

- a. Maintenance manuals.
- b. Record documents.
- c. Spare parts and materials.
- d. Tools.
- e. Lubricants.
- f. Fuels.
- g. Identification systems.
- h. Control sequences.
- i. Hazards and hazardous materials.
- j. Cleaning.
- k. Warranties and bonds.
- l. Maintenance agreements and similar continuing commitments.
- m. Copy of all submittals.

**40.10.1** As part of instruction for operating equipment, the Contractor shall demonstrate the following procedures:

- a. Startup.
- b. Shutdown.
- c. Emergency operations.
- d. Noise and vibration adjustments.
- e. Safety procedures.
- f. Economy and efficiency adjustments.
- g. Effective energy utilization.

**40.11** Final Cleaning: The General Conditions requires general cleaning during construction. Regular site cleaning is included in Division 1 Section 01570 "Cleaning".

**40.11.1** The Contractor shall employ experienced workers or 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. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion and Certification of Occupancy.

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.

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.

**40.12** Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the work of rodents, insects, and other pests.

**40.13** Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

**40.14** 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 Agency's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.

**40.15** Where extra materials of value remain after completion of associated Work, they become the Agency's property. Dispose of these materials as directed by the Construction Administrator.

**40.16** Leave building clean and ready for occupancy. If the Contractor fails to clean up, the Agency may do so, with the cost charged to the Contractor. The Agency will issue a credit change order to cover the costs.

**Article 41**  
**OPERATION AND MAINTENANCE DATA**

**41.1** The Contractor shall instruct the State's designated personnel in the operation of new equipment and shall provide manuals and provide video tapes of this basic maintenance of the equipment for training purposes. Provide qualified personnel for as long as necessary to instruct the Agency's personnel.

**41.2** Submit four copies of the manuals in 3-ring, loose-leaf notebooks to the Architect/Engineer for approval. Manuals may consist of plain paper copies of approved shop drawings and catalog cuts. Upon completion and approval, 3 copies will be forwarded to the Agency and one copy retained by the Architect/Engineer.

**41.2.1** Manuals shall include:

**41.2.1.1** Operating Procedures:

- a. Typewritten procedures for each mode of operation of each piece of equipment. Procedures shall indicate the status of each component of a system in each operating mode.
- b. Procedures shall include names, symbols, valve tags, circuit numbers, schematic wiring diagrams, locations of thermostats, manual starters, control cabinets and other controls of each system.
- c. Emergency shut-down procedures for each piece of equipment or system, both automatic and manual, as appropriate.

**41.2.1.2** Maintenance Schedule:

- a. Typewritten schedule describing manufacturers schedule of maintenance and maintenance procedures.

**41.2.1.3** Catalog Cuts:

- a. To illustrate each piece of installed equipment, including options.
- b. Include equipment descriptions including physical, electrical and mechanical; performance characteristics; installation or erection diagrams.
- c. Include spare parts numbers and names, address and phone number of manufacturer; name, address and phone number of local representative or service department.

**41.3** Typewritten list of all subcontractors on the project, including name, address and phone number of local representative or service department.

**41.4** Manuals shall be indexed with dividers indicating each system or piece of equipment.

**Article 42**  
**COMPLETION AND ACCEPTANCE**

**42.1 Substantial Completion:**

**42.1.1** When the Contractor considers that the Work, or a portion thereof is Substantially Complete, the Contractor shall request an inspection of said Work to the Construction Administrator.

**42.1.2** Upon receipt of the request, the Architect, Construction Administrator and Agency, will make an inspection to determine if the Work or designated portion thereof is Substantially Complete. 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.

**42.1.3** The Contractor shall then submit a request for another inspection. The determination of Substantial Completion is solely within the discretion of the Agency.

**42.1.4** 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 Agency. 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 Agency and shall fix the time within which the Contractor shall finish all items on the inspection list accompanying the Certificate.

**42.1.5** The Certificate of Substantial Completion shall be signed by the Contractor, Construction Administrator, Agency, and Architect.

**42.1.6** Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Construction Administrator and Architect, the Agency shall make payment reflecting adjustment in retainage, if any, for such Work or portion thereof as provided in the Contract Documents.

#### **42.2 Final Completion:**

**42.2.1** Upon Final Completion of the Work, the Contractor shall forward to the Construction Administrator a written notice that the Work is ready for Final Inspection and Acceptance and shall also forward to the Construction Administrator, a Final Application for Payment. Upon determination by the Agency that all the Work is complete, the Agency will issue a Certificate of Completion and Acceptance.

**42.2.2** When the Work has been completed in accordance with terms and conditions of the Contract Documents a Certificate of Completion shall be issued to be signed by the Contractor, Construction Administrator, Architect and Agency.

### **Article 43** **FINAL PAYMENT**

**43.1** The Agency reserves the right to retain for a period of

thirty (30) days after filing and acceptance of the Certificate of Completion and Acceptance the amount therein stated less all prior payments and advances whatsoever to or for the account of the Contractor.

**43.2** All prior estimates and payments, including those relating to extra or additional Work, shall be subject to correction by the Final Payment.

**43.3** 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.

**43.4** The Architect 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.

**43.5** Final Payment shall not be released until a Certificate of Completion and Acceptance and a Certificate of Compliance have been issued.

**43.6** Neither Final Payment nor any remaining retained percentage shall become due until the Contractor submits to the Agency the following:

**43.6.1** An affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Agency or the Agency's property might be responsible or encumbered (less amounts withheld by Agency) have been paid or otherwise satisfied.

**43.6.2** 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 Agency.

**43.6.3** 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.

**43.6.4** Written consent of surety, if any, to Final Payment.

**43.6.5** If required by the Agency, 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 Agency. If a Subcontractor refuses to furnish a release or waiver required by the Agency, the Contractor may furnish a bond satisfactory to the Agency to indemnify the Agency against such lien. If such lien remains unsatisfied

after payments are made, the Contractor shall refund to the Agency all money that the Agency may be compelled to pay in discharging such lien, including all costs and reasonable attorney's fees.

**43.6.6** If, after Substantial Completion of the Work, Final Completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting Final Completion and the Construction Administrator and Architect so confirm, the Agency shall, upon application by the Contractor and certification by the Construction Administrator and Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Agency prior to Final Payment. Such payment shall be made under terms and conditions governing Final Payment, except that it shall not constitute a waiver of Claims.

#### **Article 44**

#### **AGENCY'S RIGHT TO WITHHOLD PAYMENTS**

**44.1** The Agency may withhold a portion of any Payment due the Contractor that may, in the judgment of the Agency, be necessary:

**44.1.1** To assure the payment of just claims then due and unpaid to any persons supplying labor or materials for the Work.

**44.1.2** To protect Agency from loss due to defective, unacceptable or non-conforming Work not remedied by the Contractor.

**44.1.3** To protect the Agency 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.

**44.2** The Agency shall have the right to apply any amount withheld under this section as the Agency may deem proper to satisfy protection from claims. The amount withheld shall be considered a payment to the Contractor.

**44.3** The Agency 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 documents, request for information (RFI) log, Schedule, submittal log, change order log, certified payrolls and daily reports and all other requirement of the Contract Documents.

**44.4** Neither Final Payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Administrator:

**44.4.1** An affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Agency or the Agency's property might be responsible or encumbered (less amounts withheld by Agency) have been paid or otherwise satisfied,

**44.4.2** 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 until at least 30 days' prior written notice has been given to the Agency,

**44.4.3** 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,

**44.4.4** Consent of surety, if any, to Final Payment and

**44.4.5** If required by the Agency, 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 Agency.

**44.5** If a Subcontractor refuses to furnish a release or waiver required by the Agency, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Agency against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Agency all money that the Agency may be compelled to pay in discharging such lien, including all costs and reasonable attorney's fees.

#### **Article 45**

#### **AGENCY'S RIGHT TO STOP WORK OR TERMINATE CONTRACT**

**45.1** The Agency shall have the authority to suspend the Work wholly or in part, for such period or periods as the Agency considers to be 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.

**45.1.1** If the Agency, 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 Agency in writing a request for a Contract adjustment within 7 calendar days of receipt of the notice to resume Work. The request shall set forth the specific reasons and support for said adjustment.

**45.1.2** The Agency shall evaluate any such requests received. If the Agency 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 Agency will make a reasonable adjustment, excluding profit, of the Contract terms. The Agency will notify the Contractor of the determination as to what adjustments of the Contract, if any, that the Agency deems warranted.

**45.1.3** No Contract adjustment will be made unless the Contractor has submitted the request for adjustment within the time prescribed.

**45.1.4** 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.

**45.2** Notwithstanding any provision or language in the Contract to the contrary, the State may terminate the Contract whenever the Agency determines at their 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.

**45.2.1** In the event of such termination, the Contractor shall be entitled to reasonable compensation as determined by the Agency, however, no claim for lost overhead or profits shall be allowed.

**45.2.2** Materials obtained by the Contractor for the Work that have been inspected, tested as required, and accepted by the Agency, and that are not incorporated into the Work, shall, at the option of the Agency, 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 Agency, as shown by actual cost records.

**45.2.3** 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 46** **SUBLETTING OR ASSIGNING OF CONTRACT**

**46.1** 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 Agency.

**46.2** 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 47** **CONTRACTOR'S INSURANCE**

**47.1** The Contractor shall not start Work under the Contract until they have obtained insurance as stated in SECTIONS 00300 CERTIFICATE OF INSURANCE and 00020 BID PROPOSAL FORM, subsections 4.4.2 and 4.4.3, of the Contract Documents and until the insurance has been approved by the Agency. The Contractor shall not allow any Subcontractor to start Work until the same insurance has been obtained by the Subcontractor and approved by the Agency or the Contractor's insurance provides coverage on behalf of the Subcontractor. The Contractor shall send Certificates of Liability Insurance to the Agency unless otherwise directed in writing. Presented below is a narrative summary of the insurance required.

**47.1.1 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) must also be included when applicable to the Work to be performed. The State of Connecticut and Eastern Connecticut State University shall be named as an Additional Insured. This coverage shall be provided on a primary basis.

**47.1.2 Agency'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 and Eastern Connecticut State University.

**47.1.3** 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.

**47.1.4 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 Federal Act endorsement for U.S. Longshoremen's and Harbor Workers Act.

**47.1.5 Special Hazards** insurance, if required, will be stated in SECTION 00020 BID PROPOSAL FORM, subsection 4.4.2 of this Project Manual. This includes coverage for explosion, collapse or underground damage and shall be no less than \$1,000,000 each occurrence.

**47.1.6 Builder's Risk** insurance, if required, will be stated in SECTION 00020 BID PROPOSAL FORM, subsection 4.4.3 of this Project Manual.

**47.1.7 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.

**47.1.8 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 and Eastern Connecticut State University 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.

**47.2** Each insurance policy required to be maintained by the Contractor except Workers' Compensation and Automobile Liability shall endorse the State of Connecticut and Eastern Connecticut State University as an Additional Insured. Additional Insured endorsements shall provide coverage on a primary basis.

**47.3** When required to be maintained, the Builder's Risk and Inland Marine/Transit Insurance policy shall endorse the State of Connecticut and Eastern Connecticut State University as a Loss Payee.

**47.4** 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 Agency prior to any cancellation or non-renewal.

**47.5** 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.

**47.6** 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.

**47.7 Hold Harmless Provisions:** The Contractor shall at all times indemnify and save harmless the State of Connecticut, Eastern Connecticut State University, and their respec-

tive 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, materialmen, 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 Agency.

**Article 48**  
**FOREIGN MATERIALS**

**48.1** Preference shall be given to articles or materials manufactured or produced in the United States, conditions of quality and price with duty being equal.

**48.2** Only domestic articles or materials will be used unless a statement is submitted with the proposal that enumerates the foreign articles of materials proposed to be used and such proposal is accepted by the Agency. The foregoing provisions shall not apply to foreign articles or materials required by the Contract Documents.

**Article 49**  
**MATERIALS AND EQUIPMENT CONTROLS**

**49.1** Materials and Equipment: Shall be delivered to the project site, 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. **DO NOT DELIVER MATERIALS TO THE AGENCY'S SHIPPING & RECEIVING LOADING DOCKS.**

**49.1.1** Promptly inspect shipments to assure that products comply with requirements, that quantities are correct and products are undamaged.

**49.1.2** Packages, materials and equipment showing evidence of damage will be rejected and replaced at no additional cost to the Agency.

**49.2** Storage and Protection: The Contractor shall provide the following:

- a. Store products in accordance with manufacturers' instructions with seals and labels intact and legible. Store sensitive products in weathertight enclosures; maintain within temperature and humidity range required by manufacturer.
- b. 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.
- c. Store loose granular material on solid surfaces in a well-drained area; prevent mixing with foreign matter.
- d. 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.
- e. Stone, masonry units and similar materials shall be stored on platforms or dry skids and shall be adequately covered and protected against damage.
- f. The Contractor shall prepare, as directed by the Agency, one area or space in the building for storage of State-owned equipment.

**Article 50**  
**IDENTIFICATION BADGES**

**50.1** Identification Badges for Contractor's Personnel, Visitors & Parking Stickers:

- a. 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. Update and correct the records of all badges issued on a semi-monthly basis.
- b. 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.
  - c. 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.

**Article 51**  
**HOURS OF WORK**

**51.1** 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.

**51.2** The operation of such limitation of hours of work may be suspended during an emergency, upon the approval of the Agency, in accordance with Connecticut General Statute Section 31-57.

**Article 52**  
**DAYS OF WORK**

**52.1** Working Calendar Days include all days that the Contractor is permitted to execute the Work or employ any person to execute the Work within the Contract Time.

**52.2** Non-working Calendar Days include all Saturdays, Sundays, Legal State Holidays and any other days identified in the Contract Documents that the Contractor is not permitted to execute the Work or employ any person to execute the Work. The restriction of non-working Calendar Days may be suspended upon the approval or direction of the Agency.

**Article 53**  
**CONTRACT TIME**

**53.1** The Contract Time is the number of calendar days, allotted in the Bidding Documents, for execution and Substantial Completion of the Work, including authorized ad-

justments thereto. The Contract Time is the sum of all working and non-working calendar days.

**53.2** If weather conditions prevent the Contractor from executing the Work, the Contract Time may be extended by Change Order, for such reasonable time as may be determined by the Agency.

**Article 54**  
**CALENDAR DAY**

**54.1** This is each day of the calendar.

**End of Section**

---

**01000 WORK COVERED BY CONTRACT DOCUMENTS**

---

- A. Project Number **ECSU 2016-9 (Phase II)** is entitled **Low Rise Stairs & Courtyard Improvement Project**. It is to be located in **Willimantic**, Connecticut. It is to be completed and ready for use by the Owner and Agency within the Contract Time specified in Section 00020 Bid Proposal Form.
- B. The Project Description:
1. The replacement of the eight (8) existing exterior metal stairs and related site improvements.
  2. This Project **does not** exceed the Threshold Limits as defined by the Connecticut General Statutes.

---

**01001 OWNER AND AGENCY**

---

- A. Owner: The Owner is the Eastern Connecticut State University.
1. The authorized representative for the Owner is **Renee Theroux-Keech, Director of Facilities Management & Planning**. Facilities Management & Planning office is located at Eastern Connecticut State University, Facilities Building, 83 Windham Street, Willimantic, Connecticut 06226. Phone: **860-465-4596** Fax: **860-465-5318**; E-mail: **keechr@easternct.edu**.

---

**01002 ARCHITECT AND ENGINEER:**

---

- A. The designer of record is **Facilities Management and Planning Department**, and is located at **ECSU**. The Engineer representing the agency for this project is **James W. Fielding**. Phone: **860-465-0239**; Fax: **465-5318**; E-mail: **fieldingj@easternct.edu**.
1. The Architect and Engineer 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.
    - b. As the authorized representative of the Owner, the Architect and Engineer is responsible for review of shop drawings, materials, and equipment intended for the work, in accordance with the "General Conditions", and the "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.

---

**01003 CONSTRUCTION ADMINISTRATOR:**

---

- A. The Construction Administrator is **James Fielding**, and is located at **Eastern Connecticut State University, Facilities Building, 83 Windham Street., Willimantic Connecticut, 06226**,  
Phone: **869-465-0239**; Fax: **860-465-5318**; E-mail: **fieldingj@easternct.edu**.
1. The Construction Administrator is referred to in the Contract Documents as "Construction Administrator" or "Construction Manager" or by pronouns which imply it. All communications concerning the project will be directed through the Construction Administrator or a designated representative(s).
  2. As information to the Contractor, the Construction Administrator's status is defined as follows:
    - a. The Construction Administrator is the Owner's Agent who will, among other things, monitor the General Contractor's performance, scheduling and construction, process shop drawings, material, and equipment submittals, review and process periodic billings, review and recommend cost changes.
    - b. 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 to the Contractor. All such requests and replies shall be in writing.



---

**01010 SUMMARY OF WORK**

---

- A. Summary of Work includes but is not limited to the following:
  - 1. Demolition of the eight (8) existing exterior metal stairs.
  - 2. Installation of eight (8) new metal stairs, concrete stairs, concrete footings, and associated lighting.
  - 3. The project also consists of installing new bituminous concrete paving, concrete paving, granite curbing, drainage modifications, limited decorative fencing, and landscaping.
- B. The Contractor will include in his bid, all items required in order to carry out the intent of the work as described, shown and implied in the Contract Documents.
- C. 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.
- D. The Work will be constructed under a single lump.
- E. Work Sequence - Phase(s):
  - 1. The entire Project shall be constructed in **1** Phase(s). Work of these Phase(s) shall be substantially complete, ready for occupancy within **90** Calendar Days of commencement of the Work.

---

**01011 EXAMINATION OF SITE**

---

- A. It is not the intent of the Documents to show all existing conditions. All contractors are advised to visit and examine the site with the Construction Administrator prior to submitting bids.
- B. Contractors should investigate and satisfy themselves 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.
- C. Mandatory Pre-Bid Conference:
  - 1. A Mandatory Pre-Bid Conference and tour of the site will be conducted as scheduled in the Notice to Bidders. This scheduled conference is the only official opportunity for the bidders to tour the site with the Owner, Architect, Engineer, Construction Administrator, and Agency.

---

**01012 PROJECT DOCUMENTS**

---

- A. The Specifications and Drawings are intended to describe and illustrate the materials and labor necessary for the work of this Project.
- B. Throughout the Technical Specifications, the Connecticut Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction Form 816, current addition 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 814A are available from the Connecticut Department of Transportation at a nominal charge.

---

**01013 DOCUMENTS FURNISHED**

---

- A. The General Contractor will be given **4** sets of the Contract Documents on or about the time of execution of Contract, free of charge. If additional copies are wanted, they will be available at the direct additional cost of their reproduction, to the contractor.
- B. The Contractor shall receive one (1) set of AutoCAD compatible (latest version) Floor Plans on disks 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 disks from the Architect at the cost of their reproduction, to the contractor.

---

**01014 CONTRACTOR'S USE OF PREMISES**

---

- A. The Contractor shall confine his operations, including storage of apparatus, equipment and materials to the contract limit lines as directed by the Construction Administrator.
- B. The areas and/or spaces, including their access, shall be maintained free and clear throughout the contract term.
- C. Parking for Contractor's employees will be limited to an area (or areas) designated by the Construction Administrator. The Contractor may be required to provide identification stickers for employees' cars.

---

**01015 OCCUPANCY REQUIREMENTS**

---

- A. **Full Agency Occupancy During Construction:** The Agency will occupy the existing building during the entire construction period. Cooperate with the Agency during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with the Agency's operations.
  - 1. **The Contractor is notified that these buildings will be vacated by the tenants during construction however the University will need periodic access to the units as needed.**
- B. **Partial Agency Occupancy:** The Agency reserves the right 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 Project Manager, Agency Representative, Architect and General Contractor.
  - 3. A comprehensive list of items to be completed or corrected as issued by the General Contractor, together with the status of completion and terms of occupancy, will be forwarded to the Project Manager and the Architect by the Construction Administrator. A letter will be issued by the Project Manager and Architect 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.
  - 6. The Project Manager will request a signed "Certificate of Compliance" from Commissioner of the Department of Public Works, Architect, and Contractor, if required.
  - 6. The Project Manager will request a signed "Certificate of Compliance" from the , Architect, and Contractor, and forward the Certificate to the Office of State Building Inspector for a Certificate of Occupancy and obtain the same after his review and approval.
  - 7. A letter from the Project Manager to the Agency Representative with copy to the General Contractor granting occupancy will state the terms and conditions of occupancy and that fire insurance coverage has

- been requested, the effective date of which will indicate to the Contractor that he may cancel fire insurance coverage for that portion of the project.
8. Upon occupancy, the Agency will assume responsibility for maintenance and custodial service for occupied portions of the building.
  9. Work after Partial Agency Occupancy:
    - a. For all work to complete the area occupied, warranty work, the balancing and commissioning of systems, repair of latent defects and adjustments after partial occupancy, the contractor is responsible for all costs associated with working in occupied buildings.

**C. Agency Occupancy:**

1. The Construction Administrator will determine whether such occupancy is possible and, if so, will make arrangements for holding a job inspection with the Project Manager, Agency Representative, Architect and General Contractor.
2. A comprehensive list of items to be completed or corrected as issued by the General Contractor, together with the status of completion and terms of occupancy, will be forwarded to the Project Manager and the Architect by the Construction Administrator. A letter will be issued by the Project Manager and Architect to Construction Administrator granting such occupancy and will state the terms and conditions of occupancy.
4. Prior to Agency occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Agency will operate and maintain mechanical and electrical systems serving occupied portions of the building.
5. The Architect will prepare a "Certificate of Substantial Completion" for the Work to be occupied prior to Agency occupancy. Use the "Certificate of Substantial Completion" form as required by the Owner.
6. The Project Manager will request a signed "Certificate of Compliance" from Commissioner of the Department of Public Works, Architect, and Contractor, if required.
6. The Project Manager will request a signed "Certificate of Compliance" from the Architect, and Contractor, and forward the Certificate to the State Building Inspector a Certificate of Occupancy and obtain the same after his review and approval.
7. A letter from the Project Manager to the Agency Representative with copy to the General Contractor granting occupancy will state the terms and conditions of occupancy and that fire insurance coverage has been requested, the effective date of which will indicate to the Contractor that he may cancel fire insurance coverage for the project.
9. Upon occupancy, the Agency will assume responsibility for maintenance and custodial service for occupied portions of the building.
10. Work after Agency Occupancy:
  - a. For all work to complete the occupied building, warranty work, the balancing and commissioning of systems, repair of latent defects and adjustments after occupancy, the contractor is responsible for all costs associated with working in occupied buildings.

---

**01019 CONTRACT CONSIDERATIONS (NOT USED)**

---

**A. 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 is the Allowance Schedule of this section.
2. Architect/Engineer:
  - a. Consult with Contractor for consideration of Products, suppliers and installers.
  - b. Select Products in consultation with the 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, Project Manager and Agency Representatives for consideration of Products, suppliers and installers.
- b. Select Products in consultation with Architect/Engineer, 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:
  - a. Section \_\_\_ - "\_\_\_": Include the Stipulated sum of \$ \_\_\_ for delivery of \_\_\_.
  - b. Section \_\_\_ - "\_\_\_": Include the Stipulated sum of \$ \_\_\_ for purchase of \_\_\_.
  - c. Section \_\_\_ - "\_\_\_": Include the Stipulated sum of \$ \_\_\_ for purchase and delivery of \_\_\_.
  - d. Section \_\_\_ - "\_\_\_": Include the Unit Price of \$ \_\_\_ for purchase and delivery of \_\_\_.

**B. Unit Prices - General:**

1. Definition - Unit Price: Amount the General Contractor acknowledges in the Bid Proposal Form as a price per unit of measurement for materials or services as described in the Bidding Documents or in the Contract Documents.
2. Procedures:
  - a. 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, engineering, scaffolding, power hookups, protection, shop drawings, taxes, permits, appliances, delivery, insurance, supervision, cost of bond, etc. and shall remain in effect until completion of the Contract.
  - b. 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.
  - c. 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 Project Manager, the Undersigned 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.
3. 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.
4. 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.
5. Unit Price Schedule: A "Unit Price Schedule" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials described under each unit price.

**C. Unit Price Schedule - Earth and Rock Excavation:** This Section includes administrative and procedural requirements for the following unit prices and provisions are to be included in and become part of this Contract to be used in evaluating additions to or deductions from the work called for in the specifications and/or plans.

1. Unless otherwise specified elsewhere in these documents, Contractors are to assume that all excavation is earth; however, if unspecified rock is encountered, it will be paid for at the given unit prices listed in paragraph "F". Rock prices are net in that allowances for reduced quantities of earth are also included in the unit prices. The prices given include all costs for overhead, profit and rock surveys.
2. Wherever rock to be excavated is encountered, the Contractor shall strip or expose the rock to such an extent that in the Owner's opinion the necessary measurements can be taken. The Contractor shall provide the Owner with a survey by a licensed land surveyor indicating top of rock elevations at points of intersection on a rectilinear grid with lines spaced sufficiently close to show accurately the rock surface contours. At the Owner's option, an additional survey may be furnished by the Owner from a licensed surveyor.
3. If the conditions of the excavation work indicated are clearly of a special nature, the Contractor may ask the Owner for reconsideration of the established unit prices and if granted, the unit prices will not apply, and prices will be negotiated in accordance with Article 13 of the General Conditions.

**D. Definitions:**

1. "EARTH" - is defined, as excavation shall include removal of all materials other than 'water' and 'rock'.
2. "ROCK" - is defined as a boulder of 1 cubic yard or more in volume (1/2 cubic yard for a boulder in trenches), and rock in definite ledge formation and masonry structures of one cubic yard or more in volume, the removal of which requires the use of mechanical equipment or the use of explosives. Rock removed by scarification or ripping method is considered as a separate classification under paragraph 4.a.(1)
3. "ORIGINAL GRADE" - is defined as being the grade which exists at the time of Contract Award.
4. "ROUGH GRADE" - is defined as being the completed surface of required excavations greater than 13' in width.
5. "MASS" - excavation is to be considered as an open area whose minimum horizontal dimensions exceed 13'.
6. "TRENCH" - is defined as excavation is defined as the removal of material from areas 13 feet or less in its minimal horizontal dimensions and below the elevation of rough grade or original grade, whichever is lower.

**E. Procedures:**

1. Rock Excavation In Trenches: Basis For Horizontal Measurement:
  - a. Horizontal Measurements: Will be taken between the vertical planes as defined below.
  - b. The Minimum Width Of Trenches In Rock: Will be taken as 3' 0".
  - c. Excavation - For Walls Or Piers With Footings: The measurements will be taken parallel to and one foot outside of the edges of the concrete footings as called for in the plans (i.e. for 4' 0" footing, rock will be taken as 6' 0" in width).
  - d. Excavation For Walls Or Piers Without Footings: The limits of the excavation will be 1' 6" outside of the line of concrete at bottom as shown or called for in the plans (i.e. for a wall with a bottom thickness of 1' 0", the width of the trench will be considered to be 4' 0"). (Caissons are excluded from these measurements).
  - e. Excavation For Pipe Lines: Will be measured at 2' 0" more than the nominal inside diameter of the pipe but in no case less than 3' 0" wide.
  - f. Excavation For Tanks, Vaults, Manholes, Pits, Etc.: Will be measured as 2' 0" greater in both length and width or diameter than the actual exterior dimensions of the structures and this excavation is considered to be trench only if any measured horizontal dimensions is 13' or less.
  - g. No allowance will be made for rock removed beyond the above limits.
2. Rock Excavation In Trenches - Basis for Vertical Measurement:

**DIVISION 1  
GENERAL REQUIREMENTS**

- a. To determine depth of trench, vertical measurements will be taken from original grade or rough grade, (whichever is applicable), to the bottom of required excavation. These measurements will define the maximum depths for payments.
  - b. To determine quantity of rock in trench, vertical measurements will be taken from the top of rock as encountered in the trench to 12" below the bottom of required rock excavation. Any over excavation below the required elevation shall be filled with concrete or other material as specified at no cost to the Owner.
  - c. No allowance will be made for rock removed beyond the above limits.
3. Earth Excavation In Trenches - Basis Of Measurement: (Horizontal & Vertical): The basis of measurements and allowance limit for earth excavation in trenches is identical to that indicated for rock excavation in trenches, except that there will be no allowance for 12" below the required elevation. In addition the following will prevail:

- a. Maximum allowable widths for earth excavation in trenches without shoring:

Trench Depth - Classification		Add To Nominal ID Of Pipe Or To Footing Width
	0 ft. - 6 ft.	3 ft.
Over	6 ft. - 10 ft.	5 ft.
Over	10 ft. - 15 ft.	7 ft.
Below 15 ft. deep the width of the trench shall be based on the individual case. The final depth of trench will determine the actual width for payment.		

- b. If shoring is required the measurement shall be taken between the exterior walls of the shoring not to exceed 4' plus the I.D. of the pipe (for all depths).
  - c. To determine quantity of earth in trench, vertical measurements will be taken from the original or rough grade to actual bottom of earth excavation required.
4. Unit Prices - Earth and Rock Excavation (Basis For Payment): Prices include backfill with excavated material if it is suitable. Prices also include all excavation and disposal of all surplus or unsuitable material. Where replacement with the excavated material is prohibited or a particular backfill material is specified, the cost of the delivered replacement material in a volume equal to the above excavation pay limits minus the volume of the items installed in the trench shall be paid for a prior negotiated price. Prices do not include costs of shoring and de-watering but do include sloping for sides of excavation. Payment and credit amounts shall be determined in the following manner: Widths and depths of trench excavation as indicated. The total quantity of earth or rock excavation encountered in each depth payment category shall be paid for at its respective unit price as shown below. For example, in a 15' trench the first 6' will be paid for at the 0' - 6' price; the next 4' will be paid for at the over 6' - 10' price and the next 5' will be paid for at the over 10' - 15' price. Thus three different price brackets will prevail.

a.	EARTH EXCAVATION - HAND			UNIT	\$ ADD	\$ DEDUCT
	(1)	In Trenches - 0' - 6'.		C.Y.	36.00	28.80
	(2)	In Trenches Below 6' Deep,		Prices Must Be Negotiated Before Work Is Started.		
b.	EARTH EXCAVATION - MACHINE			UNIT	\$ ADD	\$ DEDUCT
	(1)	Open Area	All Depths	C.Y.	7.40	5.92
	(2)	In trenches	0' - 4' deep	C.Y.	4.25	3.40
		Over	0' - 10' deep	C.Y.	9.00	7.20
		Over	0' - 15' deep	C.Y.	4.75	3.80
		Over	0 - 20' deep	C.Y.	5.75	4.60
c.	ROCK EXCAVATION			UNIT	\$ ADD	\$ DEDUCT
	(1)	Open Areas, Rock Removed By Ripping (Any Amount),				
		Net Rock		C.Y.	9.20	7.30
	(2)	Open Areas, With Explosives -				
		Net Rock -	Total Quantity Up To 100	C.Y.	27.00	21.60
		Total Quantity Up To 500	C.Y.	21.30	17.00	

**DIVISION 1  
GENERAL REQUIREMENTS  
PAGE 8 of 44**

c.	ROCK EXCAVATION (cont.)		UNIT	\$ ADD	\$ DEDUCT
		Total Quantity Up To 500 or more	C.Y.	17.00	13.60
(3)	In Trenches, Boulders, Remove By Machine		C.Y.	14.00	11.20
(4)	In Trenches, Ripping Of Rock By Machine		C.Y.	16.00	12.80
(5)	In trenches, with explosives				
	Net Rock	0' - 4' Deep	C.Y.	20.60	16.48
(6)	In trenches, with explosives				
	Net Rock	0' - 10' Deep	C.Y.	36.75	29.40
(7)	In trenches, with explosives				
	Net Rock	0 - 15' Deep	C.Y.	28.60	22.88
(8)	In trenches, with explosives				
	Net Rock	Over 15' - 10' Deep	C.Y.	60.00	48.00
(9)	In trenches, with explosives -				
	Net Rock	0 - 20' Deep,	Prices Must Be Negotiated Before Start Of Work.		
(10)	Jack Holes (For Hydraulic Lift/Elevators)		L.F.	95.00	76.00
(11)	Open Or Mass Areas - If Explosives Are Prohibited				
	Net Rock		C.Y.	80.00	64.00
(12)	Trench Excavation - If Explosives Are Prohibited				
	Net Rock/With Rock Splitters And Jack Hammer or Hoe Ram		C.Y.	120.00	96.00

**F. Unit Price Schedule – Miscellaneous:**

1. Unit Price - Miscellaneous:

A.	MISCELLANEOUS Items		UNIT	\$ ADD	\$ DEDUCT
a.	*Structural fill				
b.	*Footing forms, contact area				
c.	*Footing concrete, in place				
d.	*Wall forms, contact area				
e.	*Wall concrete, in place				
f.	*Reinforcing steel bars, in place				
g.	*Structural steel, in place				

**G. Unit Price Schedule - Alterations**

1. Unit Price - Alterations:

A.	ALTERATION ITEMS		UNIT	\$ ADD	\$ DEDUCT
a.	Roof Blocking				
b.	Roof Planking				
c.	Flashing				
d.	Roof Sheathing				
e.	Roof Flashing				
f.	Structural Deck				
g.	Roof Drain Assemblies				

2. Unit prices shall be negotiated if there is a change in scope of work.

---

**01027 APPLICATION FOR PAYMENT**

---

- A. Schedule of Values:** Submit the “Schedule of Values” to the Construction Administrator at the earliest possible date but no later than (21) twenty Calendar Days after the Contract Start Date. A separate "Schedule of Value" shall be provided for each Phase of identified in Section 01010 Summary of Work, Work Sequence - Phase(s).
1. 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 of the Specification Section on electronic media printout.
  2. 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.
  3. 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.
    - d. Name of subcontractor.
    - e. Name of manufacturer or fabricator.
    - f. Name of supplier.
    - g. Retainage.
    - h. Contract sum in sufficient detail.
  4. Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
  5. 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.
  6. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.
  7. 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.
  8. 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.
- B Applications for Payment - General:** 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.



2. Payment-Application Terms: The Owner will process monthly progress payments. The Contractor may submit applications for payment on a monthly basis.
  3. Payment-Application Forms: Use the "Application for Payment" form as required by the Owner. Present the required information on electronic media printout or approved Owner Form, multiple pages should be used if required.
  4. 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*
  5. Application Preparation: Complete every entry on the form. Include final payment only and execution by a person authorized to sign legal documents on behalf of the Contractor. The Construction Administrator will return incomplete applications without action.
    - a. Entries shall match data on the "Schedule of Values".
    - b. Include amounts of Change Orders issued prior to the last day of the construction period covered by the application.
  6. Transmittal: Submit **3** signed and notarized original copies of each Application for Payment to the Construction Administrator. One copy shall be complete, including waivers of lien and similar attachments, when required.
    - a. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Architect.
  7. 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:
    - a. *List of subcontractors and suppliers' name, FEIN/Social Security numbers, and Connecticut Tax Registration Numbers.*
    - b. *List of principal suppliers and fabricators.*
    - c. *Schedule of Values.*
    - d. *Contractor's Construction Schedule (preliminary if not final).*
    - e. *Schedule of principal products.*
    - f. *Submittal Schedule (preliminary if not final).*
    - g. *List of Contractor's staff assignments.*
    - h. *List of Contractor's principal consultants.*
    - i. *Copies of all applicable permits.*
    - j. *Copies of authorizations and licenses from governing authorities for performance of the Work.*
    - k. *Initial as-built survey and damage report, if required.*
- C. 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.

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:
  - a. *Occupancy permits and similar approvals.*
  - b. *Warranties (guarantees) and maintenance agreements.*
  - c. *Test/adjust/balance records.*
  - d. *Maintenance instructions.*
  - e. *Meter readings.*
  - f. *Startup performance reports.*
  - g. *Changeover information related to Owner's occupancy, use, operation, and maintenance.*
  - h. *Final cleaning.*
  - i. *Application for reduction of retainage and consent of surety.*
  - j. *Advice on shifting insurance coverage.*
  - k. *Final progress photographs.*
  - l. *List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.*

**D. 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:

Completion, Final Inspection, and Final Payment, in the General Conditions and Supplementary Conditions.

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 without undue delay.*
5. *Transmittal of required Project construction records to the Owner.*
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.*
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 Public Works, for all Contractors, Subcontractors, Vendors, Suppliers, etc. who work on the Contract. The form includes the following information:*
  14. *Contractor/Subcontractor name.*
  15. *FEIN/Social Security Numbers*
  16. *Connecticut Tax Registration Numbers*
  17. *Type of work*
  18. *Name of business and address*
  19. *Remittance address.*

---

**01030 SUPPLEMENTAL BIDS**

---

- A. Definition:** A Supplemental Bid is an amount proposed by bidders and stated on the Bid Proposal Form for certain work defined in the Bidding Documents that may be added to the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
1. The cost for each supplemental bid is the net addition to the Contract Sum to incorporate the Supplemental Bid into the Work. Supplemental Bids are only accepted in the numerical order that they are listed on the Bid Proposal Form and never accepted out of numerical sequence. No other adjustments are made to the Contract Sum.
- B. Procedures:**
1. Coordination: Modify or adjust affected adjacent Work as necessary to completely and fully integrate that Work into the Project.
    - a. Include as part of each Supplemental Bid, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the Supplemental Bid.
  2. Execute accepted Supplemental Bids under the same conditions as other Work of this Contract.
  2. Schedule: A "Schedule of Supplemental Bids" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials necessary to achieve the Work described under each Supplemental Bid.
- C. Schedule of Supplemental Bids:**
1. *Supplemental Bid No. 1: Courtyard improvements as depicted on the drawings.*

---

**01035 MODIFICATION PROCEDURES**

---

- A. Summary:** This Section specifies administrative and procedural requirements for handling and processing contract modifications.
- B. Minor Changes in the Work:**
1. 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.
- C. Proposal Request:**
1. 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.
  2. "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.
  3. Within Fourteen (14) Calendar 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.
  4. 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.
    - a. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
    - b. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
    - c. 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 566-7033.

- d. 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.

**D. Requests for Information:**

1. 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 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. 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.
  - a. 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.
  - b. 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.
  - c. The Architect will review all "Requests for Information" to determine whether they are "Requests for Information" within the meaning of this term. If it is determined that the document is not a "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.
  - d. A "Requests for Information Response" shall be issued within seven (7) Calendar 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) Calendar 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) Calendar 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) Calendar Days set forth above.
  - e. A "Requests for Information Response" from Architect will not change any requirement of the contract documents. In the event the contractor believes that the "Requests for Information Response" will cause a change to the requirements of the contract document, the contractor shall immediately give written notice to the Construction Administrator stating that the contractor believes the "Requests for Information Response" will result in "Change Order" and the Contractor intends to submit a "Change Order Proposal" request. Failure to give such written notice immediately shall waive the contractor's right to seek additional time or cost under the requirement these Requirements.

**E. Change Order Proposal:**

1. 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 Worksheets" as required by the Owner.
  - a. 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.
  - b. 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.
  - c. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
  - d. Comply with requirements in Section 01631 Equals and Substitutions if the proposed change requires an equal or substitution of one product or system for a product or system specified.

2. 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 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
3. "Change Order Request" Forms: Use "Change Order Proposal" and "Change Order Proposal Worksheets" forms as required by Owner.
4. "Change Order Proposal" cannot be submitted without the Contractor 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.
5. 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.

**F. Construction Change Directive:**

1. "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" as authorized by the Owner on the form required 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".
  - a. 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. Documentation: The Contractor shall maintain detailed records on a time and material basis of work required by the "Construction Change Directive".
  - a. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
  - b. The final value shall be negotiated based on the supporting data to determine the value of the work.

**G. Change Order Procedures:**

1. 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 "Change Order" form as required by the Owner.

---

**01040 COORDINATION**

---

**A. Construction Administrator:**

1. The Construction Administrator is identified in Section 01003 Construction Administrator.
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 Administrators procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
  - d. Comply with instructions of the Construction Administrator for use of temporary utilities and construction facilities.
  - e. Coordinate field engineering layout as specified in Section 01050 "Field Engineering" for work under the instructions of the Construction Administrator.

- B. 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.
- C. 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.
- D. 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.*
- E. General Coordination Provisions:**
1. **Inspection of Conditions:** 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.
  2. The Contractor shall coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.
  3. **Coordination Drawings:**
    - a. The HVAC Subcontractor will initiate mylar at 1/4" scale drawings done on AutoCAD showing ducts and piping in plan and section. Sheet metal shop drawings must be approved prior to starting coordination drawings.
    - b. The Sprinkler Subcontractor will then superimpose his piping layout on the tracing.
    - c. The Electrical subcontractor will superimpose all the electrical information on the tracing. Said information to include but not necessary limited to cable trays, equipment, lighting, conduits, bus duct, etc.
    - e. The sprinkler subcontractor will complete the coordination drawing by drawing his piping (include pitch) on the tracing.
    - f. The Construction Administrator will review the completed coordination drawing for general compliance and then submit it to the Architect for his review. All subcontractors shall rework the mylar drawings until all systems are properly coordinated.
  4. The Construction Administrator will meet with the Contractor on all major items of coordination.
  5. See also General Conditions Article 7.

---

**01045 CUTTING AND PATCHING**

---

- A. 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.

- B The Contractor shall install sleeves, inserts and hangers furnished by the trades needing same.
- C. 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.
- D. Permission shall be obtained from the Construction Administrator before cutting beams, arches, lintels or other structural members.
- E. 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's of the cutting and patching proposal before cutting and patching the following structural elements:
    - a. *Foundation construction.*
    - b. *Bearing and retaining walls.*
    - c. *Structural concrete.*
    - d. *Structural steel.*
    - e. *Lintels.*
    - g. *Structural decking.*
    - i. *Miscellaneous structural metals.*
    - j. *Exterior curtain-wall construction.*
    - k. *Equipment supports.*
    - l. *Piping, ductwork, vessels, and equipment.*
    - m. *Structural systems of special construction in Division 13 Sections.*
- F. Do cutting and patching to integrate all elements of the 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.
- G. 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.
- H. 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.
- I. See also General Conditions Article 23.

---

**01050 FIELD ENGINEERING**

---

- A. Provide field engineering services to establish and record grades, lines and elevations.
- B. The Contractor shall retain a Professional Engineer or Land Surveyor registered by the State of Connecticut to lay out the building, underground utility lines and other site work from the horizontal and vertical control information furnished by the Owner and to establish and record the necessary elevations, at no additional cost to the State.
- C. The Contractor shall forward a letter from his Land Surveyor or Professional Engineer stating that the control information furnished by the Owner, is accurate or shall identify inaccuracies, if they exist. The Contractor shall not take advantage of errors, which may be included in the control information. Stakes and markings shall be preserved.

---

**01095 REFERENCE STANDARDS & DEFINITIONS**

---

- A. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. References to standard specifications and codes refer to the editions current at the bid due date. An exception is, buildings exceeding the threshold limit must be in substantial compliance with the requirements of the effective code at the time of receipt of completed application to the Office of State Building Inspector (OSBI).

References include their addenda and errata, if any, and shall be considered a part of these specifications as if they were printed herein in full.

- C. The manufacturers' standard warranties or guarantees shall apply when their products are used on this project.
- D. Flame Spread Ratings - all materials that are required or obligated to meet specified standards shall be submitted to the owner for their records as part of the shop drawing submittal process for their construction records.

---

**01120 RENOVATION/DEMOLITION PROJECT PROCEDURES**

---

**A. Products For Patching And Extending Work:**

- 1. New materials: As specified in product sections; match existing Products and Work for patching and extending Work.
- 2. Type and Quality of Existing Products: Determine by inspecting and testing Products where necessary, referring to existing Work as a standard.

**B. Inspection- General:**

- 1. Verify that demolition is complete and areas are ready for installation of new Work.
- 2. Beginning of restoration Work means acceptance of existing conditions.

**C. Project Procedures for Work Involving Asbestos Containing Material (ACM):**

- 1. The Construction Administrator is responsible for abating all ACM that is visible and accessible. This is to be accomplished through a separate project prior to the start of the renovation project. In demolition projects, every attempt should be made by the owner to remove all ACM.
- 2. If the Contractor should encounter any material suspect or known to contain ACM, he should immediately notify the Construction Administrator of same. It is the State'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. The Owner will abate ACM (if necessary) within a reasonable time period, i.e. with seven (7) Calendar Days.
- 3. Testing for asbestos has been conducted at the facility scheduled for renovation, demolition, reconstruction, alteration, remodeling, or repair. Results of the asbestos testing are for information purposes only. The testing results are in a separate Volume of this Project Manual. 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. See also General Conditions Article 23.

**D. Project Procedures for Work Involving Lead Containing Material:**

- 1. 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.
- 2. The Contractor's Work shall be based on a child under the age of six (6) in residence; the Work shall also be in accordance with Connecticut Regulations Section 19a-111-1 through 11.
- 3. This facility was constructed prior to 1978 and is likely to have painted surfaces containing lead-based paint.
- 4. 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 for information purposes only. The testing results are in a separate Volume of this Project Manual. 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.

**E. Preparation:**



1. Cut, move, or remove items as are necessary for access to alterations and renovation Work. Replace and restore at completion.
2. 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..
3. Remove debris and abandoned items from area and from concealed spaces.
4. Prepare surface and remove surface finishes to provide for proper installation of new Work and finishes.
5. Close openings in exterior surfaces to protect existing Work and salvage items from weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent condensation in exposed areas.

**F. Installation:**

1. Coordinate Work of alterations and renovations to expedite completion and if required sequence Work to accommodate Owner occupancy.
2. 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 01045 "Cutting and Patching".
3. 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 01045 "Cutting and Patching".
4. In addition to specified replacement of *equipment* and *fixtures*, restore existing *plumbing, heating, ventilation, air conditioning, electrical*, systems to full operational condition.
5. Recover and refinish Work that exposes mechanical and electrical Work exposed accidentally during the Work.
6. Install Products as specified in individual sections.

**G. Transitions:**

1. 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.
2. 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.

**H. Adjustments:**

1. 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.
2. Where a change of plane of \_\_\_\_\_inch in \_\_\_\_\_ or more occurs, request recommendation from Architect/Engineer for providing a smooth transition.
3. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.
4. Fit Work at penetrations of surfaces as specified in Section 01045 "Cutting and Patching".

**I. Repair of Damaged Surfaces:**

1. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing imperfections.
2. Repair substrate prior to patching finish.

**J. Finishes:**

1. Finish surfaces as specified in individual Product sections.
2. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

**K. Cleaning:**

1. In addition cleaning specified in Section 01700 "Project Closeout", clean Agency occupied areas of Work

---

**01121 SALVAGEABLE MATERIALS (NOT APPLICABLE)**

---

- A. The Contractor shall be responsible for removing the following salvageable items from premises and transporting said items to \_\_\_ on \_\_\_, CT \_\_\_.
1. *Equipment:*
  2. *Windows:*
  3. *Doors:*
  4. *Door Hardware:*
  5. *Fixtures:*
  6. *Art:*
- B. The Contractor shall notify the Construction Administrator in writing seven (7) Calendar Days prior to removing all salvageable items from the existing alteration project location and unloading all salvageable items at \_\_\_, \_\_\_, Connecticut \_\_\_ and store items in the appropriate location as directed by \_\_\_ personnel.

---

**01200 PROJECT MEETINGS**

---

**A. Pre-construction Conference:**

1. 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 within fourteen (14) Calendar Days after the written Notice to Proceed and before the Contract 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.
2. 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.
3. Agenda: Discuss items of significance that could affect progress, including the following:
  - a. *Tentative construction schedule.*
  - b. *Critical work sequencing.*
  - c. *Progress meeting schedule.*
  - d. *Designation of responsible personnel.*
  - e. *Procedures for processing field decisions and Change Orders.*
  - f. *Procedures for processing Applications for Payment.*
  - g. *Distribution of Contract Documents.*
  - h. *Submittal of Shop Drawings, Product Data, and Samples.*
  - i. *Preparation of record documents.*
  - j. *Use of the premises.*
  - k. *Parking availability.*
  - l. *Office, work, and storage areas.*
  - m. *Equipment deliveries and priorities.*
  - n. *Safety procedures.*
  - o. *First aid.*
  - p. *Security.*
  - q. *Housekeeping.*

- r. *Working hours.*
- s. *Coordination with Audio-Visual and Telecommunications.*

**B. Progress Meetings:**

1. 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.
2. 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.
3. 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.
  - a. Construction Schedule: Review progress since the last Progress Meeting. Determine where each activity is in relation to the required Contractor's "Construction 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.
  - b. Review the present and future needs of each entity present
4. 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.
5. A schedule of regular Project Meetings will be established at the Pre-construction Conference.

---

**01300 SUBMITTALS**

---

**A. Summary:**

1. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including but not limited to the following:
  - a. *Submittal schedule.*
  - a. Shop Drawings.
  - c. Product Data.
  - d. Samples.
  - e. Quality assurance submittals.
  - f. Proposed "Substitutions Request" form.
  - g. Warrantee samples.
  - h. Coordination Drawings.
  - i. O & M Manuals

**B. Administrative Submittals:** Refer to other Division 1 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 #'s and Connecticut tax registration #.

**C. Definitions:**

1. 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 Division 2 through 16.
  - a. Preparation of Coordination Drawings is specified in Division 1 Section "Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.
2. 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.
3. Mockups are full-size assemblies for review of construction, coordination, testing, or operation; they are not Samples.

**D. Submittal Procedures:**

1. 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.
2. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that requires sequential activity.
3. 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.
4. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
5. The Architect reserves the right to reject incomplete submitted packages.
6. 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 resubmittals.
  - a. Allow (2) two weeks 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 (2) two 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.

**E. 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 at a minimum 7 copies or as determine 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".*
- F. 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.
- G Submittal Schedule:**
- 1. After development and review by the Owner and Architect acceptance of the Contractor's Construction Schedule prepare a complete schedule of submittals. Submit the schedule to the Construction Administrator within 30 days of Contract Award.
  - 2. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction Schedule
  - 3. 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.
- H. 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.
- I. 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.
- J. Daily Construction Reports**
- 1. 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:
    - a. List of subcontractors at the site.*
    - b. Approximate count of personnel at the site.*
    - c. High and low temperatures, general weather conditions.*
    - d. Accidents and unusual events.*
    - e. Meetings and significant decisions.*
    - f. Stoppages, delays, shortages, and losses.*
    - g. Meter readings and similar recordings.*

- h. List of equipment on site and identify if idle or in use.*
- i. Orders and requests of governing authorities.*
- j. Change Orders received, start and end dates.*
- k. Services connected, disconnected.*
- l. Equipment or system tests and startups.*
- m. Partial Completion's, occupancies.*
- n. Substantial Completion's authorized.*
- o. Equals or Substitutions approved or rejected.*

**K. Shop Drawings:**

1. 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.
2. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:
  - a. Dimensions:
  - b. Identification of products and materials included by sheet and detail number.
  - c. Compliance with specified standards.
  - d. Notation of coordination requirements.
  - e. Notation of dimensions established by field measurement.
  - f. 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.
  - g. Submit one (1) reproducible media and seven (7) prints as directed by the Construction Administrator. The Contractor's submittal shall identify the specification section and/or drawing number applicable to the submittal.
  - h. Details shall be large scale and/or full size.
3. 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.
4. 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 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.
5. 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.
6. Upon final review submit four (4) additional prints, same as submitted, to the Construction Administrator for his use.
7. 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.
8. Only final reviewed shop drawings are to be used on the project site.
9. 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. Final reviewed shop drawings shall not replace or be used as a vehicle to issue or incorporate change orders.

**L. Product Data:**

1. 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.
2. 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.*
3. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
4. Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.
5. Submittals: Submit 7 copies of each required submittal; submit 5 copies where required for maintenance manuals. The Architect will retain one 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.
6. 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.

**M. Samples:**

1. 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.
2. 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.*
3. 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.
4. 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.
  5. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit three (3) sets. The Architect will return one set marked with the action taken.
  6. 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.
  7. 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.
    - a. Field samples are full-size examples erected on-site to illustrate finishes, coatings, or finish materials and to establish the Project standard.

**N. Quality Assurance Submittals:**

1. 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.
2. 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.
  - a. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.
3. Inspection and Test Reports: Requirements for submittal of inspection and test reports from independent testing agencies are specified in Division 1 Section "Quality Control."

**O. Architect's Action:**

1. 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.
  - a. Compliance with specified characteristics is the Contractor's responsibility.
2. 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:
  - a. 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.
  - b. 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.
- c. 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.
    - i. 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.
  - d. 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."
3. Unsolicited Submittals: The Architect will discard unsolicited submittals without action.

---

**01310 CONSTRUCTION SCHEDULE**

---

**A. Definitions:**

1. 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

**B. Format:**

1. Format: Utilize a horizontal bar chart (gant) 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.

**C. Quality Assurance:** 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**" compatible, latest version.
3. Standards: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

**D. Content:**

1. Show complete sequence of construction by activity, with dates beginning and completion of each element of construction.
2. Identify each item by specification section number.
3. Identify work of separate phases other and other logically grouped activities.
4. Show accumulated percentages of completion of each item, and total percentage of Work completed, as of the first day of each month.
5. 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.
6. Indicate delivery dates for Owner/Agency furnished products and any products identified as under Allowances.

7. Coordinate content with Schedule of Values specified in Section 01027.

**E. Submittals And Revisions To Schedules:**

1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
2. Identify activities modified since previous submittal, major changes in scope, other identifiable changes.
3. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.
4. An initial bar graph (ganttt) schedule is to be prepared by the General Contractor and submitted to the Construction Administrator within seven (7) calendar 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. After review, resubmit required revised data within five (5) calendar days. This schedule must be revised monthly and when the actual schedule of significant items varies more than one (1) week from the proposed schedule.
5. Submit revised Construction Schedules each Application for Payment.
6. Submit four (4) copies of the Construction Schedule to the Construction Administrator..

**F. Distribution:**

1. Distribute copies of the Construction Schedules to Construction Administrator, Architect, Owner, Subcontractors, suppliers, and other concerned parties.
2. Instruct recipients to promptly report, in writing, problem anticipated by projections indicated in schedules.

---

**01380 CONSTRUCTION PHOTOGRAPHS**

---

- A. On the date the work is begun and every thirty (30) days thereafter (until the work is at least 95 percent complete), the Contractor shall have photographs of the construction.
- B. Take color digital photos each time. Note on each photo frame the date the picture was taken and the project number. Deliver digital photographs to the Construction Administrator in digital form.
- C. As 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 digital photos to the Construction Administrator within 10 days of their taking.

---

**01400 QUALITY CONTROL**

---

- 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 forty-eight (48) hours in advance to 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 adoption 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.

**DIVISION 1  
GENERAL REQUIREMENTS**

**PAGE 28 of 44**

- c. Materials and assemblers 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 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 Codes.
- B. Retesting:** The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.
- 1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.
  - 2. The Owner will issue a credit change order to cover all costs incurred related to all re-tests/re-inspection due to non-compliance to the contract documents, including but not limited to the Owners costs and the Consultants 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:
- a) When the Contractor notifies the Construction Administrator and/or Testing Agency less than twenty-four (24) hours before the expected time of testing.
  - b) When the Contractor requires testing for his own convenience.
  - c) When the Contractor schedules a test and is not ready for the required test.
- F.** Reports of test that are part of the submittal requirements which indicate compliance or non-compliance with the specified standard.
- G.** See also General Conditions Article 16.
- H. Fire Alarm/Acceptance Testing Procedures:**

1. The Department of Public Works has been given the Authority Having Jurisdiction with regards to construction Projects which do not exceed Threshold Limit Laws. The Contractor shall follow the "Department of Public Works "Acceptance Testing Procedures" as provided by the Owner prior to Acceptance Testing.

**I. Submittals:**

1. 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.
2. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
3. 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.

**J. Quality Assurance:**

1. 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.
  - a. 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.

**K. Repair and Protection:**

1. 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 1 Section "Cutting and Patching."
2. Protect constructions exposed by or for quality-control service activities, and protect repaired construction.
3. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

---

**01505 TEMPORARY ELECTRICITY AND LIGHTING**

---

- A. Connect to existing service, and provide branch wiring and distribution boxes located to provide power and lighting by construction-grade extension cords. Owner will pay cost of energy used. Take measures to conserve energy. Provide lighting for construction operations. At the termination of construction, return the facilities to their original condition.

---

**01510 TEMPORARY HEATING, COOLING AND VENTILATING AND LIGHTING (NOT APPLICABLE)**

---

- A. The General 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.

---

**01515 TEMPORARY TELEPHONE (NOT APPLICABLE)**

---

- A. General Contractor shall provide telephone service in his office. It is preferred the Contractor use a cellular phone. Local calls will be paid by the Contractor and toll calls by the respective users.

---

**01520 TEMPORARY WATER (NOT APPLICABLE)**

---

- A. Water for construction purposes may be taken from the existing service. The Contractor shall provide connections, approved backflow prevention device, meter and pipe to the water main or nearest hydrant, subject to the approval of the Owner. Upon completion of work, the Contractor shall remove the temporary connections and backfill if necessary. If new water service is installed before construction is complete, the new system may be used provided it is returned to the Owner in as-new condition. The Contractor shall pay for the water used, as metered.

---

**01525 TEMPORARY SANITARY FACILITIES**

---

- A. Designated existing toilets may be used during construction. It is the responsibility of the Contractor to maintain the facilities in a clean and sanitary condition and return them to their original condition after use. No loitering or smoking will be permitted in these areas.

---

**01530 FIRE PROTECTION**

---

- A. 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.
- B. 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 2 gallons which shall be in U.L. listed containers. Also provide one 30 B:C fire extinguisher within 75 feet of any point on the roof.

---

**01535 CONSTRUCTION EQUIPMENT**

---

- A. 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 A.G.C. and the standards of the State Labor Department.
- B. Staging, exterior and interior, required for the execution of this Contract, shall be furnished, erected, relocated if necessary and removed by the General Contractor. Staging shall be maintained in a safe condition without charge to and for the use of all trades as needed.

---

**01540 BARRIERS AND ENCLOSURES**

---

- A. Provide barriers to prevent public entry into construction areas and to protect existing facilities from damage by construction operations.

- B. Provide a fence around construction site; equip with vehicular and pedestrian gates with locks.
- C. Provide covered walkways as required by governing authorities for public rights-of-way and for public access to existing buildings.
- D. Provide barriers around trees and plants designated to remain. Protect against vehicular traffic, materials' dumping, chemically injurious materials, puddling or running water.
- E. 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.
- F. 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 Department's approval of an alternate egress plan.
- G. See also General Conditions Article 19.

---

**01545 PROTECTION**

---

- A. Protect buildings, equipment, furnishings, grounds and plantings from damage. Any damage shall be repaired or otherwise made good at no expense to the State.
- B. 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.
- C. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.
- D. 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.
- E. Provide temporary partitions and ceilings to separate work areas from Owner-occupied areas to prevent penetration of dust and moisture into Owner-occupied areas and equipment. Erect framing and sheet materials with closed joints and sealed edges at intersections with existing surfaces.
- F. See also General Conditions Article 19.

---

**01550 SECURITY**

---

- A. Provide security program and facilities to protect work, existing facilities and Owner's operations from unauthorized entry, vandalism and theft. Coordinate with Owner's security program.
- B. The Contractor shall be solely responsible for damage, loss or liability due to theft or vandalism.

---

**01555 TRAFFIC WAYS**

---

- A. 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.
- B. 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.
- C. If the work of the Contract affects public use of any street, road, highway or thoroughfare, the G. C. 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 G.C. will be responsible for payment of any needed police services.

---

**01560 TEMPORARY CONTROLS (NOT APPLICABLE)**

---

- A. **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, Pest Control.*
4. *Erosion and Sediment Control.*
5. *Pollution Control.*
6. *Traffic Control.*

---

**01565 STORM WATER CONTROL (NOT APPLICABLE)**

---

- A. Assume responsibility for Storm Water pollution control by submitting to the Connecticut Department of Environmental Protection (DEP) a "General Permit for the Discharge of Storm Water and Dewatering Wastewaters from Construction Activities" registration; conform to the permit requirements.
- B. Conform to the Storm Water Pollution Control Plan included in the Contract Documents or have another plan, prepared at the General Contractor's expense, which has been approved by the Owner and Environmental Protection.
- C. The "General Permit for the Discharge of Storm Water and Dewatering Wastewater from Construction Activities" "draft" registration is attached to the technical Section 0227\_\_\_Storm Water Pollution Control.
- D. Sign, and cause to be signed by each appropriate subcontractor, the Certification Statement required by the General Permit.
- E. Provide, maintain, and monitor a rain gauge on the site; monitoring shall include maintaining a log of the readings. The rain gauge shall remain the property of the General Contractor.

---

**01570 CLEANING**

---

- A. Maintain areas under Contractor's control free of waste materials, debris and rubbish. Maintain in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces and other closed or remote spaces before closing the space.
- C. Periodically clean interior areas before start of surface finishing and continue cleaning on an as-needed basis.
- D. Control cleaning operations so that dust and other particulates will not adhere to wet or newly-coated surfaces.
- E. Remove waste materials, debris and rubbish from site daily and dispose of legally off-site. No scrap/debris shall remain inside the building or anywhere on site upon final acceptance of the project.
- F. See also General Conditions Article 24.

---

**01575 PROJECT SIGNS (NOT APPLICABLE)**

---

- A. Project Signs: Engage an experienced sign painter to apply graphics. Comply with details to be furnished by the Construction Administrator.
  1. Project Sign: The Contractor shall contact the Construction Administrator for the proper wording for the project sign. Fabricate sign of 3/4", exterior grade, A-B Fir plywood. Mount sign on preservative treated Fir posts. The Owner shall provide design, color selection and illustration of the Project Sign. Paint both sides and all edges of sign and the posts with two coats of exterior, white, alkyd primer. Paint the border and letters with "bulletin" (sign) paint. Letter sizes, colors and related information is given on the illustration from the Owner. A self-adhesive decal of the State seal will be furnished at the Contract signing. Erect the sign within two weeks after execution of the Contract and remove the sign within one week after completion of the project.
  2. The contractor shall contact the Construction Administrator for the proper wording for the project sign.

---

**01580 FIELD OFFICES AND SHEDS (NOT APPLICABLE)**

---

**A. Field Offices:**

1. The Contractor shall provide an office for his own use which may be a trailer type facility with electric lighting, air conditioning, and heat. It shall have ample natural light, a table, chairs, counter, shelf, plan racks and file cabinets. Provide a 5 lb. ABC fire extinguisher and an OSHA-approved first aid kit. If the contract amount is \$2,500,000 or more, the Contractor shall provide a facsimile machine in his office and shall also provide his superintendent with a message beeper.
2. The Contractor shall provide a field office for the Construction Administrator of not less than 150 sq. ft. which may be a trailer type facility. The field office shall have ample natural light, a heater of sufficient capacity to maintain 70 degrees (F) in winter and an air conditioner of sufficient capacity to maintain 75 degrees (F) in summer. The Contractor shall provide a 5-lb. ABC fire extinguisher, and an OSHA-approved first aid kit. The contractor shall furnish the following furniture, which will remain his property. Furniture may be used but shall be in good condition, as judged by the Construction Administrator.
  - a. (1) one two pedestal desk
  - b. (1) One plan table.
  - c. (1) One plan rack.
  - d. (5) Five chairs.
  - e. (2) Two file cabinets (lockable four drawer letter size).
  - f. (2) Two bookshelves w/10 L.F. of 12" wide shelving.
  - g. (2) Two large capacity waste receptacles.
  - h. (1) One Fax Machine with telephone line.
  - i. (1) One telephone with telephone line.
  - J. (1) One Answering Machine with telephone line.
  - k. (1) One Computer having PC with telephone line and E-mail connection capabilities: 200 MHz, (minimum) Pentium II with operating software, including but not limited to, Windows 95, AutoCAD (latest version), Microsoft Office 97, Microsoft Project (latest version) File Maker.
  - l. (1) One Laser printer with supplies.
  - m. (1) One Copy Machine with supplies.
2. The Agency will furnish, without charge, one room for the Contractor's use and one room for the Construction Administrator's use as an office in an existing building. The Contractor shall be responsible for furniture and shall keep these areas clean and return them to their original condition after use. The Contractor shall provide and install a 5-lb. ABC fire extinguisher and an approved first aid kit in both rooms.

**B. Storage and Fabrication Sheds:** Install storage and fabrication sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on-site.

1. Storage sheds for tools, materials and equipment shall be weathertight with heat, lighting and ventilation for products requiring controlled conditions.
2. Remove temporary materials, equipment services and construction before Substantial Completion.
3. Clean and repair damage caused by installation or use of temporary facilities. Restore existing facilities used during construction to specified or to original condition.

---

**01585 IDENTIFICATION BADGES**

---

**A. 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.

---

**01600 MATERIALS AND EQUIPMENT CONTROLS**

---

- A. 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.
1. Promptly inspect shipments to assure that products comply with requirements, that quantities are correct and products are undamaged.
  2. Packages, materials and equipment showing evidence of damage will be rejected and replaced at no additional cost to the Owner.
- B. Storage and Protection:**
1. Store products in accordance with manufacturers' instructions with seals and labels intact and legible. Store sensitive products in weathertight enclosures; maintain within temperature and humidity range required by manufacturer.
  2. 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.
  3. Store loose granular material on solid surfaces in a well-drained area; prevent mixing with foreign matter.
  4. 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.
  5. Stone, masonry units and similar materials shall be stored on platforms or dry skids and shall be adequately covered and protected against damage.
  6. The Contractor shall prepare, as directed by the Owner, one area or space in the building for storage of State-owned equipment.

---

**01631 EQUALS AND SUBSTITUTIONS**

---

- A. Definitions:** Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.
1. 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.
  2. Equal: 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 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.
  3. 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 and may be rejected or approved by the Owner. The Substitution is not equal to the specified requirement in comparison to the first manufacture 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.

4. The following are not considered to be requests for Equals or Substitutions:
  - a. Revisions to the Contract Documents requested by the Owner or Architect.
  - b. Specified options of products and construction methods included in the Contract Documents.
  - c. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities having jurisdiction.

**B. Submittals:**

1. Equals and Substitution Request Submittals: The Owner will consider requests for equals or substitutions if received within time period designated in the General Conditions Article 15. Requests received more than the days specified in Article 15 after the start date of the contract will be rejected.
  - a. The Contractor is required to prepare and submit 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 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.
2. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
3. Provide complete documentation showing compliance with the requirements for equals or substitutions, and the following information, as appropriate on a "Substitution Request" form as required by the Owner:
  - 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.
4. Architect's Action: If necessary, the Architect will request additional information or documentation for evaluation within one week 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 two (2) weeks of receipt of the request, or one (1) week 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 one (1) week 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.

**C. Equal or Substitutions:**

1. 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.
  - a. The proposed request does not require extensive revisions to the Contract Documents.
  - b. The proposed request is in accordance with the general intent of the Contract Documents.
  - c. The proposed request is timely, fully documented, and/or properly submitted.
  - d. 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.
  - e. 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.
  - f. The proposed request can receive the necessary approvals, in a timely manner, required by governing authorities having jurisdiction.
  - g. The proposed request can be provided in a manner that is compatible with the Work as certified by the Contractor.
  - h. The proposed request can be coordinated with the Work as certified by the Contractor.
  - i. The proposed request can uphold the warranties required by the Contract Documents as certified by the Contractor.
2. 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.

---

**01650 STARTING OF SYSTEMS (NOT APPLICABLE)**

---

**A. General:**

1. Coordinate schedule for start-up of various equipment and systems.
2. Provide written notification the Construction Administrator thirty (30) Calendar Days prior to start-up of each item.
3. 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.
4. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
5. Verify in wiring and support components are complete and tested.
6. Execute the start-up under supervision of manufacturer's representative, in accordance with manufacturer's instructions.

7. 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.
8. Submit a written report in accordance Section 01400 "Quality Control" that the equipment or system has been properly installed and is functioning properly.

**B. Demonstration and Instructions:**

1. Demonstrate operation and maintenance of Products to Owner and Agency Personnel two (2) weeks prior to substantial completion.
2. 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.
3. For equipment or systems requiring seasonal operation perform demonstration for season within six (6) months.
4. 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.
5. 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.
6. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during demonstration.

**C. Testing Adjusting, and Balancing:**

1. The Contractor will employ and pay for the testing services of an independent consultant to verify the testing, adjusting, and balancing.
2. 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.
3. 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.

---

**01700 CONTRACT CLOSEOUT**

---

**A. Substantial Completion:**

1. Preliminary Procedures: Before requesting inspection for Certification of Substantial Completion, complete the following. List exceptions in the request.
  - a. 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.
    - i. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
    - ii. 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.
  - b. Advise the Owner of pending insurance changeover requirements.
  - c. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
  - d. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - e. Submit record drawings, maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
  - f. Deliver tools, spare parts, extra stock, and similar items.
  - g. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.

**DIVISION 1  
GENERAL REQUIREMENTS**

**PAGE 38 of 44**

- h. Demonstration, 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.
    - i. Complete final cleanup requirements, including touchup painting.
    - j. Touch up and otherwise repair and restore marred, exposed finishes.
2. Inspection Procedures: The Contract shall be ready and prepared when they request a Substantial Completion inspection. If the inspection reveals that the work is not complete, there are extensive punchlist items and as the items listed above are not complete, the Construction Administrator, Architect, and Owner will determine the inspection has failed.
3. 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.
  - a. The Architect will repeat inspection when requested and assured that the Work is substantially complete.
  - b. Results of the completed inspection will form the basis of requirements for final acceptance.

**B. Final Acceptance:**

1. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
  - a. 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.
  - b. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
  - c. 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.
  - d. 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.
  - e. Submit consent of surety to Final Payment.
  - f. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
2. Reinspection 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.
  - a. Upon completion of reinspection, the Construction Administrator will prepare a certificate of final 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.

**C. Record Document Submittals:**

1. **General:** Do not use record documents for construction purposes. Protect Record Documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Architect's reference during normal working hours. Keep documents current; do not permanently conceal any work until required information has been recorded. Failure to keep documents current is sufficient cause to withhold progress payments.
  - a. 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
  - b. 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.

2. **Record Drawings:** The Contractor shall maintain one 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.
  - a. Mark record sets with erasable pencil to distinguish between variations in separate categories of the Work.
  - b. Mark all new information that is not shown on Contract Drawings.
  - c. Note related change-order numbers where applicable.
  - d. 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.
  - e. 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.
  - g. Submit electronic format data of all revised drawings on CD-ROM format and in AutoCAD (latest version) compatible format.
3. **Record Specifications:** The Contractor shall maintain one complete copy of the Project Manual, including Addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.
  - a. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
  - b. 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.
  - c. Note related record drawing information and Product Data.
  - d. Upon completion of the Work, submit record Specifications to the Construction Administrator for the Owner's records.
4. **Record Product Data:** The Contractor shall maintain one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.
  - a. 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.
  - b. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
  - c. Upon completion of markup, submit complete set of Record Product Data to the Construction Administrator for the Owner's records.
5. **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.
6. **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.
7. **Maintenance Manuals:** Organize operation and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual, heavy-duty, 2-inch (51-mm), 3-ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder according to section 01730. Included but not limited to the following types of information:
  - a. *Emergency instructions.*

- b. *Spare parts list.*
- c. *Copies of warranties.*
- d. *Wiring diagrams.*
- e. *Recommended "turn-around" cycles.*
- f. *Inspection procedures.*
- g. *Shop Drawings and Product Data.*
- h. *Fixture lamping schedule.*

**D. Closeout Procedures:**

1. 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:
  - a. *Maintenance manuals.*
  - b. *Record documents.*
  - c. *Spare parts and materials.*
  - d. *Tools.*
  - e. *Lubricants.*
  - f. *Fuels.*
  - g. *Identification systems.*
  - h. *Control sequences.*
  - i. *Hazards.*
  - j. *Cleaning.*
  - k. *Warranties and bonds.*
  - l. *Maintenance agreements and similar continuing commitments.*
2. As part of instruction for operating equipment, demonstrate the following procedures:
  - a. Startup.
  - b. Shutdown.
  - c. Emergency operations.
  - d. Noise and vibration adjustments.
  - e. Safety procedures.
  - f. Economy and efficiency adjustments.
  - g. Effective energy utilization.

**E. Final Cleaning:**

1. **General:** The General Conditions requires general cleaning during construction. Regular site cleaning is included in Division 1 Section 01570 "Cleaning".
2. Employ experienced workers or 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. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion and Certification of Occupancy.
3. **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.

**4. 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.

**5. Pest Control:** Engage an experienced, licensed exterminator to make a final inspection and rid the work of rodents, insects, and other pests.

**6. Removal of Protection:** Remove temporary protection and facilities installed for protection of the Work during construction.

**7. 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.

- a. 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.
- b. 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.

---

**01730 OPERATION AND MAINTENANCE DATA**

---

- A. The Contractor shall instruct the State's designated personnel in the operation of new equipment and shall provide manuals and if required, provide video tapes of this basic maintenance of the equipment for training purposes. Provide qualified personnel for as long as necessary to instruct the State's personnel.
- B. Submit four copies of the manuals in 3-ring, loose-leaf notebooks to the Architect/Engineer for approval. Manuals may consist of plain paper copies of approved shop drawings and catalog cuts. Upon completion and approval, 3 copies will be forwarded to the State and one copy retained by the Architect/Engineer.
- C. Manuals shall include:



1. Operating Procedures:
  - a. Typewritten procedures for each mode of operation of each piece of equipment. Procedures shall indicate the status of each component of a system in each operating mode.
  - b. Procedures shall include names, symbols, valve tags, circuit numbers, schematic wiring diagrams, locations of thermostats, manual starters, control cabinets and other controls of each system.
  - c. Emergency shut-down procedures for each piece of equipment or system, both automatic and manual, as appropriate.
2. Maintenance Schedule:
  - a. Typewritten schedule describing manufacturers schedule of maintenance and maintenance procedures.
3. Catalog Cuts:
  - a. To illustrate each piece of installed equipment, including options.
  - b. Include equipment descriptions including physical, electrical and mechanical; performance characteristics; installation or erection diagrams.
  - c. Include spare parts numbers and names, address and phone number of manufacturer; name, address and phone number of local representative or service department.
  - d. Typewritten list of all subcontractors on the project, including name, address and phone number of local representative or service department.
4. Manuals shall be indexed with dividers indicating each system or piece of equipment.

---

**01740 WARRANTIES AND GUARANTEES**

---

- A. 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.
- C. 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 months from the date of acceptance of the Work. In addition, the Contractor shall furnish the warranties listed below. Submit four 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. Submit certification that finish materials are fire rated as specified.
- H. Form of Guarantees and Warranties:

*Director  
Facilities Management & Planning  
83 Windham Street  
Willimantic, Connecticut 06226*

**LOW RISE STAIR REPLACEMENT & COURTYARD IMPROVEMENTS  
ECSU 2016-9 (Phase II)**

*I (We) hereby guarantee and warranty*

*the \_\_\_\_\_ work on the referenced project for a period of \_\_\_\_\_ years  
from \_\_\_\_\_, 2018 against failures of workmanship and materials in accordance  
with the requirements of Section \_\_\_\_, Page \_\_\_\_, Paragraph \_\_\_\_, of the Specifications.*

*Signed* \_\_\_\_\_

*General Contractor  
(or authorized agent)* \_\_\_\_\_

- I. Bonds shall be by approved Surety Companies, made out to the Director of Facilities Management & Planning, Eastern Connecticut State University on companies standard form.
- J. Guarantees, warranties or bonds supplied by Subcontractors, 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.

**G. Submittals:**

- 1. 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.
- 2. 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.
  - a. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.
- 3. Form of Submittal: At Final Completion compile 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.
- 4. 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 (115-by-280-mm) paper.
  - a. 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.
  - b. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
  - c. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

**END OF DIVISION 1- GENERAL REQUIREMENTS**

# TECHNICAL SPECIFICATIONS

# TECHNICAL SPECIFICATIONS

## TABLE OF CONTENTS

<b>Section No.</b>	<b>Title</b>
015713	Temporary Erosion and Sedimentation Control
033000	Cast-In-Place Concrete
051200	Structural Steel Framing
053100	Steel Decking
055116	Metal Floor Plate Stairs
055213	Pipe and Tube Railings
075323	Ethylene-Propylene-Diene-Monomer (EPDM) Roofing
099113	Exterior Painting
260010	General Conditions for Electrical
260519	Low-Voltage Electrical Power Conductors and Cables
260526	Grounding and Bonding for Electrical Systems
260529	Hangers and Supports for Electrical Systems
260533	Raceway and Boxes for Electrical Systems
260543	Underground Ducts and Raceways for Electrical Systems
260553	Identification for Electrical Systems
260923	Lighting Control Devices
265119	LED Interior Lighting
265213	Emergency and Exit Lighting
311000	Site Clearing
312000	Earth Moving
312001	Building Excavation and Backfill
321216	Bituminous Concrete Paving
321313	Concrete Paving
321640	Granite Curbing
329300	Plants
334016	Storm Drainage

## **SECTION 015713 – TEMPORARY EROSION AND SEDIMENTATION CONTROL**

### **PART 1 - GENERAL**

#### **1.1 Summary**

- A. This Section includes furnishing, placing, and maintaining sedimentation control measures as shown on the Drawings, as directed by the Engineer, and where necessary to reduce sediment content of runoff. Control measures are to remain in place until after completion of construction. Measures include the following:
  - 1. Construction entrance.
  - 2. Hay bales.
  - 3. Sediment control at catch basins.
  - 4. Dust control.
    - a. Conduct construction operations and activities to minimize the creation and dispersion of dust. If the Engineer determines that water and or calcium chloride is required for more effective dust control, provide such measures at no additional cost to the owner
  
- B. Related Sections include the following:
  - 1. Division 31 Section “Earth Moving.”

#### **1.2 Submittals**

- A. Material Certificates:
  - 1. Construction entrance stone and filter fabric.
  - 2. Sediment control at catch basins.
  - 3. Calcium chloride.

#### **1.3 Quality Assurance**

- A. Standard Specifications: “Form 816, Standard Specifications for Roads, Bridges and Incidental Construction, State of Connecticut, Department of Transportation” and supplements.
  
- B. Connecticut Guidelines for Soil Erosion and Sediment Control by the Connecticut Council on Soil and Water Conservation.

### **PART 2 - PRODUCTS**

#### **2.1 Construction Entrance**

- A. Stone: Article M.01.01 of Form 816, size as indicated on the Drawings.

#### **2.2 Hay Bales**

- 1. Bales: Hay, weighing 40 to 120 pounds per bale.

2. Stakes: Wood, 2-inch by 2-inch by 36-inch minimum.

### **2.3 Erosion Control Matting**

- A. Mat: Minimum width of 6 feet.
  1. Mat: Machine-produced of 100 percent coconut fiber with colored line or thread along outer edges to indicate material overlap limits.
    - a. Weight: 0.50 lb./sq.yd.
    - b. Overlap: Approximately 2 to 5 inches.
    - c. Top and Bottom Cover: Heavy-weight polypropylene netting with ultraviolet additives to delay breakdown.
    - d. Mesh Size: 0.625-inch by 0.625 inch.
    - e. Weight: 3 lbs/1000 sq.ft.
- B. Sew blanket and covers together on 1.5 inch center at 50 stitches per roll width with UV stable polypropylene thread.

### **2.4 Silt Sacks**

- A. Regular Flow Silt Sacks: Woven polypropylene that meets the following:

<b>Properties</b>	<b>Requirement</b>	<b>Unit</b>
Grab Tensile Strength (ASTM D4632):	300	Lbs
Grab Tensile Elongation (ASTM D4632):	20	Percent
Puncture Strength (ASTM D4833):	120	Lbs
Mullen Burst (ASTM D3786):	800	PSI
Trapezoid Tear (ASTM D4533):	120	Lbs
Flow Rate (ASTM D4491):	40	Gal/Min /Sq. Ft.
Permittivity (ASTM D4491)	0.55	Sec-1
UV Resistance(at 500 hours) (Retained strength) (ASTM D4355):	80	Percent
Apparent Opening Size (ASTM D4751):	#40	US Sieve

1. Manufacturer: ACF Environmental, 1801-A Willis Road, Richmond, VA 23237 (800-844-9223), or equal.

### **2.5 DUST CONTROL**

- A. Calcium Chloride: ASTM D98, Type 1 or Type 2.
- B. Water: Potable.

## **PART 3 - EXECUTION**

### **3.1 General**

- A. Minimize environmental damage during construction. Prevent discharge of fuel, oil, lubricants, and other fluids. Mitigate effects of discharge.
- B. Install erosion and sediment control measures prior to clearing, demolition or construction.
- C. Construct erosion and sediment control measures in accordance with standards and specifications of the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, DEP Bulletin 34
- D. Install additional control measures to address field conditions, if deemed necessary by the State, or Owner.
- E. Implement and maintain the Erosion and Sediment Control Plan. Inform parties engaged on the construction site of the requirements and objectives of the plan.
- F. Protect catch basins with control structures throughout construction until disturbed areas are stabilized.
  - 1. Remove and dispose of sediment from control structures.
- G. Control dust and prevent wind erosion. Control dust to prevent a hazard to traffic on adjacent roadways.
  - 1. Dust control includes
    - a. Sprinkling of water and uniform application of calcium chloride on exposed soils and haul roads.
    - b. Sweeping paved areas.
    - c. Temporary windbreaks.
    - d. Non-asphaltic soil tackifier.
- H. Do not discharge directly into wetlands or watercourses where dewatering is necessary. Utilize methods and devices as permitted by authorities having jurisdiction and appropriate regulations to minimize and retain suspended solids including pumping water into a temporary sedimentation bowl, providing surge protection at inlet and outlet of pumps, floating pump intake.
  - 1. If pumping operation results in turbidity problems, stop pumping until means of controlling turbidity are determined and implemented.
- I. Where control measures are required for longer than 90 days, use silt fence instead of hay bales.
- J. Cut Areas
  - 1. Establish an erosion control line (haybales or silt fence) at toe of slope in cut areas, and initiate slope stabilization with mulch or grass within 30 days of start of cut operations.
- K. Fill Areas



**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

1. Establish an erosion control line (silt fence or woodchip berm) approximately 10 feet from toe of slope of proposed fill areas prior to beginning fill installation.
  2. Initiate slope stabilization with mulch or grass within 30 days of start of fill operations.
- L. Within 7 days of completing slope construction, stabilize slopes with vegetation or matting to minimize exposure.
- M. Stockpiles
1. Side Slopes: 2:1 maximum.
  2. Surround stockpiles by a sediment barrier.
  3. Stabilize stockpiles left bare for more than 30 days with temporary vegetation or mulch.
- N. Final Grading
1. If final grading is delayed for more than 30 days after land disturbances cease, stabilize soils with temporary vegetation or mulch.
- O. Planting Season for Temporary Vegetation
1. March 1 to June 15 and August 1 to October 1.
  2. After September 15, stabilize areas with haybale check, filter fabric, or woodchip mulch.
- P. Areas to Be Left Bare Prior to Finished Grading and Seeding
1. Within Planting Seasons
  2. Temporarily seed with Perennial Ryegrass
  3. Apply at a rate of 2 pounds per 1000 sq. ft. at a depth of 1/2 inch.
  4. Where grass predominates, fertilize according to a soil test at a minimum application rate of one pound per acre.
  5. Outside of Planting Seasons
  6. Apply air-dried wood chip mulch, free of coarse matter.
  7. Apply at a rate of 185 to 275 pounds per 1000 sq. ft.

### **3.2 Control Systems**

- A. Sedimentation Control Hay Bales
1. Install at locations as shown on the Drawings or where directed by the Engineer. Place hay bales lengthwise with ends tight abutting one another. Install bales with bindings located on the sides.
  2. Entrench bales 4 inches and backfill. Place backfill toward potential silt source.
  3. Secure in place with 2 stakes per bale and insert straw in voids between bales.

### **3.3 Dust Control**

- A. Apply water and calcium chloride uniformly over the surface when dust becomes a nuisance or when directed by the Engineer. Provide shut-off valve in convenient location on water truck, to allow for regulating water flow.

### **3.4 Silt Sack**

- A. Remove catch basin grate, insert silt sack, and secure in place by replacing grate.

**3.5 Erosion Control Matting And Seeding**

- A. Install as indicated on the Drawings and in accordance with the manufacturer's recommendations.

**3.6 Maintenance**

- A. Control Systems
- B. Inspect control system immediately after each rainfall and daily during prolonged rainfall. Make repairs immediately.
- C. Remove and dispose of accumulated sediments when sediment reaches approximately one-third the height of the control system, or when directed by the Engineer.
- D. Replace control system promptly if fabric decomposes or system becomes ineffective prior to the expected usable life.
- E. Maintain or replace system until no longer necessary for the intended purpose.
- F. Silt Sack
  - 1. Inspect after each major precipitation event. Inspect every two weeks if no major rain events have occurred.
  - 2. Remove, clean, and reinstall silt sack when sediment accumulates to half capacity of sack.
- G. Construction Entrance
  - 1. Maintain in good condition throughout construction period.
  - 2. Sweep adjacent roadways daily to remove tracked material from pavement.

**3.7 REMOVAL**

- A. Remove and dispose of control system after area stabilizes with new growth or as directed by the Engineer.

**END OF SECTION**

## **SECTION 033000 - CAST-IN-PLACE CONCRETE**

### **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 cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
  - 1. Footings.
  - 2. Foundation walls.
  - 3. Slabs-on-grade.
  - 4. Suspended slabs.
  - 5. Grouting of base plates.
  - 6. Anchor rod placement.
  - 7. Expansion and adhesive anchors.
- B. Related Sections:
  - 1. Section 312001 "Building Excavation and Backfill" for sub-base under footings.

#### **1.3 DEFINITIONS**

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

#### **1.4 ACTION SUBMITTALS**

- A. General: Submit the following according to Conditions of the Contract and Division 01 Specification Sections.
- B. Product Data: For each type of product indicated, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, epoxy grout, nonshrink grout, and others if requested by the Engineer.
- C. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
  - 1. Field water is not to be added.
  - 2. Admixtures are not to be added in the field.
- D. Submit a written description of cold weather and hot weather protection procedures for review and approval a minimum of 15 days prior to start of Work.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- E. Submit a written description of curing procedures for review and approval a minimum of 15 days prior to start of Work. Description to include curing methods and duration of curing.
- F. Shop drawings shall be reviewed and "checked" by the Fabricator prior to being submitted to the Engineer. Unchecked shop drawings shall be rejected and returned to the Contractor.
- G. Contractor to provide a detailed submittal schedule identifying all submittals and the date they are to be received by BVH Integrated Services, Inc. Submittal schedule is to be submitted two weeks prior to the start of the submittal process and updated every two weeks.
- H. Submit locations of all proposed construction joints in foundation walls, concrete beams, structural slabs, and retaining walls for review and approval a minimum of 15 days prior to start of Work.
- I. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Include special reinforcement required for openings through concrete structures.
  - 1. Submit detailed shop drawings which clearly show location, splicing, cover, sizes, and spacing of all reinforcing and wire fabric. Schedules and diagrams shall indicate bends, sizes, lengths of reinforcing members and splice lengths. All reinforcement in concrete footings, walls and grade beams shall be shown in elevation, 1/8" = 1'-0" scale with top of walls, top of shelves, and bottom of footings clearly indicated and sections indicating bar placement, spacing, size and cover. All construction joints, as required on the Contract Drawings or requested by the Contractor, shall be shown with any additional reinforcement required. Show and locate all concrete openings, including those required for other Divisions. Any drawings submitted without showing construction joints and openings will be rejected and will not be reviewed.
- J. No reinforcing shall be cut, fabricated, shipped to the job site, or placed before shop drawings have been approved by the Engineer of Record. Only shop drawings bearing the appropriate Engineer's stamp marked "Furnished As Submitted" or "Furnished As Corrected" or "Furnished As Corrected and Resubmit For Record" shall be used in the field.
- K. Laboratory test reports for concrete materials and mix design tests.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Welding Certificates: Submit certifications signed by an AWS Certified Welding Inspector of pre-qualified welding procedures, qualifications of welding procedures unless pre-qualified, qualification of welding operators, and qualifications of welders.
- B. Material Certificates: For each of the following, signed by manufacturers:
  - 1. Cementitious materials.
  - 2. Admixtures.
  - 3. Form materials and form-release agents.
  - 4. Steel reinforcement and accessories.
  - 5. Waterstops.
  - 6. Curing compounds.

- 7. Bonding agents.
  - 8. Adhesives.
  - 9. Joint-filler strips.
  - 10. Repair materials.
  - 11. Anchoring adhesive.
- C. Field quality-control reports.
- D. Minutes of preinstallation conference.

## **1.6 QUALITY ASSURANCE**

- A. Codes and Standards: Comply with provisions of the following Codes, Specifications, and Standards, except where more stringent requirements are shown or specified.
- 1. American Concrete Institute (ACI) 301, "Specification for Structural Concrete for Buildings."
  - 2. ACI 318, "Building Code Requirements for Reinforced Concrete."
  - 3. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice."
  - 4. ACI 117, "Specification for Tolerances for Concrete Construction and Materials."
- B. Concrete Testing Service: Engage a testing agency acceptable to Engineer to design concrete mixes to perform material evaluation tests associated with the mix design.
- C. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- D. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- E. Testing Agency Qualifications: Owner will engage an independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
- 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
  - 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- F. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- G. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code - Reinforcing Steel."

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- H. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination," and the following:
1. At least seven days prior to concrete work, conduct a meeting to review detailed requirements for preparing concrete design mixes and to determine procedures for satisfactory concrete operations. Review requirements for submittals, status of coordinating work, and availability of materials. Establish a preliminary work progress schedule and procedures for materials inspection, testing, and certifications. Require representatives of each entity directly concerned with cast-in-place concrete to attend conference, including but not limited to the following:
    - a. Contractor's superintendent.
    - b. Agency responsible for field quality control.
    - c. Ready-mix concrete producer.
    - d. Concrete subcontractor.
    - e. Primary admixture manufacturers.
    - f. Engineer of Record.
    - g. Special Inspector, if applicable.
    - h. Construction Manager's superintendent, if applicable.
  2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semirigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

**1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.
- B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

**1.8 WARRANTY FOR SLAB MOISTURE VAPOR REDUCING ADMIXTURE**

- A. The manufacturer's standard warranty document executed by an authorized company official. The manufacturer's warranty is in addition to, and not a limitation of, other rights the Owner may have under provisions of the Contract Documents.
  1. Warranty Period: Life of concrete commencing on the date of acceptance of the project by the Owner or Notice of Completion.
  2. Warranty Terms: Terms to include moisture related failures, including all finished floor materials and labor.

**PART 2 - PRODUCTS**

**2.1 FORM-FACING MATERIALS**

- A. Forms for Exposed to View Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

1. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
  - a. High-density overlay, Class 1 or better.
- B. Forms for Unexposed to View Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Chamfer Strips: New 45-degree wood, metal, PVC, plastic or rubber strips, 3/4 by 3/4 inch, nailed 6 inches on center, and installed in inside corners of forms.
- D. Form-Release Agent: Commercially formulated form-release agent with a maximum of 350 g/L volatile organic compounds (VOCs) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
  1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- E. Form Ties: Factory-fabricated, adjustable length, removable or snap-off metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
  1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
  2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

## **2.2 STEEL REINFORCEMENT**

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 1064, plain, fabricated from as-drawn steel wire into flat sheets.

## **2.3 REINFORCEMENT ACCESSORIES**

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775/A 775M.
- C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
  1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
  2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

## **2.4 CONCRETE MATERIALS**

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
  - 1. Portland Cement: ASTM C 150, Type I/II.
- B. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.
  - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal, unless otherwise noted.
  - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M and potable.

## **2.5 ADMIXTURES**

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding 0.15 percent by mass of cement material. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
- C. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.
  - 1. Products: Subject to compliance with requirements, provide the following:
    - a. Grace Concrete Products; DCI-S Corrosion Inhibitor.
    - b. BASF Construction Chemicals; RHEOCRETE 222+.
    - c. The Euclid Chemical Company; EUCON CIA.

## **2.6 WATERSTOPS**

- A. Self-Expanding Strip Waterstops: Manufactured rectangular or trapezoidal strip, conformable polyurethane/butyl blended rubber based material free of sodium bentonite, for adhesive bonding to concrete, 1/2 by 1 inch.
  - 1. Products: Subject to compliance with requirements, provide the following:
    - a. Grace; ADCOR ES Hydrophilic Waterstop.
    - b. Sika Corporation; Swellstop.

## **2.7 CURING MATERIALS**

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.



**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: Comply with ASTM C 171, polyethylene film or white burlap-polyethylene sheet or waterproof paper.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating. Moisture loss not more than 0.55 kg/sq. m when applied at 200 sq. ft./gal. Subject to compliance with current US EPA regulations for volatile organic compounds (VOC) emissions and floor finish adhesives.

**2.8 RELATED MATERIALS**

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, 1/2 inch asphalt-saturated cellulosic fiber preformed into strips unless otherwise noted.
- B. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Anchoring Adhesive: ASTM C 881, two-compound material suitable for use on dry or damp surfaces. Epcon G5, as manufactured by ITW Ramset/Red Head; PE 1000, as manufactured by Powers Fasteners; or HIT RE-500-V3 as manufactured by HILTI. Holes shall be drilled with a rotary hammer drill and carbide-tipped drill bit.
- D. Nonmetallic, Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, Portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, comply with ASTM C 1107, of consistency suitable for application, 30-minute working time, and a seven-day compressive strength of 6,000 psi for a mixture with a "flowable" consistency, defined as 140 percent flow on flow table, ASTM C230, five drops in three seconds.

**2.9 CONCRETE MIXTURES, GENERAL**

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
  - 1. Use a qualified independent testing agency acceptable to the Engineer of Record for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Submit written reports including all statistical data to the Engineer of each proposed mix for each class of concrete at least 15 days prior to start of Work. Do not begin concrete production until proposed mix designs have been approved by the Engineer.
- C. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

- E. Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing or high-range water-reducing admixture in concrete, as required, for placement and workability.
  - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
  - 3. Use corrosion-inhibiting admixture at the dosage of three gallons per cubic yard, in concrete mixtures where indicated.
  
- F. Add air-entraining admixture where specified at manufacturer's prescribed rate to result in concrete at point of placement and having total air content with a tolerance of plus or minus 1-1/2 percent of the value indicated.
  
- G. Use admixtures for water reduction and set accelerating or retarding in strict compliance with manufacturer's directions.

## **2.10 CONCRETE MIXTURES**

- A. Design mixes to provide concrete with the following properties:
  - 1. Concrete for footings, foundations, piers, exterior slabs-on-grade, and walls to be normal weight concrete with a 4,500 psi, 28-day minimum compressive strength; water-cement ratio 0.45 maximum (water content shall include surface water in aggregates); minimum cement content of 6 sacks per cubic yard, maximum 3/4 inch aggregate, four plus or minus 1 inch slump; 6 percent air content by volume. Concrete shall contain a non-set-accelerating corrosion-inhibiting admixture
  
- B. If mixes are to be pumped, allowable slump can be increased to six plus or minus 1 inch. Submit separate mix designs, including all backup data, for each pump mix for approval by the Engineer.
  
- C. Adjustments to Concrete Mixes: Field water is not to be added. Mix design adjustments may be requested by the Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by the Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by the Engineer before using in Work.

## **2.11 FABRICATING REINFORCEMENT**

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## **2.12 CONCRETE MIXING**

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116/C 1116M, and furnish batch ticket information.
  - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

### **PART 3 - EXECUTION**

#### **3.1 GENERAL**

- A. Coordinate the installation of joint materials, vapor retarder, embedded items, anchor bolts and other related materials with placement of forms and reinforcing steel.
- B. Thoroughly clean forms, metal deck and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, welding ferrules and/or other debris just before placing concrete.

#### **3.2 FORMWORK**

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
  - 1. Class A, 1/8 inch, tolerances for concrete surfaces exposed to view.
  - 2. Class C, 1/2 inch, tolerances for other concrete surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
  - 1. Install keyways, reglets, recesses, and the like, for easy removal.
  - 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of exposed concrete, and where indicated on Contract Documents to produce uniform smooth lines and tight edge joints.
- I. Form openings, offsets, keyways, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items. Accurately place and securely support items built into forms.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
- M. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed.

### **3.3 EMBEDDED ITEMS**

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

### **3.4 REMOVING AND REUSING FORMS**

- A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the Work may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
  - 1. Formwork to remain in place for a minimum of 14 days.
  - 2. Determine compressive strength of in-place concrete by testing field cured test specimens representative of concrete location or members according to ACI 301.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect and Engineer.

### **3.5 STEEL REINFORCEMENT**

- A. General: Comply with CRSI's "Manual of Standard Practice" for details and methods of reinforcement placement and supports and as specified.
  - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover as indicated for in ACI 318. Do not tack weld crossing reinforcing bars.
  - 1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.

### **3.6 JOINTS**

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.
  - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated.
  - 2. Provide formed keyways at least 1-1/2 inches deep by one-third the wall thickness in width in construction joints in walls, and between walls and footings.
  - 3. Locate horizontal joints in walls and columns as indicated on the Drawings or as approved by the Engineer.
  - 4. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

### **3.7 WATERSTOPS**

- A. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

### **3.8 CONCRETE PLACEMENT**

- A. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.
- B. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed. Notify other trades to permit installation of their work.
- C. Do not add water to concrete during delivery, at Project site, or during placement.
- D. Deposit concrete continuously in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
- E. Deposit concrete in forms in horizontal layers no deeper than 48 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic, to avoid cold joints.
  - 1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints and segregation.
  - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set and lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  2. Maintain reinforcement in position on chairs during concrete placement.
  3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  4. Slope surfaces uniformly to drains where required.
  5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- G. Cold Weather Placement: Cold weather is defined as a period when for more than three consecutive days the average daily temperature is less than 40 deg. F and the air temperature is not greater than 50 deg. F for more than one-half of any 24-hour period. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures. Comply with ACI 306.1 and as indicated:
1. When air temperature has fallen to or is expected to fall below 40 deg. F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg. F and not more than 80 deg. F at point of placement.
  2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
  3. Do not use calcium chloride, salt, or other materials containing antifreeze agent or chemical.
  4. Slabs-on-Grade (Slab Depth Less Than 10 Inches):
    - a. Concrete operations for slabs indicated above are to take place within a heated enclosure where the air temperature is maintained between 50 deg. F and 85 deg. F for a minimum of 24 hours prior to concrete placement and 72 hours after concrete placement. Ground surface is to be free of frost or frozen materials for slabs-on-grade.
  5. Formed Footings, Walls and Piers: The protection means listed below are guidelines only. It is the Contractor's responsibility to provide any and all additional measures necessary to maintain the concrete between 50 deg. F and 85 deg. F for the time period indicated below and comply with ACI 306.1.
    - a. Elements with a minimum dimension up to 16 inches are to be protected by the formwork (3/4-inch plywood minimum) and mineral wool blankets (minimum R value of 8.0) for formed and unformed surfaces for 72 hours. If the air temperature is expected to go below 0 deg. F, then a heated enclosure is required.
    - b. Elements with a minimum dimension above 16 inches to 22 inches are to be protected by the formwork (3/4-inch plywood minimum) and mineral wool blankets (minimum R value of 8.0) for formed and unformed surfaces for 72 hours. If the air temperature is expected to go below -29 deg. F, then a heated enclosure is required.

- c. Elements with a minimum dimension above 22 inches to 34 inches are to be protected by the formwork (3/4-inch plywood minimum) and mineral wool blankets (minimum R value of 8.0) for formed and unformed surfaces for 72 hours.
  - d. Elements with a minimum dimension above 34 inches are to be protected by the formwork (3/4-inch plywood minimum) and mineral wool blankets (minimum R value of 8.0) for formed and unformed surfaces for 72 hours.
6. The Subcontractor and the Inspection Agency are each to maintain independent records of the following information during cold weather:
- a. For each section of concrete placed, record the date, time, outside air temperature, enclosure temperature, temperature of concrete during placement, weather conditions, and methods used to protect the concrete.
  - b. For each section of concrete placed, record the maximum and minimum temperature in each 24-hour period for 72 hours after the concrete is placed. Temperature readings are to be taken at the concrete surface or at three-inch-deep probes into the concrete. A minimum of one thermometer shall be provided at each spread footing or pier placed and a minimum of three thermometers provided for each 60-ft. section of wall or wall footing placed. For walls greater than 10 ft. in height, provide two thermometers at the top of the wall (surface-mounted or probes) and one thermometer within 2 ft. of the base of the wall (probe at formed surface) per each 60-ft. length of wall. Temperature readings are to represent the severe conditions. Corners and edges of concrete are the most vulnerable to freezing and are to be considered the severe condition.
- H. Hot Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot weather conditions exist. Hot weather is any combination of high ambient temperature, high concrete temperature, low relative humidity, wind speed, or solar radiation that will impair the quality of freshly mixed or hardened concrete by accelerating the rate of moisture loss and rate of cement hydration.
- 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg. F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  - 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
  - 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.
  - 4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to the Engineer.

### **3.9 FINISHING FORMED SURFACES**

- A. Rough-Formed Finish: Provide a formed finish on formed concrete surfaces not exposed to view or concealed by other construction. Tie holes and defective areas are to be repaired and patched, and fins and other projections exceeding 1/4-inch in height rubbed down or chipped off.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove and smooth fins and other projections completely.

1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
1. Smooth-Rubbed Finish: Provide smooth-rubbed finish on schedule concrete surfaces that have received smooth-formed finish treatment. Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

### **3.10 MISCELLANEOUS CONCRETE ITEMS**

- A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

### **3.11 CONCRETE PROTECTING AND CURING**

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Keep continuously cured for not less than seven days.
- C. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- D. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure if forms are loosened. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- E. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.



- F. Concrete slabs receiving moisture sensitive flooring or roofing materials shall not be moisture cured. Cure concrete according to ACI 308.1 and ACI 302.2, by one or a combination of the following methods:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
    - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
    - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
    - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
  3. Curing Compound:
    - a. Apply curing compound to concrete surfaces as soon as final finishing operations are complete (within two hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller according to manufacturer's directions. Recoat areas subject to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
    - b. Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete. Verify compatibility with floor finish supplier/manufacturer.
- G. Cure all grout in accordance with the manufacturer's requirements.

### **3.12 JOINT FILLING**

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

### **3.13 CONCRETE SURFACE REPAIRS**

- A. Patching Defective Concrete: Repair and patch defective areas immediately after removing forms when approved by Architect/Engineer. Remove and replace concrete that cannot be repaired and patched to Architect's/Engineer's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Remove and replace concrete having defective surfaces if defects cannot be repaired to the satisfaction of the Engineer.
1. Immediately after form removal, cut out honeycombs, rock pockets, holes left by tie rods and bolts, and voids more than 1/4 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
  2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
  3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect/Engineer. If defects cannot be repaired to the satisfaction of the Engineer, remove and replace the concrete.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
  2. After concrete has cured at least 14 days, correct high areas by grinding.
  3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
  4. Correct other low areas scheduled to receive floor coverings with a repair underlayment when acceptable to the Engineer/Architect. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
  5. Correct other low areas scheduled to remain exposed with a repair topping when acceptable to the Engineer. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
  6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
  7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar when acceptable to the Engineer. Groove top of cracks and cut out holes to sound

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

- E. Perform structural repairs of concrete, subject to Architect's/Engineer's approval for method and procedure, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's/Engineer's approval.

**3.14 ADHESIVE ANCHORING**

- A. All adhesive anchoring to be performed in accordance with the manufacturer's recommendations.
- B. Drill appropriate sized hole to the required depth with rotary hammer drill and carbide drill bit.
- C. Clean hole of all dust, debris and standing water with a nylon brush and compressed air.
- D. Prepare adhesive in accordance with the manufacturer's requirements and follow required procedures for placement during cold weather applications.
- E. Check initial adhesive color with provided color chart.
- F. Inject adhesive into base of hole. Provide dosage control screens for overhead applications.
- G. Install threaded anchor or reinforcing. Adhesive is to coat the entire length of hole and insert.
- H. All adhesive to set prior to disturbing insert.

**3.15 ANCHOR ROD PLACEMENT**

- A. All anchor rods placed in new concrete are to be set using a plywood or steel template to secure the anchor rods in their proper location and elevation.
  - 1. Secure template to formwork to ensure proper alignment.
  - 2. Anchor rods to be secured in place prior to start of concreting.
  - 3. Contractor's option to provide plastic anchor rod sleeves to allow for minor adjustments of anchor rod locations. Sleeves are to be fully grouted with non-shrink grout prior to grouting of leveling or base plates.
  - 4. Non-shrink grout to be installed and attain the required 7-day design strength at all locations of base plates with leveling nuts prior to the placement of supported structural slabs.
- B. All anchor rods and epoxy grouted reinforcing placed in existing concrete are to be set in epoxy grout for the entire length of required embedment.
  - 1. Hole in existing concrete to be sized, drilled, cleaned and prepared in accordance with the epoxy grout supplier's requirements.
  - 2. Epoxy grout is to be installed per manufacturer's requirements. Maintain temperature of grout to required levels during cold weather.

- C. An anchor rod is considered out of tolerance if the non-adjusted, cast plan location is not within 1/4-inch of the required plan location, and if the anchor rod projection is not within 1/2-inch the required projection. Anchor rods that are considered out of tolerance are rejected and are to be repaired and/or replaced as required by the Engineer at no cost to the Owner.
- D. All anchor rods that have been repaired or modified are to be load tested as directed by the Engineer of Record. Owner's testing lab to perform load test as directed by the Engineer of Record. Contractor to pay for all costs associated with load testing. Contractor is also responsible for all costs associated with additional repairs including design services of the Engineer of Record if load test fails.

### **3.16 PLACEMENT OF NON-SHRINK GROUT**

- A. Non-shrink grout beneath base plates and bearing plates is to be formed and placed as a flowable mix.
- B. All manufacturer's requirements for mixing, placement, cold/hot weather requirements, surface preparation, curing and protection are to be followed.

### **3.17 FIELD QUALITY CONTROL**

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
  - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete, plus one set for each additional 50 cu. yd. or fraction thereof.
    - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
  - 2. The Contractor shall notify the Owner's inspection agency 24 hours prior to placing concrete to inspect secured reinforcing. No concrete shall be placed until reinforcing has been inspected by the Owner's testing and inspection agency.
  - 3. When concrete is pumped, test cylinders shall be made from concrete taken at discharge end of the pumping train.
  - 4. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
  - 5. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample at point of placement, but not less than one test for each day's pour of each concrete mixture. First truck to be tested of each placement. If first truck does not meet project requirements, test each additional truckload until two passing results are obtained.
  - 6. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
  - 7. Compression Test Specimens: ASTM C 31/C 31M.
    - a. Cast and laboratory cure one set of four standard cylinder specimens for each composite sample, unless otherwise directed.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- b. Provide one set of field cured cylinders for each concrete type for any days that are less than or expected to be less than 40 deg. F within 24 hours after concrete placement. Field-cured cylinders to be cured under the same conditions and temperatures as the cast-in-place concrete.
  8. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at 7 days and two specimens at 28 days, and one specimen retained in reserve for later testing if required.
    - a. Test field-cured specimens as indicated for laboratory-cured specimens.
  9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
  10. Strength of each concrete mixture will be considered satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
  11. Test results shall be reported in writing to Structural Engineer, Architect, concrete manufacturer, and Contractor within 24 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
  12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.
  13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Engineer.
  14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
  15. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- C. Inspection of Adhesive Anchoring:
1. Testing agency shall randomly review anchoring procedures to verify conformance with manufacturer's installation requirements. Witness approximately 25 percent of total. The percentage of adhesive anchoring witnessed may be modified by the Structural Engineer of Record, depending upon initial results.
- D. Sampling and Testing of Non-Shrink Grout:
1. Owner's testing agency is to cast one set of six (6) 2" x 2" cubes of grout for each 10 cu. ft. of grout or fraction thereof for each day's grouting. Test two cubes at seven days, two cubes at 28 days, with two cubes retained in reserve for later testing if required. If test results for any strength test are below the required strength, the grout is rejected and is to be replaced at no cost to the Owner.
  2. Sampling, curing, and testing to be in conformance with ASTM C 1107. Molds utilized shall be made of brass or steel.
  3. Testing agency is to note the location of all grouted plates represented by each set of grout cylinders.

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

4. The contractor shall notify the Owner's testing agency laboratory 24 hours before grout placement and shall cooperate in the making of cylinders by the testing laboratory.

**END OF SECTION**

03/07/2018

## **SECTION 051200 - STRUCTURAL STEEL FRAMING**

### **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. Structural steel.
- B. Related Sections:
  - 1. Section 014000 "Quality Requirements" for independent testing agency procedures and administrative requirements.
  - 2. Section 033000 "Cast-In-Place Concrete" for materials and installation of expansion and adhesive anchors.
  - 3. Section 055116 "Metal Stairs."
  - 4. Section 057300 "Decorative Metal Railings."

#### **1.3 DEFINITIONS**

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC's "Code of Standard Practice for Steel Buildings and Bridges," unless otherwise noted.

#### **1.4 PERFORMANCE REQUIREMENTS**

- A. Connections: Provide details of connections required by the Contract Documents to be selected or completed by structural-steel fabricator, including comprehensive engineering analysis by a qualified professional engineer, to withstand loads indicated and comply with other information and restrictions indicated.
  - 1. Select and complete connections using schematic details indicated and Specification for Structural Steel Buildings.
  - 2. Use ASD; data are given at service-load level.
- B. Moment Connections: Type FR, fully restrained.

#### **1.5 ACTION SUBMITTALS**

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Shop drawings shall be reviewed and "checked" by the Fabricator prior to being submitted to the Engineer. Unchecked shop drawings shall be rejected and returned to the Contractor.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- C. Contractor to provide a detailed submittal schedule identifying all submittals and the date they are to be received by BVH Integrated Services, P.C. Submittal schedule to be submitted two weeks prior to the start of the submittal process and updated every two weeks.
- D. Product Data: For each type of product indicated.
- E. Applicable shop standards for the following:
  - 1. All gravity connection details with capacities.
  - 2. Moment connection details.
- F. Sample calculations for the following:
  - 1. Simple shear connections including seated connections and skewed connections shall include checks for bolt shear, block shear, web bearing, shear on net section of connection material, bending on net section of connection material, and weld stress as applicable.
  - 2. Moment connections including checks for weld strength, column web shear, local web yielding, compression web buckling, web crippling, and local flange bending as applicable.
  - 3. Other design calculations for connections, as requested by the Engineer.
  - 4. The above referenced standards and calculations must be submitted and approved at least two weeks prior to submitting detailed shop drawings. Shop drawings will not be reviewed until standards and calculations have been approved.
- G. Shop Drawings: Show fabrication of structural-steel components.
  - 1. Erection drawings showing weights and locations of all structural steel members shall be submitted for review prior to the submission of detail drawings. These erection drawings shall include large scale sections through all conditions to indicated suspended lintels, braces and field welding. No detail drawings shall be submitted prior to the review of shop standards and erection drawings.
  - 2. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
  - 3. Include embedment drawings.
  - 4. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
  - 5. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
  - 6. For structural-steel connections indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- H. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint qualified by testing, including the following:
  - 1. Power source (constant current or constant voltage).
  - 2. Electrode manufacturer and trade name, for demand critical welds.
- I. Fabricator Certificate of Compliance: At the completion of fabrication, the certified fabricator shall submit a Certificate of Compliance to the Building Official stating that the work was performed in accordance with the approved Construction Documents.



**1.6 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For qualified firms and persons specified in the "Quality Assurance" article who demonstrated their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Architects and Owners, and other information specified.
- B. Welding certificates.
- C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- D. Mill test reports for structural steel, including chemical and physical properties.
- E. Product Test Reports: For the following:
  - 1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
  - 2. Direct-tension indicators.
  - 3. Tension-control, high-strength bolt-nut-washer assemblies.
- F. Product Literature for Factory-Applied Metal Coatings: Submit galvanizer's product data sheets for coatings specified in this Section including physical performance test data.

**1.7 QUALITY ASSURANCE**

- A. No fabrication is to proceed until the Testing Agency has visited the fabrication plant and coordinated all testing and inspection requirements with the fabrication schedule. A minimum of seven days prior to the start of fabrication, the Fabricator is to provide written notice to the Engineer of Record and the Owner's Testing Agency indicating the date fabrication procedures will start. Any fabrication that occurs prior to the coordination visit will be rejected at no cost to the Owner.
- B. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.
- C. Detailer Qualifications: A qualified detailer with a minimum of five years experience in structural steel detailing of similar projects.
- D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  - 1. Present evidence that each welder has satisfactorily passed AWS qualification tests for welded processes involved, and if pertinent, has undergone recertification.
- E. Galvanizer's Qualifications: Engage the services of a qualified galvanizer who has demonstrated a minimum of ten years experience in the successful application of galvanized coatings specified in this section.
- F. Comply with applicable provisions of the following specifications and documents:
  - 1. AISC 303.
  - 2. AISC 341 and AISC 341s1.
  - 3. AISC 360.

4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

G. Preinstallation Conference: Conduct conference at Project site.

## **1.8 DELIVERY, STORAGE, AND HANDLING**

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.

2. Clean and relubricate bolts and nuts that become dry or rusty before use.

3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

## **1.9 COORDINATION**

A. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

## **PART 2 - PRODUCTS**

### **2.1 STRUCTURAL-STEEL MATERIALS**

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. W-Shapes: ASTM A 992/A 992M

C. Channels, Angles Shapes: ASTM A 36/A 36M

D. Plate and Bar: ASTM A 36/A 36M

E. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade [C], structural tubing.

F. Steel Pipe: ASTM A 53, Type E or S, Grade B.

1. Weight Class: As indicated.

2. Finish: As indicated.

G. Welding Electrodes: Comply with AWS requirements.

## **2.2 BOLTS, CONNECTORS, AND ANCHORS**

- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.
  - 1. Galvanized Finish: Hot-dip zinc-coating, ASTM A 153. Class C, where indicated. Retap nuts in accordance with ASTM A385.
  
- B. High-Strength Bolts, Nuts, and Washers: ASTM A 490, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers with plain finish.
  - 1. Galvanized Finish: Hot-dip zinc-coating, ASTM A 153. Class C, where indicated. Retap nuts in accordance with ASTM A 385.
  
- C. Unheaded Anchor Rods: ASTM F 1554.
  - 1. Configuration: As indicated.
  - 2. Grade: As indicated.
  - 3. Nuts: ASTM A 563 hex carbon steel.
  - 4. Plate Washers: ASTM A 36 carbon steel.
  - 5. Washers: ASTM F 436, Type 1, hardened carbon steel.
  - 6. Finish: Plain.
  - 7. Galvanized Finish: Hot-dip zinc-coating, ASTM A 153. Class C, where indicated. Retap nuts in accordance with ASTM A 385.
  
- D. Threaded Rods: ASTM A 36.
  - 1. Nuts: ASTM A 563 hex carbon steel.
  - 2. Washers: ASTM F 436, Type 1, hardened carbon steel.
  - 3. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C

## **2.3 FABRICATION**

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Steel Buildings."
  - 1. Camber structural-steel members where indicated.
  - 2. Fabricate beams with rolling camber up.
  - 3. Identify high-strength structural steel according to ASTM A 6 and maintain markings until structural steel has been erected.
  - 4. Mark and match-mark materials for field assembly.
  - 5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
  
- B. Architecturally Exposed Structural Steel: All structural steel exposed to the view of the building's occupants or the general public in the finished structure shall be considered "Architecturally Exposed Structural Steel," unless otherwise noted and shall comply with Section 10 of the AISC's "Code of Standard Practice."
  - 1. Comply with fabrication requirements, including tolerance limits of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for structural steel identified as architecturally exposed structural steel.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

2. Fabricate with exposed surfaces smooth, square, and free of surface blemishes including pitting, rust, scale, seam marks, roller marks, rolled trade names, and roughness.
  3. Remove blemishes by filling or grinding, or by welding and grinding, before cleaning, treating, and shop priming.
  4. Where welding is noted on the drawings, provide welds of a uniform size and profile.
  5. At locations where welding is on the far side of and an exposed connection occurs, grind distortion and marking of the steel to a smooth profile with adjacent material.
  6. Seal weld open ends of round and rectangular hollow structural sections with 1/4" closure plates. Provide continuous, sealed welds at brace to gusset-plate connections.
- C. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.
- D. Bolt Holes: Drill or punch standard bolt holes perpendicular to metal surfaces.
- E. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- F. Cleaning: Clean and prepare steel surfaces according to SSPC-SP 6, "Commercial Blast-Cleaning."
- G. Holes: Provide holes required for securing other work to structural steel.
1. Drill or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
  2. Baseplate Holes: Drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
  3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

## **2.4 SHOP CONNECTIONS**

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
1. Joint Type: Snug tightened.
- B. Design of end connections shall be in accordance with the AISC's "Manual of Steel Construction." Field connections may be bolted using 3/4-inch diameter bolts minimum, except where noted welded. A minimum of two bolts per member connection is required.
- C. Beam end connections shall be selected and detailed for 1.25 times the reactions indicated. A minimum connection capacity of 6k shall be provided. Reactions governed by the 6k minimum are designated as such on plan, and need not be increased by the factor of 1.25. For the purpose of bidding only, connections where no end reactions are indicated may be estimated for reaction equal to one-half the allowable uniform load for the beam span. Connections for composite beams with no end reaction indicated may be estimated for 1.5 times one-half the allowable uniform load for the beam span. For design purposes, the Fabricator shall submit a RFI to the Engineer to request values for any reactions that are not indicated.
- D. Connections shall be consistent with Type 2 construction as described in the AISC Specifications, unless otherwise indicated on the Structural Drawings.

- E. All column ends scheduled to receive cap and base plates shall be milled or sawn to ensure full bearing. All surfaces to be welded shall be free from loose scale, rust, grease, paint or other foreign material, except that mill scale which resists vigorous brushing may remain. Joint surfaces shall be free from fins or tears.
- F. Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
  - 1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

## **2.5 FACTORY APPLIED FINISH COATINGS**

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123. All zinc material shall meet the chemical requirements for High Grade Zinc according to ASTM B6.
  - 1. Provide thickness of galvanizing specified in referenced standards.
  - 2. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes, by plugging with zinc solder and filing off smooth.
  - 3. Galvanizing shall exhibit a rugosity (smoothness) of less than 25 microns when measured by a profilometer.
- B. Primer over Galvanized Steel: Provide factory-applied polyamide epoxy prime coat over hot-dipped galvanized steel.
  - 1. Primer shall be certified OTC/VOC compliant at less than 2.8 lbs/gal. and conform to EPS and local requirements.
  - 2. Apply primer within 12 hours after galvanizing or blasting at the same galvanizer's plant in a controlled environment meeting applicable environmental conditions and as recommended by the primer coating manufacturer. Primer shall have a one year re-coat window for application of finish coat.
  - 3. Polyamide epoxy primer shall be applied at 4-6 mils DFT and meet or exceed the following performance criteria as stipulated by the coatings manufacturer:
    - a. Abrasion Resistance: ASTM D 4060 (CS17 Wheel, 1,000 grams load) 1kg load, 200 mg loss.
    - b. Adhesion: ASTM D 4541, 1050 psi.
    - c. Corrosion Weathering: ASTM D 5894, 13 cycles, 4,368 hours, 10 per ASTM D 714 for blistering; 7 per ASTM D 610 for rusting.
    - d. Direct Impact Resistance: ASTM D 2794, 160 in. lbs.
    - e. Flexibility: ASTM D 522, 180 degrees bend, 1 inch mandrel, Passes.
    - f. Pencil Hardness: ASTM D 3363, 3H.
    - g. Moisture Condensation Resistance: ASTM D 4585, 100 degrees F, 2000 hours, Passes no cracking or delamination.
    - h. Dry Heat Resistance: ASTM D 2485, 250 degrees F.
    - i. Accelerated Weathering: QUV-ASTM D 4587 QUV A 500 Hours Passes.
    - j. Salt Fog Resistance: ASTM B 117, 5,600 hours, No cracking or blisters.
- C. Topcoat: Provide factory applied aliphatic acrylic urethane topcoat in specified color and gloss rater per approved samples.
  - 1. Topcoat shall be certified OTC/VOC compliant at less than 2.8 lbs/gal. and conform to EPA and local requirements.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

2. Topcoat shall be applied over primer per the manufacturer's recoat schedule at the same galvanizer's plant in a controlled environment meeting applicable environmental conditions as recommended by the coating manufacturer.
  3. Apliphatic acrylic urethane topcoat shall be applied at 6.6 mils DFT and meet or exceed the following performance criteria as stipulated by the coatings manufacturer:
    - a. Abrasion Resistance: ASTM D 4060 CS17 Wheel, 1,000 cycles 1kg load, 97.1 mg loss.
    - b. Adhesion: ASTM D 4541, 1050 psi.
    - c. Direct Impact Resistance: ASTM D 2794, greater than 28 in. lbs.
    - d. Dry Heat Resistance: ASTM D 2485, 200 degrees F.
    - e. Salt Fog Resistance: ASTM B 117, 9,000 hours, Rating 10 per ASTM D 714 for blistering, Rating 9 per ASTM D 610 for rusting.
    - f. Flexibility: ASTM D 522, 180 degrees bend, 1/8 inch mandrel, Passes.
    - g. Pencil Hardness: ASTM D 3363, F.
    - h. Moisture Condensation Resistance: ASTM D 4585, 100 degrees F, 1000 hours, No blistering or delamination.
    - i. Corrosion Weathering: ASTM D 5894, 21 Cycles, 7056 Hours: Rating 10 per ASTM D714 for blistering. Rating 9 per ASTM D 610 for rusting.
    - j. Thermal Shock: ASTM D 2246, 15 cycles, Excellent.
- D. Warranty: Provide galvanizer's standard warranty that materials will be free from visible rust for 20 years.

## **2.6 SOURCE QUALITY CONTROL**

- A. Testing Agency: Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
  1. Testing agency will conduct and interpret tests and state in each report whether test specimens comply with or deviate from requirements.
  2. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Additional testing, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.
- D. Shop Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- E. Shop Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1.
- F. Shop-welded connections will be tested and inspected according to AWS D1.1 and the inspection procedures listed below:
  1. Inspect and test shop fillet welds as follows:
    - a. Visually inspect 100 percent of all fillet welds prior to the application of a shop primer.

- b. Witness the actual welding procedures and perform magnetic particle tests on a minimum of 5 percent of fillet welds.
  - c. Witness the actual welding procedures of all multi-pass fillet welds and single pass fillet welds greater than 5/16 inch.
  - d. Welds that do not pass visual inspection are to be tested again using either magnetic particle or dye penetration test methods.
2. Witness the welding procedure and perform ultrasonic testing (ASTM E 164) on 100 percent of all full and partial penetration welds.
- G. In addition to visual inspection, shop-welded shear connectors will be tested and inspected according to requirements in AWS D1.1 for stud welding and as follows:
- 1. Bend tests will be performed if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
  - 2. Tests will be conducted on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Before details proceed, verify the existing elevations, locations and dimensions required.
- B. Before erection proceeds, verify, with steel Erector present, elevations of concrete bearing surfaces and locations of anchor rods and other embedments for compliance with requirements.
  - 1. Prepare a certified survey of bearing surfaces, anchor rods, and other embedments showing dimensions, locations, angles, and elevations.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

#### **3.3 ERECTION**

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC's "Code of Standard Practice" and AISC's "Specification for Structural Steel Buildings."
- B. Base Bearing and Leveling Plates: Clean concrete-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
  - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
  - 2. Weld plate washers to top of baseplate.
  - 3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."
- D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
  - 1. Level and plumb individual members of structure.
  - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- E. Splice members where indicated and as required to comply with OSHA requirements.
- F. Do not use thermal cutting during erection.
- G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
- H. The Contractor shall accept full responsibility for design strength, safety and adequacy of all temporary bracing and sequencing of structural steel erection to brace the structure. Provide all temporary braces, guys, connections and work platforms required to safely resist all loads, including storms, to which the structure may be subjected.
- I. The Contractor shall guy, plumb and align framing in accordance with limits defined in the AISC's "Code of Standard Practice."
- J. Any corrections required in the field to make members fit shall be brought to the attention of the Engineer for approval.

### **3.4 FIELD CONNECTIONS**

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
  - 1. Joint Type: Snug tightened.
- B. Design and end connections shall be in accordance with the AISC's "Manual of Steel Construction." A minimum of two bolts per member connection is required. Field connections may be bolted using 3/4 inch diameter bolts minimum, except where noted welded.
- C. Beam end connections shall be selected and detailed for 1.25 times the reactions indicated. A minimum connection capacity of 6k shall be provided. Reactions governed by the 6k minimum are designated as such on plans, and need not be increased by the factor of 1.25. For the purpose of bidding only, connections where no end reactions are indicated may be estimated for a reaction equal to one-half the allowable uniform load for the beam span. Connections for composite beams with no end reaction indicated may be estimated for 1.5 times one-half the allowable uniform load for the beam span. For design purposes, the Fabricator shall submit a RFI to the Engineer to request values for any reactions that are not indicated.



**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- D. Connections shall be consistent with Type 2 construction as described in the AISC Specifications, unless otherwise indicated on the Structural Drawings.
- E. Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
  - 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
  - 2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.
  - 3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

### **3.5 APPLICATION OF FACTORY-APPLIED METAL COATINGS**

- A. Galvanizing Application: Galvanize materials in accordance with specified standards and this specification. Galvanizing shall provide an acceptable substrate for applied coatings. The dry kettle process shall be used to eliminate any flux inclusions on the surface of the galvanized material.
- B. Prior to galvanizing, the steel shall be immersed in a pre-flux solution (zinc ammonium chloride). The pre-flux tank must be 12 to 14 Baume density and contain less than 0.4 percent iron. Use of the wet kettle process is not acceptable. To provide the galvanized surface required, the following procedures shall be implemented:
  - 1. A monitoring recorder shall be utilized and inspected regularly to observe any variances in the galvanizing bath temperature.
  - 2. The pickling tanks shall contain hydrochloric acid with an iron content less than 8 percent and zinc content less than 3 percent. Titrations shall be taken weekly at a minimum.
  - 3. All chemicals and zinc shall be tested at least once a week to determine compliance with ASTM standards. All testing shall be done using atomic absorption spectrometry or x-ray fluorescence (XRF) equipment at a lab in the galvanizing plant.
- C. Finish coatings shall be applied under the following conditions:
  - 1. Minimum air temperature shall be 50 degrees F. Surface temperature of steel shall be 50 degrees to 120 degrees F and, in any event, be 5 degrees F higher than the dew point. Humidity shall be 85 percent maximum.
  - 2. The use of iron, steel shot, and aluminum oxide grid as a blast medium, and power wire brushes are not permitted.
  - 3. Surface of substrate shall be dry and free from dust, dirt, oil, grease, or other contaminants. Coating and cure facility shall be maintained free of airborne dust and dirt until coatings are completely cured.

### **3.6 FIELD QUALITY CONTROL**

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field inspections and tests and to prepare test reports.
- B. Correct deficiencies in or remove and replace structural steel that inspections and test reports indicate do not comply with specified requirements.

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

- C. Additional testing, at Contractor's expense, will be performed to determine compliance of correct work with specified requirements.
- D. Bolted Connections: Bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- E. Welded Connections: Field welds will be visually inspected according to AWS D1.1 and the inspection procedures listed below:
  - 1. Inspect and test field fillet welds as follows:
    - a. Visually inspect 100 percent of all fillet welds.
    - b. Witness the actual welding procedures and perform magnetic particle test on a minimum of 15 percent of all fillet welds.
    - c. Witness the actual welding procedures of all multi-pass fillet welds and single pass fillet welds greater than 5/16 inch.
    - d. Welds that do not pass visual inspection are to be tested again using either magnetic particle or dye penetration test methods.
  - 2. Witness the welding procedures and perform ultrasonic testing (ASTM E 164) on 100 percent of all full and partial penetration welds.
- F. The Fabricator and Erector are to provide the testing and inspection agency and the Special Inspector safe access to the site throughout the duration of the steel erection. The Fabricator is to notify the testing agency and the Special Inspector a minimum of 48 hours prior to the start of erection.
- G. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

### **3.7 REPAIRS AND PROTECTION**

- A. Touch-Up and Repair: for damaged and field-welded metal coated surfaces, clean welds, bolted connections, and abraded areas.
  - 1. For galvanized surfaces, apply organic zinc repair paint complying with the requirements of ASTM A 780, modified to 95 percent zinc in dry film. Galvanizing repair paint shall have 85 percent zinc by weight. Thickness of applied galvanizing repair paint shall be not less than the coating thickness required by ASTM A 123 or A 153 as applicable. Touch-up of galvanized surfaces with silver paint, brite paint, or aluminum paints is not acceptable.
  - 2. For factory-applied finish coatings, field-touch-up shall be performed by factory approved personnel. Touch-up shall be such that repair is not visible from a distance of 6 feet. A touch-up repair kit and touchup instructions shall be provided to the Owner for each type of factory-applied finish upon request.
- B. Installation of Factory-Coated Structural steel: Comply with fabricator's and galvanizer's requirements for installation of materials and fabrications, including use of nylon slings or padded cables for handling factory-coated materials.

**END OF SECTION**

03/07/2018

## **SECTION 053100 - STEEL DECKING**

### **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. Roof deck.
  - 2. Welds and mechanical fastener types, sizes and patterns.
- B. Related Requirements:
  - 1. Section 033000 "Cast-in-Place Concrete" for normal-weight and lightweight structural concrete fill over steel deck.
  - 2. Section 051200 "Structural Steel Framing" for shop- and field-welded shear connectors and for framing deck openings with miscellaneous steel shapes.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of deck, accessory, and product indicated.
- B. Show drawings shall be reviewed and "checked" by the Fabricator prior to being submitted to the Engineer. Unchecked shop drawings shall be rejected and return to the Contractor.
- C. Contractor is to provide a detailed submittal schedule identifying all submittals and the date they are to be received by BVH Integrated Services, P.C. A submittal schedule is to be submitted two weeks prior to the start of the submittal process and updated every two weeks.
- D. Shop Drawings:
  - 1. Include layout and types of deck panels, clearly indicate span condition, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Product Certificates: For each type of steel deck.
- C. Evaluation Reports: Evidence of steel deck compliance with building code in effect for project, from a model code organization acceptable to authorities having jurisdiction.
- D. Field quality-control reports.

## **1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: An experienced installer who has completed steel deck 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.
- B. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."
- D. Direct fastening powder-actuated system operators shall be trained and licensed by a manufacturer's representative. When requested by the Engineer, the Contractor shall require operators to be retested by the manufacturer's representative. The manufacturer's representative shall be capable of training and licensing operators on the project site.
- E. FM Global Listing: Provide steel roof deck evaluated by FM Global and listed in its "Approval Guide, Building Materials" for Class 1 fire rating and applicable windstorm ratings.

## **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.
- C. Store weld studs, weld electrode, mechanical fasteners, side lap connectors and powder-actuated cartridges in original packages in a cool, dry location until final installation. Comply with all project and national safety regulations regarding handling of welding equipment and powder-actuated fastening systems.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- B. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

### **2.2 ROOF DECK**

- A. Manufacturers: Subject to compliance with requirements.

- B. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:
1. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating.
  2. Deck Profile: As indicated.
  3. Profile Depth: As indicated.
  4. Design Uncoated-Steel Thickness: As indicated.
  5. Span Condition: Three-span minimum, unless otherwise indicated..
  6. Side Laps: Overlapped.

### **2.3 MECHANICAL FASTENERS**

- A. Powder-actuated mechanical fasteners for roof and floor deck applications shall have minimum 1/2 inch diameter steel washers, knurled shanks, ballistic points, and electro-plated zinc coating conforming to ASTM B 633, SC 1, Type III. Powder-actuated mechanical fasteners shall be recognized by ICC-ES AC43, SDI listed and approved by Factory Mutual and Underwriter's Laboratories for wind uplift. Powder-actuated mechanical fasteners shall also be listed by Underwriter's Laboratories for fire-resistive steel roof deck assemblies in accordance with TLSX and TGKX designs.

### **2.4 ACCESSORIES**

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
- C. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- D. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- E. Galvanizing Repair Paint: [ASTM A 780/A 780M] [SSPC-Paint 20 or MIL-P-21035B, with dry film containing a minimum of 94 percent zinc dust by weight].

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION, GENERAL**

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.
- B. Install temporary shoring before placing deck panels if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
- H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

### **3.3 ROOF-DECK INSTALLATION**

- A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or equivalent strength mechanical fasteners.
  - 1. Arc Spot (Puddle) Welds:
    - a. Weld Diameter: 3/4 inch, nominal.
    - b. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds 6 inches apart.
  - 2. Weld Washers: Install weld washers at each weld location, if required.
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding 24 inches on center in the field of the roof, and not more than 12 inches on center in the perimeter and corners, and as follows:
  - 1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws at side laps.
  - 2. Match spacing of side laps and fasten with 3/4 inch diameter puddle welds at perimeter edge, unless otherwise noted.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
  - 1. End Joints: Lapped 2 inches minimum.
- D. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld to substrate to provide a complete deck installation.
  - 1. Weld cover plates at changes in direction of roof-deck panels unless otherwise indicated.

- E. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

### **3.4 FIELD QUALITY CONTROL**

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Field welds will be subject to inspection.
- C. Mechanical fasteners will be subject to inspection.
- D. Visually inspect mechanical or weld patterns, side-lap connections, and perimeter edge connections to confirm conformance with Specifications and Contract Documents.
- E. Testing agency will report inspection results promptly in writing to Contractor, Structural Engineer and Architect.
- F. Remove and replace work that does not comply with specified requirements.
- G. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

### **3.5 PROTECTION**

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780/A 780M and manufacturer's written instructions.
- B. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

**END OF SECTION**

03/07/2018

## **SECTION 055116 - METAL FLOOR PLATE STAIRS**

### **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 industrial-type, straight-run stairs with steel floor plate treads and railings attached to metal floor plate stairs.

#### **1.3 COORDINATION**

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for metal stairs. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For metal floor plate stairs and the following:
  - 1. Metal floor plate treads.
  - 2. Paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Delegated-Design Submittal: For stairs, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

#### **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: Fabricator of products.
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."



## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design stairs.
- B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
  - 1. Uniform Load: 100 lbf/sq. ft..
  - 2. Concentrated Load: 300 lbf applied on an area of 4 sq. in..
  - 3. Uniform and concentrated loads need not be assumed to act concurrently.
  - 4. Stair Framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
  - 5. Limit deflection of treads, platforms, and framing members to L/360.
- C. Seismic Performance of Stairs: Metal stairs shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
  - 1. Component Importance Factor: 1.5.

### **2.2 METALS**

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.
- D. Abrasive-Surface Floor Plate: Steel plate with abrasive material metallurgically bonded to steel.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. IKG Industries, a division of Harsco Corporation. (Mebac treads and landings)
    - b. ROSS TECHNOLOGY CORP. (Algrip treads and landings)
    - c. SlipNOT Metal Safety Flooring; W.S. Molnar Company. (Grip Plate treads and landings)

### **2.3 FASTENERS**

- A. General: Provide zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 where built into exterior walls. Select fasteners for type, grade, and class required.
- B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- C. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.

1. Provide mechanically deposited or hot-dip, zinc-coated anchor bolts for exterior stairs indicated to be galvanized.
- D. Post-Installed Anchors: Torque-controlled expansion anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
  1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
  2. Material for Exterior Locations and Where Stainless Steel is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

## **2.4 MISCELLANEOUS MATERIALS**

- A. Shop Primer for Galvanized Steel (if required): Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

## **2.5 FABRICATION, GENERAL**

- A. Provide complete stair assemblies, including metal framing, hangers, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
  1. Join components by welding unless otherwise indicated.
  2. Use connections that maintain structural value of joined pieces.
  3. Fabricate treads and platforms of exterior stairs so finished walking surfaces slope to drain.
- B. Form exposed work with accurate angles and surfaces and straight edges.
- C. Weld connections to comply with the following:
  1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  2. Obtain fusion without undercut or overlap.
  3. Remove welding flux immediately.
  4. Weld exposed corners and seams continuously unless otherwise indicated.
  5. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 4 welds: good quality, uniform undressed weld with minimal splatter.
- D. Fabricate joints that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

## **2.6 STEEL-FRAMED STAIRS**

- A. NAAMM Stair Standard: Comply with "Recommended Voluntary Minimum Standards for Fixed Metal Stairs" in NAAMM AMP 510, "Metal Stairs Manual," industrial class, unless more stringent requirements are indicated.

- B. Stair Framing:
  - 1. Fabricate stringers of steel channels
    - a. Provide closures for exposed ends of channel stringers.
  - 2. Construct platforms of steel channel headers and miscellaneous framing members as indicated and needed to comply with performance requirements.
  - 3. Weld or bolt stringers to headers; weld or bolt framing members to stringers and headers.
  
- C. Metal Floor Plate Stairs: Form treads and platforms to configurations shown from abrasive-surface floor plate of thickness needed to comply with performance requirements, but not less than 1/4 inch.
  - 1. Form treads with integral nosing and back edge stiffener. Form risers of same material as treads.
  - 2. Form treads with integral nosing and back edge stiffener. Form risers from steel sheet not less than 0.097 inch thick, welded to tread nosings and stiffeners and to platforms.
  - 3. Form treads with integral nosing and back edge stiffener and with open risers.
  - 4. Weld steel supporting brackets to stringers and weld treads to brackets.
  - 5. Fabricate platforms with integral nosings matching treads and weld to platform framing.

## **2.7 STAIR RAILINGS**

- A. Comply with applicable requirements in Section 055213 "Pipe and Tube Railings."
  - 1. Rails may be bent at corners, rail returns, and wall returns, instead of using prefabricated fittings.
  - 2. Connect posts to stair framing by direct welding unless otherwise indicated.

## **2.8 FINISHES**

- A. Finish metal stairs after assembly.
  
- B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.
  - 1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
  - 2. Fill vent and drain holes that will be exposed in finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
  - 3. Exterior Stairs: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 4. Color: Black

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION, GENERAL**

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.
  
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.

- C. Field Welding: Comply with requirements for welding in "Fabrication, General" Article.

### **3.2 INSTALLING METAL STAIRS WITH GROUTED BASEPLATES**

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of baseplates.
- B. Set steel stair baseplates on wedges, shims, or leveling nuts. After stairs have been positioned and aligned, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.
  - 1. Use nonmetallic, nonshrink grout unless otherwise indicated.
  - 2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

### **3.3 ADJUSTING AND CLEANING**

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
  - 1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099113 "Exterior Painting."
- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

**END OF SECTION**

03/07/2018

## **SECTION 055213 - PIPE AND TUBE RAILINGS**

### **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. Aluminum pipe and tube railings.
- B. Related Requirements:
  - 1. Section 055112 "Metal Pan Stairs" for steel tube railings associated with metal pan stairs.

#### **1.3 COORDINATION**

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For the following:
  - 1. Manufacturer's product lines of mechanically connected railings.
  - 2. Railing brackets.
  - 3. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each type of exposed finish required.
  - 1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters, including finish.
  - 2. Fittings and brackets.
  - 3. Assembled Sample of railing system, made from full-size components, including top rail, post, handrail, and infill. Sample need not be full height.
    - a. Show method of connecting and finishing members at intersections.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- D. Delegated-Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For testing agency.
- B. Welding certificates.
- C. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.
- D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.
- E. Product Test Reports: For pipe and tube railings, for tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.
- F. Evaluation Reports: For post-installed anchors, from ICC-ES.

**1.6 QUALITY ASSURANCE**

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

**1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

**1.8 FIELD CONDITIONS**

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.

**2.2 PERFORMANCE REQUIREMENTS**

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design railings, including attachment to building construction.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
  - 1. Handrails and Top Rails of Guards:
    - a. Uniform load of 50 lbf/ ft. applied in any direction.
    - b. Concentrated load of 200 lbf applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.
  - 2. Infill of Guards:
    - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
    - b. Infill load and other loads need not be assumed to act concurrently.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
  - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

### **2.3 METALS, GENERAL**

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.
  - 1. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

### **2.4 ALUMINUM**

- A. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required.
- B. Extruded Tubing: ASTM B 221, Alloy 6063-T5/T52.
- C. Extruded Structural Pipe and Round Tubing: ASTM B 429/B 429M, Alloy 6063-T6.
  - 1. Provide Standard Weight (Schedule 40) pipe unless otherwise indicated.
- D. Drawn Seamless Tubing: ASTM B 210, Alloy 6063-T832.
- E. Plate and Sheet: ASTM B 209, Alloy 6061-T6.
- F. Die and Hand Forgings: ASTM B 247, Alloy 6061-T6.
- G. Castings: ASTM B 26/B 26M, Alloy A356.0-T6.

### **2.5 FASTENERS**

- A. General: Provide the following:
  - 1. Aluminum Railings: Type 316 stainless-steel fasteners.
  - 2. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Fasteners for Interconnecting Railing Components:
  - 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
  - 2. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
  - 3. Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.
- D. Post-Installed Anchors: chemical anchors capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.

## **2.6 MISCELLANEOUS MATERIALS**

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
  - 1. For aluminum railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
- B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- C. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
  - 1. Water-Resistant Product: At exterior locations provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

## **2.7 FABRICATION**

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.



**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded connections unless otherwise indicated.
- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove flux immediately.
  - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Welded Connections for Aluminum Pipe: Fabricate railings to interconnect members with concealed internal welds that eliminate surface grinding, using manufacturer's standard system of sleeve and socket fittings.
- J. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
  - 1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.
- K. Form Changes in Direction as Follows:
  - 1. As detailed.
  - 2. By flush bends or by inserting prefabricated flush-elbow fittings.
- L. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- M. Close exposed ends of railing members with prefabricated end fittings.
- N. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- O. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
  - 1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

- P. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
- Q. Toe Boards: Where indicated, provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

## **2.8 ALUMINUM FINISHES**

- A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- B. Brush finish to campus standards.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

### **3.2 INSTALLATION, GENERAL**

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
  - 1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
  - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
  - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
  - 1. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

### **3.3 RAILING CONNECTIONS**

- A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

### **3.4 ANCHORING POSTS**

- A. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Leave anchorage joint exposed with 1/8-inch buildup, sloped away from.
- C. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:
  - 1. For aluminum pipe railings, attach posts using fittings designed and engineered for this purpose.
  - 2. For stainless-steel pipe railings, weld flanges to post and bolt to supporting surfaces.
  - 3. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.
- D. Install removable railing sections, where indicated, in slip-fit metal sockets cast in concrete.

### **3.5 ATTACHING RAILINGS**

- A. Anchor railing ends at walls with round flanges anchored to wall construction and welded to railing ends.
- B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and welded to railing ends.
- C. Attach railings to wall with wall brackets, except where end flanges are used. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- D. Secure wall brackets and railing end flanges to building construction as follows:
  - 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
  - 2. For hollow masonry anchorage, use toggle bolts.

### **3.6 ADJUSTING AND CLEANING**

- A. Clean aluminum by washing thoroughly with clean water and soap and rinsing with clean water.

**3.7 PROTECTION**

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

**END OF SECTION**

03/07/2018

## **SECTION 075323 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING**

### **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. Mechanically fastened ethylene-propylene-diene-monomer (EPDM) roofing system.
  - 2. Substrate board.

#### **1.3 DEFINITIONS**

- A. Roofing Terminology: Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work, including:
  - 1. Base flashings and membrane terminations.
  - 2. Tapered insulation, including slopes.
  - 3. Roof plan showing orientation of steel roof deck and orientation of roofing and fastening spacings and patterns for mechanically fastened roofing.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer and manufacturer.
- B. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
  - 1. Submit evidence of complying with performance requirements.
- C. Product Test Reports: For components of roofing system, tests performed by manufacturer and witnessed by a qualified testing agency.
- D. Research/Evaluation Reports: For components of roofing system, from ICC-ES.
- E. Field quality-control reports.
- F. Sample Warranties: For manufacturer's special warranties.

**1.6 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For roofing system to include in maintenance manuals.

**1.7 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: A qualified manufacturer that is UL listed and FM Global approved for roofing system identical to that used for this Project.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

**1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
  - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

**1.9 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

**1.10 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
  - 1. Special warranty includes membrane roofing, base flashings, roof insulation, fasteners, roofing accessories, and other components of roofing system.
  - 2. Warranty Period: 20 years from date of Substantial Completion.
  - 3. Installer warranty for all components: Ten years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Source Limitations: Obtain components including roof insulation and fasteners for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

### **2.2 PERFORMANCE REQUIREMENTS**

- A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.
  - 1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
  - 2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.
- B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
- C. Roofing System Design: Tested by a qualified testing agency to resist the following uplift pressures:
  - 1. Corner Uplift Pressure: Refer to Component and Cladding Wind Loads chart on drawing S-001.
  - 2. Perimeter Uplift Pressure: Refer to Component and Cladding Wind Loads chart on drawing S-001.
  - 3. Field-of-Roof Uplift Pressure: Refer to Component and Cladding Wind Loads chart on drawing S-001.
- D. FM Global Listing: Roofing, base flashings, and component materials shall comply with requirements in FM Global 4450 or FM Global 4470 as part of a roofing system, and shall be listed in FM Global's "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
  - 1. Fire/Windstorm Classification: Refer to Component and Cladding Wind Loads chart on drawing S-001.
  - 2. Hail-Resistance Rating: Refer to Component and Cladding Wind Loads chart on drawing S-001.
- E. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- F. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

### **2.3 EPDM ROOFING**

- A. EPDM: ASTM D 4637, Type I, nonreinforced, uniform, flexible EPDM sheet.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Carlisle SynTec Incorporated; Sure-Seal EPDM Roofing System, 60-mil.
    - b. Firestone Building Products; RubberGard EPDM, 60-mil.
    - c. Johns Manville; JM EPDM NR, 60-mil.
  - 2. Thickness: 60 mils, nominal.
  - 3. Exposed Face Color: Black.

### **2.4 AUXILIARY ROOFING MATERIALS**

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.
  - 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: 90-mil- thick EPDM, partially cured or cured, according to application.
- C. Bonding Adhesive: Manufacturer's standard.
- D. Seaming Material: Single-component, butyl splicing adhesive and splice cleaner.
- E. Lap Sealant: Manufacturer's standard, single-component sealant, colored to match membrane roofing.
- F. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- G. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.
- H. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick, prepunched.
- I. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening membrane to substrate, and acceptable to roofing system manufacturer.
- J. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, molded pipe boot flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.



### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:
  - 1. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

#### **3.3 ROOFING INSTALLATION, GENERAL**

- A. Install roofing system according to roofing system manufacturer's written instructions.
- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

#### **3.4 SUBSTRATE BOARD INSTALLATION**

- A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.
  - 1. Fasten substrate board to top flanges of steel deck according to recommendations in FM Global's "RoofNav" and FM Global Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification.
  - 2. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to roofing system manufacturers' written instructions.

#### **3.5 MECHANICALLY FASTENED MEMBRANE ROOFING INSTALLATION**

- A. Mechanically fasten roofing over area to receive roofing according to roofing system manufacturer's written instructions. Unroll membrane roofing and allow to relax before installing.
  - 1. For in-splice attachment, install roofing with long dimension perpendicular to steel roof deck flutes.
- B. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- C. Mechanically fasten or adhere e roofing securely at terminations, penetrations, and perimeter of roofing.
- D. Apply roofing with side laps shingled with slope of roof deck where possible.
- E. Adhesive Seam Installation: Clean both faces of splice areas, apply splicing cement, and firmly roll side and end laps of overlapping roofing according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of roofing terminations.
  - 1. Apply a continuous bead of in-seam sealant before closing splice if required by roofing system manufacturer.
- F. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.
- G. Spread sealant or mastic bed over deck-drain flange at roof drains, and securely seal roofing in place with clamping ring.
- H. In-Splice Attachment: Secure one edge of roofing using fastening plates or metal battens centered within splice, and mechanically fasten roofing to roof deck. Field splice seam.
- I. Through-Membrane Attachment: Secure roofing using fastening plates or metal battens, and mechanically fasten roofing to roof deck. Cover battens and fasteners with a continuous cover strip.

### **3.6 BASE FLASHING INSTALLATION**

- A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

### **3.7 FIELD QUALITY CONTROL**

- A. Flood Testing: Flood test each roofing area for leaks, according to recommendations in ASTM D 5957, after completing roofing and flashing but before overlying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water.
  - 1. Flood to an average depth of 2-1/2 inches with a minimum depth of 1 inch and not exceeding a depth of 4 inches. Maintain 2 inches of clearance from top of base flashing.

2. Flood each area for 24 hours.
  3. After flood testing, repair leaks, repeat flood tests, and make further repairs until roofing and flashing installations are watertight.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
- C. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

### **3.8 PROTECTING AND CLEANING**

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

### **3.9 ROOFING INSTALLER'S WARRANTY**

- A. WHEREAS \_\_\_\_\_ of \_\_\_\_\_, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
1. Owner: ECSU.
  2. Address: 83 Windham St, Willimantic, CT.
  3. Building Name/Type: Low Rise Dormitories.
  4. Address: 83 Windham St, Willimantic, CT.
  5. Area of Work: Dormitory.
  6. Acceptance Date: \_\_\_\_\_.
  7. Warranty Period: Ten years.
  8. Expiration Date: \_\_\_\_\_.
- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

- D. This Warranty is made subject to the following terms and conditions:
1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
    - a. lightning;
    - b. peak gust wind speed exceeding; Refer to Component and Cladding Wind Loads chart on drawing S-001
    - c. fire;
    - d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
    - e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
    - f. vapor condensation on bottom of roofing; and
    - g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
  2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
  3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
  4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
  5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
  6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
  7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

E. IN WITNESS THEREOF, this instrument has been duly executed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

1. Authorized Signature: \_\_\_\_\_.
2. Name: \_\_\_\_\_.
3. Title: \_\_\_\_\_.

**END OF SECTION**

03/07/2018

## **SECTION 099113 - EXTERIOR PAINTING**

### **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 surface preparation and the application of paint systems on the following exterior substrates:
  - 1. Galvanized metal.
- B. Related Requirements:
  - 1. Section 033000 "Cast-In-Place Concrete" for walking surfaces.
  - 2. Section 051200 "Structural Steel Framing" for shop priming of metal substrates.
  - 3. Section 055116 "Metal Floor Plate Stairs" for shop priming metal floor plate stairs.
  - 4. Section 055213 "Pipe and Tube Railings" for shop priming and painting pipe and tube railings.

#### **1.3 DEFINITIONS**

- A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- D. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- E. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- F. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
  - 1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
  - 2. Indicate VOC content.
- B. Samples for Initial Selection: For each type of topcoat product.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
  - 1. Submit Samples on rigid backing, 8 inches square.
  - 2. Apply coats on Samples in steps to show each coat required for system.
  - 3. Label each coat of each Sample.
  - 4. Label each Sample for location and application area.
  
- D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

**1.5 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

**1.6 QUALITY ASSURANCE**

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system.
    - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
    - b. Other Items: Architect will designate items or areas required.
  - 2. Final approval of color selections will be based on mockups.
    - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
  - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

**1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste from storage areas daily.

**1.8 FIELD CONDITIONS**

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
  
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
  - 1. Benjamin Moore & Co.
  - 2. Rust-Oleum Corporation
  - 3. Sherwin-Williams Company (The).
- B. Products: Subject to compliance with requirements, listed in the Exterior Painting Schedule for the paint category indicated.

### **2.2 PAINT, GENERAL**

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."
- B. Material Compatibility:
  - 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- C. Colors: Black

### **2.3 SOURCE QUALITY CONTROL**

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
  - 1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
  - 2. Testing agency will perform tests for compliance with product requirements.
  - 3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Portland Cement Plaster Substrates: Verify that plaster is fully cured.



- C. Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 1. Application of coating indicates acceptance of surfaces and conditions.

### **3.2 PREPARATION**

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
  - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

### **3.3 APPLICATION**

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
  - 1. Use applicators and techniques suited for paint and substrate indicated.
  - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
  - 3. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  - 4. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

### **3.4 FIELD QUALITY CONTROL**

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

### **3.5 CLEANING AND PROTECTION**

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### **3.6 EXTERIOR PAINTING SCHEDULE**

- A. Galvanized-Metal Substrates:
  1. Alkyd System MPI EXT 5.1D or MPI EXT 5.1Q:
    - a. Prime Coat: Shop primer specified in Section where substrate is specified.
    - b. Intermediate Coat: Exterior, alkyd, matching topcoat.
    - c. Topcoat: Alkyd, exterior, semi-gloss, MPI Gloss Level 5, MPI #94.
      - 1) Benjamin Moore.: Corotech, High Performance, Quick Dry Alkyd Enamel - Semi-Gloss (V231)
      - 2) Rust-Oleum Corporation: High Performance 7400 System DTM Alkyd Enamel (450 VOC)
      - 3) The Sherwin-Williams Co.: High Performance, Pro Industrial Water Based Alkyd Urethane
- B. Metal & Concrete (walking surfaces)
  1. Non-Slip Coating - add aggregate for non-slip surface
    - a. Clean metal and acid etch concrete – prepare surface as recommended by manufacturer
    - b. Intermediate Coat: Primer as recommended by manufacturer
    - c. Topcoat: Epoxy Coating
      - 1) Benjamin Moore, Corotech, Epoxy Mastic Coating - Semi-Gloss (V160)
      - 2) Rust-Oleum, 9100 System, DTM Epoxy Mastic
      - 3) Sherwin-Williams Company, Pro Industrial High Performance Epoxy

**END OF SECTION**

03/07/2018

## **SECTION 260010 - GENERAL CONDITIONS FOR ELECTRICAL**

### **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.
- B. This section is intended to supplement the requirements of Division 01 requirements. For any conflicting requirements for minimum quantities or quality levels between this Section and Division 01, comply with the most stringent requirement.

#### **1.2 SUMMARY**

- A. This Section includes the following when associated with Divisions 26 work:
  - 1. Permits and fees.
  - 2. Code requirements.
  - 3. Work under other contracts.
  - 4. Work restrictions.
  - 5. Requests for Information (RFIs).
  - 6. Coordination.
  - 7. Coordination drawings.
  - 8. Conflicting requirements.
  - 9. Minor changes in the work.
  - 10. Quality assurance and control.
  - 11. Product delivery, storage, and handling.
  - 12. Product warranties.
  - 13. Submittal procedures.
  - 14. Record drawing and record digital files.
  - 15. Product selection procedures.
  - 16. Product interoperability requirements.
  - 17. Minimum contractor's commissioning responsibilities.
- B. Related Sections include the following:
  - 1. Division 01 Sections.

#### **1.3 PERMITS AND FEES**

- A. Give all necessary notices, obtain all permits; pay all government and state sales taxes and fees where applicable, and other costs, including utility connections or extensions in connection with the Project scope of work. File all necessary drawings, prepare all documents and obtain all necessary approvals of all governmental and state departments having jurisdiction, obtain all required certificates of inspections for Project scope of work and deliver a copy to the Architect/Engineer before request for acceptance and final payment for the Project scope of work.

**1.4 CODE REQUIREMENTS**

- A. Project Code: Confirm the codes in effect at the time of permitting.
- B. Project Legislative Requirements: Confirm the State and Local Legislations in effect at the time of permitting or those that affect construction.
- C. Compliance: Comply with all codes and legislations applicable to the project, including energy related:
  - 1. Means and Methods
  - 2. Equipment and Devices.
  - 3. Materials and Work Product.

**1.5 WORK UNDER OTHER CONTRACTS**

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

**1.6 WORK RESTRICTIONS**

- A. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services:
  - 1. Notify Construction Manager or Owner not less than 20 business days in advance of proposed utility interruptions limited to this specific project and 2 months if other buildings or services are affected.
  - 2. Do not proceed with utility interruptions without Construction Manager's or Owner's written permission.

**1.7 REQUESTS FOR INFORMATION (RFIs)**

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
  - 1. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
  - 1. Project name.
  - 2. Project number.
  - 3. Date.
  - 4. Name of Contractor.
  - 5. Name of Engineer, Architect and Construction Manager.
  - 6. RFI number, numbered sequentially.
  - 7. RFI subject.
  - 8. Specification Section number and title and related paragraphs, as appropriate.
  - 9. Drawing number and detail references, as appropriate.
  - 10. Field dimensions and conditions, as appropriate.
  - 11. Contractor's suggested resolution.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

12. Contractor's signature.
  13. Attachments: Include sketches, descriptions, measurements, photos, product data, shop drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
    - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. The following RFIs will be returned without action:
1. Requests for approval of submittals.
  2. Requests for approval of substitutions.
  3. Requests for coordination information already indicated in the Contract Documents.
  4. Requests for adjustments in the Contract Time or the Contract Sum.
  5. Requests for interpretation of Architect's actions on submittals.
  6. Incomplete RFIs or inaccurately prepared RFIs.
- D. Action may include a request for additional information, in which case time for response will date from time of receipt of additional information.

## **1.8 COORDINATION**

- A. Coordination: Each Contractor shall coordinate its construction operations with those of other Contractors and entities to ensure efficient and orderly installation of each part of the Work. Each Contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in 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 with other Contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
  3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Utility Coordination: Contractor shall coordinate all final specific utility requirements.
- C. Utilizing Two and Three Dimensional Information:
1. Design Intent Model: The Design Intent Model has been developed to a Level of Development LOD 200 and LOD 300 Model Content Requirements as defined by AIA G-202-2013. The contract documents are solely a two dimensional set of documents. The Design Intent Model is a three dimensional tool utilized to create a two dimensional contract document. A two dimensional contract document requires, for reason of clarity and otherwise, that components of the design not be modeled in three dimensions and/or that the model be formed in a way that construction means and methods will dictate other ways of performing the installation. It is at the sole discretion of BVH Integrated Services, P.C. as to which portions of the design are modeled, which are not and to what degree each portion of the design requires coordination to convey design intent for contractual purposes. The Design Intent Model is not a substitute for the contractors' coordination process as outlined in the contract documents; full coordination remains the responsibility of this contractor and their sub-contractors. The contents of the model are not to be used for the basis of detailed cost estimating, coordinating equipment locations and systems routing with all other trades. The model does not include three dimensional

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

detailed field survey work of existing conditions or new work in existing conditions. The contractor may use the Design Intent Model to help establish the backgrounds and/or starting point for the coordination drawings based on the stipulations of the release form that can be provided if and when the model is requested.

2. Construction Coordination Model: The Construction Coordination Model shall be developed to a minimum Level of Development LOD 400 Model Content Requirements as defined by AIA G-202-2013. The contractor shall be fully responsible for creating and maintaining a Construction Coordination Model and coordination drawings as required for detailed construction installation and coordination with all other trades.
3. Differences between the Design Intent Model and the Construction Coordination Model and/or actual installation location, means and methods are included in this contract and shall not constitute a change order on the basis of drawing, engineering and/or coordination time.

## **1.9 COORDINATION DRAWINGS**

- A. Coordination Drawings, General: Prepare coordination drawings in accordance with requirements in this Section and individual equipment and distribution sections, to facilitate integration of products and materials fabricated or installed by more than one entity. Maintain maximum headroom, where space conditions appear inadequate to maintain proposed ceiling heights or code clearances, notify Architect/Engineer with proposed solutions.
  1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts, but no less than 1/4" equals 1'-0". Do not base coordination drawings on standard printed data. Include the following information, as applicable:
    - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
    - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
    - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
    - e. Show location and size of access doors required for access to concealed equipment, devices, junction boxes.
    - f. Indicate required installation sequences.
    - g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
    - h. Provisions for scheduling, sequencing, moving and positioning large equipment in the building during construction.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- i. Floor plans, elevations and details, including the following:
    - 1) Clearances to meet safety requirements and for servicing and maintaining equipment, including space for equipment disassembly required for periodic maintenance.
    - 2) Equipment support details.
    - 3) Exterior wall, roof and foundation penetrations of cable and raceway; and their relation to other penetrations and installations.
    - 4) Fire-rated interior wall and floor penetrations by electrical installations.
    - 5) Sizes and locations of required concrete pads and bases.
  2. Electrical Room Coordination Drawing: Prepare a drawing at 1/2" = 1'-0" scale including the following approved equipment: switchboards, panelboards, transformers, metering equipment, transfer switches, enclosed switches, enclosed controllers, pull boxes, lighting control equipment, dimming equipment, fire alarm equipment, security equipment, luminaires and switches, receptacles, raceways large than 1 inch, busduct, plywood backboards, and all foreign equipment. Indicate required clearances for all equipment. Indicate ceiling height of room.
- B. Coordination Drawing Process:
1. Particular emphasis is placed on timely installation of major apparatus and furnishing other Contractors, especially the General Contractor or Construction Manager, with information as to openings, chases, sleeves, bases, inserts, equipment locations, panels, access doors, etc., required by other trades.
  2. In general, ductwork, heating piping, sprinkler piping and drainage lines take precedence over water, gas and electrical conduits. The Engineer regarding the arrangement of Work, which cannot be agreed upon by the Contractors, will make final decisions.
  3. Where the Work of the Contractor will be installed in close proximity to or will interfere with Work of other trades, assist in working out space conditions to make a satisfactory adjustment.
  4. If Work is installed before coordinating with other Divisions or so as to cause interference with Work of other Sections, the Contractor causing the interference will make necessary changes to correct the condition without extra charge to the Owner.
  5. The Construction Manager/General Contractor shall coordinate the coordination process between the trades. Each trade shall incorporate their systems electronically using a different color code. Establish a meeting schedule where the Architect and Engineer can be present, including initiation of a kickoff meeting to establish the process with all parties, Contractor Coordination Meetings, and Architect/Engineer/Contractor Coordination Review Meetings. Regular Contractor Coordination Meetings of all Contractors involved shall be held to resolve all conflicts, assure accessibility, coordinate sequences and make adjustment to the layout to achieve the Architectural/Engineering intent of spaces, ceiling heights, accessibility, and to maximize headroom clearances in preparation for the Architect/Engineer/Contractor Coordination Review Meetings. Forward one (1) preliminary copy to the Architect and Engineer each, one (1) week prior to the Architect/Engineer Review Meeting identifying all unresolved conflicts. Upon resolving any outstanding conflicts (which may take a couple of rounds), drawings shall be completed and all trades shall sign acceptance of the drawings and submit a minimum of six (6) prints of each drawing to the Architect/Engineer for review.
- C. Coordination drawing creation is an interactive process. Submit multiple options and configurations at no additional cost until the Engineer's and Architect's acceptance is given.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- D. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire protection, fire alarm, and electrical work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Project scope of work.
  2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of luminaires indicated on Drawings. Indicate areas of conflict between luminaires and other components.
  3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire protection, fire alarm, and electrical equipment.
  4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
  5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
  6. Electrical Work: Show the following:
    - a. Runs of vertical and horizontal conduit 1-1/4 inch diameter and larger.
    - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire alarm locations.
    - c. Panelboard, switchboard, switchgear, transformer, busway, generator, and motor control center locations.
    - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
  7. Review: Architect/Engineer will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are the Contractor's responsibility. If the Architect determines that the coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, the Architect will so inform the Contractor, who shall make changes as directed and resubmit.
  8. Coordination Drawing Prints: Prepare coordination drawing prints in accordance with requirements of this Section "Submittal Procedures."
- E. Coordination Digital Data Files: Prepare coordination digital data files in accordance with the following requirements:
1. File Preparation Format: Autodesk AutoCAD .dwg file format in Microsoft Windows operating system.
  2. File Submittal Format: Submit or post coordination digital data files in the file preparation format and in Adobe .pdf format.
  3. Upon receipt of a signed release form, Engineer/Architect will furnish to the Contractor one set of digital data files for use in preparing coordination digital data files.
    - a. Engineer/Architect makes no representations as to the accuracy or completeness of digital data files as they relate to the drawings.
    - b. Contractor shall execute a data licensing agreement in the form of AIA Document C106.
- F. Construction Coordination Building Information Model:
1. Prepare Construction Coordination Building Information Model for the project utilizing Autodesk Revit software.



2. Construction coordination model to reflect the as-installed conditions of the project and the characteristics of installed equipment.

#### **1.10 CONFLICTING REQUIREMENTS**

- A. General: If compliance with two or more standards or directives is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect/Engineer for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. 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 requirements. Refer uncertainties to Engineer for a decision before proceeding.

#### **1.11 MINOR CHANGES IN THE WORK**

- A. Engineer/Architect will issue through the Construction Manager, supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.
- B. Drawings are diagrammatic, the Contractor shall relocate devices a reasonable distance for coordination.
  1. A reasonable distance is considered to be 15 feet at no additional cost.

#### **1.12 QUALITY ASSURANCE AND CONTROL**

- A. General: Qualifications paragraphs in this Article establish some of the minimum qualification levels required; Division 01 and individual Specification Sections specify additional requirements.
- B. Code Compliance: Work and equipment shall comply with all latest applicable codes and legislations.
- C. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those required for this Project.
- D. Instructor Qualifications: A factory-authorized service representative, complying with requirements in "Quality Requirements," experienced in operation and maintenance procedures and training.
- E. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  2. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  3. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- F. **Manufacturer's Field Services:** Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections.
- G. **Retesting/Reinspecting:** Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- H. **Associated Services:** Cooperate with agencies performing required commissioning, tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  4. Facilities for storage and field curing of test samples.
  5. Delivery of samples to testing agencies.
  6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  7. Security and protection for samples and for testing and inspecting equipment at Project site.
- I. **Coordination:** Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- J. **Compatibility of Options:** If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
  2. If a dispute arises between contractors over concurrently selectable but incompatible products, Engineer will determine which products shall be used at no additional cost to the project.
- K. **Acceptance of Work:** Failure on the part of the Engineer to reject shop drawings or to reject Work in progress shall not be interpreted as acceptance of Work not in conformance with Code,

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

Legislation, the Drawings and/or Specifications. Correct Work not in conformance whenever non-conformance is discovered.

**1.13 PRODUCT DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions and generally accepted construction practice.
  
- B. Storage:
  - 1. Store products to allow for inspection and measurement of quantity or counting of units.
  - 2. Store materials in a manner that will not endanger Project structure.
  - 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
  - 4. Store cementitious products and materials on elevated platforms.
  - 5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
  - 6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
  - 7. Protect stored products from damage and liquids from freezing.
  - 8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

**1.14 PRODUCT WARRANTIES**

- A. Refer to Division 01 and individual sections for requirements.
  
- B. The following requirements are supplemental and in addition to those stated in other specific sections and Division 01.
  - 1. Warranty all materials and workmanship under these Specifications and the Contract for a period of one year from the date of final acceptance by the Owner.
  - 2. During this warranty period, correct or replace all defects developing through materials or workmanship immediately as directed by the Engineer without expense to the Owner; make all such repairs or replacements to the Owner's satisfaction.
  
- C. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  
- D. Warranty Start Date: From the date of final acceptance by the Owner.

**1.15 SUBMITTAL PROCEDURES**

- A. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- B. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
1. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.
- C. Substitution Requests: Submit four copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Substitution: A submittal shall be considered a substitution when the Engineer/Architect does not accept the product or material as an "equivalent" or where one of the listed manufacturers is not submitted.
  2. Substitution Requirements: Substitutions shall meet the requirements of "Comparable Products."
  3. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified material or product cannot be provided.
    - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
    - c. Detailed comparison of significant qualities of proposed substitution with those of the Project scope of work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
    - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    - e. Samples, where applicable or requested.
    - f. Cost information, including a proposal of change, if any, in the Contract Sum.
    - g. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
    - h. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
    - i. Statement indicating why the requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations.

**1.16 RECORD DRAWINGS AND RECORD DIGITAL FILES**

- A. Record Drawings and Record Digital Files: Comply with the following:
1. Submit Record Drawings and Record Digital Files as follows:
    - a. Initial Submittal: Submit one set of plots from corrected Record CAD Drawings and one set of marked-up Record Prints. Engineer will initial and date each plot and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Engineer will return plot for organizing into sets, printing, binding, and final submittal.
    - b. +
    - c. Final Submittal: Submit three sets of Record CAD Drawing files, three sets of Construction Coordination Building Information Model, and one set of Record

CAD Drawing plots. Plot and print each drawing, whether or not changes and additional information were recorded.

- 1) Electronic Media: CD-R.

B. Qualification Data: For training instructor.

### **1.17 PRODUCT SELECTION PROCEDURES**

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Engineer and/or Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
6. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Design Basis: The design has been based on the single manufacturer indicated in the contract documents. The Contractor is responsible for verifying prior to submission, that any other manufacturer even though listed complies with dimensional and performance characteristics of the base specified product. Modifications shall be made by the Contractor as part of this contract to accommodate changes to the design basis.
2. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
3. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
4. Equivalent Product: Equipment, material or devices submitted for review as an "accepted equivalent" shall meet all of the following requirements:
  - a. A product of a listed manufacturer.
  - b. The equivalent shall have the same construction features such as, but not limited to:
    - 1) Material thickness, gauge, weight, density, etc.
    - 2) Welded, riveted, bolted, etc., construction
    - 3) Finish, undercoating, corrosion protection
  - c. The equivalent shall perform with the same or better operating efficiency.
  - d. The equivalent shall have equal or greater reserve capacity.
  - e. The equivalent shall be locally represented by the manufacturer for service, parts and technical information.
  - f. The equivalent shall bear the same labels of performance certification as is applicable to the specified item, such as UL, AMCA or ARI labels.

**1.18 MINIMUM CONTRACTOR'S COMMISSIONING RESPONSIBILITIES**

- A. Each Contractor shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
1. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
  2. Cooperate with the CxA for resolution of issues recorded in the Issues Log.
  3. Attend commissioning team meetings held on a weekly basis.
  4. Integrate and coordinate commissioning process activities with construction schedule.
  5. Review and accept construction checklists provided by the CxA.
  6. Complete paper or electronic construction checklists as Work is completed and provide to the Commissioning Authority on a weekly basis.
  7. Review and accept commissioning process test procedures provided by the Commissioning Authority.
  8. Complete commissioning process test procedures.
- B. Refer to related information in other sections for additional requirements.

**PART 2 - PRODUCTS**

**2.1 COORDINATION DRAWINGS**

- A. Coordination Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents and actual special restrictions.
  2. Sheet Size: Submit Coordination Drawings on sheets at least 30 by 42 inches.
  3. Submit Shop Drawings in the following format:
    - a. PDF electronic file.
    - b. AutoCAD/Revit file in the latest version.
    - c. Six opaque (bond) copies of each submittal. Engineer will return five copies.

**2.2 SHOP DRAWINGS**

- A. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed or electronic data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Identification of products.
    - b. Schedules.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
    - f. Relationship and attachment to adjoining construction clearly indicated.
    - g. Seal and signature of professional engineer if specified.
  2. 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 30 by 42 inches.

## **2.3 RECORD DRAWINGS**

- A. Record Prints: Maintain one set of black-line white prints of the Contract Drawings and Shop Drawings.
1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an understandable drawing technique.
    - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
  2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a. Revisions to details shown on Drawings.
    - b. Locations and depths of underground system entities.
    - c. Revisions to routing of piping.
    - d. Actual equipment locations.
    - e. Duct size and routing.
    - f. Locations of concealed internal utilities.
    - g. Changes made by Change Order or Change Directive.
    - h. Changes made following Engineer's written orders.
    - i. Details not on the original Contract Drawings.
    - j. Field records for variable and concealed conditions.
    - k. Record information on the Project scope of work that is shown only schematically.
  3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
  4. Mark record sets with erasable, colored pencil. Use multiple colors to distinguish between changes for different categories of the Work at same location.
  5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record CAD Drawings: Immediately before observation for Certificate of Substantial Completion, review marked-up Record Prints with Engineer and Construction Manager. When authorized, prepare a full set of corrected CAD Drawings of the Contract Drawings, as follows:
1. Format: DWG or Revit format of the same version, and operating system as the original Contract Drawings.
  2. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.
  3. Refer instances of uncertainty to Engineer for resolution.
  4. Contractor may request one set of CAD Drawings of the Contract Drawings for use in recording information.
    - a. Engineer makes no representations as to the accuracy or completeness of CAD Drawings as they relate to the Contract Drawings.
- C. Construction Coordination Building Information Model:

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

1. Prepare Construction Coordination Building Information Model for the project utilizing Autodesk Revit software.
  2. Construction coordination model to reflect the as-installed conditions of the project and the characteristics of installed equipment.
- D. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
  2. Record CAD/Revit Drawings: Organize information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each file.
  3. Identification: As follows:
    - a. Project name.
    - b. Date.
    - c. Designation "PROJECT RECORD DRAWINGS."
    - d. Name of Engineer, Architect and Construction Manager.
    - e. Name of Contractor.

#### **2.4 RECORDING AND MAINTENANCE**

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours.

#### **2.5 TRAINING AND INSTRUCTION PROGRAM**

- A. Program Structure: In addition to Division 01 and individual section requirements, develop an instruction program that includes individual training modules for each system and equipment not part of a system.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. Provide instruction for the following modules.
  1. Basis of System Design and Operational Requirements
  2. Documentation
  3. Emergencies
  4. Adjustments
  5. Troubleshooting
  6. Maintenance
  7. Repairs



- C. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

## **2.6 COMPARABLE PRODUCTS**

- A. Conditions for Consideration: Engineer/Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer/Architect may return requests without action, except to record noncompliance with these requirements:
  1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
  3. Evidence that proposed product provides specified warranty.
  4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
  5. Samples, if requested.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
  1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utility and system connections.
  2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
  3. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Acceptance of Conditions: Examine substrates, areas, and conditions, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  1. Written Report: Where a written report listing conditions detrimental to performance of the Project scope of work is required by other Sections, include the following:
    - a. Description of the Work.
    - b. List of detrimental conditions, including substrates.
    - c. List of unacceptable installation tolerances.
    - d. Recommended corrections.
  2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

**3.2 PREPARATION**

- A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Engineer. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

**3.3 DEMOLITION**

- A. Work indicated to be removed includes removal of all auxiliary materials, accessories, anchorage, fasteners, and etc., down to bare substrate. No residual materials shall remain from work to be removed. Contractor will use whatever means necessary; including removal of all materials attached or related to those items designated to be removed, as acceptable to Owner and Engineer, to provided complete and thorough removal of existing work.
- B. Protect existing equipment and installations indicated to remain. If damaged or disturbed in the course of the Work, remove damaged portions and install new products of equal capacity, quality, and functionality.
- C. Accessible Work: Remove exposed equipment and installations, indicated to be demolished, in their entirety.
- D. Abandoned Work: Cut and remove buried MEP system materials, equipment, raceways, piping and distribution, indicated to be abandoned in place, 2 inches below the surface of adjacent construction. Cap and patch surface to match existing finish.
- E. Remove demolished materials from Project site.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- F. Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.
- G. Field verify all existing E system materials, equipment, raceways, piping and distribution to be removed for exact quantities.
- H. Remove all existing E system materials, equipment, raceways, piping and distribution located above ceilings and in walls that are not being reused.
- I. Remove all E systems and appurtenances, which are to be removed, in their entireties back to the source or source panels.
- J. Remove all existing E system materials, equipment, raceways, piping and distribution located in walls or ceilings being demolished. Abandon no devices that have been disconnected unless specifically noted.
- K. Maintain continuity of all existing E devices, and utilization equipment not removed.
- L. Remove, store, protect, and reinstall existing work as required to accommodate alteration indicated.
- M. The existing work to be removed, in general, is as indicated on the Drawings and in this Section, but also includes any materials or work necessary to permit installation of new materials, as approved by Owner and Engineer.
- N. Disconnect, demolish, and remove systems, equipment, and components indicated to be removed, abandoned or as made obsolete by this project.
  - 1. To Be Removed: Remove portion of systems, equipment, and components indicated to be removed and cap or plug remaining with same or compatible material.
  - 2. To Be Abandoned in Place: Drain piping and cap or plug systems, equipment, and components with same or compatible material.
  - 3. Equipment to Be Removed: Disconnect, make safe and cap services and remove equipment.
  - 4. Equipment to Be Removed and Reinstalled: Disconnect, make safe and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
  - 5. Equipment to Be Removed and Salvaged: Disconnect, make safe and cap services and remove equipment and deliver at direction of Owner.
- O. If systems, equipment, and components to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.
- P. In finished areas, all systems, equipment, and components shall be cut back to a concealed location, i.e., within walls, above ceilings, etc., before capping.

### **3.4 INSTALLATION**

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

1. Make vertical work plumb and make horizontal work level.
  2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
  4. Maintain minimum headroom clearance as indicated by Architect and/or Construction Manager in spaces without a suspended ceiling.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produces harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
1. All electrical equipment and piping not supported from the building structural steel shall not exceed a combined load of 7 psf when supported from the metal deck/slab. Any condition that may exceed this limit shall be reviewed and approved by the Design-Builder and Structure Engineer before installation.
  2. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer and/or to allow for proper access.
  3. Allow for building movement, including thermal expansion and contraction.
  4. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

### **3.5 CUTTING AND PATCHING**

- A. See Division 01 for additional requirements. The Contractor shall furnish sketches showing the location and sizes of all openings, chases, etc., required for the installation of Work.
- B. Work under this Division shall include furnishing, locating and setting inserts and/or sleeves required before the floors and walls are built or be responsible for cutting, drilling or chopping where sleeves and inserts were not installed, where wall or floors are existing or not correctly located. The Contractor shall do all drilling required for the installation of hangers.

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

- C. Exercise extreme caution when core drilling or punching openings in concrete floor slabs in order to avoid cutting or damaging structural members. No structural members or structural slabs/floors shall be cut without the written acceptance of the Structural Engineer and all such cutting shall be done in a manner directed by him.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

**3.6 SCAFFOLDING, RIGGING, HOISTING**

- A. The Contractor shall furnish all scaffolding, rigging, hoisting and services necessary for erection and delivery into the premises any equipment and apparatus furnished under this Division. Remove same from premises when no longer required.

**3.7 EXCAVATION AND BACKFILLING**

- A. It is the responsibility of the Contractor to coordinate sizes, depths, fill and bedding requirements and any other excavation work required under this Division.

**3.8 ACCESSIBILITY AND ACCESS PANELS**

- A. The Contractor shall be responsible for the sufficiency of the size of shafts and chases, the adequate thickness of partitions, and the adequate clearance in double partitions and hung ceilings for the proper installation of the Work.
- B. Locate all equipment which must be serviced, operated or maintained in fully accessible positions. Equipment shall include, but not be limited to: motors, controllers, coil, valves, switchgear, drain points, etc. Access doors shall be furnished if required for better accessibility. Minor deviations from the Drawings may be made to allow better accessibility, but changes of magnitude or which involve extra cost shall not be made without the acceptance of the Engineer.
- C. Access doors in walls, ceilings, floors, etc., shall be field coordinated. It is the responsibility of the Contractor to coordinate and provide information regarding the sizes and quantities of access doors required for his work. The Contractor shall arrange his work in such a manner as to minimize the quantity of access doors required, such as grouping shutoff valves in the same area. Where possible, locate valves in already accessible areas, such as lay-in ceilings, etc.
- D. On a clean set of prints, the Contractor shall mark in red pencil the location of each required access door, including its size and fire rating (if any), and shall submit the print to the Architect for review before access doors are purchased or installed.
- E. Upon completion of the Project, the Contractor shall physically demonstrate that all equipment and devices installed have been located and/or provided with adequate access panels for repair, maintenance and/or operation. Any equipment not so furnished shall be relocated or provided with additional access panels by the installing Contractor at no additional cost to the Owner.

**3.9 STARTING AND ADJUSTING**

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Provide a factory-authorized service representative to inspect field-assembled components and equipment installation, comply with qualification requirements in "Quality Requirements."

**3.10 PROTECTION OF INSTALLED CONSTRUCTION**

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.
- C. Remove debris from concealed spaces before enclosing the space.
- D. Remove liquid spills promptly.
- E. Where dust would impair proper execution of the Project scope of work, broom-clean or vacuum the entire work area, as appropriate.
- F. Installed Work: Keep installed work clean.
- G. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. 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.

**3.11 CORRECTION OF THE WORK**

- A. The cost of corrective work shall be included under the contract.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- B. Repair or remove and replace defective construction.
  - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- C. Restore permanent facilities used during construction to their specified or original condition.
- D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- E. Repair components that do not operate properly. Remove and replace operating components to new condition.
- F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

**END OF SECTION**

03/07/2018

## **SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES**

### **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. Building wires and cables rated 600 V and less.
  - 2. Connectors, splices, and terminations rated 600 V and less.

#### **1.3 DEFINITIONS**

- A. EPDM: Ethylene-propylene-diene terpolymer rubber.
- B. NBR: Acrylonitrile-butadiene rubber.
- C. VFC: Variable frequency controller.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For testing agency.
- B. Field quality-control reports.

#### **1.6 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: Member company of NETA or an NRTL.
  - 1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

### **PART 2 - PRODUCTS**

#### **2.1 GENERAL REQUIREMENTS**

- A. Comply with the requirements in Part 3 Articles for where materials shall be applied.

#### **2.2 CONDUCTORS AND CABLES**

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - 1. Alpha Wire Company.



2. American Insulated Wire Corp.
3. Belden Inc.
4. Cerro Wire LLC.
5. Encore Wire Corporation.
6. General Cable Technologies Corporation.
7. General Cable; General Cable Corporation.
8. Senator Wire & Cable Company.
9. Southwire Company.

B. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.

C. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN/THWN-2.

D. Low Leakage Conductor: Type.

### **2.3 CONNECTORS AND SPLICES**

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. 3M.
2. AFC Cable Systems, Inc.
3. Gardner Bender.
4. Hubbell Power Systems, Inc.
5. Ideal Industries, Inc.
6. ILSCO.
7. NSi Industries LLC.
8. O-Z/Gedney; an EGS Electrical Group brand; an Emerson Industrial Automation business.
9. Tyco Electronics Corp.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

### **2.4 SYSTEM DESCRIPTION**

A. 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.

B. Comply with NFPA 70.

## **PART 3 - EXECUTION**

### **3.1 CONDUCTOR MATERIAL APPLICATIONS**

A. Feeders: Copper. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.

**3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS**

- A. Exposed Feeders: Type THHN/THWN-2, single conductors in raceway.
- B. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN/THWN-2, single conductors in raceway.
- C. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type XHHW-2, single conductors in raceway.
- D. Branch Circuits Concealed in Ceilings, Walls and Partitions: Type THHN/THWN, single conductors in raceway to outlet box located within 10 ft. of first wiring device, luminaire of utilization equipment indicated on documents served by branch circuit. Metal-clad cable, Type MC may be used on load side of this outlet box.
- E. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type XHHW-2, single conductors in raceway.
- F. Class 1 Control Circuits: Type THHN/THWN, in raceway.
- G. Class 2 Control Circuits: Type THHN/THWN, in raceway.
- H. Minimum Branch Circuit Conductor Size: No. 12 AWG. For all 120-volt circuits in excess of 100 ft. from power source to last device, provide No. 10 AWG entire length of circuit. For all 120-volt circuits in excess of 200 ft. from power source to last device, provide No. 8 AWG entire length of circuit. For all 208-volt circuits in excess of 200 ft. from power source to last device, provide No. 10 AWG entire length of circuit.

- I. Install dedicated neutral for every circuit.

**3.3 INSTALLATION OF CONDUCTORS AND CABLES**

- A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
- B. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.
- C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

- F. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems" and Section 260548 "Vibration and Seismic Controls for Electrical Systems."
- G. Complete cable tray systems installation according to Section 260536 "Cable Trays for Electrical Systems" prior to installing conductors and cables.

### **3.4 CONNECTIONS**

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

### **3.5 IDENTIFICATION**

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

### **3.6 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS**

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

### **3.7 FIRESTOPPING**

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Section 078413 "Penetration Firestopping."

### **3.8 FIELD QUALITY CONTROL**

- A. Perform tests and inspections and prepare test reports.
- B. Perform the following tests and inspections:
  - 1. After installing conductors and cables and before electrical circuitry has been energized, test equipment feeder conductors for compliance with requirements.
  - 2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
  - 3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in conductors No. 3 AWG and

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

larger. Remove box and equipment covers so splices are accessible to portable scanner. Correct deficiencies determined during the scan.

- a. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
  - b. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
- C. Test and Inspection Reports: Prepare a written report to record the following:
1. Procedures used.
  2. Results that comply with requirements.
  3. Results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
- D. Cables will be considered defective if they do not pass tests and inspections.

**END OF SECTION**

03/07/2018

## **SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL 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 grounding and bonding systems and equipment.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. As-Built Data: Plans showing dimensioned as-built locations of grounding features specified in "Field Quality Control" Article, including the following:
  - 1. Ground rods.
- B. Qualification Data: For testing agency and testing agency's field supervisor.
- C. Field quality-control reports.

#### **1.5 QUALITY ASSURANCE**

- A. 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.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Burndy; Part of Hubbell Electrical Systems.
  - 2. ERICO International Corporation.
  - 3. O-Z/Gedney; a brand of Emerson Industrial Automation.

#### **2.2 SYSTEM DESCRIPTION**

- A. 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.

- B. Comply with UL 467 for grounding and bonding materials and equipment.

### **2.3 CONDUCTORS**

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
  - 1. Solid Conductors: ASTM B 3.
  - 2. Stranded Conductors: ASTM B 8.
  - 3. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
  - 4. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
  - 5. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

### **2.4 CONNECTORS**

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- D. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

### **2.5 GROUNDING ELECTRODES**

- A. Ground Rods: Copper-clad steel, sectional type; 3/4 inch in diameter by 10 feet .

## **PART 3 - EXECUTION**

### **3.1 BUILDING GROUNDING**

- A. Provide grounding for utility transformer per utility company standards. Minimum of four ground rods located at corners of pad, connected together in a loop and connected to transformer.
- B. Building steel and rebar to be bonded to the following:
  - 1. Ufer ground system.
  - 2. Building ground system.
- C. Project includes but is not limited to the following grounding components:
  - 1. Wye configured ground rod system.
  - 2. Grounding of exterior lighting.

### **3.2 APPLICATIONS**

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
- B. Underground Grounding Conductors: Install bare copper conductor, No. 2/0 AWG minimum.
  - 1. Bury at least 30 inches below grade.
  - 2. Duct-Bank Grounding Conductor: Bury 12 inches above duct bank when indicated as part of duct-bank installation.
- C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.
- D. Conductor Terminations and Connections:
  - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
  - 2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
  - 3. Connections to Ground Rods at Test Wells: Bolted connectors.
  - 4. Connections to Structural Steel: Welded connectors.

### **3.3 GROUNDING UNDERGROUND DISTRIBUTION SYSTEM COMPONENTS**

- A. Comply with IEEE C2 grounding requirements.
- B. Grounding Manholes and Handholes: Install two driven ground rods. If necessary, install ground rod before manhole is placed and provide 60 ft. of No. 4/0 AWG bare, tinned-copper conductor from under manhole and ground rods into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete with a double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inches above to 6 inches below concrete. Seal openings with waterproof, nonshrink grout.

### **3.4 EQUIPMENT GROUNDING**

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Isolated Grounding Receptacle Circuits: Install an insulated equipment grounding conductor connected to the receptacle grounding terminal. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service unless otherwise indicated.
- C. Isolated Equipment Enclosure Circuits: For designated equipment supplied by a branch circuit or feeder, isolate equipment enclosure from supply circuit raceway with a nonmetallic raceway fitting listed for the purpose. Install fitting where raceway enters enclosure, and install a separate insulated equipment grounding conductor. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service unless otherwise indicated.

- D. Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors.

### **3.5 INSTALLATION**

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade unless otherwise indicated.
  - 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
  - 2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.
- C. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Section 260543 "Underground Ducts and Raceways for Electrical Systems," and shall be at least 12 inches deep, with cover.
  - 1. Test Wells: Install at least one test well for each service unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.
- D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
  - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
  - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
  - 3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.
- E. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install bonding jumper to bond across flexible duct connections to achieve continuity.
- F. Grounding for Steel Building Structure: Install a driven ground rod at base of each corner column and at intermediate exterior columns at distances not more than 60 feet apart. Provide jumper to steel rebar at each of these locations.

### **3.6 LABELING**

- A. Comply with requirements in Section 260553 "Identification for Electrical Systems" for instruction signs. The label or its text shall be green.



**3.7 FIELD QUALITY CONTROL**

- A. Perform tests and inspections.
  - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
  
- B. Tests and Inspections:
  - 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
  - 2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
  - 3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal. Make tests at ground rods before any conductors are connected.
    - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
    - b. Perform tests by fall-of-potential method according to IEEE 81.
  
- C. Grounding system will be considered defective if it does not pass tests and inspections.
  
- D. Prepare test and inspection reports.
  
- E. Report measured ground resistances that exceed the following values:
  - 1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.
  - 2. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 ohms.
  - 3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
  
- F. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

**END OF SECTION**

03/07/2018

## **SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL 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. This Section includes the following:
  - 1. Hangers and supports for electrical equipment and systems.
  - 2. Construction requirements for concrete bases.

#### **1.3 DEFINITIONS**

- A. EMT: Electrical metallic tubing.
- B. RMC: Rigid metal conduit.

#### **1.4 PERFORMANCE REQUIREMENTS**

- A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of **five** times the applied force.

#### **1.5 ACTION SUBMITTALS**

- A. Product Data: For the following:
  - 1. Steel slotted support systems.
- B. Shop Drawings: Show fabrication and installation details and include calculations for the following:
  - 1. Trapeze hangers. Include Product Data for components.
  - 2. Steel slotted channel systems. Include Product Data for components.
  - 3. Equipment supports.

**1.6 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.

**1.7 QUALITY ASSURANCE**

- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Comply with NFPA 70.

**1.8 COORDINATION**

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified together with concrete Specifications.
- B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Section 077200 "Roof Accessories."

**PART 2 - PRODUCTS**

**2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS**

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Allied Tube & Conduit.
    - b. Cooper B-Line, Inc.; a division of Cooper Industries.
    - c. ERICO International Corporation.
    - d. GS Metals Corp.
    - e. Thomas & Betts Corporation, A Member of the ABB Group.
    - f. Unistrut; an Atkore International company.
    - g. Wesanco, Inc.
  - 2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
  - 3. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
  - 4. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
  - 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) Hilti, Inc.
      - 2) ITW Ramset/Red Head; Illinois Tool Works, Inc.
      - 3) MKT Fastening, LLC.
      - 4) Simpson Strong-Tie Co., Inc.
  - 2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated or stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
      - 2) Empire Tool and Manufacturing Co., Inc.
      - 3) Hilti, Inc.
      - 4) ITW Ramset/Red Head; Illinois Tool Works, Inc.
      - 5) MKT Fastening, LLC.
  - 3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
  - 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
  - 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
  - 6. Toggle Bolts: All-steel springhead type.
  - 7. Hanger Rods: Threaded steel.

## **2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES**

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Section 055000 "Metal Fabrications" for steel shapes and plates.

## **PART 3 - EXECUTION**

### **3.1 APPLICATION**

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted [or other ]support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
  - 1. Secure raceways and cables to these supports with two-bolt conduit clamps, single-bolt conduit clamps, or single-bolt conduit clamps using spring friction action for retention in support channel.

### **3.2 SUPPORT INSTALLATION**

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT and RMC may be supported by openings through structure members, as permitted in NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
  - 1. To Wood: Fasten with lag screws or through bolts.
  - 2. To New Concrete: Bolt to concrete inserts.
  - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
  - 4. To Existing Concrete: Expansion anchor fasteners.
  - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
  - 6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts, beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69, or spring-tension clamps.
  - 7. To Light Steel: Sheet metal screws.
  - 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

### **3.3 INSTALLATION OF FABRICATED METAL SUPPORTS**

- A. Comply with installation requirements in Section 055000 "Metal Fabrications" for site-fabricated metal supports.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

**3.4 CONCRETE BASES**

- A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi minimum, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03.
- C. Anchor equipment to concrete base.
  - 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
  - 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

**3.5 PAINTING**

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
  - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.
- B. Touchup: Comply with requirements in Division 09 painting sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

**END OF SECTION**

03/07/2018

## **SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL 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. Metal conduits and fittings.
  - 2. Nonmetallic conduits and fittings.
  - 3. Surface raceways.
  - 4. Boxes, enclosures, and cabinets.

#### **1.3 DEFINITIONS**

- A. ARC: Aluminum rigid conduit.
- B. GRC: Galvanized rigid steel conduit.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Sustainable Design Submittals:
  - 1. VOC Content: 510 g/L or less for PVC conduit and fittings.
- C. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:
  - 1. Structural members in paths of conduit groups with common supports.
- B. Qualification Data: For professional engineer.
- C. Seismic Qualification Data: Certificates, for enclosures, cabinets, and conduit racks and their mounting provisions, including those for internal components, from manufacturer.
  - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
  - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.

3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
4. Detailed description of conduit support devices and interconnections on which the certification is based and their installation requirements.

D. Source quality-control reports.

## **1.6 COORDINATION**

- A. Coordinate layout and installation of raceways, boxes, enclosures, cabinets, and suspension system with other construction that penetrates ceilings or is supported by them, including luminaries, HVAC equipment, fire suppression system, and partition assemblies.

## **PART 2 - PRODUCTS**

### **2.1 METAL CONDUITS AND FITTINGS**

- A. Metal Conduit:
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
    - a. AFC Cable Systems; a part of Atkore International.
    - b. Allied Tube & Conduit; a part of Atkore International.
    - c. Anamet Electrical, Inc.
    - d. Calconduit.
    - e. Electri-Flex Company.
    - f. FSR Inc.
    - g. Korkap.
    - h. NEC, Inc.
    - i. Opti-Com Manufacturing Network, Inc (OMNI).
    - j. O-Z/Gedney; a brand of Emerson Industrial Automation.
    - k. Patriot Aluminum Products, LLC.
    - l. Perma-Cote.
    - m. Picoma Industries, Inc.
    - n. Plasti-Bond.
    - o. Republic Conduit.
    - p. Southwire Company.
    - q. Thomas & Betts Corporation; A Member of the ABB Group.
    - r. Topaz Electric; a division of Topaz Lighting Corp.
    - s. Western Tube and Conduit Corporation.
    - t. Wheatland Tube Company.
  2. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
  3. GRC: Comply with ANSI C80.1 and UL 6.
  4. ARC: Comply with ANSI C80.5 and UL 6A.
  5. EMT: Comply with ANSI C80.3 and UL 797.
  6. FMC: Comply with UL 1; zinc-coated steel.
  7. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.



- B. Metal Fittings:
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
    - a. AFC Cable Systems; a part of Atkore International.
    - b. Allied Tube & Conduit; a part of Atkore International.
    - c. Anamet Electrical, Inc.
    - d. Calconduit.
    - e. Electri-Flex Company.
    - f. FSR Inc.
    - g. Korkap.
    - h. NEC, Inc.
    - i. NewBasis.
    - j. Opti-Com Manufacturing Network, Inc (OMNI).
    - k. O-Z/Gedney; a brand of Emerson Industrial Automation.
    - l. Patriot Aluminum Products, LLC.
    - m. Perma-Cote.
    - n. Picoma Industries, Inc.
    - o. Plasti-Bond.
    - p. Republic Conduit.
    - q. Southwire Company.
    - r. Thomas & Betts Corporation; A Member of the ABB Group.
    - s. Topaz Electric; a division of Topaz Lighting Corp.
    - t. Western Tube and Conduit Corporation.
    - u. Wheatland Tube Company.
  2. Comply with NEMA FB 1 and UL 514B.
  3. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
  4. Fittings, General: Listed and labeled for type of conduit, location, and use.
  5. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 1203 and NFPA 70.
  6. Fittings for EMT:
    - a. Material: Steel.
    - b. Type: compression.
- C. Joint Compound for GRC or ARC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

## **2.2 BOXES, ENCLOSURES, AND CABINETS**

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
1. Adalet.
  2. Crouse-Hinds, an Eaton business.
  3. EGS/Appleton Electric.
  4. Erickson Electrical Equipment Company.
  5. FSR Inc.
  6. Hoffman; a brand of Pentair Equipment Protection.
  7. Hubbell Incorporated.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

8. Hubbell Incorporated; Wiring Device-Kellems.
  9. Kraloy.
  10. Milbank Manufacturing Co.
  11. MonoSystems, Inc.
  12. Oldcastle Enclosure Solutions.
  13. O-Z/Gedney; a brand of Emerson Industrial Automation.
  14. Plasti-Bond.
  15. RACO; Hubbell.
  16. Spring City Electrical Manufacturing Company.
  17. Stahlin Non-Metallic Enclosures.
  18. Thomas & Betts Corporation; A Member of the ABB Group.
  19. Topaz Electric; a division of Topaz Lighting Corp.
  20. Wiremold / Legrand.
- B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
- D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy or aluminum, Type FD, with gasketed cover.
- E. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb. Outlet boxes designed for attachment of luminaires weighing more than 50 lb shall be listed and marked for the maximum allowable weight.
- F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- G. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum or galvanized, cast iron with gasketed cover.
- H. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- I. Gangable boxes are prohibited.
- J. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 1, Type 3R, Type 4, or Type 12 with continuous-hinge cover with flush latch unless otherwise indicated.
1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
  2. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.
- K. Cabinets:
1. NEMA 250, Type 1, Type 3R, or Type 12 galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
  2. Hinged door in front cover with flush latch and concealed hinge.
  3. Key latch to match panelboards.
  4. Metal barriers to separate wiring of different systems and voltage.
  5. Accessory feet where required for freestanding equipment.
  6. Nonmetallic cabinets shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

### **2.3 SOURCE QUALITY CONTROL FOR UNDERGROUND ENCLOSURES**

- A. Handhole and Pull-Box Prototype Test: Test prototypes of handholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
  - 1. Tests of materials shall be performed by an independent testing agency.
  - 2. Strength tests of complete boxes and covers shall be by either an independent testing agency or manufacturer. A qualified registered professional engineer shall certify tests by manufacturer.
  - 3. Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012 and traceable to NIST standards.

## **PART 3 - EXECUTION**

### **3.1 RACEWAY APPLICATION**

- A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
  - 1. Exposed Conduit: GRC.
  - 2. Concealed Conduit, Aboveground: GRC.
  - 3. Underground Conduit: RNC, Type EPC-80-PVC, direct buried.
  - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
  - 5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
- B. Indoors: Apply raceway products as specified below unless otherwise indicated:
  - 1. Exposed, Not Subject to Physical Damage: EMT.
  - 2. Exposed, Not Subject to Severe Physical Damage: EMT.
  - 3. Exposed and Subject to Severe Physical Damage: GRC. Raceway locations include the following:
    - a. Loading dock.
    - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
    - c. Mechanical rooms.
    - d. Gymnasiums.
    - e. Raceways penetrating roof to within 3 ft. of enclosed switch.
  - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
  - 5. Damp or Wet Locations: GRC.
- C. Minimum Raceway Size: 3/4-inch trade size.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
  - 1. Rigid Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
  - 2. EMT: Comply with NEMA FB 2.10.
    - a. Utilize steel compression fittings in the following locations:
      - 1) Damp locations.
      - 2) Boiler rooms.
      - 3) Mechanical rooms.
      - 4) Within block walls.
    - b. Utilize steel set-screw fittings in the following locations:

- 1) Dry locations.
  - 2) Above suspended ceilings.
  - 3) Within stud walls.
3. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.
- F. Install surface raceways only where indicated on Drawings.

### **3.2 INSTALLATION**

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.
1. Whenever any raceway crosses an expansion or seismic joint, provide a pull box on each side of the joint with sufficient length of flexible raceways to accommodate movement in all directions. See section regarding seismic control for electrical work for additional requirements. Coordinate movement requirements at expansion and seismic joints with Structural Engineer of Record.
- B. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
- C. Do not install raceways or electrical items on any "explosion-relief" walls or rotating equipment.
- D. Do not fasten conduits onto the bottom side of a metal deck roof.
- E. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- F. Complete raceway installation before starting conductor installation.
- G. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- H. Make bends in raceway using large-radius preformed ells. Field bending shall be according to NFPA 70 minimum radii requirements. Use only equipment specifically designed for material and size involved.
- I. Conceal raceway within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- J. Support raceway within 12 inches of enclosures to which attached.
- K. Stub-Ups to Above Recessed Ceilings:
1. Use RMC for raceways.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
- L. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- M. Join raceways with fittings designed and approved for the purpose and make joints tight.
  1. Use insulating bushings to protect conductors. Within return air plenums, utilize plenum-rated bushings.
- N. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- O. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- P. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.
- Q. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.
- R. Cut conduit perpendicular to the length. For conduits 2-inch trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.
- S. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Within return air plenums, utilize a No. 10 AWG conductor in place of a plastic line. Cap underground raceways designated as spare above grade alongside raceways in use.
- T. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to NFPA 70.
- U. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:
  1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
  2. Where an underground service raceway enters a building or structure.
  3. Conduit extending from interior to exterior of building.
  4. Conduit extending into pressurized duct and equipment.
  5. Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
  6. Where otherwise required by NFPA 70.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- V. Comply with manufacturer's written instructions for solvent welding RNC and fittings.
- W. Expansion-Joint Fittings:
  - 1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F and that has straight-run length that exceeds 25 feet. Install in each run of aboveground RMC conduit that is located where environmental temperature change may exceed 100 deg F and that has straight-run length that exceeds 100 feet.
  - 2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
    - a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
    - b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
    - c. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F temperature change.
  - 3. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
  - 4. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
- X. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
- Y. Locate boxes so that cover or plate will not span different building finishes.
- Z. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
- AA. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

### **3.3 FIRESTOPPING**

- A. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

### **3.4 PROTECTION**

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
  - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
  - 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

**END OF SECTION**

03/07/2018

**SECTION 260543 - UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL 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. Metal conduits and fittings, including GRC.
  - 2. Rigid nonmetallic duct.
  - 3. Duct accessories.
  - 4. Polymer concrete handholes and boxes with polymer concrete cover.
  - 5. Utility structure accessories.
  - 6. Manhole and handhole waterproof coating.

**1.3 DEFINITIONS**

- A. Direct Buried: Duct or a duct bank that is buried in the ground, without any additional casing materials such as concrete.
- B. Duct: A single duct or multiple ducts. Duct may be either installed singly or as component of a duct bank.
- C. Duct Bank:
  - 1. Two or more ducts installed in parallel, with or without additional casing materials.
  - 2. Multiple duct banks.
- D. GRC: Galvanized rigid (steel) conduit.
- E. Trafficways: Locations where vehicular or pedestrian traffic is a normal course of events.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Duct-bank materials, including spacers and miscellaneous components.
  - 2. Duct, conduits, and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
  - 3. Accessories for manholes and handholes.
  - 4. Detectable warning tape.
  - 5. Waterproof coating.
  - 6. Sump pumps.
  - 7. Concrete mix design.

- B. Shop Drawings:
  - 1. Precast or Factory-Fabricated Underground Utility Structures:
    - a. Plans, elevations, sections, details, attachments to other work, and accessories.
    - b. Duct entry provisions, including locations and duct sizes.
    - c. Reinforcement details.
    - d. Frame and cover design and manhole chimneys.
    - e. Grounding details.
    - f. Dimensioned locations of cable rack inserts, pulling-in and lifting irons, and sumps.
    - g. Joint details.
    - h. Sump pumps.
  - 2. Factory-Fabricated Handholes Other Than Precast Concrete:
    - a. Dimensioned plans, sections, and elevations, and fabrication and installation details.
    - b. Duct entry provisions, including locations and duct sizes.
    - c. Cover design.
    - d. Grounding details.
    - e. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Coordinate layout and installation of ducts and handholes with final arrangement of other utilities, site grading, and surface features as determined in the field.
- B. Coordinate elevations of ducts and duct-bank entrances into handholes with final locations and profiles of ducts and duct banks as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations from those indicated as required to suit field conditions and to ensure that duct runs drain to manholes and handholes, and as approved by Engineer.
- C. Product Certificates: For concrete and steel used in precast concrete handholes, as required by ASTM C 858.
- D. Source quality-control reports.
- E. Field quality-control reports.

#### **1.6 MAINTENANCE MATERIALS SUBMITTALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
- B. Furnish cable-support stanchions, arms, insulators, and associated fasteners in quantities equal to **5** percent of quantity of each item installed.

#### **1.7 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
- B. Comply with ANSI C2.



- C. Comply with NFPA 70.
- D. Comply with ASTM C 857 Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.

### **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver ducts to Project site with ends capped. Store nonmetallic ducts with supports to prevent bending, warping, and deforming.
- B. Store precast concrete and other factory-fabricated underground utility structures at Project site as recommended by manufacturer to prevent physical damage. Arrange so identification markings are visible.
- C. Lift and support precast concrete units only at designated lifting or supporting points.

### **1.9 FIELD CONDITIONS**

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions, and then only after arranging to provide temporary electrical service according to requirements indicated:
  - 1. Do not proceed with interruption of electrical service without Architect's and Owner's written permission.
- B. Ground Water: Assume ground-water level is at grade level unless a lower water table is noted on Drawings.
- C. Ground Water: Assume ground-water level is 36 inches below ground surface unless a higher water table is noted on Drawings.

## **PART 2 - PRODUCTS**

### **2.1 METAL CONDUIT AND FITTINGS**

- A. GRC: Comply with ANSI C80.1 and UL 6.
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - 1. AFC Cable Systems; a part of Atkore International.
  - 2. Allied Tube & Conduit; a part of Atkore International.
  - 3. Anamet Electrical, Inc.
  - 4. Calconduit.
  - 5. Electri-Flex Company.
  - 6. FSR Inc.
  - 7. Korkap.
  - 8. Opti-Com Manufacturing Network, Inc (OMNI).
  - 9. O-Z/Gedney; a brand of Emerson Industrial Automation.
  - 10. Perma-Cote.
  - 11. Picoma Industries, Inc.
  - 12. Plasti-Bond.

13. Republic Conduit.
14. Southwire Company.
15. Thomas & Betts Corporation; A Member of the ABB Group.
16. Topaz Electric; a division of Topaz Lighting Corp.
17. Western Tube and Conduit Corporation.
18. Wheatland Tube Company.

- C. Listed and labeled as defined in NFPA 70, by a nationally recognized testing laboratory, and marked for intended location and application.

## **2.2 RIGID NONMETALLIC DUCT**

- A. Underground Plastic Utilities Duct: Type EPC-40-PVC RNC, complying with NEMA TC 2 and UL 651, with matching fittings complying with NEMA TC 3 by same manufacturer as duct.

- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. ARNCO Corp.
2. Beck Manufacturing.
3. CANTEX INC.
4. CertainTeed Corporation.
5. Condux International, Inc.
6. Crown Line Plastics.
7. ElecSys, Inc.
8. Electri-Flex Company.
9. Endot Industries Inc.
10. IPEX USA LLC.
11. Lamson & Sessions.
12. Manhattan/CDT.
13. National Pipe & Plastics.
14. Opti-Com Manufacturing Network, Inc (OMNI).
15. Spiraduct/AFC Cable Systems, Inc.

- C. Listed and labeled as defined in NFPA 70, by a nationally recognized testing laboratory, and marked for intended location and application.

- D. Solvents and Adhesives: As recommended by conduit manufacturer.

## **2.3 DUCT ACCESSORIES**

- A. Duct Spacers: Factory-fabricated, rigid, PVC interlocking spacers; sized for type and size of duct with which used, and selected to provide minimum duct spacing indicated while supporting duct during concreting or backfilling.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - a. Allied Tube & Conduit; a part of Atkore International.
  - b. CANTEX INC.
  - c. Carlon; a brand of Thomas & Betts Corporation.
  - d. IPEX USA LLC.
  - e. PenCell Plastics.

f. Underground Devices, Inc.

- B. Detectable Warning Tape: Comply with requirements for underground-line warning tape specified in Division 31 Section "Earth Moving."

#### **2.4 DUCT BANK CONCRETE DESIGN MIX**

- A. Concrete to be normal weight concrete with a 2,500 psi, 28-day compressive strength; water-cement ratio of 0.55 maximum (water content shall include surface water in aggregates); minimum cement content of 5-1/2 sacks per cubic yard, maximum 3/8-inch aggregate, four +/- 1 inch slump; 6 percent air content by volume.
1. Portland Cement: ASTM C 150, Type I/II.
  2. Normal Weight Aggregates: ASTM C33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.
    - a. Maximum Coarse Aggregate Size: 3/8-inch nominal, unless otherwise noted.
    - b. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
  3. Water: ASTM C94, potable.

#### **2.5 POLYMER CONCRETE HANDHOLES AND BOXES WITH POLYMER CONCRETE COVER**

- A. Description: Molded of sand and aggregate, bound together with a polymer resin, and reinforced with steel or fiberglass or a combination of the two.
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
1. Quazite: Hubbell Power Systems, Inc.
  2. Armorcast Products Company.
  3. NewBasis.
  4. Oldcastle Enclosure Solutions.
- C. Standard: Comply with SCTE 77. Handholes and bores to be Tier 22 unless otherwise noted.
- D. Color: Green.
- E. Configuration: Units shall be designed for flush burial and have integral closed bottom unless otherwise indicated.
- F. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
- G. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
- H. Cover Legend: Molded lettering, "ELECTRIC."
- I. Direct-Buried Wiring Entrance Provisions: Knockouts equipped with insulated bushings or end-bell fittings, selected to suit box material, sized for wiring indicated, and arranged for secure, fixed installation in enclosure wall.

- J. Duct Entrance Provisions: Duct-terminating fittings shall mate with entering duct for secure, fixed installation in enclosure wall.
- K. Handholes shall have factory-installed inserts for cable racks and pulling-in irons.

## **2.6 SOURCE QUALITY CONTROL**

- A. Test and inspect precast concrete utility structures according to ASTM C 1037.
- B. Nonconcrete Handhole and Pull-Box Prototype Test: Test prototypes of manholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
  - 1. Strength tests of complete boxes and covers shall be by an independent testing agency or manufacturer. A qualified registered professional engineer shall certify tests by manufacturer.
  - 2. Testing machine pressure gages shall have current calibration certification, complying with ISO 9000 and ISO 10012, and traceable to NIST standards.

## **2.7 MISCELLANEOUS MATERIALS**

- A. Waterproof Coating:
  - 1. Hydrocide 700B.
  - 2. PPS 922 Superseal.
  - 3. Bay Oil, "Ebony."
  - 4. Karnak 83AF.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Coordinate layout and installation of duct, duct bank, manholes, and handholes with final arrangement of other utilities, site grading, and surface features as determined in the field. Notify Architect if there is a conflict between areas of excavation and existing structures or archaeological sites to remain.
- B. Coordinate elevations of duct and duct-bank entrances into manholes and handholes with final locations and profiles of duct and duct banks, as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations as required to suit field conditions and to ensure that duct and duct bank will drain to manholes and handholes, and as approved by Architect.
- C. Clear and grub vegetation to be removed, and protect vegetation to remain according to Section 311000 "Site Clearing." Remove and stockpile topsoil for reapplication according to Section 311000 "Site Clearing."

### **3.2 UNDERGROUND DUCT APPLICATION**

- A. Duct for Electrical Cables: Type EPC-40-PVC RNC, direct-buried unless otherwise indicated.
- B. Stub-ups: Concrete-encased GRC.

### **3.3 EARTHWORK**

- A. Excavation and Backfill: Comply with Division 31 Section "Earth Moving," but do not use heavy-duty, hydraulic-operated, compaction equipment.
- B. Restoration: Replace area after construction vehicle traffic in immediate area is complete.
- C. Restore surface features at areas disturbed by excavation, and re-establish original grades unless otherwise indicated. Replace removed sod immediately after backfilling is completed.
- D. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Section 329200 "Turf and Grasses" and Section 329300 "Plants."
- E. Cut and patch existing pavement in the path of underground duct, duct bank, and underground structures according to "Cutting and Patching" Article in Section 017300 "Execution."

### **3.4 DUCT AND DUCT-BANK INSTALLATION**

- A. Where indicated on Drawings, install duct, spacers, and accessories into the duct-bank configuration shown. Duct installation requirements in this Section also apply to duct bank.
- B. Install duct according to NEMA TCB 2.
- C. Slope: Pitch duct a minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope duct from a high point between two manholes, to drain in both directions.
- D. Curves and Bends:
  - 1. Direct-Buried Duct Banks: Use manufactured GRC long radius sweeps for all bends with a radius of 6 ft. or less. All other bends are to be heated long radius sweeps. Conduit is not to be distorted.
  - 2. Concrete-Encased Duct Banks: Use heated long radius sweeps. Conduit is not to be distorted.
- E. Joints: Use solvent-cemented joints in duct and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent duct do not lie in same plane.
- F. End Bell Entrances to Manholes and Concrete and Polymer Concrete Handholes: Use end bells, spaced approximately 10 inches o.c. for 5-inch duct, and vary proportionately for other duct sizes.
  - 1. Begin change from regular spacing to end-bell spacing 10 feet from the end bell, without reducing duct slope and without forming a trap in the line.
  - 2. Grout end bells into structure walls from both sides to provide watertight entrances.
- G. Terminator Entrances to Manholes and Concrete and Polymer Concrete Handholes: Use manufactured, cast-in-place duct terminators, with entrances into structure spaced approximately 6 inches o.c. for 4-inch duct, and vary proportionately for other duct sizes.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

1. Begin change from regular spacing to terminator spacing 10 feet from the terminator, without reducing duct line slope and without forming a trap in the line.
- H. Building Wall Penetrations: Make a transition from underground duct to GRC at least 10 feet outside the building wall, without reducing duct line slope away from the building and without forming a trap in the line. Use fittings manufactured for RNC-to-GRC transition. Install GRC penetrations of building walls as specified in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."
- I. Sealing: Provide temporary closure at terminations of duct with pulled cables. Seal spare duct at terminations. Use sealing compound and plugs to withstand at least 15-psig hydrostatic pressure.
- J. Pulling Cord: Install 200-lbf- test nylon cord in empty ducts.
- K. Concrete-Encased Ducts and Duct Bank:
  1. Excavate trench bottom to provide firm and uniform support for duct. Prepare trench bottoms as specified in Section 312000 "Earth Moving" for pipes less than 6 inches in nominal diameter.
  2. Width: Excavate trench 12 inches wider than duct on each side if forms are installed to encase the duct.
  3. Width: Excavate trench 3 inches wider than duct on each side if sides of excavation are used as forms.
  4. Depth: As indicated on the Contract Documents.
  5. Support duct on duct spacers coordinated with duct size, duct spacing, and outdoor temperature.
  6. Spacer Installation: Place spacers close enough to prevent sagging and deforming of duct, with not less than four spacers per 20 feet of duct. Place spacers within 24 inches of duct ends. Stagger spacers approximately 6 inches between tiers. Secure spacers to earth and to duct to prevent floating during concreting. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
  7. Minimum Space between Duct: 3 inches between edge of duct and exterior envelope wall, 3 inches between ducts for like services, and 24 inches between power and communications ducts.
  8. Elbows: Use manufactured GRC elbows for stub-ups, at building entrances, and at changes of direction in duct run.
    - a. Couple RNC duct to GRC with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
    - b. Stub-ups to Outdoor Equipment: Extend concrete-encased GRC horizontally a minimum of 60 inches from edge of base. Install insulated grounding bushings on terminations at equipment.
      - 1) Stub-ups shall be minimum 4 inches above finished floor and minimum 3 inches from conduit side to edge of slab
    - c. Stub-ups to Indoor Equipment: Extend concrete-encased GRC horizontally a minimum of 60 inches from edge of wall. Install insulated grounding bushings on terminations at equipment.
      - 1) Stub-ups shall be minimum 4 inches above finished floor and no less than 3 inches from conduit side to edge of slab

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

9. Reinforcement: Reinforce concrete-encased duct as indicated on the Contract Documents. Arrange reinforcing rods and ties without forming conductive or magnetic loops around ducts or duct groups.
  10. Forms: Use walls of trench to form side walls of duct bank where soil is self-supporting and concrete envelope can be poured without soil inclusions; otherwise, use forms.
  11. Concrete Cover: Install a minimum of 3 inches of concrete cover between edge of duct to exterior envelope wall, 3 inches between duct of like services, and 24 inches between power and communications ducts.
  12. Concreting Sequence: Pour each run of envelope between manholes or other terminations in one continuous operation.
    - a. Start at one end and finish at the other, allowing for expansion and contraction of duct as its temperature changes during and after the pour. Use expansion fittings installed according to manufacturer's written instructions, or use other specific measures to prevent expansion-contraction damage.
    - b. If more than one pour is necessary, terminate each pour in a vertical plane and install 3/4-inch reinforcing-rod dowels extending a minimum of 18 inches into concrete on both sides of joint near corners of envelope.
  13. Pouring Concrete: Place concrete carefully during pours to prevent voids under and between duct and at exterior surface of envelope. Do not allow a heavy mass of concrete to fall directly onto ducts. Allow concrete to flow around duct and rise up in middle, uniformly filling all open spaces. Do not use power-driven agitating equipment unless specifically designed for duct-installation application.
- L. Direct-Buried Duct and Duct Bank:
1. Excavate trench bottom to provide firm and uniform support for duct. Comply with requirements in Division 31 Section "Earth Moving" for preparation of trench bottoms for pipes less than 6 inches in nominal diameter.
  2. Depth: As indicated on the Contract Documents.
  3. Support ducts on duct spacers coordinated with duct size, duct spacing, and outdoor temperature.
  4. Spacer Installation: Place spacers close enough to prevent sagging and deforming of duct, with not less than four spacers per 20 feet of duct. Place spacers within 24 inches of duct ends. Stagger spacers approximately 6 inches between tiers. Secure spacers to earth. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
  5. Install duct with a minimum of 3 inches between ducts for like services and 24 inches between power and communications duct.
  6. Install manufactured GRC long radius sweeps for stub-ups, at poles and equipment and at building entrances, and at changes of direction in duct.
    - a. Couple RNC duct to GRC with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
    - b. Stub-ups to Outdoor Equipment: Extend concrete-encased GRC horizontally a minimum of 60 inches from edge of base. Install insulated grounding bushings on terminations at equipment.
      - 1) Stub-ups shall be minimum 4 inches above finished floor and minimum 3 inches from conduit side to edge of slab
    - c. Stub-ups to Indoor Equipment: Extend concrete-encased GRC horizontally a minimum of 60 inches from edge of wall. Install insulated grounding bushings on terminations at equipment.

- 1) Stub-ups shall be minimum 4 inches above finished floor and no less than 3 inches from conduit side to edge of slab
7. After installing first tier of duct, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand place backfill to 4 inches over duct and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction. Comply with requirements in Section 312000 "Earth Moving" for installation of backfill materials.
    - a. Place minimum 8 inches of sand as a bed for duct. Place sand to a minimum of 12 inches above top level of duct.
- M. Warning Tape: Bury detectable warning tape approximately 18 to 24 inches directly over all direct-buried ducts and duct banks. Align tape parallel to and within 3 inches of centerline of duct bank. Provide an additional warning tape for each 12-inch increment of duct-bank width over a nominal 18 inches. Space additional tapes 12 inches apart, horizontally. Refer to Division 31 Section "Earth Moving."

### **3.5 INSTALLATION OF HANDHOLES OTHER THAN PRECAST CONCRETE**

- A. Install handholes level and plumb and with orientation and depth coordinated with connecting duct, to minimize bends and deflections required for proper entrances. Use handhole extension if required to match depths of duct, and seal joint between handhole and extension as recommended by manufacturer.
- B. Unless otherwise indicated, support units on a level bed of crushed stone as indicated on the drawings and compacted per Division 31 Section "Earth Moving."
- C. Elevation: In paved areas and trafficways, set cover flush with finished grade. Set covers of other handholes 1 inch above finished grade.
- D. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables, but short enough to preserve adequate working clearances in enclosure.
- E. Field cut openings for duct according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

### **3.6 GROUNDING**

- A. Ground underground ducts and utility structures according to Section 260526 "Grounding and Bonding for Electrical Systems."



### **3.7 FIELD QUALITY CONTROL**

- A. Perform the following tests and inspections:
  - 1. Demonstrate capability and compliance with requirements on completion of installation of underground duct, duct bank, and utility structures.
  - 2. Pull solid aluminum or wood test mandrel through duct to prove joint integrity and adequate bend radii, and test for out-of-round duct. Provide a minimum 12-inch- long mandrel equal to duct size minus 1/4 inch. If obstructions are indicated, remove obstructions and retest.
  - 3. Test handhole grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance as specified in Section 260526 "Grounding and Bonding for Electrical Systems."
- B. Correct deficiencies and retest as specified above to demonstrate compliance.
- C. Prepare test and inspection reports.

### **3.8 CLEANING**

- A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of duct until duct cleaner indicates that duct is clear of dirt and debris. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.
- B. Clean internal surfaces of manholes, including sump.
  - 1. Sweep floor, removing dirt and debris.
  - 2. Remove foreign material.

### **3.9 AS-BUILT DRAWINGS**

- A. The Contractor shall provide as-built drawings including as-built ties and markups on a monthly basis. As work progresses, all construction activities shall be documented. The record documents shall include:
  - 1. All demolition and abandonment of underground utilities and structures.
  - 2. Location, elevation and type (size and quantity) of installed underground utilities. Location, elevation and type of existing exposed utilities during installation of new work.
  - 3. The Contractor shall hire the services of a surveyor licensed in the state where the work is being performed to determine parameters stated above or complete work and record the results and update the electronic files. As-builts shall include lateral and vertical (depth) locations of all utilities at 50-foot increments as well as swing ties.
  - 4. Document installation with photographs in digital format, especially but not limited to, field joints, bedding material, concrete encasement, duct spacers, sweeps, bends and connections to manholes and buildings.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

5. Final documents (drawings and electronic files in AutoCAD format, latest edition) shall be submitted to the designated Owner's Representative not later than 30 days after substantial completion of the project. All comments shall be incorporated to the final documents within 14 days after receiving them from the Owner's Representative. The final record set (hard copy and the electronic files) shall be submitted to the Owner's Representative.

**END OF SECTION**

03/07/2018

## **SECTION 260553 - IDENTIFICATION FOR ELECTRICAL 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. Identification for raceways.
  - 2. Identification of power and control cables.
  - 3. Identification for conductors.
  - 4. Underground-line warning tape.
  - 5. Warning labels and signs.
  - 6. Instruction signs.
  - 7. Equipment identification labels.
  - 8. Miscellaneous identification products.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each electrical identification product indicated.
- B. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels. Furnish extra copies, in addition to mounted copies, for inclusion in maintenance manuals. Provide one copy on electronic media, type specified by Owner.

#### **1.4 QUALITY ASSURANCE**

- A. Comply with ANSI A13.1 and IEEE C2.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

#### **1.5 COORDINATION**

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications and with Owner's desired identification scheme, regardless of numbering indicated on the drawings and specifications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and

with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project. Coordinate Owner's desired identification scheme with NEMA and OSHA standards.

- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- C. Coordinate installation of identifying devices with location of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

## **PART 2 - PRODUCTS**

### **2.1 POWER AND CONTROL RACEWAY IDENTIFICATION MATERIALS**

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.
- B. Colors for Raceways Carrying Circuits at 600 V or Less:
  - 1. Black letters on an orange field.
  - 2. Legend: Indicate voltage and system or service type.
- C. Snap-Around Labels for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

### **2.2 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS**

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each cable size.
- B. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of cable it identifies and to stay in place by gripping action.

### **2.3 CONDUCTOR IDENTIFICATION MATERIALS**

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.
- B. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of conductor it identifies and to stay in place by gripping action.
- C. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tube with machine-printed identification label. Sized to suit diameter of and shrinks to fit firmly around conductor it identifies. Full shrink recovery at a maximum of 200 deg F. Comply with UL 224.
- D. Write-On Tags: Polyester tag, 0.010 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
  - 1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

## **2.4 UNDERGROUND-LINE WARNING TAPE**

- A. Tape:
  - 1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
  - 2. Printing on tape shall be permanent and shall not be damaged by burial operations.
  - 3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.
  
- B. Color and Printing:
  - 1. Comply with ANSI Z535.1 through ANSI Z535.5.
  - 2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.
  - 3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE.
  
- C. Tag:
  - 1. Reinforced, detectable three-layer laminate, consisting of a printed pigmented woven scrim, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
  - 2. Overall Thickness: 8 mils.
  - 3. Foil Core Thickness: 0.35 mil.
  - 4. Weight: 34 lb/1000 sq. ft..
  - 5. 3-Inch Tensile According to ASTM D 882: 300 lbf, and 12,500 psi.

## **2.5 WARNING LABELS AND SIGNS**

- A. Comply with NFPA 70 and 29 CFR 1910.145.
  
- B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.
  
- C. Warning label and sign shall include, but are not limited to, the following legends:
  - 1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
  - 2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

## **2.6 INSTRUCTION SIGNS**

- A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.
  - 1. Engraved legend with black letters on white face.
  - 2. Punched or drilled for mechanical fasteners.
  - 3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

## **2.7 EQUIPMENT IDENTIFICATION LABELS**

- A. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.
- B. Equipment Label Content: Include equipment's drawing designation and Owner specified unique equipment number, drawing numbers where equipment is indicated (plans, details, and schedules), plus the specification section number and title where equipment is specified.

## **2.8 CABLE TIES**

- A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.
  - 1. Minimum Width: 3/16 inch.
  - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
  - 3. Temperature Range: Minus 40 to plus 185 deg F.
  - 4. Color: Black except where used for color-coding.
- B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.
  - 1. Minimum Width: 3/16 inch.
  - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
  - 3. Temperature Range: Minus 40 to plus 185 deg F.
  - 4. Color: Black.
- C. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.
  - 1. Minimum Width: 3/16 inch.
  - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 7000 psi.
  - 3. UL 94 Flame Rating: 94V-0.
  - 4. Temperature Range: Minus 50 to plus 284 deg F.
  - 5. Color: Black.

## **2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS**

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
- F. Attach plastic raceway and cable labels that are not self-adhesive type with clear vinyl tape with adhesive appropriate to the location and substrate.
- G. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.
- H. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.
- I. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:
  - 1. Outdoors: UV-stabilized nylon.
  - 2. In Spaces Handling Environmental Air: Plenum rated.
- J. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches overall.

### **3.2 IDENTIFICATION SCHEDULE**

- A. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30 A, and 120 V to ground: Identify with self-adhesive vinyl label. Install labels at 10-foot maximum intervals.
- B. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:
  - 1. Power.
  - 2. UPS.
- C. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
  - 1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder and branch-circuit conductors.
    - a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
    - b. Colors for 208/110-V Circuits:
      - 1) Phase A: Black.
      - 2) Phase B: Red.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- 3) Phase C: Blue.
  - c. Colors for 480/277-V Circuits:
    - 1) Phase A: Brown.
    - 2) Phase B: Orange.
    - 3) Phase C: Yellow.
  - d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- D. Power-Circuit Conductor Identification, More than 600 V: For conductors in vaults, pull and junction boxes, manholes, and handholes, use write-on tags, nonmetallic plastic tag holder with adhesive-backed phase tags, and a separate tag with the circuit designation.
- E. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.
- F. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes, manholes, and handholes, use write-on tags, self-adhesive vinyl labels with the conductor or cable designation, origin, and destination.
- G. Control-Circuit Conductor Termination Identification: For identification at terminations provide self-adhesive vinyl labels with the conductor designation.
- H. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
  - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
  - 2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
  - 3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.
- I. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.
  - 1. Install underground-line warning tape for both direct-buried cables and cables in raceway.
- J. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.
- K. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive warning labels.
  - 1. Comply with 29 CFR 1910.145.
  - 2. Identify system voltage with black letters on an orange background.
  - 3. Apply to exterior of door, cover, or other access.
  - 4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:



**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- a. Power transfer switches.
- b. Controls with external control power connections.
5. Color code all junction boxes and associated cover plates serving emergency equipment with red paint.
  
- L. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
  
- M. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
  1. Labeling Instructions:
    - a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2-inch- high label; where two lines of text are required, use labels 2 inches high.
    - b. Outdoor Equipment: Stenciled legend 4 inches high.
    - c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
    - d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.
  2. Equipment to Be Labeled:
    - a. Enclosures and electrical cabinets.
    - b. Access doors and panels for concealed electrical items.
    - c. Enclosed switches.
    - d. Contactors.
    - e. Monitoring and control equipment.

**END OF SECTION**

03/07/2018

## **SECTION 260923 - LIGHTING CONTROL DEVICES**

### **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. Photoelectric switches.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings:
  - 1. Interconnection diagrams showing field-installed wiring.
  - 2. Include diagrams for power, signal, and control wiring.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Coordination Drawings: Reflected ceiling plan(s) and elevations, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
  - 1. Suspended ceiling components.
  - 2. Structural members to which equipment will be attached.
- B. Field quality-control reports.
- C. Sample Warranty: For manufacturer's warranties.

#### **1.5 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For each type of lighting control device to include in operation and maintenance manuals.

### **PART 2 - PRODUCTS**

#### **2.1 OUTDOOR PHOTOELECTRIC SWITCHES**

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - 1. Cooper Industries, Inc.
  - 2. Douglas Controls.
  - 3. Intermatic, Inc.
  - 4. Leviton Manufacturing Co., Inc.

5. NSi Industries LLC.

- B. Description: Solid state, with SPST dry contacts rated for 1800 VA inductive, to operate connected load, complying with UL 773, and compatible with CFL and LED lamps.
1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
  2. Light-Level Monitoring Range: 1.5 to 15 fc, with an adjustment for turn-on and turn-off levels within that range.
  3. Time Delay: Two hundred-second minimum, to prevent false operation.
  4. Lightning Arrester: Air-gap type.
  5. Mounting: Twist lock complying with NEMA C136.10, with base.
  6. Failure Mode: Luminaire stays ON.

## **2.2 CONDUCTORS AND CABLES**

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 14 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- D. Install unshielded, twisted-pair cable for control and signal transmission conductors.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine lighting control devices before installation. Reject lighting control devices that are wet, moisture damaged, or mold damaged.
- B. Examine walls and ceilings for suitable conditions where lighting control devices will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 WIRING INSTALLATION**

- A. Comply with NECA 1.
- B. Wiring Method: Comply with Section 260519 "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size is 3/4 inch.

- C. Wiring within Enclosures: Comply with NECA 1. Bundle, lace and train conductors to terminal points. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
- D. Size conductors according to lighting control device manufacturer's written instructions unless otherwise indicated.
- E. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

### **3.3 IDENTIFICATION**

- A. Identify components and power and control wiring according to Section 260553 "Identification for Electrical Systems."
  - 1. Identify controlled circuits in lighting contactors.
  - 2. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.
- B. Label time switches and contactors with a unique designation.

### **3.4 FIELD QUALITY CONTROL**

- A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
  - 1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
  - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Lighting control devices will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports.

### **3.5 ADJUSTING**

- A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting lighting control devices to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.
  - 1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.
  - 2. For daylighting controls, adjust set points and deadband controls to suit Owner's operations.

### **3.6 SOFTWARE SERVICE AGREEMENT**

- A. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- B. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.
  - 1. Upgrade Notice: At least **30** days to allow Owner to schedule and access the system and to upgrade computer equipment if necessary.

**3.7 DEMONSTRATION**

- A. Coordinate demonstration of products specified in this Section with demonstration requirements for low-voltage, programmable lighting control systems specified in Section 260943.16 "Addressable-Luminaire Lighting Controls" and Section 260943.23 "Relay-Based Lighting Controls," and Section 260943.33 "Distributive Network Lighting Control."
- B. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain lighting control devices. As a minimum and in addition to the requirements of other sections, provide two 4-hour days of owner training sessions in addition to multiple start-up visits to properly support the contractor.

**END OF SECTION**

03/07/2018

## **SECTION 265119 - LED INTERIOR LIGHTING**

### **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 the following types of LED luminaires:
  - 1. Materials.
  - 2. Finishes.
  - 3. Luminaire support.

#### **1.3 DEFINITIONS**

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Fixture: See "Luminaire."
- D. IP: International Protection or Ingress Protection Rating.
- E. LED: Light-emitting diode.
- F. Lumen: Measured output of lamp and luminaire, or both.
- G. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Arrange in order of luminaire designation.
  - 2. Include data on features, accessories, and finishes.
  - 3. Include physical description and dimensions of luminaires.
  - 4. Include emergency lighting units, including batteries and chargers.
  - 5. Include life, output (lumens, CCT, and CRI), and energy-efficiency data.
  - 6. Photometric data and adjustment factors based on laboratory tests IES LM-79 and IES LM-80.
    - a. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
    - b. Testing Agency Certified Data: For indicated luminaires, photometric data certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

7. Plans: Plans containing computer-generated point-by-point layouts in all spaces that interior luminaires submitted or substitutions are located.
- B. Shop Drawings: For nonstandard or custom luminaires.
  1. Include plans, elevations, sections, and mounting and attachment details.
  2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  3. Include diagrams for power, signal, and control wiring.
- C. Product Schedule: For luminaires and lamps. Use same designations indicated on Drawings.

### **1.5 INFORMATIONAL SUBMITTALS**

- A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
  1. Luminaires.
  2. Suspended ceiling components.
  3. Structural members to which equipment and or luminaires will be attached.
  4. Initial access modules for acoustical tile, including size and locations.
  5. Moldings.
  6. Architectural features.
- B. Qualification Data: For testing laboratory providing photometric data for luminaires.
- C. Seismic Qualification Data: For luminaires, accessories, and components, from manufacturer.
  1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
  2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- D. Product Certificates: For each type of luminaire.
- E. Product Test Reports: For each type of luminaire, for tests performed by manufacturer and witnessed by a qualified testing agency.
- F. Sample warranty.

### **1.6 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.
  1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

**1.7 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. LED Boards: One for every 20 of each type. Furnish at least one board for each luminaire type.
  - 2. LED Drivers: One for every 20 of each type. Furnish at least one driver for each luminaire type.
  - 3. Diffusers and Lenses: One for every 100 of each type and rating installed. Furnish at least one of each type.
  - 4. Globes and Guards: One for every 20 of each type and rating installed. Furnish at least one of each type.
  - 5. Luminaires with Non-Field Replaceable Boards and Drivers: One for every 100 of each type installed. Furnish at least one of each type.

**1.8 QUALITY ASSURANCE**

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.
- B. Provide luminaires from a single manufacturer for each luminaire type.
- C. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

**1.9 DELIVERY, STORAGE, AND HANDLING**

- A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

**1.10 COORDINATION**

- A. Coordinate layout and installation of luminaires and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, and partition assemblies. Coordinate type of luminaire with ceiling type and insulation. Notify Engineer of conflicts prior to ordering fixtures via Coordination Drawings described in this Section.

**1.11 WARRANTY**

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
- B. Warranty Period: Five years from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Products: Subject to compliance with requirements below.



1. Luminaires:
  - a. If only one manufacturer is listed in Luminaire Schedule, contractor must submit on this product.
  - b. If multiple manufacturers are listed in Luminaire Schedule, the first named manufacturer listed in the Luminaire Schedule is the basis of design. If the Electrical Contractor chooses to provide one of the listed acceptable equivalent manufacturers, the light fixture submittal in addition to proposed light fixtures shall include lighting calculations for interior areas to demonstrate equivalent fixture performance. Light fixture samples shall be provided at the request of the Architect and/or Engineer.
  - c. If one manufacturer is listed in Luminaire Schedule followed by the words "or equal," contractor may submit on any manufacturer with similar characteristics to those listed under description.
2. LED Boards:
  - a. Cree.
  - b. Nichia.
  - c. Lumileds.
  - d. Samsung.

## **2.2 PERFORMANCE REQUIREMENTS**

- A. Seismic Performance: Luminaires and lamps shall be labeled vibration and shock resistant.
  1. The term "withstand" means "the luminaire will remain in place without separation of any parts when subjected to the seismic forces specified and the luminaire will be fully operational during and after the seismic event."
- B. Ambient Temperature: 5 to 104 deg F.
  1. Relative Humidity: Zero to 95 percent.
- C. Altitude: Sea level to 1000 feet.

## **2.3 LUMINAIRE REQUIREMENTS**

- A. 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.
- B. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.
  1. Label shall include the following lamp characteristics:
    - a. "USE ONLY" and include specific lamp type.
    - b. Lamp diameter, shape, size, wattage, and coating.
    - c. CCT and CRI.
- C. Standards:
  1. ENERGY STAR certified.
  2. Recessed luminaires shall comply with NEMA LE 4.
  3. NRTL Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by an NRTL.

4. FM Global Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.
  5. UL Listing: Listed for damp location.
  6. California Title 24 compliant.
  7. User Replaceable LED Boards:
    - a. Bulb shape complying with ANSI C78.50.
- D. CRI of minimum 90.
- E. CCT of 3500 K.
- F. Rated lamp life of 50,000 hours to L70.
- G. Lamps Dimming Range: As indicated in Luminaire Schedule.
- H. Integral driver, unless indicated otherwise in Luminaire Schedule.
- I. Nominal Operating Voltage: As indicated in Luminaire Schedule.
- J. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.

## **2.4 DRIVERS - GENERAL REQUIREMENTS**

- A. Description: Include the following features, unless otherwise indicated.
1. Rebate Program Compliance: All electronic drivers must be on the local utility company's list of approved ballasts.
  2. Voltage: Field verify all voltage requirements prior to releasing lighting package and provide driver voltages as required by circuiting on plans.
  3. Disconnecting Means: Code-approved disconnecting means within each luminaire.

## **2.5 DRIVERS FOR LED BOARDS**

- A. Description: Electronic driver designed for applicable fixture(s) and load indicated by LED boards. Driver shall be designed for full light output with full range dimming.
1. Input Voltage Range: 120 to 277, +/-10%.
  2. Input Frequency: 50 to 60 Hz.
  3. Power Factor: >90% at full load.
  4. THD: <20% at full load.
  5. Case temperature rated for -40 deg. C through +80 deg. C.
  6. Overheat protection, self-limited short-circuit protection and overload protected.
  7. Primary fused.
  8. Dimming Range: 100 to 10 percent of normal.
  9. Compatibility: Certified manufacturer for use with specific dimming control system and lamp type indicated.
  10. Control: Coordinate wiring from driver to control device to ensure that the driver, controller, and connecting wiring are compatible.

## **2.6 MATERIALS**

- A. Metal Parts:
  - 1. Free of burrs and sharp corners and edges.
  - 2. Sheet metal components shall be steel unless otherwise indicated.
  - 3. Form and support to prevent warping and sagging.
- B. Steel:
  - 1. ASTM A 36/A 36M for carbon structural steel.
  - 2. ASTM A 568/A 568M for sheet steel.
- C. Stainless Steel:
  - 1. 1. Manufacturer's standard grade.
  - 2. 2. Manufacturer's standard type, ASTM A 240/240 M.
- D. Galvanized Steel: ASTM A 653/A 653M.
- E. Aluminum: ASTM B 209.
- F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
- G. Diffusers and Globes:
  - 1. Acrylic Diffusers: One hundred percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
  - 2. Glass: Annealed crystal glass unless otherwise indicated.
  - 3. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
- H. Factory-Applied Labels: Comply with UL 1598. Include recommended LED boards. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.
  - 1. Label shall include the following lamp characteristics:
    - a. LED board, shape, size, wattage, and coating.
    - b. CCT and CRI for all luminaires.

## **2.7 METAL FINISHES**

- A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

## **2.8 LUMINAIRE SUPPORT**

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.
- B. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Install lamps in each luminaire.
- D. Supports:
  - 1. Sized and rated for luminaire weight.
  - 2. Able to maintain luminaire position after cleaning and relamping.
  - 3. Provide support for luminaire without causing deflection of ceiling or wall.
  - 4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.
- E. Flush-Mounted Luminaires:
  - 1. Secured to outlet box.
  - 2. Attached to ceiling structural members at four points equally spaced around circumference of luminaire.
  - 3. Trim ring flush with finished surface.
- F. Wall-Mounted Luminaires:
  - 1. Attached per manufacturer's recommendations.
- G. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.
- H. Remote Mounting of Drivers: Distance between the driver and fixture shall not exceed that recommended by driver manufacturer. Verify, with driver manufacturers, maximum distance between driver and luminaire.
- I. Luminaire Locations: Refer to architectural reflected ceiling plans, sections, elevations, and details for exact luminaire locations, mounting heights, and mounting arrangements.

### **3.3 IDENTIFICATION**

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

**3.4 FIELD QUALITY CONTROL**

- A. Perform the following tests and inspections:
  - 1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
  - 2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
- B. Luminaire will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.

**3.5 ADJUSTING**

- A. Luminaire Aiming: For adjustable luminaires, aim all luminaires per Engineer's direction.
- B. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting the direction of aim of luminaires to suit occupied conditions. Make up to two visits to Project during other-than-normal hours for this purpose. Some of this work may be required during hours of darkness.
  - 1. During adjustment visits, inspect all luminaires. Replace LED boards and drivers or luminaires that are defective.
  - 2. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
  - 3. Adjust the aim of luminaires in the presence of the Architect.

**END OF SECTION**

03/07/2018

## **SECTION 265213 - EMERGENCY AND EXIT LIGHTING**

### **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. Exit signs.
  - 2. Luminaire supports.

#### **1.3 DEFINITIONS**

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Fixture: See "Luminaire" Paragraph.
- D. LED: Light emitting diode (lamp assembly).
- E. Lumen: Measured output of lamp and luminaire, or both.
- F. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of emergency lighting unit, exit sign, and emergency lighting support.
  - 1. Include data on features, accessories, and finishes.
  - 2. Include physical description of the unit and dimensions.
  - 3. Battery and charger for light units.
- B. Samples: For each product and for each color and texture specified.
- C. Product Schedule:
  - 1. For exit signs. Use same designations indicated on Drawings.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
  - 1. Luminaires.
  - 2. Structural members to which equipment will be attached.

3. Size and location of initial access modules for acoustical tile.
  4. Moldings.
  5. Architectural features.
- B. Qualification Data: For testing laboratory providing photometric data for luminaires.
- C. Product Certificates: For each type of luminaire.
- D. Seismic Qualification Data: For luminaires, accessories, and components, from manufacturer.
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
  2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
  4. Provide seismic qualification certificate for each piece of equipment.
- E. Product Test Reports: For each luminaire for tests performed by manufacturer and witnessed by a qualified testing agency.
- F. Sample Warranty: For manufacturer's special warranty.

#### **1.6 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For luminaires and lighting systems to include in emergency, operation, and maintenance manuals.
1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

#### **1.7 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. LED Boards: One for every 20 of each type and rating installed. Furnish at least one of each type.

#### **1.8 QUALITY ASSURANCE**

- A. FM Global Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.

#### **1.9 DELIVERY, STORAGE, AND HANDLING**

- A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

#### **1.10 WARRANTY**

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
1. Warranty Period: Five years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Seismic Performance: Luminaires shall withstand the effects of earthquake motions determined according to ASCE/SEI 7. Luminaires and lamps shall be labeled vibration and shock resistant.
1. The term "withstand" means "the luminaire will remain in place without separation of any parts when subjected to the seismic forces specified and the luminaire will be fully operational during and after the seismic event."

### **2.2 EXIT SIGNS**

- A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction. Comply with International Fire Code for size of Chevron-type circuits and indicator, which must be identifiable as a directional indicator at a distance of 40 ft.
- B. Internally Lighted Signs:
1. Operating at nominal voltage of As indicated on the drawings.
  2. Lamps for AC Operation: LEDs; 50,000 hours minimum rated lamp life.
  3. Self-Powered Exit Signs (Battery Type): Internal emergency power unit.
  4. Master/Remote Sign Configurations:
    - a. Master Unit: Comply with requirements above for self-powered exit signs, and provide additional capacity in LED power supply battery for power connection to remote unit.
    - b. Remote Unit: Comply with requirements above for self-powered exit signs, except omit power supply, battery, and test features. Arrange to receive full power requirements from master unit. Connect for testing concurrently with master unit as a unified system.
- C. Self-Luminous Signs:
1. Powered by tritium gas, with universal bracket for flush-ceiling, wall, or end mounting. Signs shall be guaranteed by manufacturer to maintain the minimum brightness requirements in UL 924 for **10** years.
  2. Use strontium oxide aluminate compound to store ambient light and release the stored energy when the light is removed. Include universal bracket for flush-ceiling, wall, or end mounting.

### **2.3 MATERIALS**

- A. Metal Parts:
1. Free of burrs and sharp corners and edges.
  2. Sheet metal components shall be steel unless otherwise indicated.
  3. Form and support to prevent warping and sagging.
- B. Doors, Frames, and Other Internal Access:
1. Smooth operating, free of light leakage under operating conditions.
  2. Designed to permit relamping without use of tools.
  3. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.



- C. Diffusers and Globes:
  - 1. Acrylic: 100 percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
  - 2. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.

## **2.4 METAL FINISHES**

- A. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## **2.5 LUMINAIRE SUPPORT COMPONENTS**

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for conditions affecting performance of luminaires.
- B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.
- C. Examine walls, floors, roofs, and ceilings for suitable conditions where emergency lighting luminaires will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Install lamps in each luminaire.
- D. Supports:
  - 1. Sized and rated for luminaire weight.
  - 2. Able to maintain luminaire position when testing emergency power unit.
  - 3. Provide support for luminaire and emergency power unit without causing deflection of ceiling or wall.
  - 4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire and emergency power unit weight and vertical force of 400 percent of luminaire weight.
- E. Wall-Mounted Luminaire Support:
  - 1. Attached per manufacturer's recommendations.

2. Do not attach luminaires directly to gypsum board.

### **3.3 IDENTIFICATION**

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

### **3.4 FIELD QUALITY CONTROL**

- A. Perform the following tests and inspections:
  1. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
- B. Luminaire will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.

### **3.5 STARTUP SERVICE**

- A. Perform startup service:
  1. Charge batteries minimum of one hour and depress switch to conduct short-duration test.
  2. Charge batteries minimum of 24 hours and conduct one-hour discharge test.

### **3.6 ADJUSTING**

- A. Adjustments: Within 12 months of date of Substantial Completion, provide on-site visit to do the following:
  1. Inspect all luminaires. Replace lamps, batteries, or luminaires that are defective.
    - a. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
  2. Conduct short-duration tests on all emergency lighting.

**END OF SECTION**

03/07/2018

## **SECTION 311000 - SITE CLEARING**

### **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. Protecting existing vegetation to remain.
  - 2. Removing above- and below-grade site improvements including, but not necessarily limited to, the following:
    - a. Bituminous concrete pavement including base material.
  - 3. Salvaging above-grade site improvements including the following:
    - a. Site furnishings (granite benches, signage, trash receptacles, etc.).
    - b. Catch basin and grates
  - 4. Disconnecting, capping or sealing, and removing site utilities or abandoning site utilities in place, as noted.
- B. Related Sections:
  - 1. Section 01 57 13 "Temporary Erosion and Sediment Control" for temporary control systems including silt fence, hay bales, and construction entrance requirements.

#### **1.3 Definitions**

- A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow; reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.
- D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

**1.4 Material Ownership**

- A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

**1.5 Informational Submittals**

- A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
  - 1. Use sufficiently detailed photographs or video.
  - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.
- B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

**1.6 Project Conditions**

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from University and authorities having jurisdiction.
  - 2. Provide alternate routes around closed or obstructed traffic ways if required by University or authorities having jurisdiction.
- B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on University's premises where directed.
- C. Utility Locator Service: Notify "Call Before You Dig" before site clearing.
  - 1. Coordinate with appropriate Utility companies, appropriate Agencies, Eastern Connecticut State University, and pay for permits, fees licenses, etc., for utility service work, as necessary.
- D. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.
- E. The following practices are prohibited within protection zones:
  - 1. Storage of construction materials, debris, or excavated material.
  - 2. Parking vehicles or equipment.
  - 3. Foot traffic.
  - 4. Erection of sheds or structures.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

5. Impoundment of water.
  6. Excavation or other digging unless otherwise indicated.
  7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- F. Do not direct vehicle or equipment exhaust towards protection zones.
- G. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.
- H. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

## **PART 2 - PRODUCTS**

### **2.1 Materials**

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 31 20 00 "Earth Moving."
1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

## **PART 3 - EXECUTION**

### **3.1 Preparation**

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Protect existing site improvements to remain from damage during construction.
1. Restore damaged improvements to their original condition, as acceptable to the University.
- C. Verify existing condition of items scheduled for removal. The University assumes no responsibility for the actual condition of items to be removed.
1. Do not proceed with any work that will result in unsafe conditions causing a continuing or permanent hazard or interruption of necessary utility services and/or facility's functions without written consent from the University.

### **3.2 Tree and Plant Protection**

- A. Temporary Fencing: Install temporary fencing located as indicated or outside the drip line of trees to protect remaining vegetation from construction damage.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- B. Protect tree root systems from damage due to noxious materials caused by runoff or spillage while mixing, placing, or storing construction materials. Protect root systems from flooding, eroding, or excessive wetting caused by dewatering operations.
- C. Do not store construction materials, debris, or excavated material within the drip line of remaining trees. Do not permit vehicles or foot traffic within the drip line; prevent soil compaction over root systems.
- D. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Landscape Architect.

**3.3 Existing Utilities**

- A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.
  - 1. Arrange with utility companies to shut off indicated utilities.
- B. Interrupting Existing Utilities: Do not interrupt utilities serving University facilities or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify University not less than days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without University's written permission.

**3.4 Excavation**

- A. Do not excavate within drip line of trees, unless otherwise indicated.
- B. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots.
  - 1. Relocate roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and relocate them without breaking. If encountered immediately adjacent to location of new construction and relocation is not practical, cut roots approximately 3 inches back from new construction.
  - 2. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with compacted material and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
- C. Where utility trenches are required within drip line of trees, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.
  - 1. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments; do not break or chop.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

**3.5 Site Improvements**

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.
- B. Remove slabs, paving, and aggregate base as indicated.
  - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
    - a. Do not mix excavated pavement with other excavated materials.

**3.6 Disposal of Surplus and Waste Materials**

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off the University's property.

**END OF SECTION**

## **SECTION 312000 – EARTH MOVING**

### **PART 1 - GENERAL**

#### **1.1 Summary**

- A. This Section includes the following:
  - 1. Preparing subgrades for site pavements and lawns.
  - 2. Base course for walks and pavements.
    - a) Refer to Division 32 Section "Concrete Paving" and "Bituminous Concrete Paving".
  - 3. Disposal of unsuitable material.
  - 4. Disposal of surplus suitable material, if required.
- B. Related Sections include the following:
  - 1. Division 31 Section "Site Clearing" for site stripping, grubbing, removing topsoil, and protecting trees to remain.

#### **1.2 Definitions**

- A. Backfill: Soil materials used to fill trench, structure or pit excavations.
  - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
  - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Layer placed between the subgrade and cementitious concrete paving, and bituminous concrete paving.
- C. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.
- D. Excavation: Removal of material encountered above subgrade elevations.
  - 1. Additional Excavation: Excavation below subgrade elevations as directed by Engineer. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
  - 2. Bulk Excavation: Excavations more than 10 feet in width and pits more than 30 feet in either length or width.
  - 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.



**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- E. Fill: Soil materials used to raise existing grades to subgrade.
- F. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- G. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below base, drainage fill, or topsoil materials.
- H. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

**1.3 Submittals**

- A. Physical Analysis: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated. Prepare separate reports for each type and application of borrow material.
  - 1. Classification: ASTM D 2487.
  - 2. Gradation Analysis (Sieve Analysis): ASTM D 422
  - 3. Moisture and Density Relationship Curve (Modified Proctor Analysis): ASTM D 1557.
  - 4. Classification and laboratory compaction curve for on-site soil material, in accordance with the above requirements, when requested by the Engineer.
- B. Soil/Material Origin: Provide a description for each originating off-site location or project from which imported soil/material is obtained, including known historical activities occurring on the site, and any possible releases that have occurred.
  - 1. The following are not acceptable:
    - a) Soils/materials originating from sites subject to any Federal or State remediation program.
    - b) Soils/materials that have undergone any treatment process for one or more chemical constituents listed within the CT RSRs.
- C. Shop Drawings for Information.
  - 1. Dewatering System: Show arrangement, locations, and details of system; and means of discharge and disposal of water. Include the following:
    - a) Process for removing particulate matter from pumped or drained water.
    - b) Copy of discharge permit.
    - c) Written report outlining control procedures to be adopted if dewatering problems arise.
  - 2. Excavation Protection System: Proposed system and design data; including certification by the qualified professional engineer responsible for their preparation.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

3. Disposal Facilities: The Contractor shall submit written documentation to the Engineer, prior to disposal, identifying the final disposal location(s) of soil, liquid and solid waste.
4. Disposal Records: For all waste generated by the project and removed from the property, submit records indicating receipt and acceptance by a facility licensed to accept the type of waste in question.
  - a) Records must clearly indicate name of accepting facility, quantity of material accepted (e.g., tons of soil) and dates of acceptance.
  - b) Records must indicate that the disposal facility was provided with satisfactory waste characterization data.
  - c) Submit Hazardous Waste Manifests for all Hazardous material generated by the project.

**1.4 Quality Assurance**

- A. Form 816: State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction.

**1.5 Project Conditions**

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Engineer and then only after arranging to provide temporary utility services according to requirements indicated:
  1. Notify Engineer not less than two days in advance of proposed utility interruptions.
  2. Do not proceed with utility interruptions without Engineer's written permission.
  3. Contact "Call Before You Dig" at 1-800-922-4455 before excavating. Proceed with excavation only after utility locator service completes marking of utility locations.
  4. Contractor to locate all existing underground utilities
- B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

**PART 2 - PRODUCTS**

**2.1 Soil Materials**

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Free of debris, waste, frozen materials, vegetation, clay and other deleterious matter; adequately graded for satisfactory compaction.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

1. On-Site Material: Native soil additionally free of masses of roots, individual roots more than 18 inches long and 1/2 inch in diameter, subject to approval by the Engineer.
2. Borrow Material:
  - a) Gravel Fill: Naturally occurring gravel material free of rock or gravel larger than 3 inches in any dimension; Form 816, Section M.02.06, Grading A.
  - b) Granular Fill: Broken or crushed stone gravel or a mixture thereof; Form 816, Section M.02.01, and M.02.06, Grading A.
- C. Backfill and Fill: Satisfactory soil materials.
- D. Base: Naturally or artificially graded mixture of sound, tough, durable particles of bank or crushed gravel.
  1. Rolled Gravel Base: Form 816, Section M.02.03
    - a) Bottom Course: Grading B.
    - b) Top Course: Grading C.
- E. Processed Aggregate Base or Processed Stone: Form 816, Section M.05.01.
- F. Pervious Structure Backfill: Naturally or artificially graded mixture of natural or crushed gravel, and broken or crushed stone; Form 816, Section M.02.05.
- G. Bedding (Pipe, Conduit, and Utilities):
  1. Sand: Form 816, Section M.08.01-21.
  2. Crushed Stone: Form 816, Section M.01.01, 3/4 inch (No. 6) gradation.

## **2.2 Accessories**

- A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility.
- B. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, minimum 6 inches wide and 4 mils thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep.
- C. Identifying Colors for Utilities:
  1. Red: Electric.
  2. Yellow: Gas, oil, steam, and dangerous materials.
  3. Orange: Telephone and other communications.

4. Blue: Water systems.
  5. Green: Sewer systems.
- D. Geotextile Fabric: Nonwoven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
1. Grab Tensile Strength: 110 lbf; ASTM D 4632.
  2. Tear Strength: 40 lbf; ASTM D 4533.
  3. Puncture Resistance: 50 lbf; ASTM D 4833.
  4. Water Flow Rate: 150 gpm per sq. ft.; ASTM D 4491.
  5. Apparent Opening Size: No. 50; ASTM D 4751.

### **PART 3 - EXECUTION**

#### **3.1 Preparation**

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

#### **3.2 Dewatering**

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding or damaging Project site and surrounding area.
- B. Protect excavations, backfills, fills and subgrades from softening, undermining, washout, and damage by rain or water accumulation.
  1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches. Provide positive drainage of backfill and fill.
  2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain dewatering until structures, pipes and appurtenances will not be damaged by surface or ground water. Maintain until dewatering is no longer required.
- C. Obtain discharge permit for water discharging into storm drainage system or waterway. Remove particulate matter from pumped or drained water which discharges or flows into storm drainage system or waterway.

### **3.3 Explosives**

- A. Explosives: Do not use explosives.

### **3.4 Excavation, General**

- A. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

### **3.5 Excavation For Structures**

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
  - 1. Excavation for Stormwater Structures, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended for bearing surface.

### **3.6 Excavation For Walks And Pavements**

- A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

### **3.7 Excavation For Utility Trenches**

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
  - 1. Clearance: 12 inches on each side of pipe or conduit.
  - 2. Clearance: As indicated.
- C. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.
  - 1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

### **3.8 Approval Of Subgrade**

- A. Notify Engineer when excavations have reached required subgrade.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- B. If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
  - 1. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- C. Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.
- D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer.

**3.9 Unauthorized Excavation**

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Engineer.
  - 1. Fill unauthorized excavations under other construction or utility pipe as directed by Engineer.

**3.10 Storage Of Soil Materials**

- A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Prevent windblown dust. Provide erosion control measures.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

**3.11 Backfill**

- A. Place and compact backfill in excavations promptly, but not before completing the following:
  - 1. Construction below finish grade.
  - 2. Surveying locations of underground utilities for record documents.
  - 3. Inspecting and testing underground utilities.
  - 4. Removing concrete formwork.
  - 5. Removing trash and debris.
  - 6. Removing temporary shoring and bracing, and sheeting.

**3.12 Utility Trench Backfill**

- A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- B. Backfill trenches excavated under footings and within 18 inches of bottom of footings; fill with concrete to elevation of bottom of footings.
- C. Place and compact initial backfill of subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.
  - 1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
- D. Coordinate backfilling with utilities testing.
- E. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.
- F. Place and compact final backfill of satisfactory soil material to final subgrade.
- G. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.
  - 1. Install detectable warning tape over non-ferrous piping.

**3.13 Fill**

- A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.
- B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 3 horizontal so fill material will bond with existing material.
- C. Place and compact fill material in layers to required elevations.

**3.14 Moisture Control**

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
  - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

**3.15 Compaction Of Backfills And Fills**

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
  - 1. Under structures, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material at 95 percent.
  - 2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 95 percent.
  - 3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 90 percent.
  - 4. Under rain gardens, compact each layer of backfill or fill material at 85 percent.

**3.16 Grading**

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  - 1. Provide a smooth transition between adjacent existing grades and new grades.
  - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Topsoil Finished Grade Adjacent to Walkway Surfaces: 1 inch below walkway finished grade.
- C. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
  - 1. Lawn or Unpaved Areas: Plus or minus 1 inch, however, not consistently in one direction.
  - 2. Walks: Plus or minus 1 inch.
  - 3. Pavements: Plus or minus 1/2 inch.

**3.17 Base Courses**

- A. Under pavements and walks, place base course on prepared subgrade and as follows:
  - 1. Place base course material over subgrade.
  - 2. Compact base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
    - a) Place material to indicated thickness within 3/4 inch, plus or minus.
  - 3. Shape base to required crown elevations and cross-slope grades.



**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

4. When thickness of compacted base course is 6 inches or less, place materials in a single layer.
5. When thickness of compacted base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

**3.18 Field Quality Control**

- A. Testing Agency: Engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing. Provide test results to Owner and Engineer within 72 hours of testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Engineer.
- D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
  1. Paved Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 square feet or less of paved area or building slab, but in no case fewer than three tests.
  2. Retaining Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet or less of wall length, but no fewer than two tests.
  3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet or less of trench length, but no fewer than two tests.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

**3.19 Protection**

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

1. Scarify or remove and replace soil material to depth as directed by Owner; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

**3.20 Disposal Of Surplus And Waste Materials**

- A. Disposal:
  1. Remove excess/surplus soil and transport to an off-site location at the approval of the Engineer.
  2. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.
- B. Characterization Sampling for Off-Site Disposal: The Contractor will be responsible for characterization of soil to be removed from the property. The Engineer will not conduct characterization sampling, testing, or analysis, unless directed by the Owner for independent verification.

**END OF SECTION**

## **SECTION 312001 - BUILDING EXCAVATION AND BACKFILL**

### **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.
- B. State of Connecticut Department of Transportation, Standard Specifications for Roads, Bridges and Incidental Construction Form 816, latest edition.
- C. American Society for Testing and Materials (ASTM) Standards:
  - 1. ASTM C136 - Method of sieve analysis of fine and coarse aggregates.
  - 2. ASTM C117 - Standard test method for materials finer than No. 200 sieve in mineral aggregate washing.
  - 3. ASTM D422 - Standard test method for particle size analysis of soils.
  - 4. ASTM D1140 - Test for amount of material in soils finer than the No. 200 sieve.
  - 5. ASTM D1556 - Test method for density of soil in place by the sand cone method.
  - 6. ASTM D1557 - Test methods for moisture-density relations of soils and soil aggregate mixtures using 10 lb. hammer and 18 inch drop. AASHTO Standard T-180 may be substituted for ASTM D1557.
  - 7. ASTM D2922 - Test methods for density of soil and soil-aggregate in place by nuclear methods (shallow depth).
  - 8. ASTM D4318 - Test method for liquid limit, plastic limit and plasticity index of soils.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Excavating and backfilling for buildings, walls, site walls and structures.
  - 2. Subsurface drainage backfill for walls and trenches.
  - 3. Excavation and off-site disposal of all unsuitable and excess materials and stockpiling of all suitable onsite materials required for reuse.
  - 4. Provision, transportation and placement of all required fill and backfill materials.
  - 5. Drainage and dewatering required to perform work in the dry.

#### **1.3 UNIT PRICES**

- A. Work of this Section is affected by unit prices for earth moving specified in Division 01 Section "Unit Prices."
- B. Quantity allowances for earth moving are included in Division 01 Section "Allowances."

#### **1.4 DEFINITIONS**

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
- B. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

- C. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- D. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
  - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by geotechnical engineer and the owner's agent. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
  - 2. Bulk Excavation: Excavation more than 10 feet in width.
  - 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by geotechnical engineer and the owner's agent. Unauthorized excavation, as well as remedial work directed by geotechnical engineer and the owner's agent, shall be without additional compensation.
- E. Fill: Soil materials used to raise existing grades.
- F. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing, trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:
  - 1. Excavation of Footings, Trenches, and Pits: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch- wide, maximum, short-tip-radius rock bucket; rated at not less than 138-hp flywheel power with bucket-curling force of not less than 28,700 lbf and stick-crowd force of not less than 18,400 lbf with extra-long reach boom; measured according to SAE J-1179.
  - 2. Bulk Excavation: Late-model, track-mounted loader; rated at not less than 230-hp flywheel power and developing a minimum of 47,992-lbf breakout force with a general-purpose bare bucket; measured according to SAE J-732.
- G. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface within the building limits.
- H. Subbase Course: Aggregate layer placed between the subgrade and base course.
- I. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase.
- J. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

## **1.5 SUBMITTALS**

- A. Product Data: For each type of the following manufactured products required:
  - 1. Warning tapes.
  - 2. Subsurface drainage geotextile.
- B. Samples for Verification: For the following products, in sizes indicated below:
  - 1. 12 by 12-inch sample of drainage geotextile with specification analysis.

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

- C. Qualification Data: For qualified testing agency.
- D. Earth Material Samples: Contractor shall be responsible for obtaining samples (50 lb. minimum) of earthwork materials proposed to be used and transporting them to the site seven calendar days in advance of the time planned for incorporating them into the work. Use of proposed materials by the Contractor prior to testing and approval or rejection shall be at the Contractor's risk. The following information shall be submitted with the samples.
  - 1. Location of borrow source site.
  - 2. Present and past usage of the source site and material.
  - 3. Any previously existing report(s) associated with an assessment of the source site, as relates to the presence of oil or hazardous material.
  - 4. Location within the source site from which the material will be obtained.
- E. Up to three test series (gradation and laboratory compaction) will be completed by the geotechnical engineer or owner's agent for off-site borrow sources for each category of earth materials defined in Part 2 of this Section at the owner's cost. Testing of additional samples or sources shall be at the Contractor's cost.
  - 1. Sieve analysis to be based on washed sieve analysis in accordance with appropriate ASTM Standard.
- F. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
  - 1. Classification according to ASTM D 2487.
  - 2. Laboratory compaction curve according to ASTM D 1557.
  - 3. Report of actual unconfined compressive strength and/or results of bearing tests of each stratum tested.
- G. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earth moving operations. Submit before earth moving begins.
- H. Flowable Fill Mix Design: Submit mix design with admixture information for review and approval a minimum of 15 days prior to start of Work.

**1.6 QUALITY ASSURANCE**

- A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.
- B. Earthwork Observation and Testing:
  - 1. The owner and/or owner's agent will retain a qualified geotechnical engineer and/or testing agency to perform onsite observation and testing during work under this and related sections and as indicated in the "Schedule of Special Inspections." The services of the geotechnical engineer/testing agency may include, but not be limited to, the following:
    - a. Observation during excavation, subgrade preparation and backfill for footings, slabs-on-grade, and subsurface drainage construction, etc.
    - b. Determination of requirements for additional excavation to remove unsuitable materials.
    - c. Observation and testing during placement and compaction of fill and backfill.

- d. Laboratory testing and analysis of fill materials specified.
  - e. Review of submittals.
  - 2. During the course of construction the geotechnical engineer/testing agency shall advise the owner's agent, in writing, with a copy to the Architect and Contractor, if at any time, in his opinion, the work is not in substantial conformity with the plans and specifications. The geotechnical engineer's and/or testing agency's presence does not include supervision or direction of the actual work by the Contractor, his employees, subcontractors or agents. Neither the presence of the geotechnical engineer and/or testing agency, nor any observations and testing performed by him shall excuse the Contractor from defects discovered in his work.
  - 3. Testing equipment will be provided by and testing performed by the geotechnical engineer and/or testing agency, except as otherwise provided by contract. Upon request by the owner's agent, the Contractor shall provide such auxiliary personnel and services as needed to accomplish testing work and to repair damage caused thereby to permanent work.
  - 4. References herein to observations, testing and determinations by the "Engineer" include services to be provided by the geotechnical engineer and/or testing agency when appropriate and when so authorized by the engineer or owner.
- C. Preexcavation Conference: Conduct conference at Project site.
- 1. Before commencing earthwork, meet with representatives of the governing authorities, owner, architect, engineer, consultants, independent testing agency, and other concerned entities. Review earthwork procedures and responsibilities including testing and inspection procedures and requirements. Notify participants at least three working days prior to convening conference. Record discussions and agreements and furnish a copy to each participant.

## **1.7 PROJECT CONDITIONS**

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
- 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
  - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Existing Utilities:
- 1. Notify utility locator service for area where project is located before site clearing or excavating. Hire private utility markout service for areas not marked by utility companies. See the "General Conditions" of the construction contract.
  - 2. Before starting excavation, establish location and extent of any underground utilities occurring in work area. Make arrangements with appropriate utility company for removal and relocation of lines which are in the way of excavation. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.
  - 3. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult utility owner immediately for direction. Cooperate with owner, owner's agent, and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

4. Inactive or abandoned utilities encountered during construction operations shall be removed, plugged or capped. The location of such utilities shall be noted on record drawings and reported in writing to owner's agent. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies for shutoff services if lines are active.
  5. Do not interrupt existing utilities serving facilities occupied and used by owner or others, during occupied hours, except when permitted in writing by owner's agency and then only after arranging to provided acceptable temporary utility services. Provide minimum of 48 hours notice to owner's agent and receive written notice to proceed before interrupting any utility. Do not proceed with utility interruptions without owner's written permission.
  6. When in the course of the work it is necessary to connect a utility to a main in a public way, all the requirements of both the authorities governing the utility and those governing the public way shall be met. Pavement shall be temporarily and permanently replaced as directed by these authorities at no additional cost to the owner.
- C. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shutoff services if lines are active.
- D. Site Information:
1. Information in the contract plans and in the Specifications relating to subsurface conditions, existing utilities and structures is from the best sources presently available. Such information is furnished only for the information and convenience of the Contractor, and the accuracy and completeness of this information is not guaranteed. The opinions expressed in this report are those of the geotechnical engineer and represent interpretations of the subsoil conditions, tests and results of analyses conducted by the geotechnical engineer. The owner will not be responsible for interpretations or conclusions drawn from this data by the Contractor.
  2. Refer to Division 01 "Supplemental Information - Geotechnical Report" for available subsurface data. The report is not part of the Contract Documents. The Contractor may, at his own expense and upon application to the owner, conduct additional subsurface explorations and testing.

## **PART 2 - PRODUCTS**

### **2.1 SOIL MATERIALS**

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations. All rock and soil materials furnished for use as fill or backfill shall be free of grease, soil, solvents, pesticides, herbicides or other hazardous or deleterious materials and/or contaminants. All rock and soil materials specified in this Section shall also be free from ice, snow, trash, debris, stumps, roots and organic material.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups symbols shall not be used as fill or backfill except where impervious fill is specified or detailed Satisfactory soils which have

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

been rendered excessively wet, such that the Contractor cannot establish a stable soil mass compacted as specified in this Section, also shall not be used as fill or backfill.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Backfill and Fill: Satisfactory soil materials.

E. 3/4 Inch Crushed Stone: Crushed stone shall be a quarry product or washed gravel stone obtained from offsite sources for use as detailed on the drawings. Crushed stone shall consist of durable crushed rock or gravel stone essentially free of silt, clay, loam or other deleterious materials and shall conform to the following gradation requirements for the nominal size indicated.

SQUARE MESH SIEVES	PERCENT FINER BY WEIGHT
Pass 1 Inch	100
Pass 3/4 Inch	90 - 100
Pass 1/2 Inch	20 - 55
Pass 3/8 Inch	0 - 15
Pass No. 4	0 - 5

F. Sand-Gravel Fill: Naturally or artificially graded non-plastic mixture of durable, sound coarse and fine aggregate and obtained from suitable excavated onsite soils or offsite sources. Mixture to be free of debris, waste, frozen materials, and organics, and shall be well graded within the following limits:

SQUARE MESH SIEVES	PERCENT FINER BY WEIGHT
Pass 2-1/4 Inch	100
Pass 2 Inch	95 - 100
Pass 3/4 Inch	50 - 75
Pass 1/4 Inch	25 - 45
Pass No. 40	5 - 20
Pass No. 100	2 - 12

G. Bedding Material: Sand or sandy soil free of debris, waste, frozen materials and organics with 100 percent passing a 3/8-inch sieve and not more than 10 percent passing a No. 200 sieve.

H. Granular Fill (Also Termed "Structural Fill"): Granular fill shall be obtained from suitable excavated onsite soil or offsite borrow sources for use as fill and backfill below and interior to building areas except where other materials are specified or detailed, and as detailed on the drawings. Granular fill shall consist of non-plastic naturally or artificially graded mixture of sound coarse and fine aggregates free of debris, waste, frozen materials and organics and conforming to the following gradation:

SQUARE MESH SIEVES	PERCENT FINER BY WEIGHT
Pass 3-1/2 Inch	100
Pass 1-1/2 Inch	55 - 100
Pass 1/4 Inch	25 - 60
Pass No. 10	15 - 45
Pass No. 40	5 - 25



**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

SQUARE MESH SIEVES	PERCENT FINER BY WEIGHT
Pass No. 100	0 - 10
Pass No. 200	0 - 5

- I. General Fill: Clean, sound mixture of material free of debris, waste, frozen materials and organics with 5 inch maximum size aggregate and not more than 12 percent passing the No. 200 sieve.
- J. Sand: ASTM C 33; fine aggregate.
- K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.
- L. Flowable Fill: Mixture of cement, GranCem, sand, water and admixtures to produce a flowable fill with a 100 psi minimum, 28 day minimum compressive strength.

**2.2 GEOTEXTILES**

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
  - 1. Grab Tensile Strength: 157 lbf (minimum); ASTM D 4632.
  - 2. Sewn Seam Strength: 142 lbf (minimum); ASTM D 4632.
  - 3. Tear Strength: 56 lbf (minimum); ASTM D 4533.
  - 4. Puncture Strength: 56 lbf (minimum); ASTM D 4833.
  - 5. Apparent Opening Size: No. 70 sieve, maximum; ASTM D 4751.
  - 6. Permittivity: 0.5 per second, minimum; ASTM D 4491.
  - 7. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

**2.3 ACCESSORIES**

- A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
  - 1. Red: Electric.
  - 2. Yellow: Gas, oil, steam, and dangerous materials.
  - 3. Orange: Telephone and other communications.
  - 4. Blue: Water systems.
  - 5. Green: Sewer systems.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

- B. Protect and maintain erosion and sedimentation controls during earth moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.
- D. Provide protective construction fence around all landscaping in work area to remain.

**3.2 DEWATERING**

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades and foundation soils from softening, undermining, washout, and damage by rain or water accumulation.
  - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. The Contractor shall grade and ditch the site as necessary to direct surface runoff away from open excavations. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
  - 2. The Contractor shall provide, at his own expense, adequate pumping and drainage facilities to keep all excavations and work sufficiently dry from groundwater and/or surface runoff so as not to adversely affect construction product or procedures nor cause excessive disturbance of underlying natural ground or footing and slab subgrades. Contractor shall similarly control water entering the excavation as a result of construction operations, such as washing of concrete equipment and tools and the like.
  - 3. Water from trenches and excavations shall be disposed of in such a manner as will not cause injury to public health, nor damage to public or private property, existing work, or work in progress, nor to the surface of roads, walks and streets, nor cause any undue interference with the use of the same by the public. The Contractor shall comply with all applicable environmental protection and/or sediment/erosion control regulations.
  - 4. Under no circumstances place concrete or fill, or lay piping or install appurtenances in excavations containing free water. Keep utility trenches free from water until pipe joint material has hardened.

**3.3 EXPLOSIVES**

- A. Explosives: Do not use explosives.

**3.4 EXCAVATION, GENERAL**

- A. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not disintegrate or excavate rock until it has been classified and cross sectioned by the geotechnical engineer and/or owner's agent. The Contract Sum will be adjusted for rock excavation according to contract provisions for changes in the Work. Changes in the Contract Time may be authorized for rock excavation.
  - 1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
    - a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

2. Rock excavation includes removal and disposal of rock and includes replacement with approved materials.
  - a. Uncover and expose all rock surfaces to be removed.
  - b. Notify owner in writing before rock removal proceeds.
  - c. The owner will engage a registered land surveyor to cross section the top of rock and determine the quantity of rock for payment. Measurements for payment will be based on in place cubic yards of rock removed to paylines, as defined:
    - 1) For Walls or Piers with Footings: The measurements will be taken horizontally parallel to and 12 inches outside of the edges of the concrete footings and vertically 12 inches below bottom of footing elevation as indicated in the Contract Documents.
    - 2) For Walls or Piers without Footings: The measurements will be taken horizontally parallel to and 12 inches outside of the edges of the concrete limits and vertically 12 inches below bottom of concrete elevation as indicated in the Contract Documents.
    - 3) For Slabs-on-Grade: The measurement will be taken vertically 12 inches below slab subgrade elevation as indicated in the Contract Documents.
    - 4) For Utility Trenches: The measurement will be taken vertically 6 inches below bottom of pipe and horizontally 24 inches wider than the nominal diameter of pipe/conduit as indicated in the Contract Documents.
    - 5) For Tanks, Vaults, Manholes, Pits, Etc.: The measurement will be taken horizontally 24 inches greater in both length and width or diameter than the actual exterior dimensions of the structures and vertically 12 inches below the bottom elevation of structure as indicated in the Contract Documents.
  - d. No payment will be made for overblasted rock and/or shattered layers below paylimits, associated removal and replacement with suitable fill material.

**B. Dimensions:**

1. Excavate to elevations and dimensions indicated on the drawings or as otherwise required for the work. Do all necessary excavation, including but not limited to, excavation for structures, footings, foundations, grade beams, walls and slabs below grade, paving, utility lines, mechanical work, mechanical and drainage structures, drains, and other below grade work. Excavate sufficient material so as to allow ample space for construction operations including placing and removal of forms, installation of waterproofing, dampproofing or utilities and inspection of excavated areas.
2. Side forms will be required for all concrete work unless omission of forms is requested by the Contractor, in writing, to the engineer. Where omission of forms is requested by the Contractor, and accepted by the engineer, the Contractor shall bear the cost of any additional concrete volume required beyond the minimum profiles and dimensions of the footing, wall, pier as detailed.

**C. Disposition of Excavated Material:**

1. Sort and stockpile excavated material according to its suitability for reuse and job requirements. Onsite stockpile room will be limited and the contractor shall plan his operations to facilitate prompt reuse of excavated material or provide off-site stockpile locations as required.
2. Stockpile soil materials without intermixing. Place, grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

3. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
  4. Offsite Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash and debris and legally dispose of it off owner's property.
- D. Unauthorized Excavation: Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the engineer or owner's agent. Unauthorized excavation, as well as remedial work specified by the engineer, shall be at the Contractor's expense.
1. In areas below structures, pavements and walks, backfill unauthorized excavation with granular fill placed and compacted in accordance with this Section, unless otherwise directed by the engineer.
  2. Elsewhere, backfill and compact unauthorized excavations with general fill, compacted to the requirements of this Section.
  3. Where the excavation of otherwise suitable materials is required due to these materials being rendered unsuitable due to disturbance, construction activity, freezing or lack of protection from the elements, the Contractor shall excavate these materials and provide remedial work as specified above at no additional cost to the owner.
- E. Authorized Additional Excavation: In the case that unsuitable materials, as determined by the engineer, are encountered at the specified subgrade elevation, the engineer may direct the removal of the unsuitable material and refill with granular fill placed and compacted in accordance with the requirements of this Section. Authorized additional excavation with granular fill backfill will be paid for according to contract provisions for changes in the Work.
- F. Backfilling Prior to Acceptance of Work Installed:
1. Do not allow or cause the work performed or installed to be covered up or enclosed by work of this Section prior to all required inspections, tests and acceptances.
  2. Should any of the work be so enclosed or covered up before it has been accepted, uncover all such work at no additional cost to the owner.
  3. After the work has been completed, tested, inspected and accepted, make all repairs and replacements necessary to restore the work to the condition in which it was found at the time of uncovering, all at no additional cost to the owner.
- G. Sheeting, Shoring and Bracing:
1. Provide sheeting, shoring and/or bracing at excavations as required to assure safety against collapse of earth or rock at sides of excavations; as required for support of adjacent structures, streets or utilities; or as required to comply with federal, state or local regulations, codes or ordinances.
  2. Provide materials for sheeting, shoring and bracing, such as sheet piling, uprights, stringers and cross braces, in good serviceable condition. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down sheeting, shoring and bracing as excavation progresses.
  3. All sheeting and bracing not ordered left in place shall be carefully removed in such a manner as not to endanger the construction of other structures, utilities or property whether public or private. All voids left after withdrawal of sheeting shall be immediately refilled with sand and rammed with tools especially adapted to that purpose or otherwise compacted as directed to achieve the required density.

**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

4. Wood sheeting shall not be completely withdrawn if driven below mid-diameter of any pipe, and under no circumstances shall any wood sheeting be cut off at a level lower than one foot above the top of pipe.
5. Refer to the *Related Requirements* in Section 315000 "Excavation Support and Protection."

H. Dust and Erosion Control:

1. The Contractor shall take all necessary measures and provide equipment and/or materials to minimize dust from rising and blowing across the site and also to control surface water throughout the operation so that it does not run onto paved ways without being filtered. In addition, the Contractor shall control all dust created by construction operations and movement of construction vehicles, both on the site and on paved ways.
2. Thoroughly moisten all surfaces as required to prevent dust from being a nuisance to the public, neighbors and performance of other work on the site.
3. Repair any broken or damaged sections of hay bales or other erosion and siltation control measures damaged during excavation and grading operations and install any additional sections necessary for proper control.

I. Frost Protection and Snow Removal:

1. The Contractor shall, at his own expense, keep the operations under this contract clear and free of accumulations of snow or as required to carry out the Work.
2. Do not excavate to full indicated depth when freezing temperatures may be expected, unless footings or slabs can be cast immediately after excavation has been completed. Protect the excavation from frost if placing of concrete is delayed. Do not cast concrete on frozen ground.
3. Completed foundations which have not been backfilled or which have less than 42 inches of earth cover above the bottom of the foundation shall be protected from freezing by temporary additional earth cover, insulating blankets, heaters or other methods. See Section 033000 "Cast-In-Place Concrete" for additional requirements.

J. Protection of Persons and Property:

1. The Work shall be executed in such a manner as to prevent any damage to adjacent property and any other property and existing improvements, such as but not limited to, streets, curbs, paving, service utility lines, structures, monuments, bench marks and other public and private property. Protect existing improvements from damage caused by settlement, lateral movements, undermining, washout, vibration and other hazards created by earthwork operations.
2. In the case of any damage or injury caused in the performance of the Work, the Contractor shall, at his own expense, make good such damage or injury to the satisfaction of and without cost to the owner. Existing roads, sidewalks and curbs damaged during the project work shall be repaired or replaced to their original condition at the commencement of operations. The Contractor shall replace, at his own expense, existing bench marks, monuments and other reference points which are disturbed or destroyed.
3. Barricade open excavations occurring as part of this Work and post with warning lights. Operate warning lights during hours from dusk to dawn each day and otherwise as required.
4. Buried structures, utility lines, etc., including those which project less than 18 inches above grade, which are subject to damage from construction equipment shall be clearly marked to indicate the hazard.

5. Provide protective construction fence around all landscaping in work area to remain.

### **3.5 EXCAVATION FOR STRUCTURES**

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
  1. General: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
  
- B. Preparation of Building Area for Foundations:
  1. The Contractor's bid is to include the costs to excavate and legally dispose of from the site all materials within the building footprint to the subgrade elevations indicated on the drawings, including stripping of topsoil. The Contractor's bid is also to include all excavation of the area of proposed footings plus 2 feet horizontally (minimum) beyond the area of all footings as well as excavation of necessary transitional slopes per OSHA requirements, and backfill with compacted granular fill. Additionally the Contractor's bid is to include the costs to furnish and place compacted granular fill and base materials to the slab subgrade elevations indicated on the drawings.
  2. Additional excavation and backfill beyond the limits indicated must be approved by the owner's agent. Compensation for the approved additional excavation with granular fill backfill will be calculated using the contract unit prices and allowances. The Contractor is responsible to hire an independent registered land surveyor approved by the owner to survey, record and determine the quantity of additional excavation (as defined by the geotechnical engineer) for payment.
  3. Excavation of Unsuitable Material within the Influence of the Building Foundations: Additional excavation to remove existing fill or other unsuitable material from within the areas of influence of the foundations and below slabs-on-grade shall be conducted when so directed by the geotechnical engineer. The horizontal limits of excavation below footing level shall be one foot beyond the outside perimeter of the footing plus an additional one foot for every foot of depth below the footing, unless otherwise directed by the engineer. See Section 3.5 B.2 for additional requirements.
  
- C. Spread Footing Subgrades:
  1. Spread footing foundations shall bear on natural inorganic soil or compacted granular fill overlying natural inorganic soils. The compacted granular fill shall extend at least one foot horizontally beyond the limits of the footing. See drawing S-4 for additional requirements.
  2. Footing subgrades shall be prepared by excavating all existing material to the specified bottom of the footing elevation, 4 feet below existing grades, or as indicated on the Contract Documents, whichever is lower. Allow the geotechnical engineer to view the excavated subgrade at this level. The geotechnical engineer shall determine whether authorized additional excavation is required to remove unsuitable material. Remove and replace such unsuitable material in accordance with paragraph 3.5 B.2 and 3.5 B.3 of this section or as otherwise directed by the engineer.
  3. The Contractor shall take every precaution to minimize the disturbance of excavated subgrades in the natural soils. Such precautions shall include, but not be limited to, using excavation buckets without teeth and/or accomplishing excavation to final subgrade with

hand tools. All materials disturbed during excavation shall be removed to undisturbed natural soils or re-compacted as directed by the engineer.

4. Refill excavation to the specified bottom of the footing elevation with granular fill placed and compacted in accordance with the requirements of this Section.
5. Proof compact the final footing subgrade with at least two passes of a vibratory plate compactor immediately prior to placing forms and reinforcing.

D. Subgrade for Slabs-on-Grade:

1. Slabs-on-grade shall be supported on subbase/base course(s) as indicated on the drawings.
2. Remove and replace excessively wet, disturbed or unstable material and proof compact the subgrade for the slab subbase/base course with at least six passes of a vibratory plate or vibratory roller compactor immediately prior to placement of slab base course material unless otherwise directed.
3. The final surface of the subgrade for the moisture retarder membrane and/or slabs-on-grade shall be proof rolled with at least four passes of an approved vibratory plate or vibratory drum compactor immediately prior to placing the membrane, reinforcing or concrete (as may be applicable).

E. Excavations at Edges of Tree- and Plant-Protection Zones:

1. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Cut and protect roots according to requirements in Division 01 Section "Temporary Tree and Plant Protection."

### **3.6 EXCAVATION FOR UTILITY TRENCHES**

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe, conduit or ductbank. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe, conduit or ductbank unless otherwise indicated.

1. Clearance: 12 inches each side of pipe or conduit unless otherwise indicated.

C. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe and conduit elevation, unless otherwise indicated on Construction Documents, to allow for bedding course. Hand-excavate deeper for bells of pipe.

1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

D. Trenches in Tree- and Plant-Protection Zones:

1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
3. Cut and protect roots according to requirements in Division 01 Section "Temporary Tree and Plant Protection."

### **3.7 SUBGRADE INSPECTION**

- A. Notify Architect, geotechnical engineer and owner's agent when excavations have reached required subgrade.
- B. If geotechnical engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed and in accordance with paragraphs 3.5 B.2 and 3.5 B.3 of this section.
- C. Unforeseen additional excavation and replacement material will be paid for according to contract provisions for changes in the Work.
- D. Proof-roll subgrade as directed by the geotechnical engineer and /or owner's agent.
- E. Authorized additional excavation and replacement material will be paid for according to Contract provisions for [unit prices] [changes in the Work].
- F. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by geotechnical engineer, without additional compensation.

### **3.8 STORAGE OF SOIL MATERIALS**

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### **3.9 PLACEMENT AND COMPACTION OF FILL AND BACKFILL**

- A. Place and compact backfill in excavations promptly, but not before completing the following:
  - 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
  - 2. Surveying locations of underground utilities for Record Documents.
  - 3. Testing and inspecting underground utilities.
  - 4. Removing concrete formwork.
  - 5. Removing trash and debris.
  - 6. Removing temporary shoring and bracing, and sheeting.
  - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.
- C. Unless otherwise specified or indicated on the drawings, the products specified in Part 2 of this Section shall be employed in the various fill and backfill applications indicated in that part. Place and compact fill material in layers to required elevations as follows:
  - 1. Under steps and ramps, use granular fill material.
  - 2. Under building slabs-on-grade, use granular fill, crushed stone and sand-gravel material. See Contract Documents for additional information.
  - 3. Under footings and foundations, use granular fill.



**Low Rise Courtyard Improvements**  
**EASTERN CONNECTICUT STATE UNIVERSITY**  
**Project No. ECSU 2016-9**

4. Against the interior face of foundation walls, use granular fill material. Use granular fill material to 3'-0" beyond the outside face of foundation walls. Use general fill beyond the 3 feet of granular fill.
  5. Under utilities, use either bedding material or crushed stone (see drawings).
  6. Under equipment pads, use crushed stone.
- D. All vegetation, peat, organic topsoil or subsoil, trash, debris, roots, stumps, and any compressible or otherwise deleterious materials shall be stripped from the existing ground surface and removed from excavations prior to placement of fill or backfill.
- E. All fill and backfill materials shall be placed in horizontal layers. Each layer shall be spread evenly and thoroughly mixed during spreading to ensure uniformity of material in each layer. Layer thickness shall not exceed that specified in paragraph 3.11 L of this Section.
- F. Where horizontal fill layers meet a natural or excavated slope, the layer shall be keyed into the slope by cutting a bench. The surface of benches shall be compacted to the same requirements as apply to the area being filled.
- G. In no instance place fill over materials that were permitted to freeze prior to compaction or over ice or snow. Removal of such materials will be required as directed by the engineer. In no case will frozen material be allowed for use in fill or backfill.
- H. No fill shall be placed or compacted during unfavorable weather conditions. When work is interrupted by heavy rains or snow, fill operations shall not be resumed until the moisture content and density of previously placed fill are as specified hereinafter.
- I. Allow the geotechnical engineer sufficient time to make necessary observations and tests. The degree of compaction shall be based on a maximum dry density as determined by ASTM Standard D1557 or AASHTO Standard T180. All fill and backfill placed in various areas shall be compacted in individual layers to minimum dry densities as follows:
1. Under Structures, within Building Foundation Backfill Limits, Equipment Pads, Building Slabs, Steps and Pavements: 95 percent.
  2. Under Walkways: 92 percent.
  3. Under Lawn or Unpaved Areas: 90 percent.
  4. Uniformly graded crushed stone materials which are not suited to field density testing shall be compacted in accordance with the minimum compactive effort indicated in paragraph 3.5 K of this Section.
- J. The term "under," as applied to building, structures and paved areas, shall be construed to include all materials immediately below the plan area of the building, as well as those materials within a line sloping at one vertical to one horizontal drawn downward and outward from the exterior of building foundation, structure foundation or paved area.
- K. Compaction shall be by mechanical means designed specifically for compaction and approved by the engineer. The engineer reserves the right to disapprove any device of inadequate capacity or of type unsuited to the character of the material being compacted. In areas which are too restricted to permit the use of mechanical compactors, fill may be placed in 3 inch layers and compacted by hand rammer or pneumatic tools.

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

- L. In addition to the stated degree of compaction, all fill and backfill shall receive at least the compactive effort given in the following table. Lift thickness shall not exceed that shown for the compaction method selected, except that the first lift of fill or backfill placed over natural ground in wet conditions may be as much as 12 inches thick. Application of the minimum compactive effort does not relieve the contractor from his requirement to achieve the specified degree of compaction.

Compaction Method	Maximum Stone Size	Maximum Loose Lift Thickness		Minimum Number of Passes	
		Below Structures and Pavement	Less Critical Areas	Below Structures and Pavement	Less Critical Areas
Hand-operated vibratory plate or light roller in confined areas	4"	6"	8"	6	4
Hand-operated vibratory drum rollers weighting at least 1,000#	6"	8"	10"	6	4
Light vibratory drum roller, minimum dynamic force 3,000# per ft. of drum width	6"	10"	14"	6	4
Medium vibratory drum roller, minimum dynamic force 5,000# per ft. of drum width	8"	12"	18"	6	4
Large vibratory drum roller, minimum dynamic force 8,000# per ft. of drum width	10"	16"	24"	6	4

- M. Moisture Control:
1. Water shall be added to fill material which does not contain sufficient moisture to be compacted to the specified densities. Fill and backfill material containing excess moisture shall be required to dry prior to or during compaction to a moisture content not greater than two percentage points above optimum except that material which displays pronounced elasticity or deformation underfoot or under load shall be required to dry to optimum moisture content before it is placed and compacted, if that is required to achieve specified compaction. At the Contractor's option, material which is too wet may be removed and replaced with satisfactory material at no additional cost to the owner.
  2. The Contractor is alerted to the potential silty nature of the onsite soil which renders them sensitive to moisture. Onsite silty soils are difficult to handle and compact and are easily disturbed when wet. The Contractor shall plan and conduct his excavation and filling operations considering the nature of the onsite materials.

- N. Where the engineer determines that fill or backfill does not conform to the compacted density specified, or did not receive the minimum compactive effort specified, such fill shall be removed and replaced with conforming materials at the Contractor's own cost.

- O. Backfilling of Walls:

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

1. Do not backfill against walls until completion of slabs-on-grade, structural framing and suspended slabs which provide lateral support to these walls. In placing backfill, take special care to prevent any wedge action, eccentric loading or overloading by equipment used in backfilling and compaction. See Contract Documents for additional requirements.
2. Do not use equipment weighing more than 5,000 lbs. within 10 feet of all walls. Equipment weighing more than 5,000 lbs. shall not be used adjacent to walls, except as expressly approved by the engineer.
3. Backfill shall be placed concurrently on all sides of shafts, tunnel, and freestanding walls, each lift being compacted on all sides before successive lifts are placed. See Contract Documents for additional requirements.
4. Prevent damage to wall waterproofing or dampproofing when backfilling.

**3.10 DISTURBANCE OF EXCAVATED AND FILLED AREAS DURING CONSTRUCTION**

- A. The Contractor shall take the necessary steps to avoid disturbance of subgrade during excavation and filling operations. Methods of excavation and filling shall be revised as necessary to avoid disturbance of the subgrade, including restricting the use of certain types of construction equipment and their movement over sensitive or unstable materials, dewatering and other acceptable control measures. The Contractor shall cooperate with the engineer to modify his operations as necessary to mitigate disturbance and protect bearing soils, based on the engineer's observations.
- B. All excavated or filled areas disturbed during construction; damaged by freezing temperatures, frost, rain, accumulated water, or construction activities; all loose or saturated soil, and other areas that do not meet compaction requirements as specified herein shall be removed and replaced with the compacted fill materials specified. Costs of removal of disturbed material and refill with compacted fill shall be borne by the Contractor.

**3.11 UTILITY TRENCH BACKFILL**

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits and ductbanks.
- C. Backfill voids with satisfactory soil while removing shoring and bracing.
- D. Place and compact initial backfill of gravel fill, free of particles larger than 1 inch in any dimension, to the building slab subgrade elevation.
  1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- E. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- F. Coordinate backfilling with utilities testing.

- G. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

### **3.12 GRADING**

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  - 1. Provide a smooth transition between adjacent existing grades and new grades.
  - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

### **3.13 FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
  - 1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
  - 2. Determine that fill material and maximum lift thickness comply with requirements.
  - 3. Determine, at the required frequency, that in-place density of compacted fill complies with requirements.
- B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- D. Footing Subgrade: At footing subgrades, each soil stratum will be verified by a geotechnical engineer to confirm subgrade preparation and ability to support design bearing capacities.
- E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.
  - 1. Field in-place density tests may also be performed by the nuclear method according to ASTM D 2922, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D1556. With each density calibration check, check the calibration curves furnished with the moisture gages according to ASTM D 3017.
  - 2. When field in-place density tests are performed using nuclear methods, make calibration checks for both density and moisture gages at the beginning of work, on each different type of material encountered and at intervals as directed by the engineer.
  - 3. Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
  - 4. Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet or less of wall length, but no fewer than two tests along a wall face.

**Low Rise Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9**

5. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length, but no fewer than two tests.
- F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

**3.14 PROTECTION**

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
  1. Scarify or remove and replace soil material to depth as directed by geotechnical engineer and/or owner's agent; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

**3.15 DISPOSAL OF SURPLUS AND WASTE MATERIALS**

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

**END OF SECTION**

03/07/2018

## **SECTION 321216 – BITUMINOUS CONCRETE PAVING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Hot-mix asphalt patching.
  - 2. Hot-mix asphalt paving.
- B. Related Requirements:
  - 1. Section 312000 "Earth Moving" for subgrade preparation, fill material, unbound-aggregate subbase, and base courses.

#### **1.2 PREINSTALLATION MEETINGS**

- A. Pre-installation Conference: Conduct conference at Project site.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Material Certificates: For each paving material.

#### **1.5 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by CTDOT.
- B. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of CTDOT Form 816 for asphalt paving work.
  - 1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

## **PART 2 - PRODUCTS**

### **2.1 AGGREGATES**

- A. Coarse Aggregate: ASTM D 692/D 692M, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.
- B. Fine Aggregate: ASTM D 1073, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.
- C. Mineral Filler: ASTM D 242/D 242M, rock or slag dust, hydraulic cement.

### **2.2 ASPHALT MATERIALS**

- A. Asphalt Binder: AASHTO M 320, Class II.
- B. Tack Coat: ASTM D 977 emulsified asphalt.

### **2.3 AUXILIARY MATERIALS**

- A. Recycled Materials for Hot-Mix Asphalt Mixes: Reclaimed asphalt pavement; reclaimed, unbound-aggregate base material; and recycled tires, asphalt shingles, or glass from sources and gradations that have performed satisfactorily in previous installations, equal to performance of required hot-mix asphalt paving produced from all new materials.

### **2.4 MIXES**

- A. Recycled Content of Hot-Mix Asphalt: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 10 percent or more than 15 percent by weight.
- B. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes approved by CTDOT and complying with the following requirements:
  - 1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
  - 2. Surface Course: Class II

## **PART 3 - EXECUTION**

### **3.1 PATCHING**

- A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- B. Portland Cement Concrete Pavement: Break cracked slabs and roll as required to reseal concrete pieces firmly.
  - 1. Remove disintegrated or badly cracked pavement. Excavate rectangular or trapezoidal patches, extending into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Recompact existing unbound-aggregate base course to form new subgrade.
- C. Tack Coat: Before placing patch material, apply tack coat uniformly to vertical asphalt surfaces abutting the patch. Apply at a rate of 0.05 to 0.15 gal./sq. yd.
  - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
  - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.
- D. Placing Patch Material: Fill excavated pavement areas with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact flush with adjacent surface.

### **3.2 SURFACE PREPARATION**

- A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
- B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- C. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.
  - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
  - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

### **3.3 PLACING HOT-MIX ASPHALT**

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
  - 1. Spread mix at a minimum temperature of 250 deg F.
  - 2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.



**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

### **3.4 JOINTS**

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
  - 1. Clean contact surfaces and apply tack coat to joints.
  - 2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
  - 3. Offset transverse joints, in successive courses, a minimum of 24 inches.
  - 4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."

### **3.5 COMPACTION**

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
  - 1. Complete compaction before mix temperature cools to 185 deg F.
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
  - 1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent or greater than 96 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- G. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

**3.6 INSTALLATION TOLERANCES**

- A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:
  - 1. Surface Course: Plus 1/4 inch, no minus.
  
- B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
  - 1. Surface Course: 1/8 inch.
  - 2. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

**3.7 FIELD QUALITY CONTROL**

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Replace and compact hot-mix asphalt where core tests were taken.
- C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

END OF SECTION

## **SECTION 321 13 - CONCRETE PAVING**

### **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. Concrete Pavement.
- B. Related Sections:
  - 1. Division 31 Section "Earth Moving" for excavation, filling, and rough grading and for subsurface aggregate drainage and drainage backfill materials.

#### **1.3 Definitions**

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

#### **1.4 Submittals**

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color selection.
- C. Other Action Submittals:
  - 1. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- D. Qualification Data: For qualified ready-mix concrete manufacturer and testing agency.
- E. Material Certificates: For the following, from manufacturer:
  - 1. Cementitious materials.
  - 2. Steel reinforcement and reinforcement accessories.
  - 3. Fiber reinforcement.
  - 4. Admixtures.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

5. Curing compounds.
  6. Applied finish materials.
  7. Bonding agent or epoxy adhesive.
  8. Joint fillers.
- F. Material Test Reports: For each of the following:
1. Aggregates. Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.
- G. Field quality-control reports.

**1.5 Quality Assurance**

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").
- B. Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- C. Concrete Testing Service: Engage a qualified testing agency to perform material evaluation tests and to design concrete mixtures.
- D. ACI Publications: Comply with ACI 301 (ACI 301M) unless otherwise indicated.

**1.6 Project Conditions**

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

**PART 2 - PRODUCTS**

**2.1 Forms**

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

**2.2 Steel Reinforcement**

- A. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, fabricated from galvanized steel wire into flat sheets.
- B. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.
- C. Epoxy-Coated Welded Wire Reinforcement: ASTM A 884/A 884M, Class A, plain steel.
- D. Galvanized Reinforcing Bars: ASTM A 767/A 767M, Class II zinc coated, hot-dip galvanized after fabrication and bending; with ASTM A 615/A 615M, Grade 60 (Grade 420) deformed bars.
- E. Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60 (Grade 420), deformed bars; assembled with clips.
- F. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.
- G. Deformed-Steel Wire: ASTM A 496/A 496M.
- H. Epoxy-Coated-Steel Wire: ASTM A 884/A 884M, Class A coated.
- I. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420) plain-steel bars; zinc coated (galvanized) after fabrication according to ASTM A 767/A 767M, Class I coating. Cut bars true to length with ends square and free of burrs.
- J. Epoxy-Coated, Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars.
- K. Tie Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- L. Hook Bolts: ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6), internally and externally threaded. Design hook-bolt joint assembly to hold coupling against paving form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
- M. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
  - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

N. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating, compatible with epoxy coating on reinforcement.

O. Zinc Repair Material: ASTM A 780.

### **2.3 Concrete Materials**

A. Cementitious Material: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C 150, portland cement Type I with the following:

- a. Fly Ash: ASTM C 618, Class C or Class F.
- b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33, Class 4S, uniformly graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: Potable and complying with ASTM C 94/C 94M.

D. Air-Entraining Admixture: ASTM C 260.

E. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

F. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

1. Products: Subject to compliance with requirements, provide one of the following:
  - a. BASF Construction Chemicals - Building Systems; Rheocrete 222+.
  - b. Cortec Corporation; MCI- 2005NS.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- c. Grace Construction Products, W. R. Grace & Co.; DCI-S.
- d. Sika Corporation; FerroGard 901.

#### **2.4 Curing Materials**

- A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. White, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B, dissipating.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Anti-Hydro International, Inc.; A-H Curing Compound #2 WP WB.
    - b. ChemMasters; Safe-Cure 2000.
    - c. Conspec by Dayton Superior; D.O.T. Resin Cure White.
    - d. Dayton Superior Corporation; Day-Chem White Pigmented Cure (J-10-W).
    - e. Edoco by Dayton Superior; Resin Emulsion Cure V.O.C. (Type II).
    - f. Euclid Chemical Company (The), an RPM company; Kurez VOX White Pigmented.
    - g. Kaufman Products, Inc.; Thinfilm 450.
    - h. Lambert Corporation; AQUA KURE - WHITE.
    - i. L&M Construction Chemicals, Inc.; L&M CURE R-2.
    - j. Meadows, W. R., Inc.; 1100-WHITE SERIES.
    - k. SpecChem, LLC; PaveCure Rez White.
    - l. Symons by Dayton Superior; Resi-Chem White.
    - m. Vexcon Chemicals Inc.; Certi-Vex Enviocure White 100.

#### **2.5 Related Materials**

- A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork in preformed strips.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Epoxy Bonding Adhesive: ASTM C 881/C 881M, two-component epoxy resin capable of humid curing and bonding to damp surfaces; of class suitable for application temperature, of grade complying with requirements.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- D. Rock Salt: Sodium chloride crystals, kiln dried, coarse gradation with 100 percent passing 3/8-inch (9.5-mm) sieve and 85 percent retained on a No. 8 (2.36-mm) sieve.

**2.6 Concrete Mixtures**

- A. Prepare design mixtures, proportioned according to ACI 301 (ACI 301M), for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
  - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
  - 2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that meet or exceed requirements.
- B. Proportion mixtures to provide normal-weight concrete with the following properties:
  - 1. Compressive Strength (28 Days): 4000 psi.
  - 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
  - 3. Slump Limit: 4 inches, plus or minus 1 inch.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete, in accordance with ASTM C260.
- D. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing admixture in concrete as required for placement and workability.
  - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- E. Cementitious Materials: Limit percentage by weight of cementitious materials other than portland cement according to ACI 301 (ACI 301M) requirements as follows:
  - 1. Fly Ash or Pozzolan: 25 percent.
  - 2. Ground Granulated Blast-Furnace Slag: 50 percent.
  - 3. Combined Fly Ash or Pozzolan, and Ground Granulated Blast-Furnace Slag: 50 percent, with fly ash or pozzolan not exceeding 25 percent.

**2.7 Concrete Mixing**

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.
  - 1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.



**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
  - 1. For concrete batches of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
  - 2. For concrete batches larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
  - 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

### **PART 3 - EXECUTION**

#### **3.1 Examination**

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.
  - 1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
  - 2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
  - 3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch according to requirements in Division 31 Section "Earth Moving."
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 Preparation**

- A. Remove loose material from compacted subbase surface immediately before placing concrete.

#### **3.3 Edge Forms And Screed Construction**

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

#### **3.4 Steel Reinforcement**

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Zinc-Coated Reinforcement: Use galvanized-steel wire ties to fasten zinc-coated reinforcement. Repair cut and damaged zinc coatings with zinc repair material.
- F. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M.
- G. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap of adjacent mats.

### **3.5 Joints**

- A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
  - 1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
  - 1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
  - 2. Provide tie bars at sides of paving strips where indicated.
  - 3. Butt Joints: Use epoxy bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
  - 4. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

5. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.
1. Locate expansion joints as indicated on drawings.
  2. Extend joint fillers full width and depth of joint.
  3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
  4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
  5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
  6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
  7. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete as indicated on drawings. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a **1/4-inch** radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
    - a. Tolerance: Ensure that grooved joints are within 3 inches either way from centers of dowels.
  2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
    - a. Tolerance: Ensure that sawed joints are within 3 inches either way from centers of dowels.
- E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a **1/4-inch** radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

### **3.6 Concrete Placement**

- A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.
- B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with ACI 301 (ACI 301M) requirements for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete according to ACI 301 (ACI 301M) by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
  - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels and joint devices.
- H. Screed paving surface with a straightedge and strike off.
- I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- J. Curbs and Gutters: Use design mixture for monolithic construction. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing.
- K. Slip-Form Paving: Use design mixture for automatic machine placement. Produce paving to required thickness, lines, grades, finish, and jointing.
  - 1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of slip-form paving machine during operations.
- L. Cold-Weather Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
  2. Do not use frozen materials or materials containing ice or snow.
  3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
- M. Hot-Weather Placement: Comply with ACI 301 (ACI 301M) and as follows when hot-weather conditions exist:
1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
  3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

### **3.7 Float Finishing**

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.
  2. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.
  3. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

### **3.8 Concrete Protection And Curing**

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture curing or moisture-retaining-cover curing as follows:
  - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period using cover material and waterproof tape.

### **3.9 Paving Tolerances**

- A. Comply with tolerances in ACI 117 and as follows:
  - 1. Elevation: 3/4 inch.
  - 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
  - 3. Surface: Gap below 10-foot-long, unlevelled straightedge not to exceed 1/2 inch.
  - 4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
  - 5. Lateral Alignment and Spacing of Dowels: 1 inch.
  - 6. Vertical Alignment of Dowels: 1/4 inch.
  - 7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
  - 8. Joint Spacing: 3 inches.
  - 9. Contraction Joint Depth: Plus 1/4 inch, no minus.
  - 10. Joint Width: Plus 1/8 inch, no minus.

### **3.10 Field Quality Control**

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain at least one composite sample for each 50 cu. yd. or fraction thereof of each concrete mixture placed each day.
    - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
  2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
  3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
  4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when it is 80 deg F (27 deg C) and above, and one test for each composite sample.
  5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
  6. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at 28 days.
    - a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- D. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer.
- G. Concrete paving will be considered defective if it does not pass tests and inspections.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- I. Prepare test and inspection reports.

**3.11 Repairs And Protection**

- A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Engineer.
- B. Drill test cores, where directed by Engineer, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.
- C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

**END OF SECTION**



## **SECTION 321640 - GRANITE CURBING**

### **PART 1 - GENERAL**

#### **1.1 REQUIREMENTS, CODES**

- A. All applicable portions of Division 1 - General Requirements shall be considered as included with this section.
- B. The following are minimum requirements and shall govern except that all Federal, Local and/or State Codes and Ordinances shall govern when their requirements are in excess hereof.

#### **1.2 DESCRIPTION**

The work in this section consists of the following:

- A. The construction of new granite curb or removed by construction under other items of work of this contract. Their construction shall be on concrete and gravel base at the locations shown on the Contract Drawings or as ordered by the Engineer and in accordance with the Contract Drawings and these specifications.
- B. All granite curbing shall be properly installed and backfilled prior to the placement of the bituminous concrete pavement.

#### **1.3 SUBMITTALS**

- A. Sources of Supply: Approval of sources and types of all materials as directed by the Engineer.

### **PART 2 PRODUCTS**

#### **2.1 MATERIALS**

Materials shall conform to the following requirements:

- A. Types of curb include straight with flush installation. See drawings for dimensions.
- B. All granite curbing materials shall be crated from hard and durable granite, light gray in color, free from seams which impair its structural integrity, and of smooth splitting character. Natural color variations characteristic of the deposit will be permitted. The top surface shall be pointed, peen hammered or sawed. The top 8 inches of the face shall be smooth quarry split and free from drill holes. The ends of all stones shall be square with the planes of the top and face, and so finished that when stones are placed end to end as closely as possible, no space more than ½ inch shall show in the joint for the full width of the top or the top 8 inches of the face. If sawed, the curbstone shall be thoroughly cleaned of any iron rust or iron particles. Straight curbing shall be furnished in lengths not less than 3 feet, except that for closures when no piece less than 2 feet in length will be allowed.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- C. Processed Aggregate Base: Shall conform to Section 312000 "Earth Moving of these Specifications for Processed Aggregate Base Material.
- D. Concrete: Shall conform to the following requirements:
1. General Composition of Concrete Mix: All concrete used shall be proportioned by weight for one cubic yard as follows:
- |                    |                 |
|--------------------|-----------------|
| Cement (7sacks)    | 658 lbs.        |
| Sand               | 1300 lbs.       |
| ½" Crushed Stone   | 720 lbs.        |
| ¾" Crushed Stone   | 1080 lbs.       |
| Water              | 34 gals         |
| Air                | 5 – 7%          |
| Slump              | 3-inches (max)  |
| Strength (28 days) | 4000 psi (min.) |
- The proportions listed above are based on the weight of cement and surface dry aggregates and on bulk specific gravity of 2.65 for sand with a fineness modulus of 2.70 and on trap rock with a specific gravity of 2.90. For aggregates having appreciably different specific gravities and fineness modulus, appropriate corrections shall be made and the City Engineer notified in writing prior to mixing of the concrete.
- E. Mortar shall consist of one part Portland Cement and two parts fine aggregate by volume. Hydrated lime may be added to the mix only as approved by the Engineer. The amount of lime shall not exceed four (4) pounds lime per bag of cement used. Water shall be clean and potable.
- F. Preformed Expansion Joints shall comply with the provisions of ASTM D1751 (AASHTO M213).

### **PART 3 EXECUTION**

#### **3.1 EXCAVATION**

- A. Excavation, including removal of any existing pavements shall be made to the required depths below the finished grade, as shown on the Contract Drawings or as directed. All soft and yielding material shall be removed and replaced with suitable material. Compact the subgrade to a firm even surface.

#### **3.2 PROCESSED AGGREGATE BASE**

- A. Processed Aggregate Base shall be placed to the dimensions shown on the Contract Drawings and be properly compacted. The base shall be wetted and compacted prior to placing of the granite curbing.

#### **3.3 PREPARATION**

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- A. Proofroll prepared base material surface in accordance with Section 312000 – “Earth Moving” to check for unstable areas. Curbing work shall begin only after unsuitable areas have been corrected and are ready to receive curbing.

**3.4 CONCRETE**

- A. Concrete shall contain not less than five nor more than seven percent entrained air at the time of the concrete is deposited within the area to receive granite curbing. Concrete shall be placed only on moist base. Concrete shall not be placed on a soft, muddy or frozen base.

**3.5 GRANITE CURBING**

- A. Granite Curbing shall be set on edge and settled into place with a heavy wooden hand rammer, to the proper line and grade and straight and true for the full depth. The joints of the granite curbing shall be pointed for the full depth with mortar. Concrete shall be placed underneath curb sections as shown on the Contract Drawings.

The trench for granite curbing shall be backfilled with approved material; the first layer to be 4 inches in depth thoroughly rammed, the other layers to be not more than 6 inches in depth and thoroughly rammed until the trench is filled.

Upon completion of concrete work, the Contractor shall clean the exposed top and face of the curbing of any excess concrete by brushing with a wire brush.

The Contractor shall protect granite curb stones and keep them in first class condition until completion and acceptance.

**3.6 FINISHING**

- A. Finishing for any portion of the surface of face of the curb departing more than one-fourth (1/4) of an inch from a straight edge ten (10) feet in length placed on the line of the curb, or should any part of the exposed surface present a wavy appearance, the same will be sufficient cause for rejection of that portion of the work.

**3.7 BACKFILLING**

- A. Backfilling shall be performed after the concrete has set sufficiently. The grading shall be completed to the lines shown on the plans, or as ordered, by refilling to the required elevation with approved material which shall be placed in layers of not over 6 inches in depth and compacted until firm and solid.

**3.8 ADJUST AND CLEAN**

- A. After completion of all granite curb installation the contractor shall remove all debris from site.

**END OF SECTION**

## **SECTION 329300 - PLANTS**

### **PART 1 - GENERAL**

#### **1.1 Summary**

- A. This Section includes the following:
  - 1. Shrubs.
  - 2. Perennials.
  - 3. Groundcovers.
  
- B. Related Sections include the following:
  - 1. Division 31 Section "Site Clearing" for protection of existing trees and planting, topsoil stripping and stockpiling, and site clearing.
  - 2. Division 31 Section "Earth Moving" for excavation, filling, and rough grading and for subsurface aggregate drainage and drainage backfill materials.

#### **1.2 Definitions**

- A. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.
  
- B. Finish Grade: Elevation of finished surface of planting topsoil.
  
- C. Planting Area: Areas to be planted.
  
- D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.  
Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.
  
- E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

#### **1.3 Submittals**

- A. Product Data: For each type of product indicated.
  - 1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
  
- B. Product Certificates: For each type of manufactured product, signed by product manufacturer,

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

and complying with the following:

1. Manufacturer's certified analysis for standard products.
  2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
- C. Qualification Data: For landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.
- D. Material Test Reports: For existing surface soil and imported topsoil.
1. Sieve analysis
  2. Organic constituent analysis
  3. Microorganism content
  4. Acidity-alkalinity test (pH)
  5. Soluble salts
  6. Percentage tests for the following:
    - a. Nitrogen (N)
    - b. Phosphoric Acid (P<sub>2</sub>O<sub>5</sub>)
    - c. Potash (K<sub>2</sub>O)
  7. Percentages by volume for sand, silt, and clay.
- E. Planting Schedule: Indicating anticipated planting dates for exterior plants.
- F. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Submit before expiration of required maintenance periods.

**1.4 Quality Assurance**

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of exterior plants.
1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

1. Report suitability of topsoil for plant growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.
  2. Contractor shall supplement soil with amendments and additions at no additional cost as required to remedy any deficiencies indicated in tests and to meet laboratory recommendations.
- D. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."
- E. Shrub Measurements: Measure according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Measure main body of shrub for height and spread; do not measure branches or roots tip-to-tip.
- F. Observation: Landscape Architect may observe plants either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. Landscape Architect retains right to observe plants further for size and condition of root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected plants immediately from Project site.
1. Notify Landscape Architect of sources of planting materials seven days in advance of delivery to site.
  2. Notify Landscape Architect three days in advance of proposed delivery to site.

**1.5 Delivery, Storage, And Handling**

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.
- B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
  2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
  3. Accompany each delivery of bulk materials with appropriate certificates.
- C. Do not prune plants before delivery, except as approved by Landscape Architect. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie plants in such a manner as to destroy their natural shape. Provide protective covering of plants during delivery. Do not drop plants during delivery.
- D. Handle planting stock by root ball.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- E. Deliver plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set plants in shade, protect from weather and mechanical damage, and keep roots moist.
  - 1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
  - 2. Do not remove container-grown stock from containers before time of planting.
  - 3. Water root systems of plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.

**1.6 Coordination**

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
  - 1. Deciduous Plants:
    - a. Spring Planting: March 15 to May 15.
    - b. Fall Planting: September 15 to November 15.
  - 2. Evergreen Plants:
    - a. Spring Planting: March 15 to June 15.
    - b. Fall Planting: August 15 to November 15.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

**1.7 Substitutions**

- A. Pre-Bid: If any plant specified is not obtainable, submit a written substitution request to Contracting Officer.
- B. Substitutions of planting materials will not be permitted unless Contractor has made a good faith effort to find material

**1.8 Warranty**

- A. Special Warranty: Warrant the following exterior plants, for the warranty period indicated, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, or incidents that are beyond Contractor's control.
- B. Submit written warranty signed by material supplier and installer agreeing that they will:
  - 1. Warranty Period for Trees and Shrubs: One year from date of Substantial Completion.
  - 2. Remove dead exterior plants immediately. Replace immediately unless required to plant

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

in the succeeding planting season.

3. Replace exterior plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.

## **1.9 Maintenance**

- A. Plants: Maintain for the following maintenance period by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, tightening, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep plants free of insects and disease.
  1. Maintenance Period: One year from date of expectance by Landscape Architect for all new plants furnished under this contact have been satisfactorily installed.

## **PART 2 - PRODUCTS**

### **2.1 Plant Material**

- A. General: Furnish nursery-grown plants complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
  1. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.
- B. Grade: Provide plants of sizes and grades complying with ANSI Z60.1 for type of plants required. Plants of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.
- C. Label at least one plant of each variety with a securely attached, waterproof tag bearing legible designation of botanical and common name.
- D. If formal arrangements or consecutive order of plants is shown, select stock for uniform height and spread to assure symmetry in planting.
- E. Annuals/Biennials/Perennials: Provide healthy, disease-free plants of species and variety shown or listed, with well-established root systems reaching to sides of the container to maintain a firm ball, but not with excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery and that are in bud but not yet in bloom.

### **2.2 Topsoil**

- A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 2 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful



**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

to plant growth.

1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
  - a. Supplement with imported topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.
2. Topsoil Source: Import topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

### **2.3 Inorganic Soil Amendments**

- A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
  1. Provide lime in form of dolomitic limestone, with a minimum of 95 percent passing a No.100 sieve.

### **2.4 Organic Soil Amendments**

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
  1. Organic Matter Content: 50 to 60 percent of dry weight.
- B. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.
- C. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.
  1. Product: "Bovung" or equal.

### **2.5 Fertilizer**

- A. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
- B. Products Include:
  1. Bonemeal: Finely ground raw bonemeal having a minimum analysis of one percent

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

nitrogen and 11 percent phosphoric acid.

2. Plantone: Organic plant nutrient with potential acidity (CACO<sub>2</sub>) at 80 pounds per 2,000 pounds as manufactured by Espoma, Millville, New Jersey, or approved equal.
3. Fluid Fertilizer: "Algro" 14-7-4 low chlorine 40 percent organic root food as manufactured and supplied by Plant Food Chemical Company, Cranberry, New Jersey, or approved equal.

**2.6 Water**

- A. Water: Potable.

**2.7 Mulches**

- A. General: Free from noxious weeds, mold, pesticides, or other deleterious materials, and suitable as a top dressing of trees and shrubs.
- B. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through a 1-inch sieve; soluble-salt content of 2 to 5 dS/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
  1. Organic Matter Content: 50 to 60 percent of dry weight.
  2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

**2.8 Weed-Control Barriers**

- A. Nonwoven Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. minimum.

**2.9 Planting Soil Mix**

- A. Planting Soil Mix: Mix topsoil with the following soil amendments and fertilizers in the following quantities:
  1. Ratio of Loose Compost to Topsoil by Volume: 1:4.
  2. Ratio of Loose Peat or manure to Topsoil by Volume: 1:4.
  3. Weight of Lime, Bonemeal, Superphosphate, and Commercial Fertilizer per 1000 Sq. Ft.: As determined by topsoil test report.

**PART 3 - EXECUTION**

**3.1 Examination**

- A. Examine areas to receive plantings for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions

have been corrected.

### **3.2 Preparation**

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing plants from damage caused by planting operations.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Lay out individual plants locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Landscape Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.

### **3.3 Plant Excavation**

- A. Pits and Trenches: Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.
  - 1. Excavate approximately three times as wide as ball diameter.
  - 2. Excavate pit to a depth to allow a 6-inch (150 mm) layer of topsoil beneath ball.
- B. Subsoil removed from excavations may not be used as backfill.
- C. Obstructions: Notify Landscape Architect if unexpected rock or obstructions detrimental to plants are encountered in excavations.
- D. Drainage: Notify Landscape Architect if subsoil conditions evidence unexpected water seepage or retention in plant pits.

### **3.4 Plant Planting**

- A. Set planting stock plumb and in center of pit or trench with top of root ball 1 inch above adjacent finish grades.
  - 1. Do not use planting stock if root ball is cracked or broken before or during planting operation.
  - 2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.
  - 3. Carefully remove root ball from container without damaging root ball or plant.
- B. Organic Mulching: Apply 4-inch average thickness of organic mulch extending beyond edge of planting pit or trench. Do not place mulch within 3 inches of trunks or stems.

### **3.5 Plant Pruning**

- A. Prune, thin, and shape plants according to standard horticultural practice. Prune shrubs to retain natural character. Plant sizes indicated are sizes after pruning.

### **3.6 Ground Cover And Plant Planting**

- A. Set out and space ground cover and plants as indicated.
- B. Use planting soil for backfill.
- C. Dig holes large enough to allow spreading of roots.
- D. For rooted cutting plants supplied in flats, plant each in a manner that minimally disturbs the root system but to a depth not less than two nodes.
- E. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

### **3.7 Planting Area Mulching**

- A. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6 inches and secure seams with galvanized pins.
- B. Mulch backfilled surfaces of planting areas and other areas indicated.
  - 1. Apply organic mulch ring of 3-inch average thickness, with indicated radius around trunks or stems. Do not place mulch within 3 inches of trunks or stems.
  - 2. Organic Mulch in Planting Areas: Apply 3-inch average thickness of organic mulch over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems.

### **3.8 Plant Maintenance**

- A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.
- B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

**3.9 Repair And Replacement**

- A. General: Repair or replace existing or new plants that are damaged by construction operations, in a manner approved by Landscape Architect.
  - 1. Submit details of proposed pruning and repairs.
  - 2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
  - 3. Replace plants that cannot be repaired and restored to full-growth status, as determined by Landscape Architect.
- B. Remove and replace plants that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.
  - 1. Species of Replacement Plants: Same species being replaced.

**3.10 Cleanup And Protection**

- A. During exterior planting, keep adjacent pavings and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Protect plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting.

**3.11 Disposal**

- A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

**END OF SECTION**

## **SECTION 334016 – STORM DRAINAGE**

### **PART 1 - GENERAL**

#### **1.1 Summary**

- A. This Section includes storm drainage piping, structures, outlets and grates.
- B. Related Sections include the following:
  - 1. Division 31 Section “Earth Moving” for excavation, backfill, base, and bedding layers.

#### **1.2 Definitions**

- A. RCP: Reinforced Concrete Pipe.

#### **1.3 Performance Requirements**

- A. Gravity-Flow, Nonpressure-Piping Pressure Ratings: At least equal to system test pressure.

#### **1.4 Submittals**

- A. Shop Drawings: Include plans, elevations, details, and attachments for the following:
  - 1. Precast concrete manholes and other structures, including frames, covers, and grates.
- B. Product and Material Certifications: Each material or item listed in Part 2.
- C. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

#### **1.5 Delivery, Storage, And Handling**

- A. Protect pipe, pipe fittings, and seals from dirt and damage.
- B. Handle precast concrete manholes and other structures according to manufacturer's written rigging instructions.

#### **1.6 Project Conditions**

- A. Site Information: Perform site survey, research public utility records, and verify existing utility locations.
- B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Engineer not less than 2 days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Engineer's written permission.

## **PART 2 - PRODUCTS**

### **2.1 Pipes And Fittings**

- A. Reinforced-Concrete Pipe and Fittings: ASTM C 76.
  1. Tongue-and-groove ends and gasketed joints with ASTM C 443, rubber gaskets.

### **2.2 Drainage Structures**

- A. Standard Precast Concrete Manholes: Form 816, Section 5.07.
  1. Joint Sealant: ASTM C 443 and ASTM C923, bitumen or butyl rubber.
  2. Resilient Pipe Connectors: ASTM C 923 (ASTM C 923M), cast or fitted into manhole walls, for each pipe connection.
- B. Drainage Structures Frames and Covers:
  1. Beehive Grate: Neenah Foundry R-2560-C, cast iron, 18" diameter, or approved equal.
  2. Manhole Frame and Cover: Campbell or Neenah Foundry type, 24" diameter.
  3. Manhole and Catch Basin: United Concrete Products, or approved equal
  4. Catch Basin Frame: Neenah Foundry, Inc., or accepted equal, diameter as shown on the plans.
  5. Cleanout: Round, Brass, Flush-mount.

### **2.3 Miscellaneous**

- A. Brick: ASTM C32, Grade MS.
- B. Mortar: Composed by volume, of one part Portland cement and two parts sand.
- C. Grout: Form 816, Section M.03.01-14.
- D. Filter Fabric: Form 816, Section M.08.01-26.

## **PART 3 - EXECUTION**

### **3.1 Earthwork**

- A. Excavating, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

### **3.2 Identification**

- A. Materials and their installation are specified in Division 1 Section "Earth Moving." Arrange for installing green warning tapes directly over piping and at outside edges of underground structures.
  - 1. Use warning tape or detectable warning tape over ferrous piping.
  - 2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

### **3.3 Installation, General**

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab or drag in line, and pull past each joint as it is completed.
- C. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- D. Install gravity-flow piping and connect to building's storm drains, of sizes and in locations indicated. Terminate piping as indicated.
  - 1. Install piping pitched down in direction of flow, at minimum slope of 1 percent, unless otherwise indicated.
  - 2. Install RCP piping with 18-inch minimum cover.
- E. Extend storm drainage piping and connect to building's storm drains, of sizes and in locations indicated. Terminate piping as indicated.

### **3.4 Pipe Joint Construction And Installation**

- A. General: Join and install pipe and fittings according to installations indicated.
- B. RCP Pipe and Fittings: As follows:
  - 1. Join pipe with soil tight joints according to manufacturer's written instructions.
  - 2. Install reinforced-concrete piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."
- C. System Piping Joints: Make joints using system manufacturer's couplings, unless otherwise indicated.



- D. Join piping made of different materials or dimensions with couplings made for this application. Use couplings that are compatible with and that fit both systems' materials and dimensions.

### **3.5 Beehive Grate Installation**

- A. Install type of structures at locations as indicated on the plans.
- B. General: Remove existing grate and provide to Owner. Install beehive grate, complete with appurtenances and accessories indicated.
- C. Set grates to elevations indicated.

### **3.6 Manhole and Catch Basin Installation**

- A. Install type of structures at locations as indicated on the plans.
- B. General: Install manholes and catch basins, complete with appurtenances and accessories indicated.
- C. Install precast concrete manhole and catch basin sections with sealants according to ASTM C 891.
- D. Where specific manhole construction is not indicated, follow manhole manufacturer's written instructions.
- E. Set frames and grates to elevations indicated. Tops of frames and covers shall be flush with finished surface of manholes that occur in pavements.

### **3.7 Field Quality Control**

- A. Clear interior of piping and structures of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed.
  - 1. In large, accessible piping, brushes and brooms may be used for cleaning.
  - 2. Place plug in end of incomplete piping at end of day and when work stops.
  - 3. Flush piping between manholes and other structures to remove collected debris, if required by authorities having jurisdiction.
- B. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
  - 1. Submit separate reports for each system inspection.
  - 2. Defects requiring correction include the following:
    - a) Alignment: Less than full diameter of inside of pipe is visible between structures.
    - b) Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    - c) Crushed, broken, cracked, or otherwise damaged piping.

**Low Rise Stair Replacement & Courtyard Improvements  
EASTERN CONNECTICUT STATE UNIVERSITY  
Project No. ECSU 2016-9 (Phase II)**

- d) Infiltration: Water leakage into piping.
  - e) Exfiltration: Water leakage from or around piping.
3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
  4. Reinspect and repeat procedure until results are satisfactory.

END OF SECTION

# APPENDIX A

May 6, 2016

Eastern Connecticut State University (ECSU)

Low Rise Apartments

Utility Mark-Out Summary

### **Utility Mark-out Overview- How it Works**

BL Companies conducted a Quality Level B, underground utility mark out using electromagnetic induction and ground penetrating radar. Electromagnetic Induction (EMI) uses a transmitter and receiver to trace out a target utility. The transmitter is connected to a pipe or cable with metallic properties (preferred method) or the transmitter can be placed above the path of a line. The transmitter sends an electromagnetic signal along the path of the utility. This path is then picked up by the receiver. The technician is then able to trace out the target utility on the ground surface. EMI has some limitations. One limitation to electromagnetic induction is that the transmitted signal can induce a signal through multiple utilities nearby, thus making it difficult to positively identify the target line. This is commonly referred to as electromagnetic bleed off. This is common when multiple utilities run close to each other and when utilities are bonded together. This can also happen with rebar in concrete walks. Another limitation is that the electromagnetic signal decreases as the distance from the transmitter increases. If the utility does not have metallic properties, this technique does not work. At times, the electromagnetic induction signal seizes due to insulated joint connections in pipes or material changes. The signal from the transmitter cannot pass through the pipe connection. The signal from the electromagnetic induction transmitter can become distorted due to other metallic objects in the ground or overhead lines. It is also possible to obtain the approximate vertical extents to the center line of the targeted utility and its accuracy is dependent on the factors mentioned above.

Ground Penetrating Radar (GPR) uses high frequency pulses transmitted by an antenna into the ground. The signal from the antenna reflects off of the subsurface features and transmits back to the antenna where it goes through a processing unit. The signal is displayed on a monitor in the form of hyperbolas. GPR data is acquired through passes in a longitudinal and latitudinal direction. The technician observes hyperbolas on the monitor and looks for a repeating pattern to the hyperbolas to conclude that there is a utility or tank present. If the technician can make multiple passes and finds a repeating hyperbola to a known structure, the utility can be positively identified. The limitations of the GPR are surface conditions and soil conditions.

Surface conditions can limit the ability of the GPR to smoothly pass, thereby not being able to acquire data. Areas covered with obstacles, such as dumpsters, cars, landscaping, heavily wooded areas,

curbing, fences and piles of debris limit the survey access. Uneven terrain can also hinder the ability of the GPR as the trigger wheel has to be on the ground to acquire data.

The conductivity of the subsurface determines the ability of the GPR to reflect the subsurface and the quality of the radar data. The GPR signal does not penetrate clay rich soils, or moisture holding soils as some are considered highly conductive. In many cases the GPR does not penetrate concrete, RCA and asphalt. Dry soils (low conductive conditions) work best for radar data. The subsurface features reflect best when there is low moisture, creating a strong contrast in subsurface features which translates into a high reflection. Sandy areas and loose dry soil usually give the best reflections.

BL Companies was contracted by ECSU to:

- Mark out the existing subsurface utilities in the courtyard between the 5 apartment buildings of the Low Rise apartment complex.
- BL Companies utilized an RD 8000, RD 5000, Subsite 830, Mala (GPR) and a Schonstedt GA-52C, on the site.

### **Conclusion**

BL Companies traced out the utilities via access points observed on the ground and through the use of utility records. Our findings were sketched and attached to this report.

### **Field Sketch References:**

- Field Sketches page 1&2

### **Utilities Found Within Scope:**

Electric feeds enter the courtyard through corridors between BLDG. C / BLDG. D and between BLDG. A / BLDG. B into electric meter and circuit breaker panel enclosures. From these enclosures the power feeds are distributed to each building from their associated enclosures. The electric feed for BLDG. E does not enter the courtyard, rather the feed exits the scope from the walkway between BLDG. E and BLDG. A.

The PIV posts for the water fire lines have electric feeds that run from sprinkler rooms to the PIV feature.

There are electric feeds that run from building corners to the receptacle boxes at the end of the stairwells between BLDG. A and BLDG. B and the end of the stairwell between BLDG. C and BLDG. D.

There is an electric cable of unknown purpose that crosses from one side of the BLDG. E lower level to the other side.

Communications cables enter the courtyard in the corridor between BLDG. B and BLDG. C where they route to a manhole vault in the center of the courtyard and are divided to the inside corners of each building through lateral cables, with the exception of BLDG. E, that transfer to rising conduits. BLDG. A has a lateral feed that does not transfer to a rising conduit, but rather continues into the inside corner of the building.

BLDG. E has a communications feed that does not route through the courtyard but rather passes across the E/A corridor walkway to the data room in the maintenance office of BLDG. A

OLD Telephone lines were identified entering the courtyard from the E/A corridor and dispersing to the inside corners of each building except for BLDG. E as well as dispersing to the electric panel enclosures.

Fire alarm communication lines were marked as FA and were found to connect the fire alarm panels on the center courtyard facing sides of the buildings. The fire alarm panel on BLDG. A had a seemingly auxillary conduit that went underground, though this did not give an obtainable signal. The fire alarm cable to BLDG. E entered a conduit visible under the ground level bridge walkway.

The drainage system consists mainly of catch basins at the inside corners of BLDG. A/B/C/D that flow into a basin at the center of the courtyard, which then exits through the B/C corridor.

BLDG. E has a separate basin drain system on its lower level, data was unobtainable on where the outflow exits the courtyard.

Half of the roof drain pipes could not accept conductive cable for toning.

The sanitary system had multiple service lines from the inside corners of BLDG. A/B/C/D that merged into four single lines from all corners with cleanout handholes which had associated vent pipes to each. From these cleanouts the sewer pipes merged into two single lines on both sides of the courtyard that meet at the sanitary vault in the center of the courtyard. From this vault a line from the B/C corridor flows into this system and then the entire system flows out of the E/A corridor while also picking up the service line from BLDG. E.

The sanitary line from BLDG. E in the E/A corridor depicted in the previous survey records as bisecting the stairway then tapping into the main was not found.

The domestic water lines within the courtyard did not give good data, though the distribution of the main to each building was identified legitimately. The connections between the three water valves in the center of the courtyard were too poor in signal to draw conclusions on. The main enters through the E/A corridor and exits through the B/C corridor.

The water fire lines were found from sprinkler rooms to PIV posts.

There is a hand sketch of the utility mark out on the following page. Please note that all utilities were marked in traditional colors except for the electric lines from meters to transformers. Thanks for the opportunity to work with you on your project. Please let me know if you have any questions.

Michael Sabia

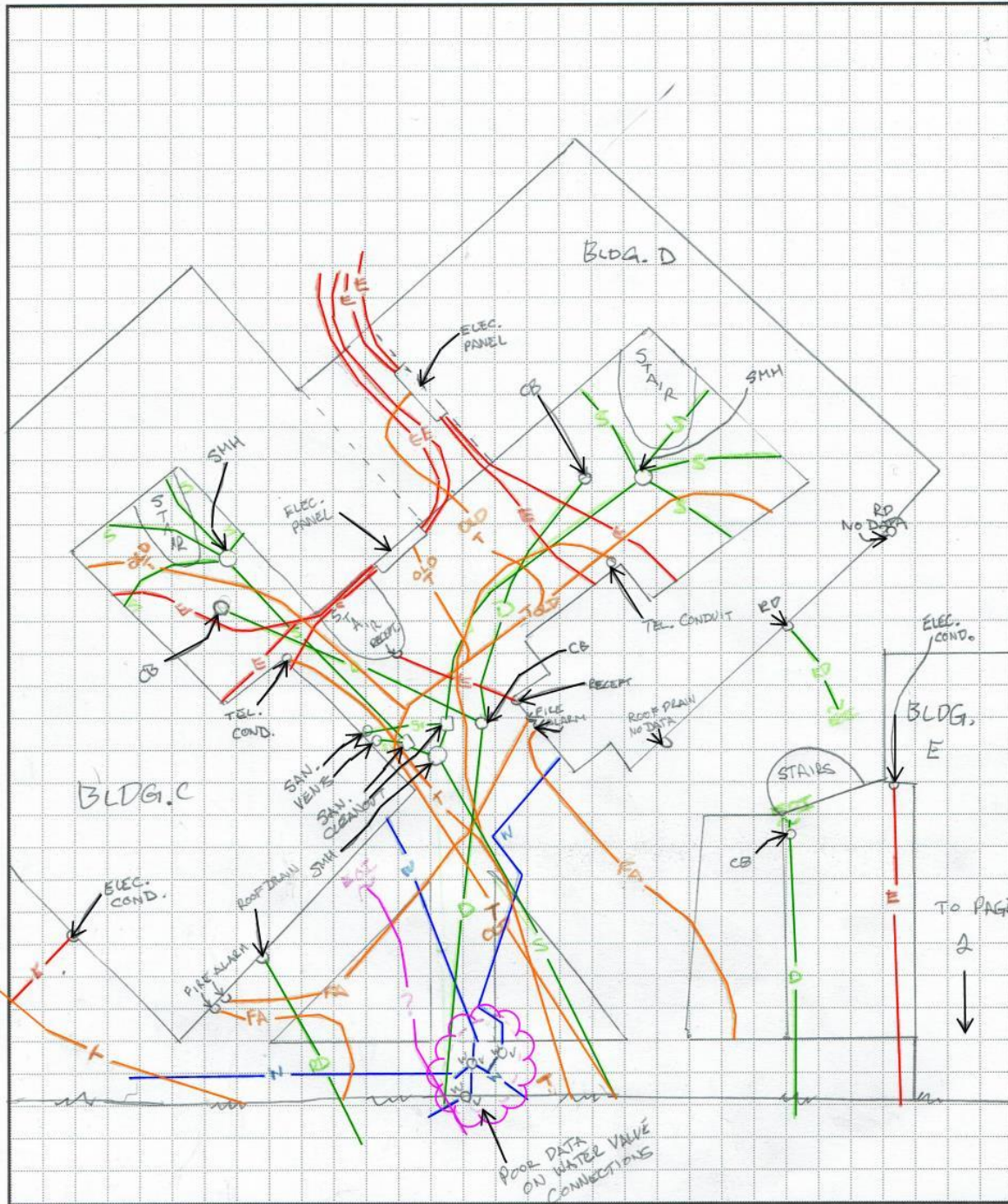
Field Sketches:



JOB ECSU LOW RISE APT.  
 DESCRIPTION BLDG. D / BLDG. C / BLDG. E

PROJECT NO. 16c5718  
 COMPUTED BY M. SABIA  
 CHECKED BY \_\_\_\_\_

PAGE 1 OF 2  
 SHEET \_\_\_\_\_ OF \_\_\_\_\_  
 DATE 5/5/16  
 DATE \_\_\_\_\_



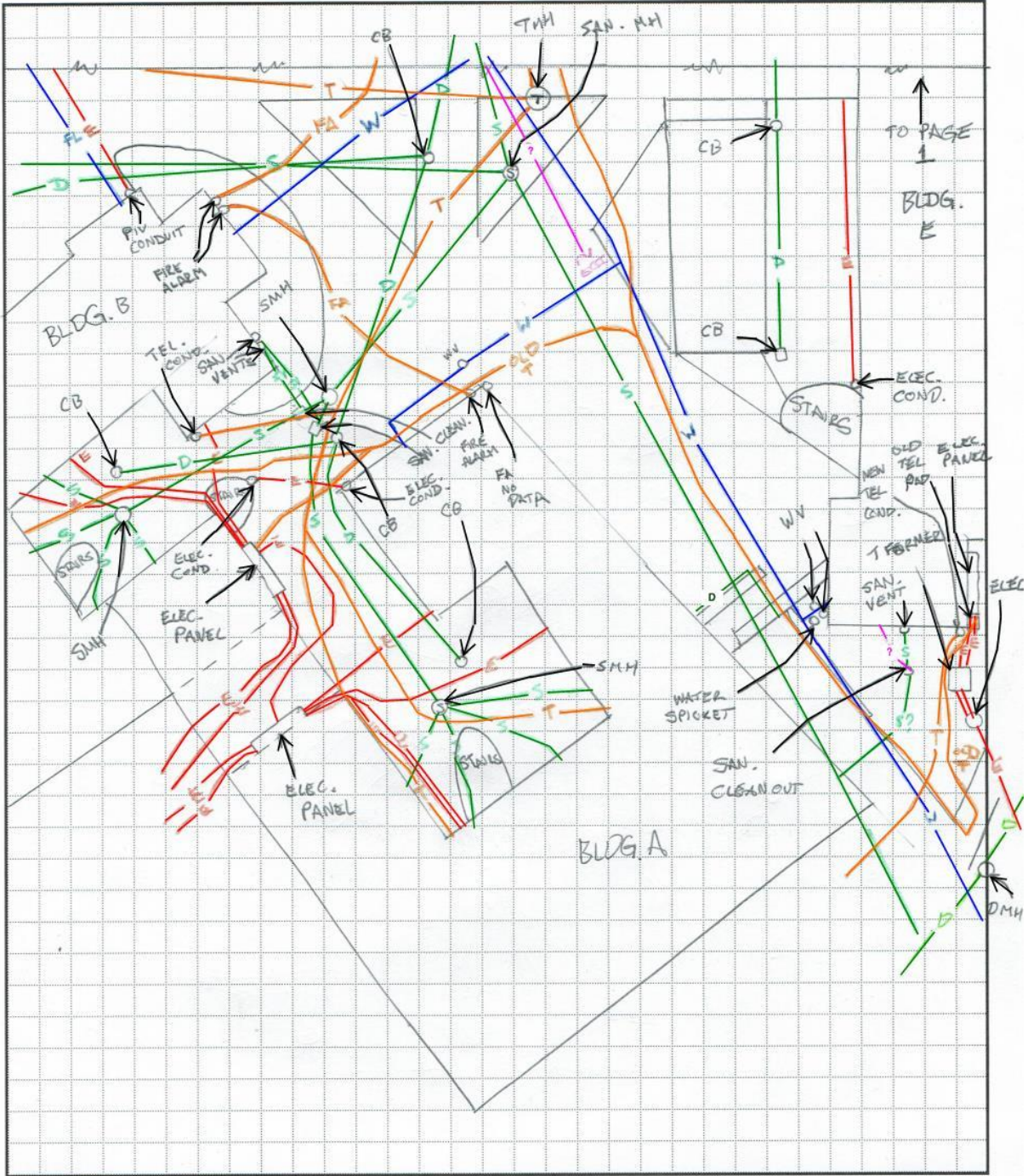




JOB ECSU LOW RISE APT.  
DESCRIPTION BLDG. B / BLDG. A / BLDG. E

PROJECT NO. 16c5778  
COMPUTED BY M. SABIA  
CHECKED BY \_\_\_\_\_

PAGE 2 OF 2  
SHEET \_\_\_\_\_ OF \_\_\_\_\_  
DATE 5/5/16  
DATE \_\_\_\_\_

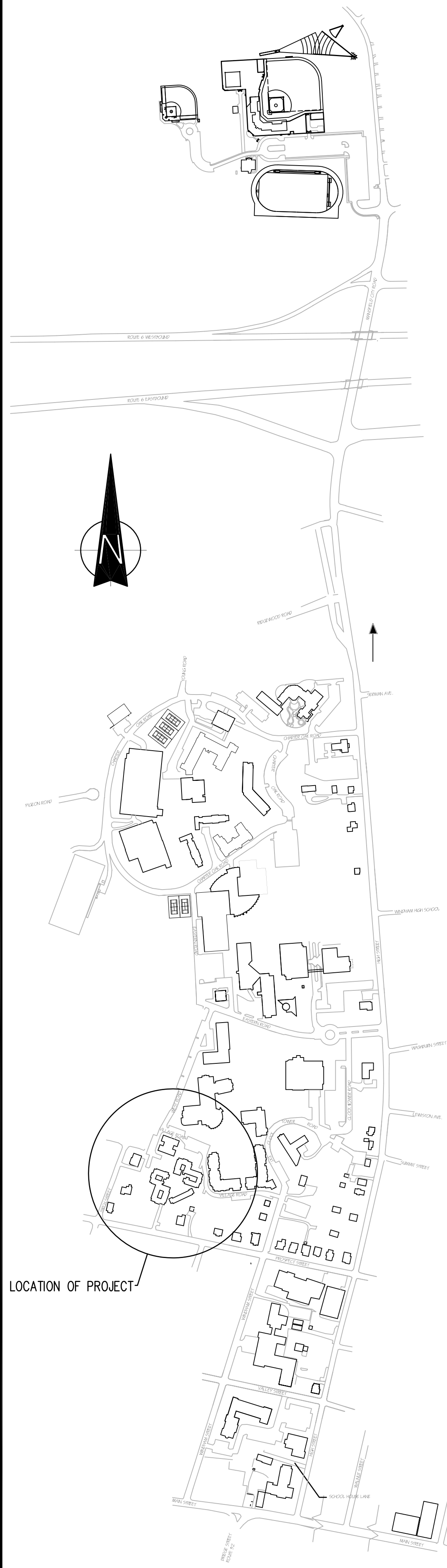




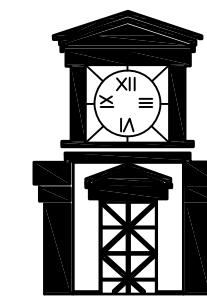
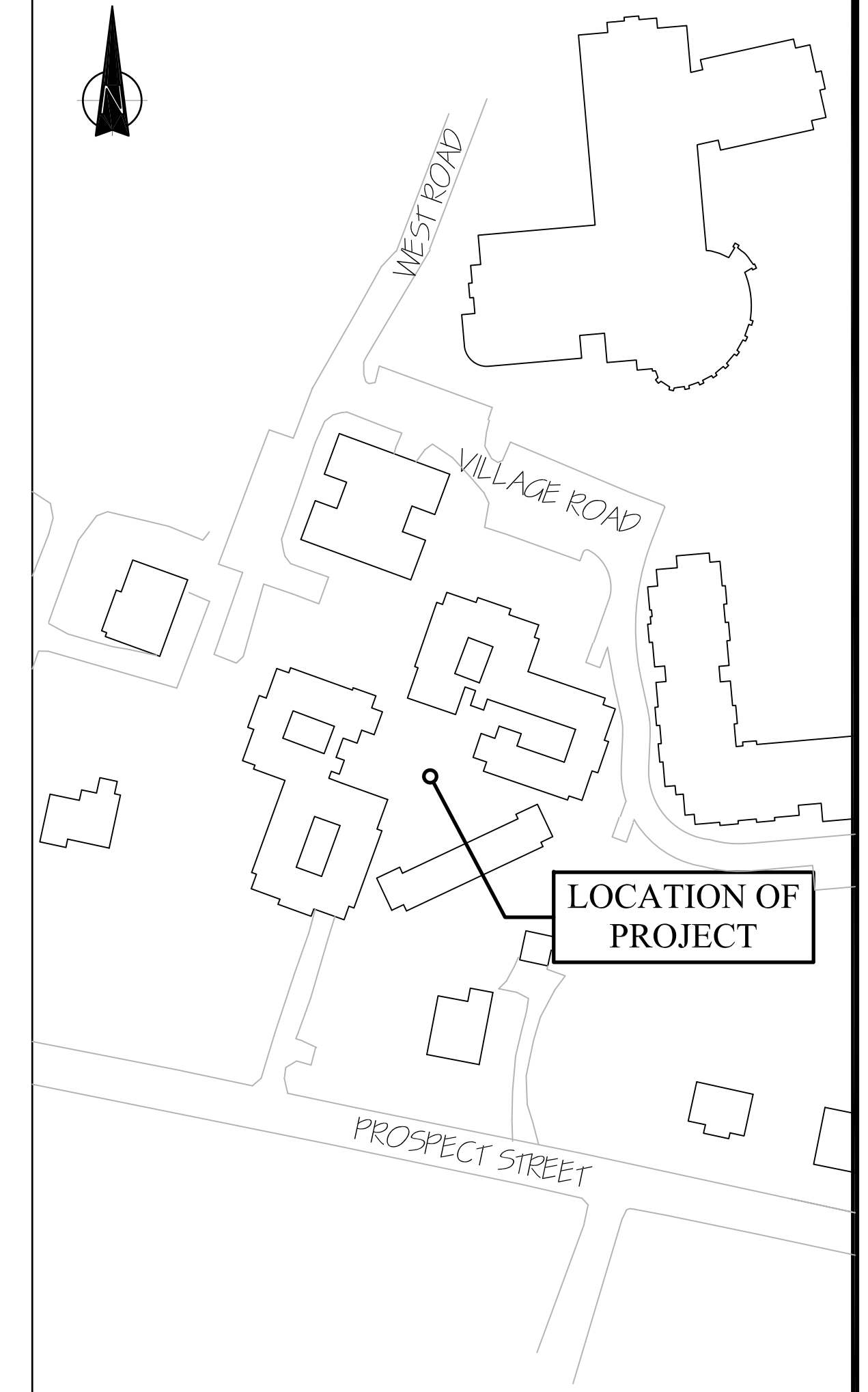




SITE PLAN



LOCATION PLAN



**EASTERN CONNECTICUT STATE UNIVERSITY**

WILLIMANTIC, CONNECTICUT

# LOW RISE STAIR REPLACEMENT & COURTYARD IMPROVEMENTS

**PROJECT # ECSU 2016-9 (Phase II)**  
**Facilities Management & Planning**

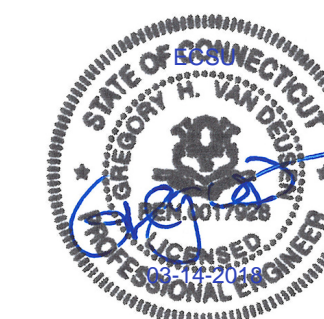
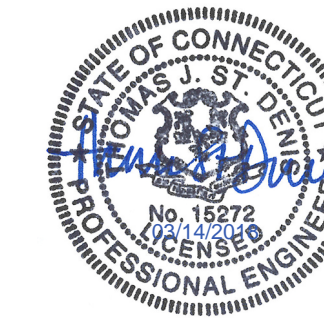
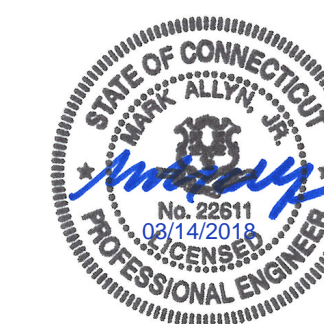
ELSA NUÑEZ  
PRESIDENT

March 7th, 2018

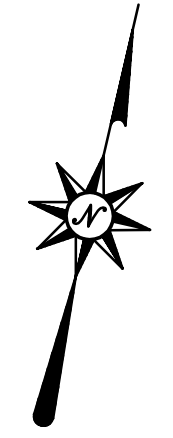
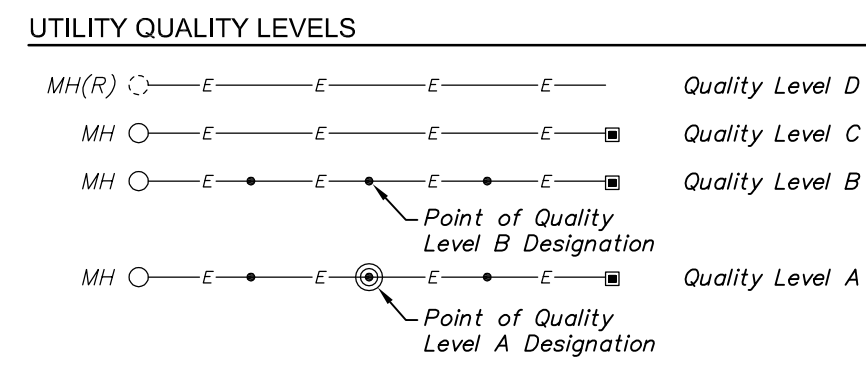
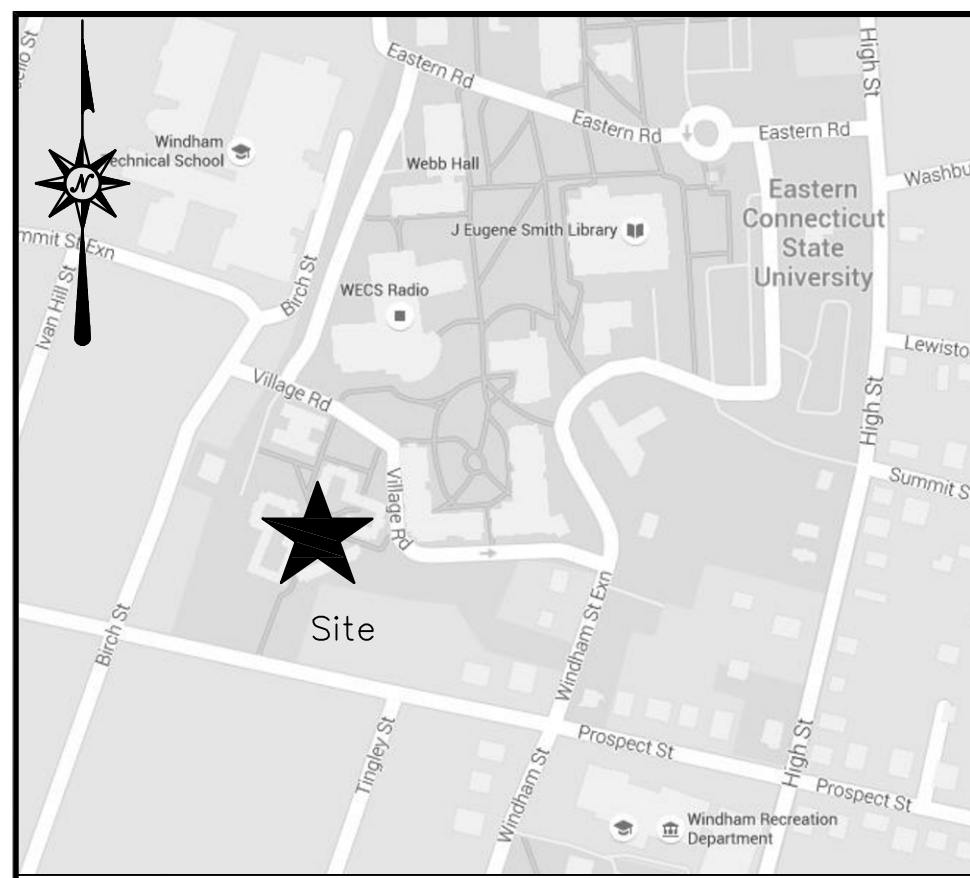
**LIST OF DRAWINGS**

- SITE:**
- EX-1 TOPOGRAPHIC SURVEY
  - DM-1 DEMOLITION PLAN
  - SP-1 SITE PLAN
  - SP-2 LAYOUT PLAN
  - GR-1 GRADING & UTILITIES PLAN
  - LP-1 LANDSCAPE PLAN
  - DN-1 DETAIL SHEET

- STAIRS:**
- G-1 GENERAL INFORMATION
  - A-1 STAIR A
  - A-2 STAIR B
  - A-3 STAIR C
  - A-4 STAIR D
  - A-5 STAIR E-WEST
  - A-6 STAIR E-EAST
  - A-7 STAIR AB
  - A-8 STAIR CD
  - C-1 STAIR DEMO PLAN
  - C-2 STAIR PLAN
  - C-3 STAIR PLAN
  - C-4 SITE ELECTRICAL PLAN
  - S-1 GENERAL NOTES, ABBREVIATIONS
  - S-2 STAIR DEMOLITION PLAN
  - S-3 STAIR 'A' FOUNDATION AND FRAMING PLANS
  - S-4 STAIR 'B' FOUNDATION AND FRAMING PLANS
  - S-5 STAIR 'C' FOUNDATION AND FRAMING PLANS
  - S-6 STAIR 'D' FOUNDATION AND FRAMING PLANS
  - S-7 STAIR 'E-WEST' FOUNDATION AND FRAMING PLANS
  - S-8 STAIR 'E-EAST' FOUNDATION AND FRAMING PLANS
  - S-9 STAIR 'AB' FOUNDATION AND FRAMING PLANS
  - S-10 STAIR 'CD' FOUNDATION AND FRAMING PLANS
  - S-11 TYPICAL FOUNDATION DETAILS
  - S-12 TYPICAL FRAMING DETAILS
  - S-13 FRAMING DETAILS - STAIR "A,B,C,D"
  - S-14 FRAMING DETAILS - STAIR 'E-WEST' & E-EAST
  - S-15 FRAMING DETAILS - STAIR 'AB & CD'
  - S-16 ROOF FRAMING DETAILS
  - E-1 ELECTRIC PLAN
  - E-2 ELECTRIC PLAN
  - E-3 ELECTRIC PLAN
  - E-4 ELECTRIC PLAN



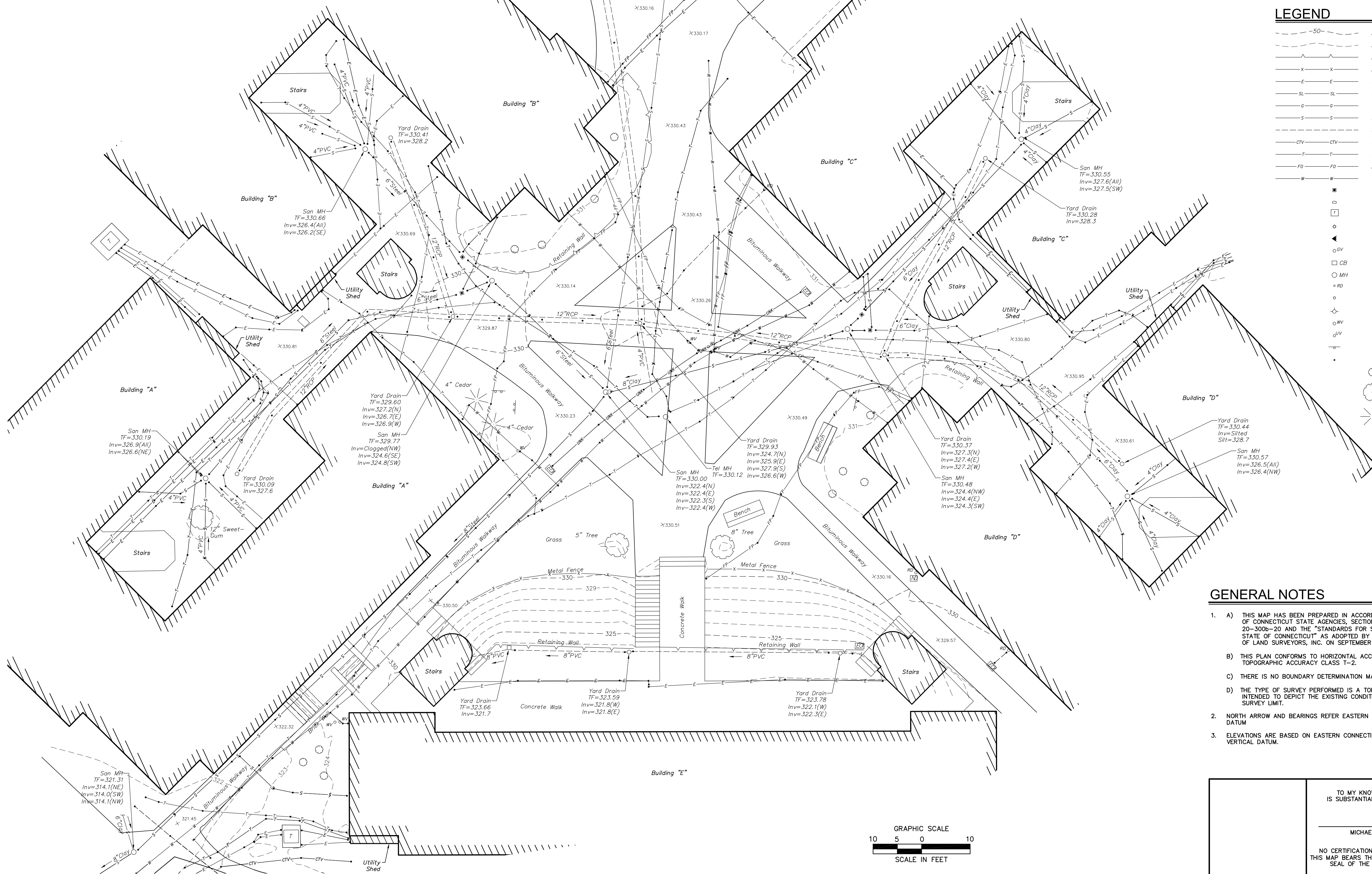
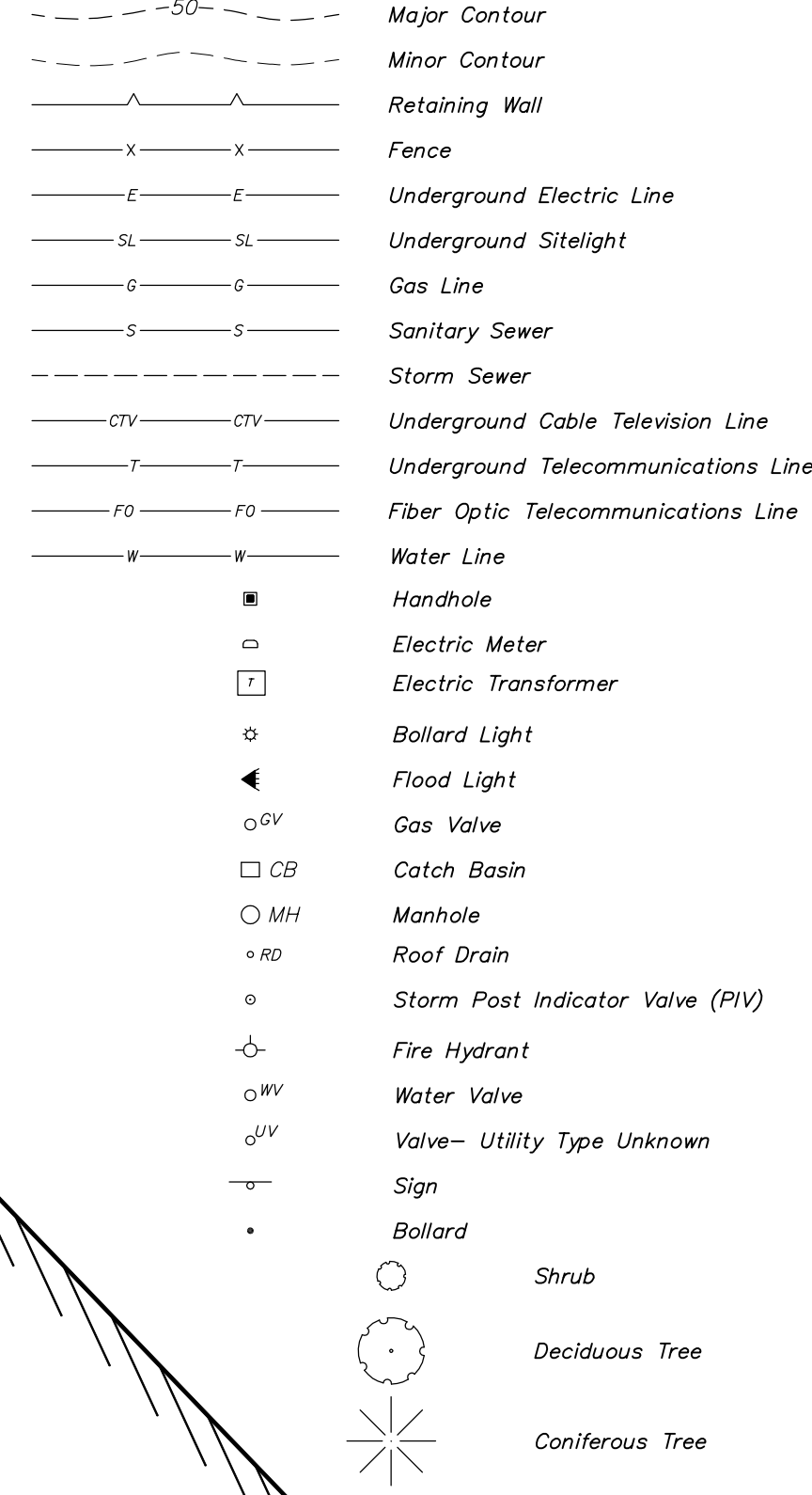




**UTILITY NOTES**

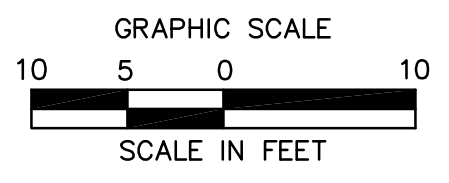
- EXISTING SUBSURFACE UTILITY FEATURES HAVE BEEN DEPICTED IN ACCORDANCE WITH GS/ASSE 38-02, "AMERICAN SOCIETY OF CIVIL ENGINEERS, STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA". THIS STANDARD HAS ESTABLISHED FOUR DISTINCT QUALITY LEVELS OF UTILITY MAPPING.
  - QUALITY LEVEL D - INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS.
  - QUALITY LEVEL C - INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D INFORMATION.
  - QUALITY LEVEL B - INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES. THIS INFORMATION IS SURVEYED TO APPLICABLE TOLERANCES DEFINED BY THE PROJECT AND REDUCED ONTO PLAN DOCUMENTS. PROFESSIONAL JUDGMENT IS USED IN CORRELATING THIS INFORMATION TO QUALITY LEVEL C AND D INFORMATION.
  - QUALITY LEVEL A - HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE (OR VERIFICATION OF PREVIOUSLY EXPOSED AND SURVEYED UTILITIES) AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES, USUALLY AT A SPECIFIC POINT. PROFESSIONAL JUDGMENT IS USED IN CORRELATING THIS INFORMATION TO QUALITY LEVEL B, C AND D INFORMATION.
- ONE OR MORE OF THESE QUALITY LEVELS HAS BEEN UTILIZED IN THE PRODUCTION OF THIS SURVEY. REFER TO THE LEGEND FOR DESIGNATION OF QUALITY LEVELS.
- THE SURVEYOR MAKES NO GUARANTEE OR WARRANTY THAT THE UNDERGROUND UTILITIES DEPICTED COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT GUARANTEE OR WARRANT THAT THE UNDERGROUND UTILITIES DEPICTED ARE IN THE EXACT LOCATION INDICATED. UTILITIES ARE DEPICTED IN ACCORDANCE WITH THE STANDARD OF CARE, FROM INFORMATION AVAILABLE.
- THE CONTRACTOR SHALL UTILIZE "CALL BEFORE YOU DIG", "ONE CALL", OR LOCAL EQUIVALENT, PRIOR TO EXCAVATION FOR THE PURPOSE OF VERIFYING THE SUBSURFACE UTILITIES IN THE AREA. IN AREAS WHERE THE "CALL BEFORE YOU DIG", "ONE CALL", OR LOCAL EQUIVALENT DOES NOT RESPOND, THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF THE EXISTING UTILITIES, IN ACCORDANCE WITH THE OWNER'S CONTRACT AND ALL APPLICABLE LAWS AND REGULATIONS, INCLUDING OSHA.
- INDIVIDUAL COMPONENTS OF UTILITIES AND RELATED STRUCTURES MAY EXIST ABOVE OR BELOW GRADE FOR THE PURPOSES AND MAY NOT BE DEPICTED. THESE MAY INCLUDE BUT ARE NOT LIMITED TO GROUND WIRES, STRUCTURAL SUPPORT, AND CATHODIC PROTECTION. THE CONTRACTOR SHALL 1) CONTACT THE OWNER OF THE UTILITY PRIOR TO EXCAVATION FOR INSTRUCTION REGARDING HAZARDS ASSOCIATED WITH, AND SPECIFIC PRECAUTIONS TO BE UTILIZED WHEN WORKING AT OR NEAR, SUCH FACILITIES AND 2) EXERCISE THE APPROPRIATE STANDARD OF CARE REQUIRED IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS, INCLUDING OSHA, WHEN EXCAVATING IN THE VICINITY OF A UTILITY AND/OR ITS RELATED STRUCTURES.
- DETERMINATION OF ABANDONMENT OF A UTILITY, INDICATED AS "ABANDONED" OR "ABAN", HAS BEEN MADE ACCORDING TO RECORD INFORMATION AND IS NOT TO BE CONSTRUED AS BEING THE RESULT OF A PHYSICAL EVALUATION BY BL COMPANIES.

**LEGEND**



**GENERAL NOTES**

- THIS MAP HAS BEEN PREPARED IN ACCORDANCE WITH THE REGULATIONS OF CONNECTICUT STATE AGENCIES, SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.
  - THIS PLAN CONFORMS TO HORIZONTAL ACCURACY CLASS A-2 AND TOPOGRAPHIC ACCURACY CLASS T-2.
  - THERE IS NO BOUNDARY DETERMINATION MADE OR IMPLIED.
  - THE TYPE OF SURVEY PERFORMED IS A TOPOGRAPHIC SURVEY AND IS INTENDED TO DEPICT THE EXISTING CONDITIONS WITHIN THE CONTRACTED SURVEY LIMIT.
- NORTH ARROW AND BEARINGS REFER EASTERN CONNECTICUT STATE UNIVERSITY DATUM
- ELEVATIONS ARE BASED ON EASTERN CONNECTICUT STATE UNIVERSITY VERTICAL DATUM.



TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

MICHAEL J. GARON L.S. #70366

NO CERTIFICATION IS EXPRESSED OR IMPLIED UNLESS THIS MAP BEARS THE ORIGINAL SIGNATURE AND EMBOSSED SEAL OF THE ABOVE NAMED LAND SURVEYOR.

EASTERN CONNECTICUT STATE UNIVERSITY  
LOW RISE HOUSING  
WILLIMANTIC, CT



REVISIONS	Desc.	Revised	Flow	Arrows
No.	Date			
1.	05/26/16			
Surveyed	JP			
Drawn	JP/AV			
Checked	MG			
Approved	MG			
Scale	1"=10'			
Project No.	16C5778			
Date	05/08/16			
Field Book	N/A			
CAD File:	EX16C577801			
Title	TOPOGRAPHIC SURVEY			
Sheet No.	EX-1			

May 26, 2016 7:37am mgaron G:\JBS16\16C\16C5778\DWG\EX16C577801.dwg  
Layout: EX-1 24x36 XSC  
©2016 BL COMPANIES, INC. THESE DRAWINGS SHALL NOT BE UTILIZED BY ANY PERSON, FIRM OR CORPORATION WITHOUT THE SPECIFIC WRITTEN PERMISSION OF BL COMPANIES.



DEMOLITION NOTES

1. SEDIMENT AND EROSION CONTROLS SUCH AS CATCH BASIN SILT SACS AND HAYBALES NECESSARY FOR PROTECTION SHALL BE INSTALLED BY THE CONTRACTOR PRIOR TO START OF DEMOLITION OPERATIONS.
2. REMOVE AND DISPOSE OF SOIL, GRAVEL, DEBRIS, AND ANY RUBBISH REQUIRING REMOVAL FROM THE WORK AREA IN AN APPROVED OFF SITE LANDFILL, BY AN APPROVED HAULER. HAULER SHALL COMPLY WITH ALL REGULATORY REQUIREMENTS.
3. THE CONTRACTOR SHALL STABILIZE THE SITE AND KEEP EROSION CONTROL MEASURES IN PLACE UNTIL THE COMPLETION OF HIS WORK AS REQUIRED OR DEEMED NECESSARY BY THE CONSTRUCTION ADMINISTRATOR. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE MAINTENANCE OF EXISTING EROSION AND SEDIMENTATION CONTROLS AND FOR INSTALLATION OF ANY NEW EROSION AND SEDIMENTATION CONTROLS AS PER THE PLANS AT THAT TIME.
4. CONTRACTOR SHALL PROVIDE AND MAINTAIN TRAFFIC DEVICES FOR PROTECTION OF VEHICLES AND PEDESTRIANS CONSISTING OF DRUMS, BARRIERS, SIGNS, LIGHTS, FENCES AND UNIFORMED TRAFFIC CONTROLLERS AS REQUIRED OR AS ORDERED BY THE CONSTRUCTION ADMINISTRATOR. CONTRACTOR SHALL MAINTAIN ALL TRAFFIC LANES AND PEDESTRIAN WALKWAYS AT ALL TIMES UNLESS WRITTEN APPROVAL FROM THE OWNER IS GRANTED.
5. THE CONTRACTOR SHALL RESTORE ANY UTILITY STRUCTURE, PIPE, UTILITY, PAVEMENT, RETAINING WALLS, SIDEWALKS, DRAINAGE STRUCTURE, SWALE OR LANDSCAPED AREAS DISTURBED DURING DEMOLITION AND CONSTRUCTION ACTIVITIES TO THEIR ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE OWNER.
6. NO WORK ON THIS SITE SHALL BE INITIATED BY THE CONTRACTOR UNTIL A PRE-CONSTRUCTION MEETING WITH OWNER IS PERFORMED. THE CONTRACTOR SHALL HAVE CALL-BEFORE-YOU-DIG MARK OUTS OF EXISTING UTILITIES COMPLETED PRIOR TO MEETING.
7. THE CONTRACTOR SHALL NOT COMMENCE DEMOLITION UNTIL AUTHORIZED TO DO SO BY THE OWNER.
8. THE CONTRACTOR SHALL INSTALL TEMPORARY SHEETING OR SHORING AS NECESSARY TO PROTECT EXISTING AND NEW IMPROVEMENTS AND UTILITIES DURING CONSTRUCTION AND DEMOLITION. SHEETING OR SHORING SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER, LICENSED IN THIS STATE AND EVIDENCE OF SUCH SUBMITTED TO THE OWNER PRIOR TO INSTALLATION.
9. THE CONTRACTOR SHALL COMPLY WITH CFR29 PART 1926 FOR EXCAVATION, TRENCHING, AND TRENCH PROTECTION REQUIREMENTS.

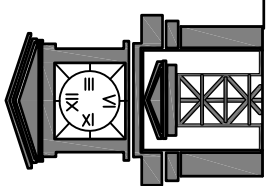
— ADD ALTERNATE #1:  
LIMITS OF PAVEMENT REMOVAL  
INCLUDING EXISTING BASE MATERIAL

NOTICE TO BIDDERS:

THE FOLLOWING SCOPE RELATES TO BITUMINOUS CONCRETE PAVEMENT ONLY.

**BASE BID SCOPE** - INCLUDES PAVEMENT REPAIR REQUIRED FOR THE REPLACEMENT OF THE PROPOSED STAIRS ONLY. SAWCUTS ARE REQUIRED ALONG ALL PAVEMENT REPAIR LIMITS.

**ADD ALTERNATE #1** - INCLUDES THE HATCHED LIMITS AS SHOWN ON THIS PLAN.



**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

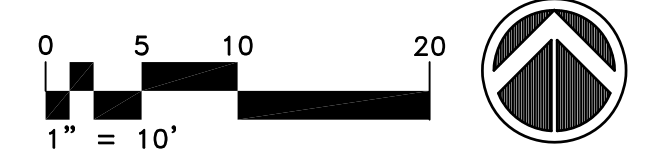
2	Bid Set	3/7/18
1	OSBI Review Submission	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

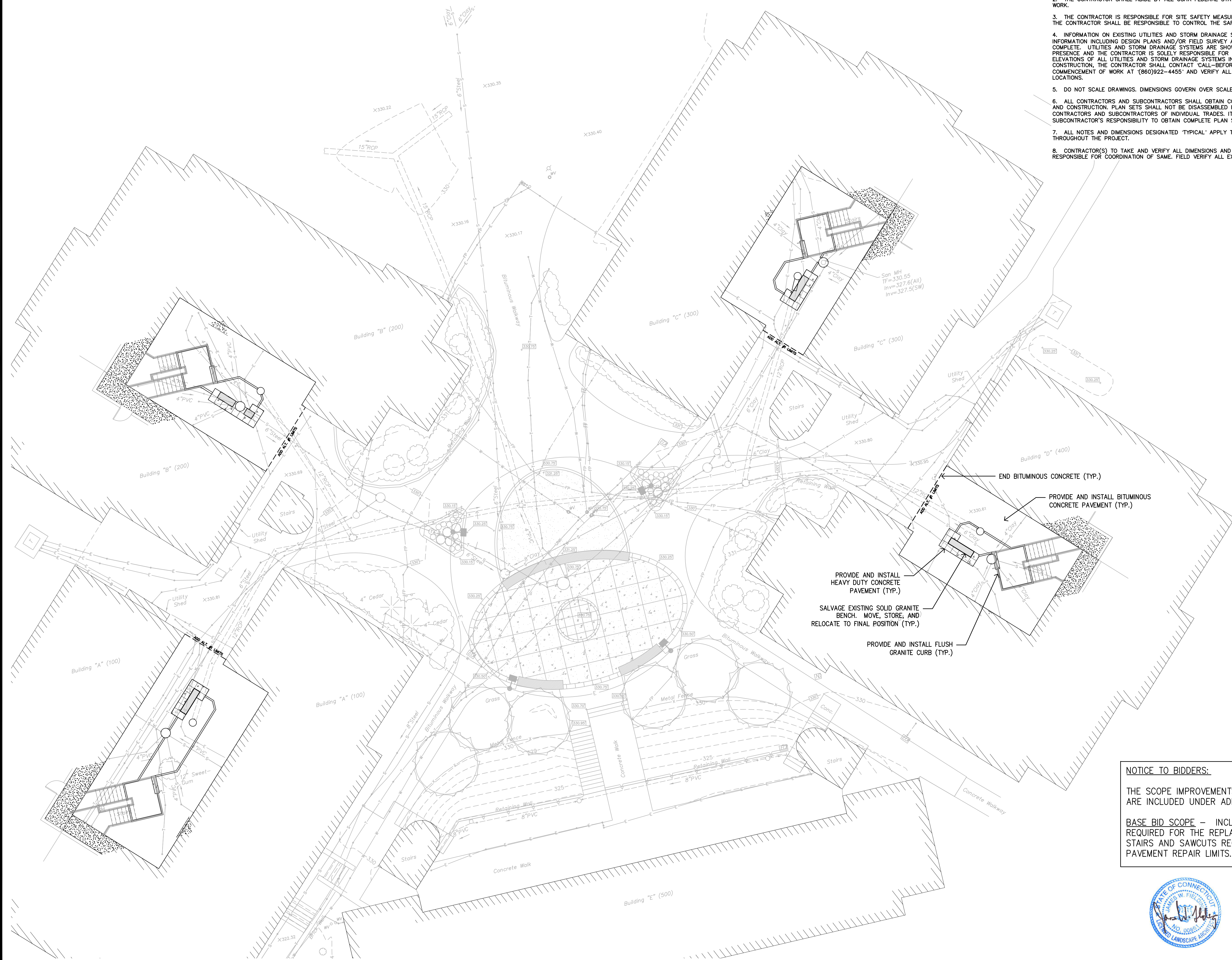
DRAWING NAME:  
**Demolition Plan**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017**  
Scale: **AS NOTED**  
Plot Size: **24 x 36**

Drawing No.: **DM-1**







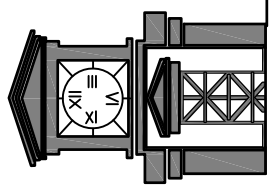
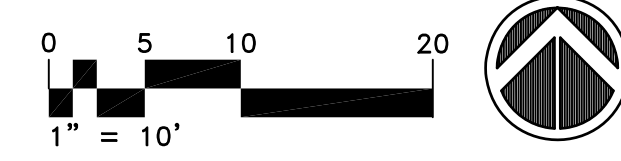
**GENERAL NOTES**

1. THE CONTRACTOR SHALL VERIFY ALL SITE AND BUILDING CONDITIONS IN THE FIELD AND CONTACT THE CONSTRUCTION ADMINISTRATOR IF THERE ARE ANY QUESTIONS OR CONFLICTS REGARDING THE CONSTRUCTION DOCUMENTS AND/OR FIELD CONDITIONS.
2. THE CONTRACTOR SHALL ABIDE BY ALL OSHA FEDERAL STATE AND LOCAL REGULATIONS WHEN PERFORMING WORK.
3. THE CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY MEASURES TO BE EMPLOYED DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL THE SAFEST METHODS OR MEANS OF THE WORK.
4. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING DESIGN PLANS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "CALL-BEFORE-YOU-DIG" 72 HOURS BEFORE COMMENCEMENT OF WORK AT (860)922-4455 AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS.
5. DO NOT SCALE DRAWINGS. DIMENSIONS GOVERN OVER SCALED DIMENSIONS.
6. ALL CONTRACTORS AND SUBCONTRACTORS SHALL OBTAIN COMPLETE DRAWING PLAN SETS FOR BIDDING AND CONSTRUCTION. PLAN SETS SHALL NOT BE DISASSEMBLED INTO PARTIAL PLAN SETS FOR USE BY CONTRACTORS AND SUBCONTRACTORS OF INDIVIDUAL TRADES. IT SHALL BE THE CONTRACTOR'S AND SUBCONTRACTOR'S RESPONSIBILITY TO OBTAIN COMPLETE PLAN SETS FOR USE IN BIDDING AND CONSTRUCTION.
7. ALL NOTES AND DIMENSIONS DESIGNATED "TYPICAL" APPLY TO ALL LIKE OR SIMILAR CONDITIONS THROUGHOUT THE PROJECT.
8. CONTRACTOR(S) TO TAKE AND VERIFY ALL DIMENSIONS AND CONDITIONS OF THE WORK AND BE RESPONSIBLE FOR COORDINATION OF SAME. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK.

**NOTICE TO BIDDERS:**

THE SCOPE IMPROVEMENTS SHOWN ON THIS PLAN ARE INCLUDED UNDER ADD ALTERNATE #1

**BASE BID SCOPE** - INCLUDES PAVEMENT REPAIR REQUIRED FOR THE REPLACEMENT THE PROPOSED STAIRS AND SAWCUTS REQUIRED ALONG THE PAVEMENT REPAIR LIMITS.



**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

2	Bid Set	3/7/18
1	OSBI Review Submission	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**Site Plan**

Project No.:  
**ECSU 2016-9 (Phase II)**

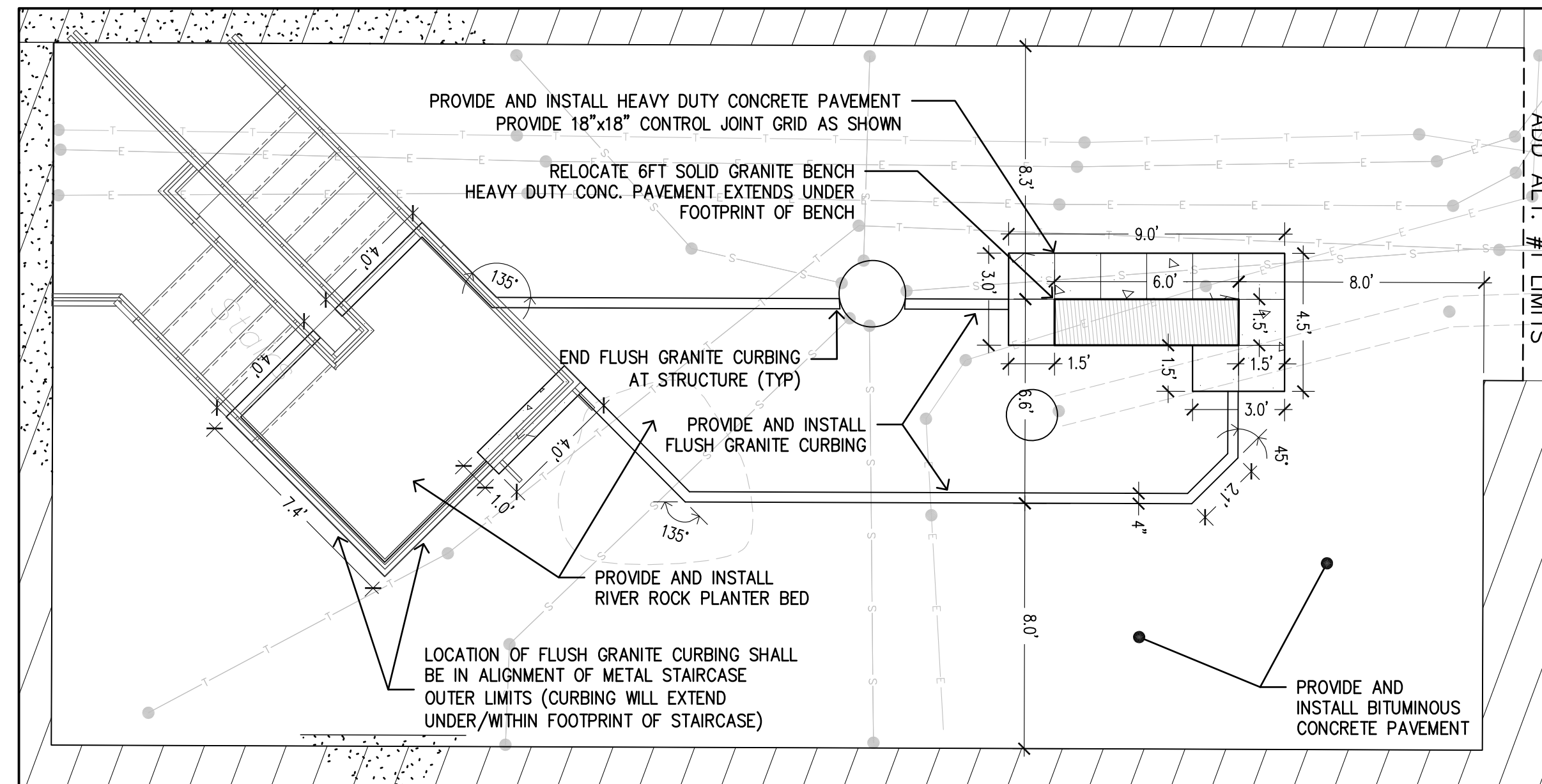
Date:  
**12/6/2017**

Scale:  
**AS NOTED**

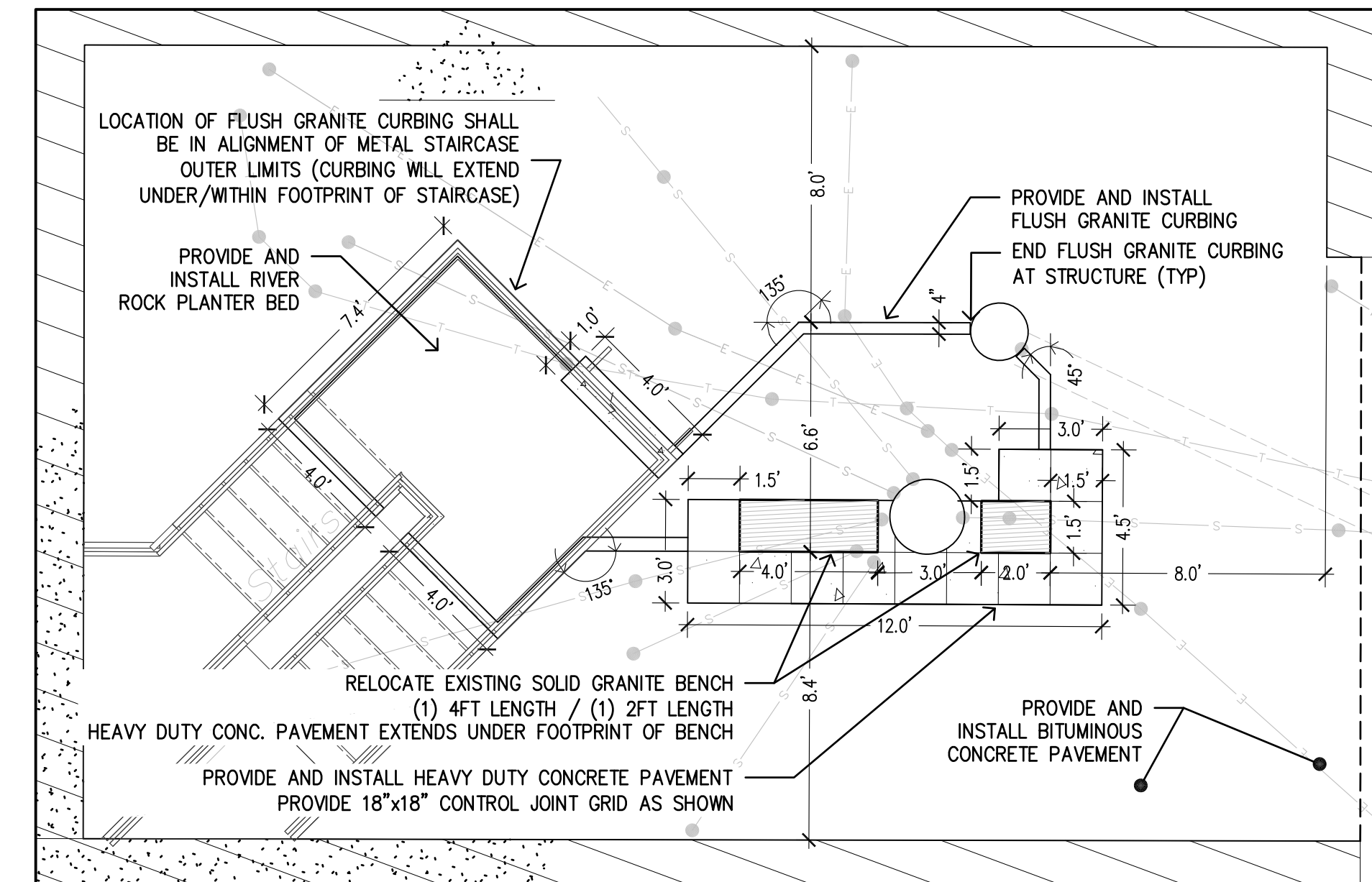
Plot Size:  
**24 x 36**

Drawing No.:  
**SP-1**

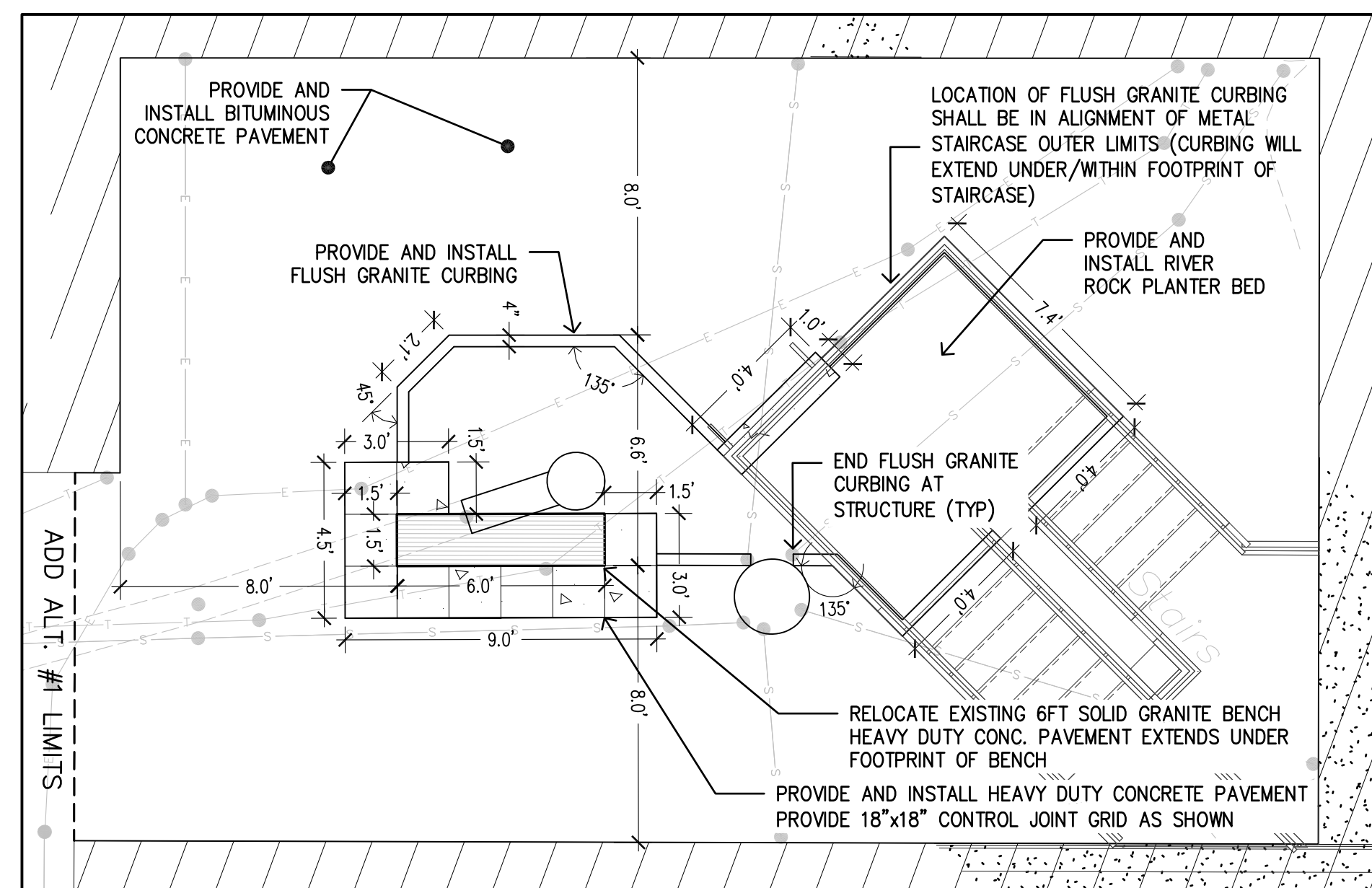




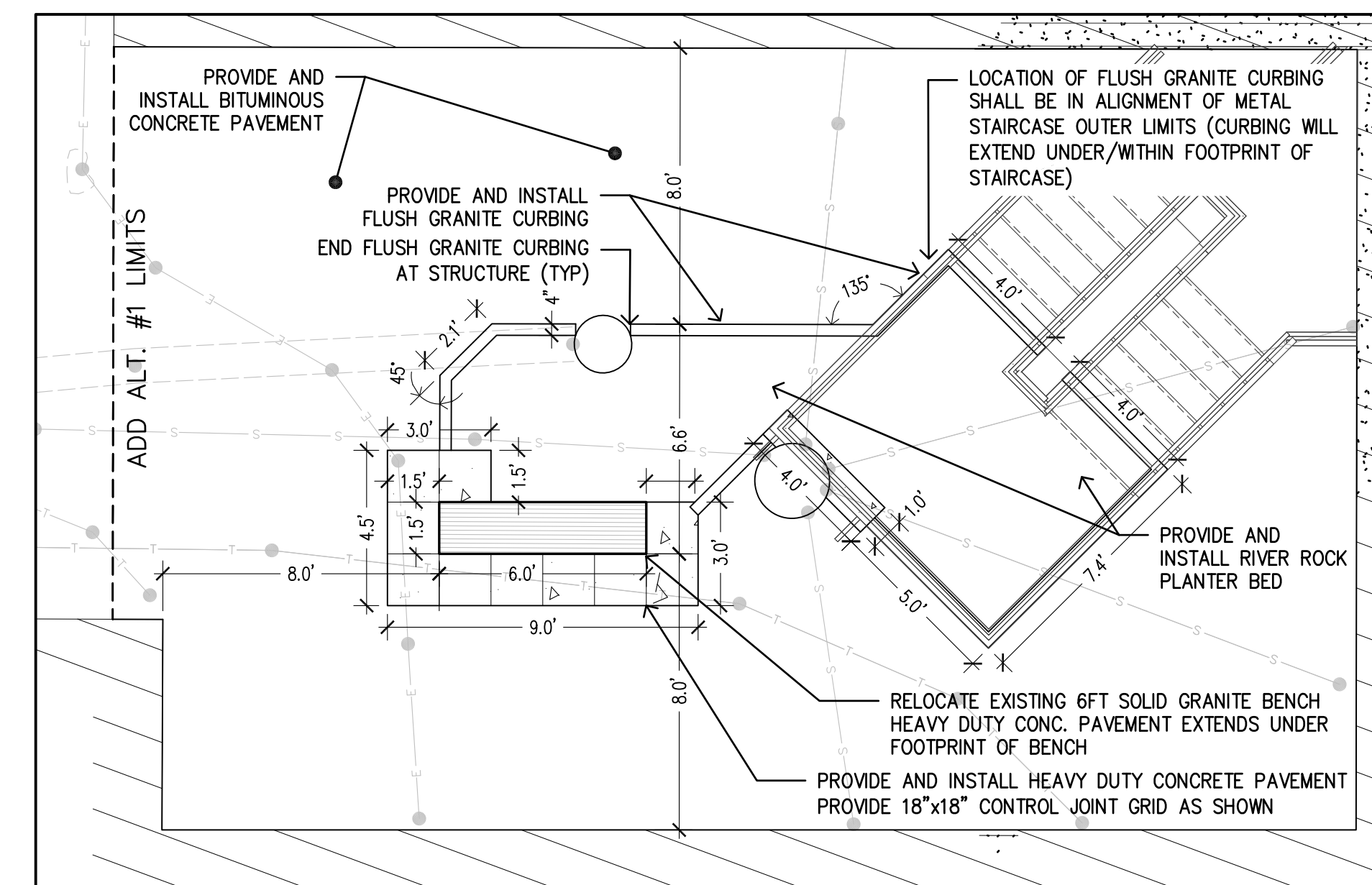
**INTERIOR COURTYARD @ BLDG 100**  
SCALE: 1/4"=1'-0"



**INTERIOR COURTYARD @ BLDG 200**  
SCALE: 1/4"=1'-0"

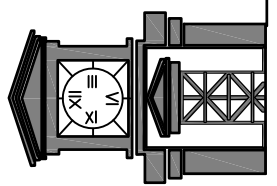


**INTERIOR COURTYARD @ BLDG 300**  
SCALE: 1/4"=1'-0"



**INTERIOR COURTYARD @ BLDG 400**  
SCALE: 1/4"=1'-0"

**NOTICE TO BIDDERS:**  
THE SCOPE IMPROVEMENTS SHOWN ON THIS  
PLAN ARE INCLUDED UNDER ADD ALTERNATE #1



**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

2	Bld Set	3/7/18
1	OSBI Review Submission	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:

**Low Rise Stair  
Replacement &  
Courtyard  
Improvements**

DRAWING NAME:

**Layout Plan**

Project No.: <b>ECSU 2016-9 (Phase II)</b>	
Date: <b>12/6/2017</b>	Drawing No.: <b>SP-2</b>
Scale: <b>AS NOTED</b>	Plot Size: <b>24 x 36</b>







**UTILITY CONSTRUCTION NOTES**

1. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TRAFFIC DEVICES FOR PROTECTION OF VEHICLES AND PEDESTRIANS CONSISTING OF DRUMS, BARRIERS, SIGNS, LIGHTS, FENCES AND UNIFORMED TRAFFIC CONTROLLERS AND UNIFORMED TRAFFIC OFFICERS AS REQUIRED, OR AS ORDERED BY THE CONSTRUCTION ADMINISTRATOR.
2. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY THE ELEVATION AND LOCATION OF ALL UTILITIES BY VARIOUS MEANS PRIOR TO BEGINNING ANY EXCAVATION. TEST PITS SHALL BE DUG AT ALL LOCATIONS WHERE PROPOSED SANITARY SEWERS AND WHERE PROPOSED STORM PIPING WILL CROSS EXISTING UTILITIES, AND THE HORIZONTAL AND VERTICAL LOCATIONS OF THE UTILITIES SHALL BE DETERMINED. THE CONTRACTOR SHALL CONTACT THE CONSTRUCTION ADMINISTRATOR IN THE EVENT OF ANY DISCOVERED OR UNFORESEEN CONFLICTS BETWEEN EXISTING AND PROPOSED SANITARY SEWERS, STORM PIPING AND UTILITIES SO THAT AN APPROPRIATE MODIFICATION MAY BE MADE.
3. THE CONTRACTOR SHALL ENSURE THAT ALL UTILITY PROVIDERS AND GOVERNING AUTHORITY STANDARDS FOR MATERIALS AND CONSTRUCTION METHODS ARE MET. THE CONTRACTOR SHALL PERFORM PROPER COORDINATION WITH THE RESPECTIVE UTILITY PROVIDER.
4. ALL EXISTING PAVEMENT WHERE UTILITY PIPING IS TO BE INSTALLED SHALL BE SAW CUT. AFTER UTILITY INSTALLATION IS COMPLETED, THE CONTRACTOR SHALL INSTALL TEMPORARY AND/OR PERMANENT PAVEMENT REPAIR AS DETAILED ON THE DRAWINGS OR AS REQUIRED BY THE OWNER.
5. ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENTS AND EVEN GRADES USING A PIPE LASER OR OTHER ACCURATE METHOD.
6. THE CONTRACTOR SHALL COMPACT THE PIPE BACKFILL IN 8" LIFTS ACCORDING TO THE PIPE BEDDING DETAILS. TRENCH BOTTOM SHALL BE STABLE IN HIGH GROUNDWATER AREAS. A PIPE FOUNDATION SHALL BE USED PER THE TRENCH DETAILS AND IN AREAS OF ROCK EXCAVATION.
7. ALL UTILITY CONSTRUCTION IS SUBJECT TO INSPECTION FOR APPROVAL PRIOR TO BACKFILLING, IN ACCORDANCE WITH THE APPROPRIATE UTILITY PROVIDER REQUIREMENTS AND THE CONSTRUCTION ADMINISTRATOR.
8. A ONE-FOOT MINIMUM VERTICAL CLEARANCE BETWEEN WATER, GAS, ELECTRICAL, AND TELEPHONE LINES AND STORM PIPING SHALL BE PROVIDED. A SIX-INCH MINIMUM CLEARANCE SHALL BE MAINTAINED BETWEEN STORM PIPING AND SANITARY SEWER WITH A CONCRETE ENCASEMENT. AN 18-INCH TO 6-INCH VERTICAL CLEARANCE BETWEEN SANITARY SEWER PIPING AND STORM PIPING SHALL REQUIRE CONCRETE ENCASEMENT OF THE PROPOSED PIPING.
9. MANHOLE RIMS AND CATCH BASIN GRATES SHALL BE SET TO ELEVATIONS SHOWN. SET ALL EXISTING MANHOLE RIMS AND VALVE COVERS TO BE RAISED OR LOWERED FLUSH WITH FINAL GRADE AS NECESSARY.
10. SITE CONTRACTOR SHALL COORDINATE INSTALLATION OF ELECTRICAL SERVICES, CONDUIT, AND CABLES FOR SITE LIGHTING WITH THE ELECTRICAL CONTRACTOR.
11. THE CONTRACTOR SHALL RESTORE ANY UTILITY STRUCTURE, PIPE, UTILITY, PAVEMENT, CURBS, SIDEWALKS, DRAINAGE STRUCTURE, SWALE OR LANDSCAPED AREAS DISTURBED DURING CONSTRUCTION, TO THEIR ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE CONSTRUCTION ADMINISTRATOR.
12. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE INCLUDING SERVICES. CONTACT CALL-BEFORE-YOU-DIG AT (800) 922-4455 72 HOURS PRIOR TO CONSTRUCTION AND VERIFY ALL UNDERGROUND AND OVERHEAD UTILITY AND STORM DRAINAGE LOCATIONS. THE CONTRACTOR SHALL EMPLOY THE USE OF A UTILITY LOCATING COMPANY TO PROVIDE SUBSURFACE UTILITY ENGINEERING CONSISTING OF DESIGNATING UTILITIES AND STORM PIPING ON PRIVATE PROPERTY WITHIN THE CONTRACT LIMIT AND CONSISTING OF DESIGNATING AND LOCATING WHERE PROPOSED UTILITIES AND STORM PIPING CROSS EXISTING UTILITIES AND STORM PIPING WITHIN THE CONTRACT LIMITS.
13. THE CONTRACTOR SHALL MAINTAIN ALL FLOWS AND UTILITY CONNECTIONS TO EXISTING BUILDINGS WITHOUT INTERRUPTION UNLESS/UNTIL AUTHORIZED TO DISCONNECT BY THE CONSTRUCTION ADMINISTRATOR.

**GRADING NOTES**

1. MAINTAIN POSITIVE DRAINAGE FOR ALL PAVEMENT SURFACES.

**LEGEND**

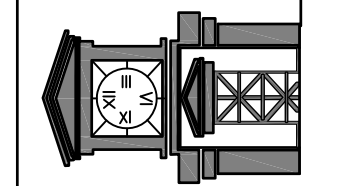


**NOTICE TO BIDDERS:**

THE SCOPE IMPROVEMENTS SHOWN ON THIS PLAN ARE INCLUDED UNDER ADD ALTERNATE #1

**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226



2	Bid Set	3/7/18
1	OSBI Review Submission	12/14/17
No.	Revision/Issue	Date

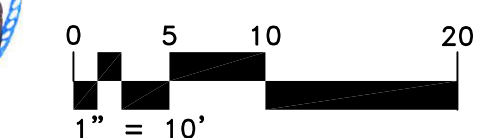
PROJECT NAME:

**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:

**Grading and Utilities Plan**

Project No.: ECSU 2016-9 (Phase II)	
Date: 12/6/2017	Drawing No.: GR-1
Scale: AS NOTED	Plot Size: 24 x 36





LANDSCAPE PLANT SCHEDULE

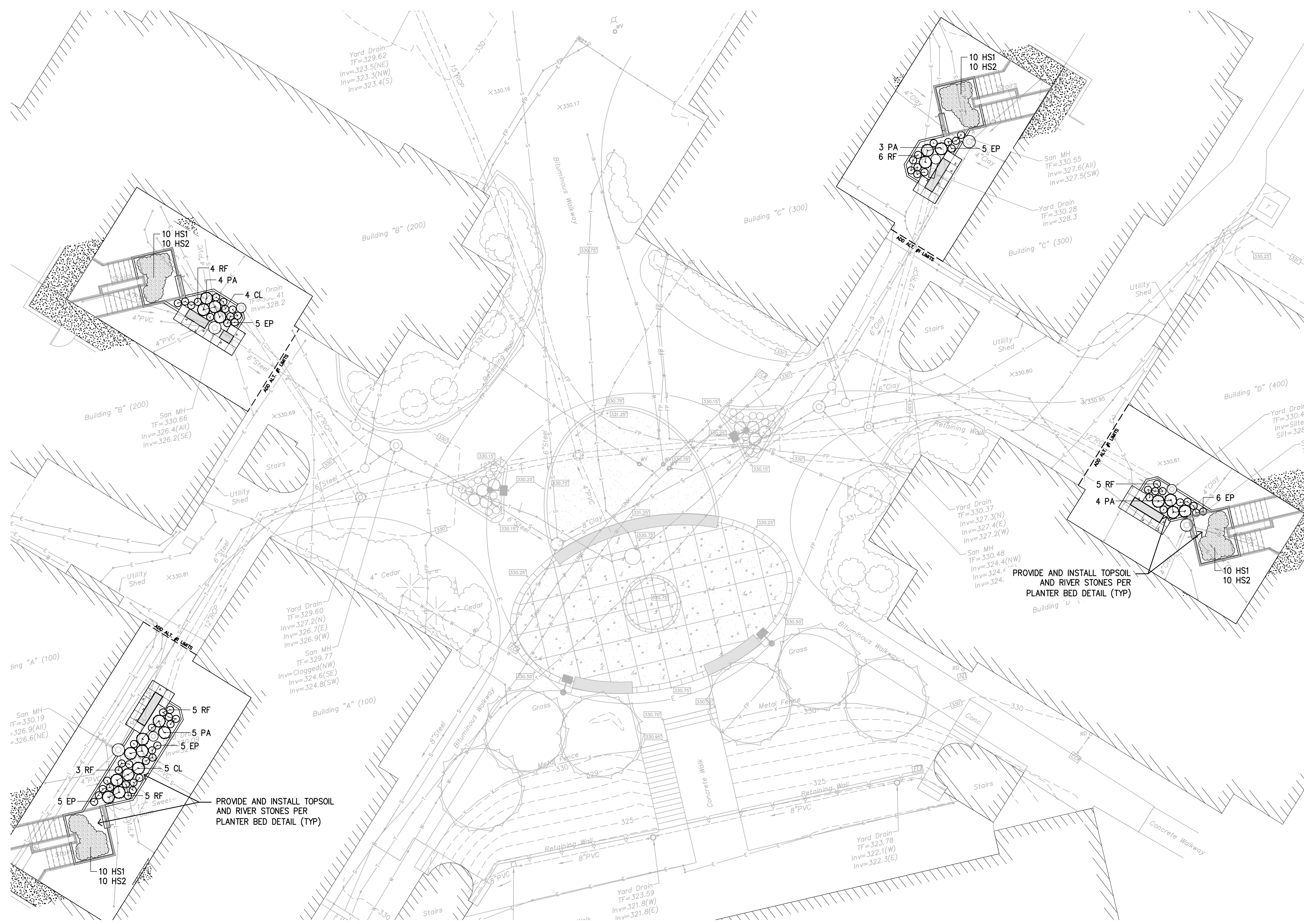
PERENNIALS					
KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	ROOT SIZE	COMMENTS
EP	26	Echinacea purpurea	PURPLE CONEFLOWER	1 GAL.	12"-18" HT. 18"-24" OC.
HS1	40	Hosta sieboldiana 'Stained Glass'	STAINED GLASS HOSTA	1 GAL.	12"-18" HT. 18"-24" OC.
HS2	40	Hosta sieboldiana 'Elegans'	ELEGANS HOSTA	1 GAL.	12"-18" HT. 18"-24" OC.
RF	28	Rudbeckia fulgida	BLACK-EYED SUSAN	1 GAL.	12"-18" HT. 18"-24" OC.

ORNAMENTAL GRASSES					
KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	ROOT SIZE	COMMENTS
CL	9	Chasmanthium latifolium	SEA OATS	1 GAL.	12"-18" HT. 18"-24" OC.
PA	16	Pennisetum alopecuroides	FOUNTAIN GRASS	1 GAL.	12"-18" HT. 18"-24" OC.

BULBS					
KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	ROOT SIZE	COMMENTS
CR	200	Crocus tommasinianus 'Lawn-of-Dreams'	LAWN-OF-DREAMS CROCUS*	BULB	3" OC.
NR	200	Narcissus 'Grand Mixture'	GRAND MIXTURE DAFFODIL*	BULB	6" OC.

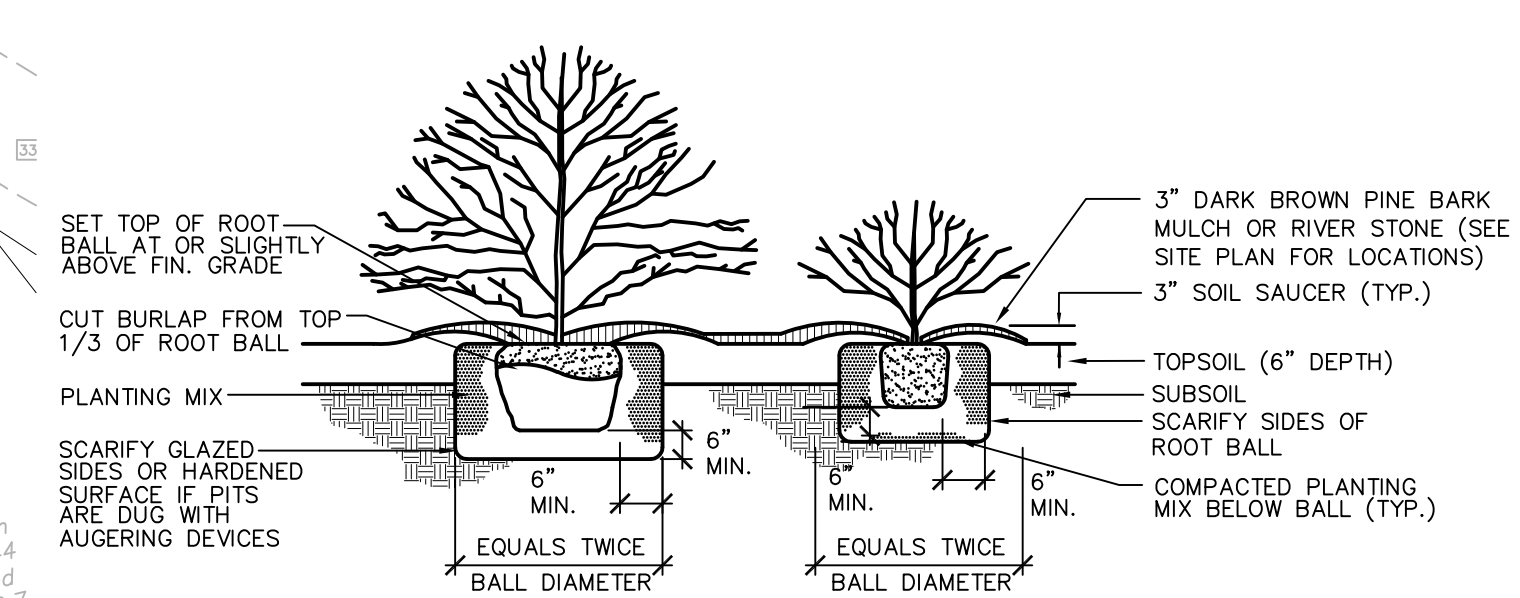
\*LAWN-OF-DREAMS & GRAND MIXTURE CAN BE FOUND AT VAN ENGELEN INC. (860-567-8734) DISPERSE BULBS EQUALLY AND EVENLY AMONG PLANTER BEDS AND ISLANDS

**NOTICE TO BIDDERS:**  
THE SCOPE IMPROVEMENTS SHOWN ON THIS PLAN ARE INCLUDED UNDER ADD ALTERNATE #1

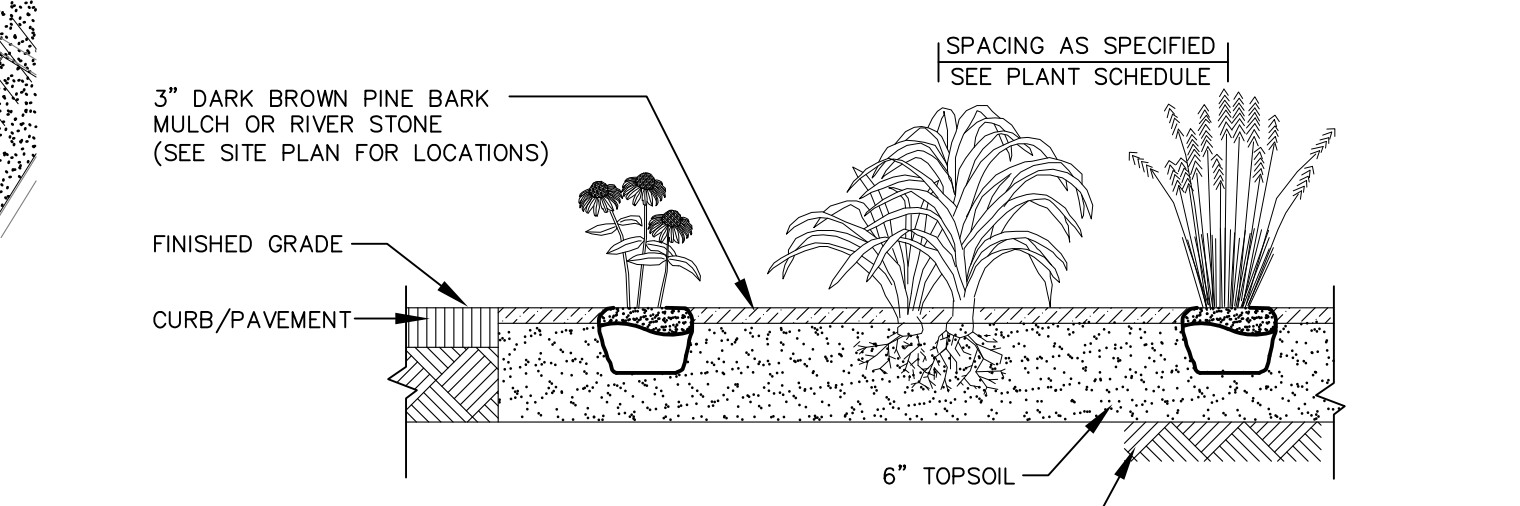


LANDSCAPE NOTES

1. THE LANDSCAPE PLAN ARE FOR LANDSCAPING INFORMATION ONLY. REFER TO THE SITE PLAN, LAYOUT PLAN, GRADING AND UTILITIES PLAN FOR ALL OTHER INFORMATION.
2. PLANTING LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO FIELD ADJUSTMENT DUE TO UTILITY LOCATIONS AND SITE CONDITIONS. CONTRACTOR SHALL LAY OUT THE WORK FOR THE REVIEW, ADJUSTMENT, AND APPROVAL OF OWNER OR LANDSCAPE ARCHITECT PRIOR TO PLANTING.
3. UTILITY LOCATIONS SHOWN IN THE DRAWINGS ARE APPROXIMATE. EXERCISE CARE WHEN DIGGING IN AREAS OF POTENTIAL CONFLICT WITH UNDERGROUND OR OVERHEAD UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE DUE TO CONTRACTOR'S NEGLIGENCE AND SHALL REPLACE OR REPAIR ANY DAMAGE AT CONTRACTOR'S EXPENSE.
4. TOPSOIL SHALL BE INSTALLED AT A MINIMUM DEPTH OF 6 INCHES. CONTRACTOR SHALL SUBMIT SAMPLES FROM EACH PROPOSED TOPSOIL SOURCE TO A CERTIFIED TESTING LABORATORY TO DETERMINE pH, FERTILITY, ORGANIC CONTENT AND MECHANICAL COMPOSITION. CONTRACTOR SHALL SUBMIT THE TEST RESULTS TO OWNER OR LANDSCAPE ARCHITECT FOR REVIEW. CONTRACTOR SHALL INCORPORATE AMENDMENTS FOR PROPER SOIL pH AND PLANT GROWTH AS RECOMMENDED BY TEST REPORTS AT NO INCREASE IN CONTRACT PRICE.
5. THE CONTRACTOR SHALL SUPPLY ALL LABOR, PLANTS, AND MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE WORK SHOWN ON THE DRAWINGS AND LISTED IN THE PLANT SCHEDULE. WHEN QUANTITIES LISTED IN THE PLANT SCHEDULE DIFFER FROM THOSE REQUIRED BY THE DRAWINGS, THE LARGER QUANTITY SHALL BE USED.
6. LANDSCAPE PLANTING PITS MUST BE FREE DRAINING. PAVEMENT, COMPACTED SOIL, AND ROCK SHALL BE REMOVED FROM PLANTING PITS AND LANDSCAPE ISLANDS TO A DEPTH OF 2' OR TO A GREATER DEPTH IF REQUIRED BY PLANTING DETAILS OR SPECIFICATIONS. REPLACE SOIL WITHIN ISLANDS WITH LOAM OR SANDY LOAM FREE OF STONES AND DEBRIS 1" OR GREATER IN DIAMETER AND ALL OTHER MATERIAL HARMFUL TO PLANT DEVELOPMENT.
7. PLANT REQUIREMENTS: ALL PLANTS SHALL CONFORM IN SIZE AND GRADE TO THE AMERICAN STANDARD FOR NURSERY STOCK, ANSI Z601. (LATEST EDITION). ALL PLANTS SHALL MEET THE ADDITIONAL REQUIREMENTS SET FORTH BELOW AND IN WRITTEN SPECIFICATIONS AS APPLICABLE. ALL TREES AND SHRUBS SHALL HAVE BEEN GROWN AT A COMMERCIAL NURSERY WITHIN 200 MILES OF THE PROJECT SITE UNLESS OTHERWISE APPROVED BY OWNER OR LANDSCAPE ARCHITECT. THEY SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY. THEY SHALL BE HEALTHY, SYMMETRICAL, EVENLY AND DENSELY BRANCHED, AND DENSELY FOLIATED WHEN IN LEAF. THEY SHALL BE FREE OF BARK INJURY, DISEASE, AND INSECT PESTS. SIZES SHALL CONFORM TO THE MEASUREMENT SPECIFIED ON THE DRAWINGS. PLANTS LARGER THAN SPECIFIED MAY BE USED IF APPROVED. THE USE OF SUCH PLANTS SHALL NOT INCREASE THE CONTRACT PRICE. ALL PLANT MATERIALS ARE SUBJECT TO INSPECTION AND ACCEPTANCE BY THE OWNER OR LANDSCAPE ARCHITECT AT THE NURSERY SOURCE. THE CONTRACTOR SHALL COORDINATE SOURCE VISITS WITH THE LANDSCAPE ARCHITECT AND SHALL ACCOMPANY THE OWNER AND/OR LANDSCAPE ARCHITECT FOR ALL INSPECTIONS. CERTIFICATES OF COMPLIANCE WITH SPECIFICATIONS ARE REQUIRED FOR ALL PLANTS.
8. GUARANTEE: GUARANTEE ALL PLANTS AND LAWNS FOR A MINIMUM OF 1 YEAR TO BE ALIVE AND IN VIGOROUS GROWING CONDITION AT THE END OF THE GUARANTEE PERIOD. THE GUARANTEE PERIOD FOR ALL PLANTS SHALL BEGIN UPON APPROVAL AS SPECIFIED UNDER SEMI-FINAL ACCEPTANCE. PLANT MATERIALS AND LAWNS APPROVED IN THE SPRING SHALL BE ALIVE AND IN SATISFACTORY GROWTH ON JUNE 1 OF THE FOLLOWING YEAR; PLANTING DONE IN LATE FALL (AFTER NOVEMBER 1ST), SHALL BE MAINTAINED AND GUARANTEED UNTIL THE SECOND SPRING'S LEAFING. REPLACEMENTS: ALL PLANTS SHALL BE FREE OF DEAD OR DYING BRANCHES AND BRANCH TIPS, AND SHALL BEAR FOLIAGE OF A NORMAL DENSITY, SIZE AND COLOR. PROMPTLY REMOVE DEAD, UNSIGHTLY, UNHEALTHY, OR EXCESSIVELY PRUNED PLANTS. THESE AND ANY PLANTS MISSING DUE TO THE CONTRACTOR'S NEGLIGENCE, SHALL BE REPLACED OR ADDED WITH THE SAME KIND AND SIZE AS ORIGINALLY SPECIFIED AS SOON AS CONDITIONS PERMIT. METHOD OF REPLACEMENT SHALL BE THE SAME AS SPECIFIED FOR THE ORIGINAL PLANTING WITH REPLACEMENTS MATCHING ADJACENT SPECIMENS OF THE SAME SPECIES. REPLACEMENTS SHALL BE MADE AS MANY TIMES AS NECESSARY TO ENSURE HEALTHY PLANTS AND THEY SHALL BE MAINTAINED AND GUARANTEED. REPLACEMENTS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE AND SHALL BE GUARANTEED FOR ONE FULL YEAR FROM TIME OF REPLACEMENT.



SHRUB PLANTING



PERENNIAL PLANTING

N.T.S.

- NOTES:
1. ROTOTILL FERTILIZER AND LIME INTO SOIL PRIOR TO PLANTING AND IN ACCORDANCE TO SOIL ANALYSIS RECOMMENDATIONS.
  2. DO NOT COMPACT PLANTING BED. WATER THOROUGHLY AFTER PLANTING.

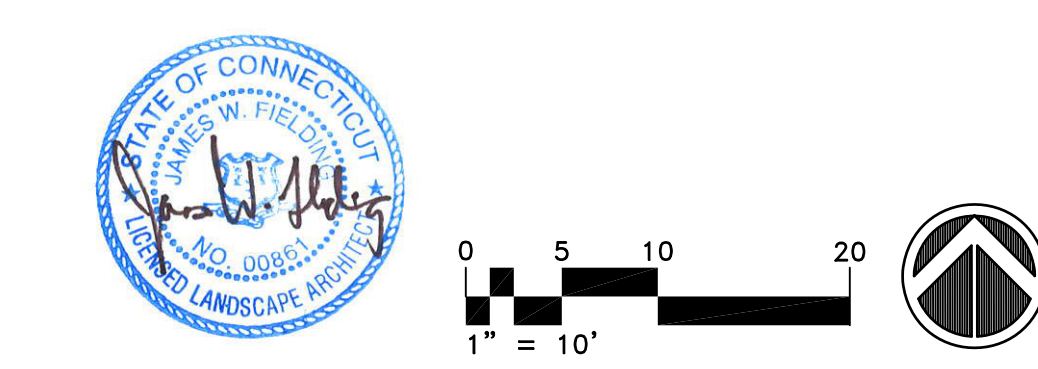
**EASTERN CONNECTICUT STATE UNIVERSITY**  
Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

2	Bid Set	3/7/18
1	OSBI Review Submission	12/14/17
No.	Revision/Issue	Date

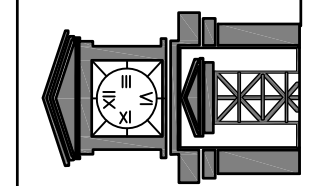
PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**Landscape Plan**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **LP-1**  
Scale: **AS NOTED**  
Plot Size: **24 x 36**







2	Bid Set	3/7/18
1	OSBI Review Submission	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

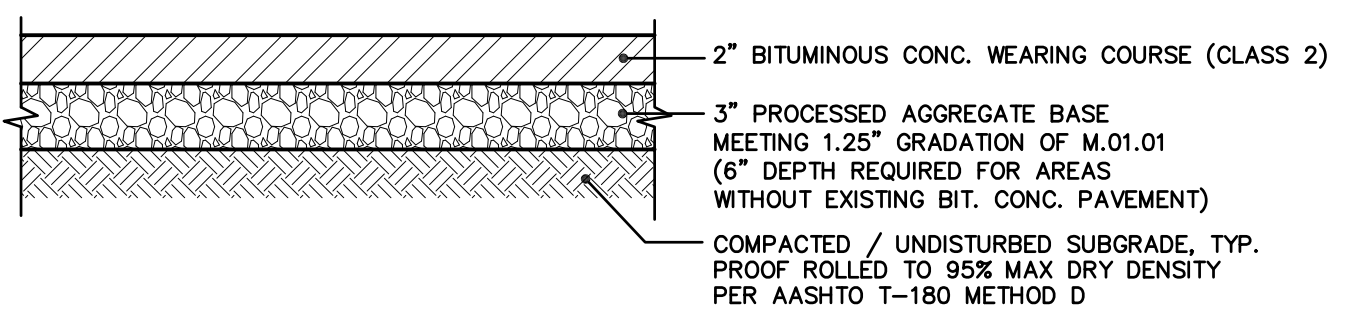
DRAWING NAME:  
**Detail Sheet**

Project No.: ECSU 2016-9 (Phase II)	
Date: 12/6/2017	Drawing No.: DN-1
Scale: AS NOTED	Plot Size: 24 x 36



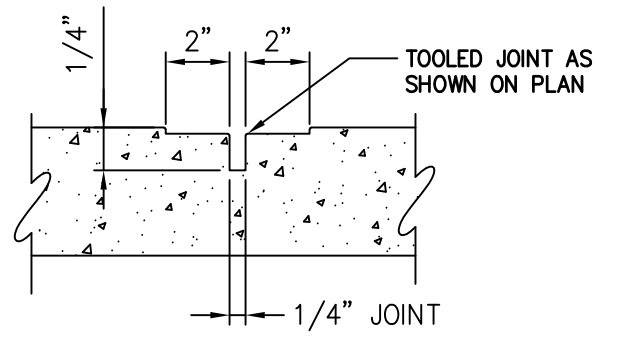
THE EXISTING PAVEMENT VARIES FROM 1" TO 1.5" THICKNESS. THE EXISTING BASE MATERIAL IS UNKNOWN AND ASSUMED TO BE MISCELLANEOUS GRAVEL FILL.

NOTES:  
ALL MATERIALS SHALL MEET CURRENT REQUIREMENTS OF CONN. D.O.T. FORM 816  
PROCESS AGGREGATE BASE SHALL CONFORM TO SECTION 3.04 OF CONN. D.O.T. FORM 816

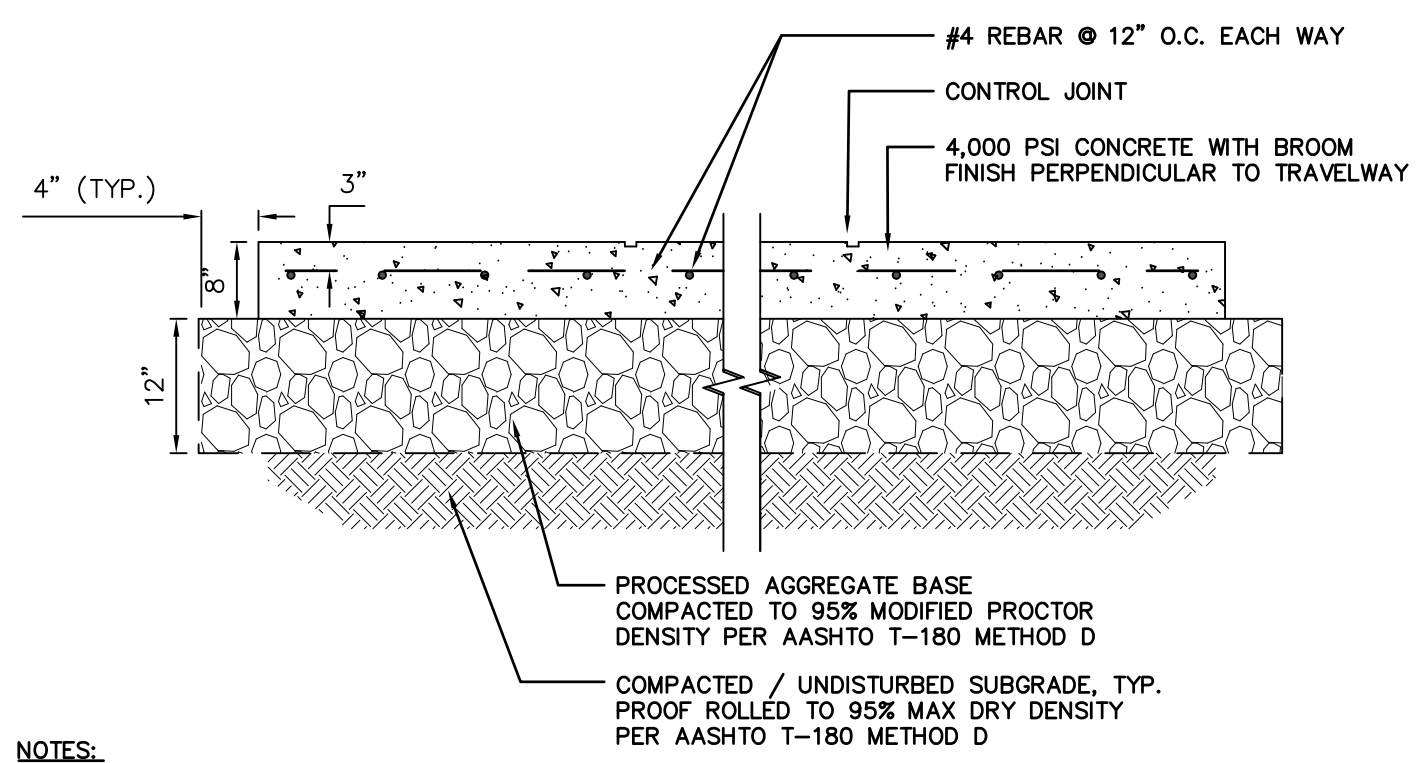


**BITUMINOUS CONCRETE PAVEMENT (BASE BID AND ADD ALTERANTE #1)**  
N.T.S.

TOOLING (TO CREATE 2" EDGE BANDS) SHALL ALSO OCCUR AROUND ENTIRE PERIMETER OF CONCRETE PAVEMENT.

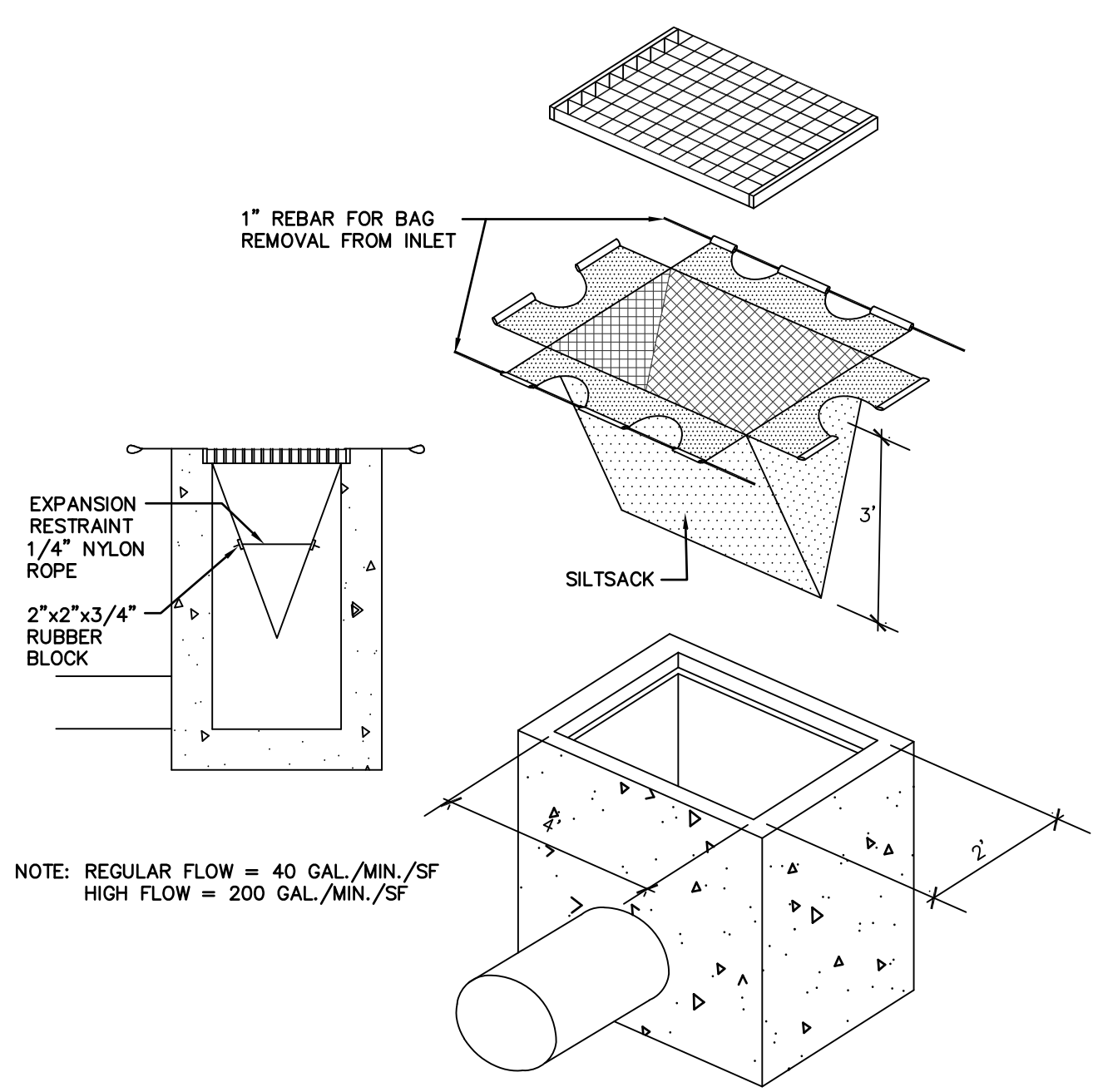


**CONTROL JOINT**  
N.T.S.



NOTES:  
1. DISCONTINUE ALTERNATE REBAR AT CONTROL JOINTS.  
2. LOCATE CONTROL JOINTS AS SHOWN ON LAYOUT PLAN.  
3. INSURE PROP. GRADES PITCH TO DRAIN ON ALL PAVEMENT SURFACES CROSS PITCH WALK MIN. 1/4" PER FOOT.

**HEAVY DUTY CONCRETE PAVEMENT (ADD ALTERNATE #1)**  
N.T.S.

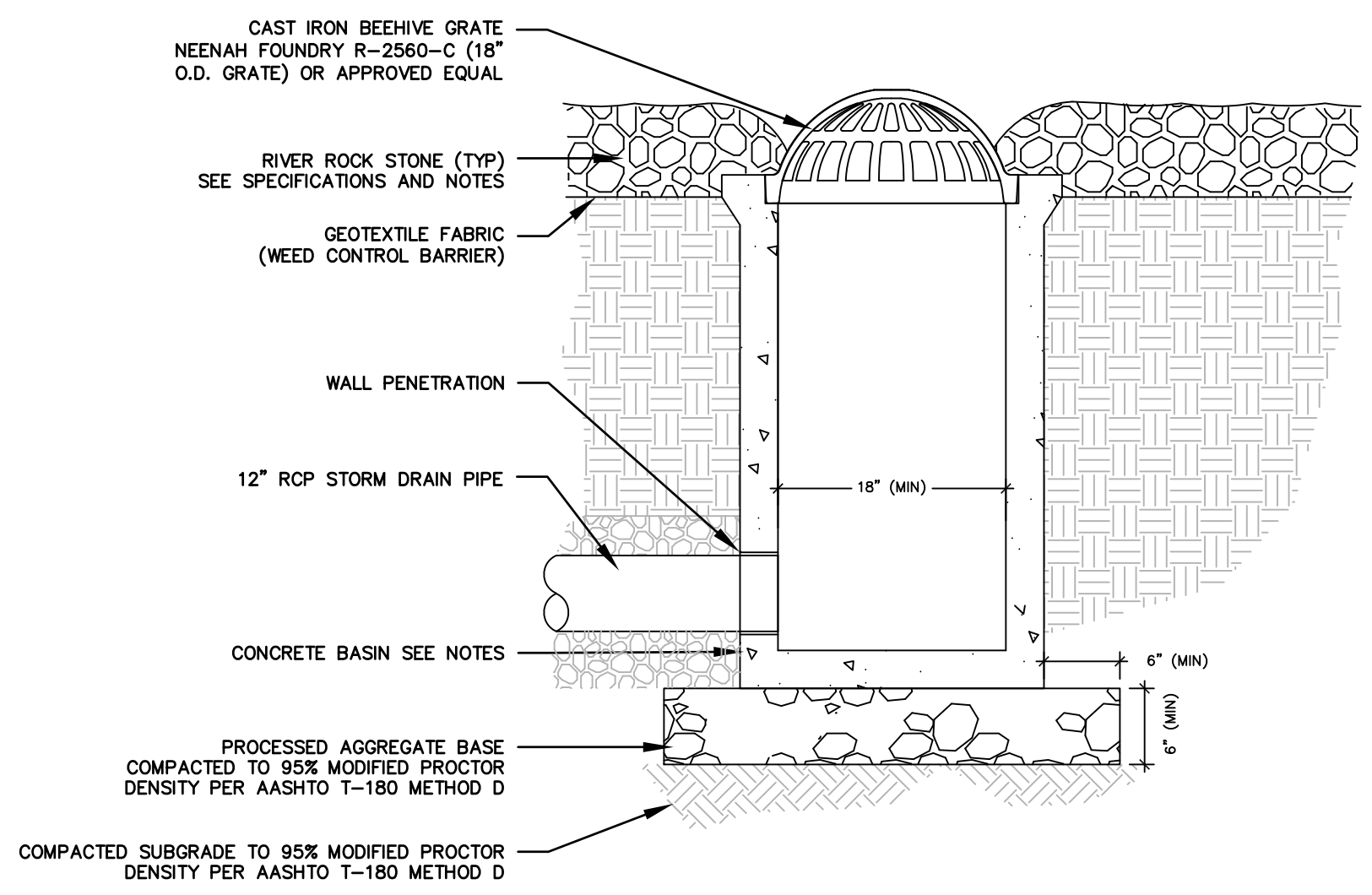


NOTE: REGULAR FLOW = 40 GAL./MIN./SF  
HIGH FLOW = 200 GAL./MIN./SF

**SILTSACK DETAIL (BASE BID)**  
N.T.S.

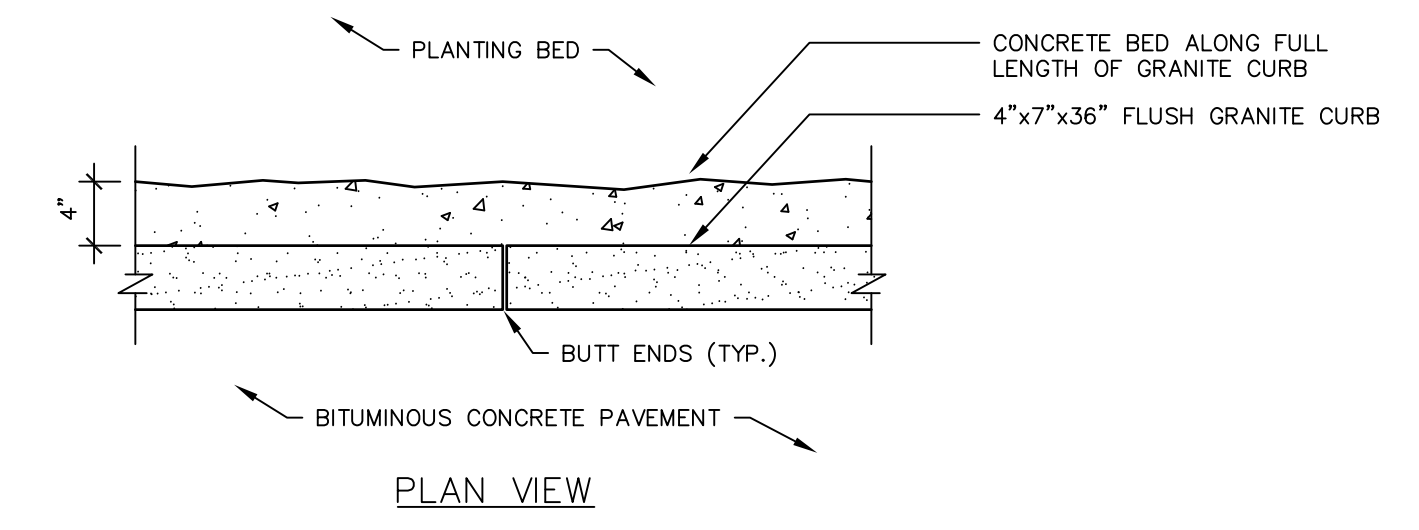
**CONSTRUCTION NOTES:**

1. SIZE OF GRATE SHALL MATCH SIZE OF EXISTING RISER OR SPECIFIED IN PLANS. GRATE SHALL BE REMOVABLE TO PROVIDE MAINTENANCE ACCESS.
2. BASE OF CATCH BASIN SHALL BE PRE-CAST WITH REINFORCING STEEL PER MANUFACTURER'S RECOMMENDATIONS.
3. MINIMUM RIVER ROCK STONE DIAMETER SHALL BE LARGER THAN MAXIMUM GRATE OPENING.
4. GROUT ALL PENETRATIONS, CRACKS, SEAMS, AND JOINTS WITH CLASS "C" MORTAR.

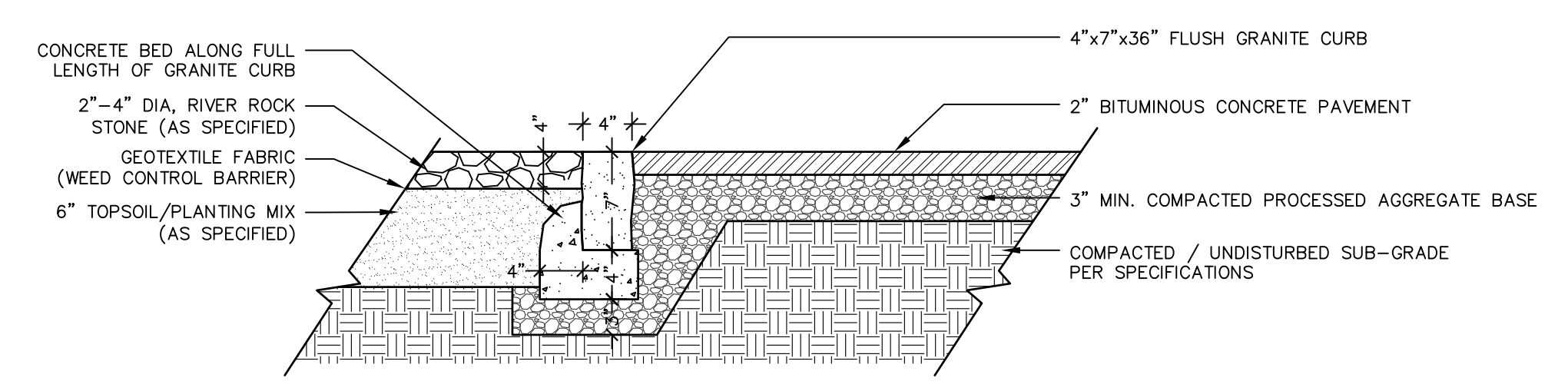


PROCESSED AGGREGATE BASE COMPACTED TO 95% MODIFIED PROCTOR DENSITY PER AASHTO T-180 METHOD D  
COMPACTED SUBGRADE TO 95% MODIFIED PROCTOR DENSITY PER AASHTO T-180 METHOD D

**CATCH BASIN AND PLANTER BED DETAILS (ADD ALTERNATE #1)**  
N.T.S.



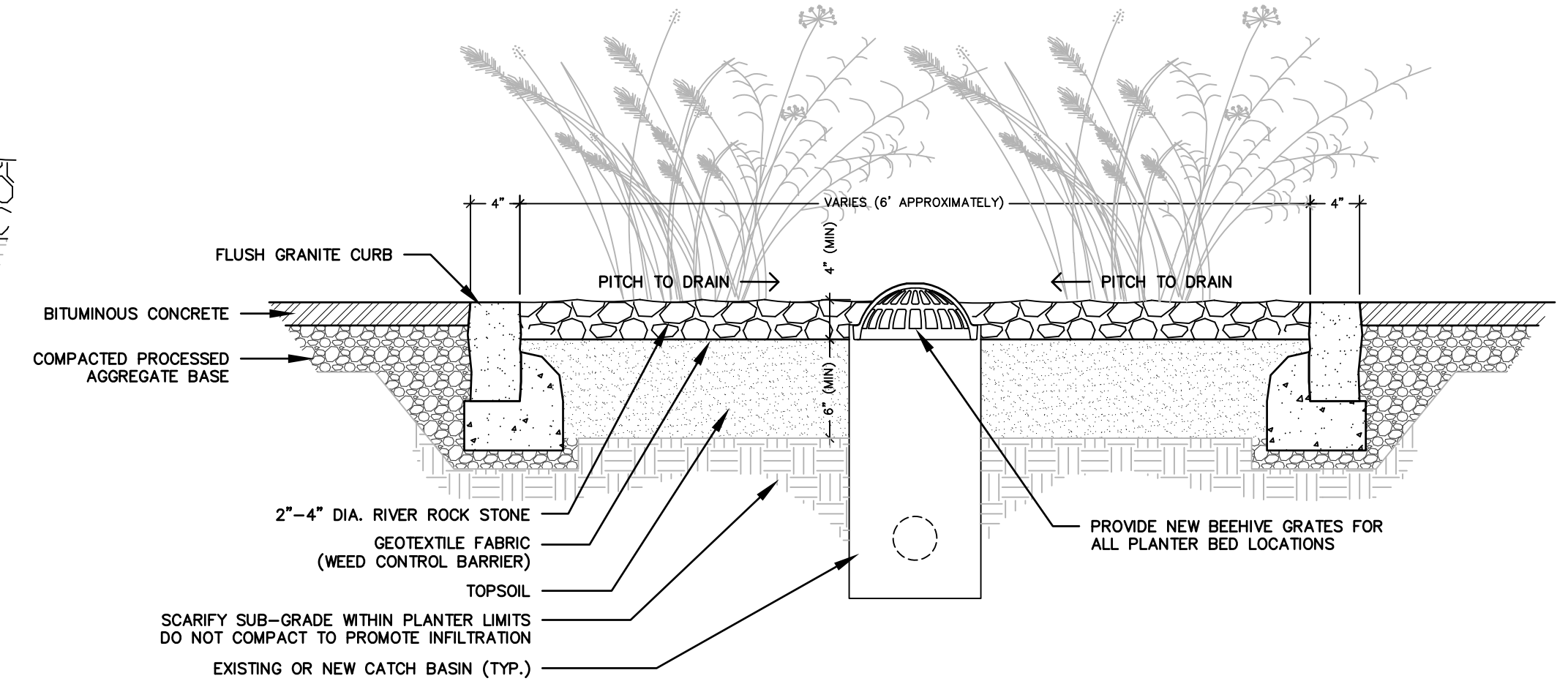
**PLAN VIEW**



**FLUSH GRANITE CURBING @ COURTYARD PLANTERS (ADD ALTERNATE #1)**  
N.T.S.

**CONSTRUCTION NOTES:**

1. AVOID COMPACTION OF EXISTING SUBGRADE BELOW PLANTER DURING CONSTRUCTION.
2. SCARIFY SUBGRADE TO A DEPTH OF 6 INCHES (MIN) IMMEDIATELY PRIOR TO PLACEMENT OF PLANTING MIX SOIL.
3. MAXIMUM DROP FROM TOP OF CURB TO TOP OF PLANTING MIX SOIL SHALL INCLUDE CONSIDERATIONS FOR PLANTING MIX SOIL SETTLEMENT.



SCARIFY SUB-GRADE WITHIN PLANTER LIMITS DO NOT COMPACT TO PROMOTE INFILTRATION  
EXISTING OR NEW CATCH BASIN (TYP.)



## BUILDING CODE NOTES

**APPLICABLE CODES:**

THE FOLLOWING CODES APPLY TO THIS PROJECT.

- 2016 CT STATE BUILDING CODE INCLUDING ERRATA #1
- 2012 INTERNATIONAL BUILDING CODE, WITH CONNECTICUT AMENDMENTS.
  - AS REFERENCED BY THE CODE UNDER ALTERATIONS, NEW ALTERATIONS SHALL BE DONE IN A MANNER THAT MAINTAINS THE LEVEL OF PROTECTION PROVIDED FOR THE EXISTING MEANS OF EGRESS.
- 2016 CT STATE FIRE SAFETY CODE
- 2012 INTERNATIONAL FIRE CODE, PART III
- OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
- OTHER CODES AND STANDARDS AS REFERENCED BY THE ABOVE CODES.

**OCCUPANCY CLASSIFICATION:**

- THE EXISTING BUILDINGS ARE A USE GROUP R-2 – DORMITORY OCCUPANCY.
- THE PROPOSED WORK RESULTS IN NO CHANGE OF OCCUPANCY.

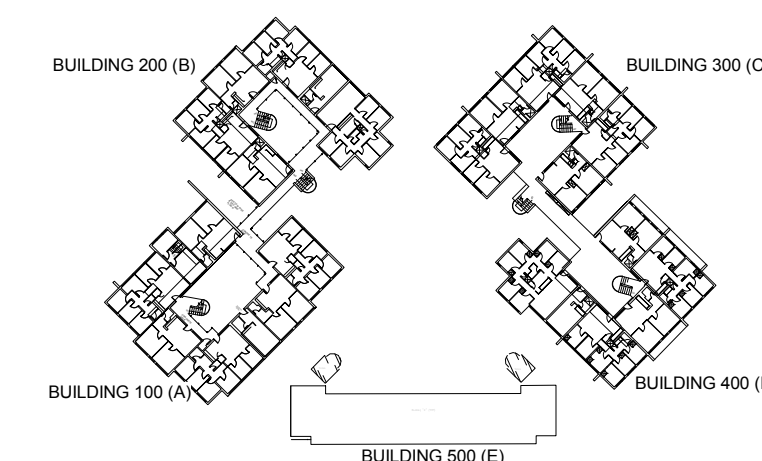
**GENERAL:**

- HEIGHT AND AREA OF THE EXISTING BUILDINGS ARE NOT AFFECTED BY PROJECT WORK OR EXTENT OF ALTERATIONS, THEREFORE HEIGHT AND AREA LIMITATIONS ARE NOT IMPACTED.
- AREA :
  - BUILDING A-B:
    - FLOOR 1 = 5,217 GSF + 4,491 GSF = 9,708 GSF
    - FLOOR 2 = 5,313 GSF + 4,397 GSF = 9,710 GSF
    - FLOOR 3 = 3,857 GSF
  - BUILDING C-D:
    - FLOOR 1 = 4,618 GSF + 4,560 GSF = 9,178 GSF
    - FLOOR 2 = 4,487 GSF + 4,671 GSF = 9,158 GSF
    - FLOOR 3 = 3,300 GSF
  - BUILDING E:
    - FLOOR 1 = 3,356 GSF
    - FLOOR 2 = 3,356 GSF
    - FLOOR 3 = 3,442 GSF
- HEIGHT :
  - STORIES: 2 AND 3 STORIES
  - FEET: 17'-4" AND 26'-0"
    - SITE APPROXIMATELY FLAT. HEIGHT MEASURED FROM GRADE TO AVERAGE OF HIGHEST ROOF
    - SPRINKLERS: FULLY SPRINKLERED
    - OPEN FRONTAGE TO 30 FOOT CLEAR SPACE: APPROXIMATELY 95%
    - CONSTRUCTION TYPE: II-B
    - STRUCTURAL FIRE RESISTANCE: STRUCTURAL FIRE RATINGS ARE NOT REQUIRED

**MEANS OF EGRESS:**

- OCCUPANT LOADS: DORMITORIES = 50 GSF / OCCUPANT
  - BUILDING A-B:
    - FLOOR 1: 9,708 GSF / 50 = 195 OCCUPANTS
    - FLOOR 2: 9,710 GSF / 50 = 195 OCCUPANTS
    - FLOOR 3: 3,857 GSF / 50 = 78 OCCUPANTS
  - BUILDING C-D:
    - FLOOR 1: 9,178 GSF / 50 = 184 OCCUPANTS
    - FLOOR 2: 9,158 GSF / 50 = 184 OCCUPANTS
    - FLOOR 3: 3,300 GSF / 50 = 66 OCCUPANTS
  - BUILDING E:
    - FLOOR 1: 3,356 GSF / 50 = 68 OCCUPANTS
    - FLOOR 2: 3,356 GSF / 50 = 68 OCCUPANTS
    - FLOOR 3: 3,442 GSF / 50 = 69 OCCUPANTS

- NUMBER OF EXITS: EACH STORY REQUIRES 2 MEANS OF EGRESS
- TRAVEL DISTANCE TO THE NEAREST EXIT: GROUP R-2 DORMITORY, FULLY SPRINKLERED = 250 FT
  - ACTUAL = 60 FT < 250 FT ALLOWED
- DEAD ENDS ARE LIMITED TO 50 FT.
  - ACTUAL = NONE
- REMOTENESS OF MULTIPLE EXITS - EXISTING TO REMAIN
  - MAXIMUM DIAGONAL = 194 FT. ACTUAL REMOTENESS = 92 FT > 64 FT - 47% PROVIDED
- ACCESSIBLE MEANS OF EGRESS ARE NOT REQUIRED IN ALTERATIONS TO EXISTING BUILDINGS STAIRS & STAIR PARTS
- MINIMUM WIDTH = 44"
- HANDRAILS PROJECTION = 4 1/2" MAX
- HEADROOM MINIMUM = 80 INCHES
- MEANS OF EGRESS CAPACITY FACTOR = 0.3 INCH / OCCUPANT
- RISER HEIGHT AND TREAD DEPTH = 7" MAX AND 4" MIN RISER HEIGHT, 11" MIN TREAD DEPTH
- RISER AND TREAD VARIATION PER FLIGHT = 3/8" MAX
- NOSING PROJECTION SIZE = LEADING EDGE NOT MORE THAN 1 1/2" BEYOND TREAD BELOW
- STAIRWAY LANDINGS = WIDTH NOT LESS THAN WIDTH OF STAIR MEASURED PERPENDICULAR TO THE DIRECTION OF TRAVEL AND AT LEAST AS DEEP AS STAIR WIDTH
- STAIRWAY WALKING SURFACE = NO SLOPE MORE THAN 1 IN 48 (2%) IN ANY DIRECTION
- OUTDOOR CONDITIONS, RAIN AND SNOW COVERING = NEW ALTERATIONS SHALL BE DONE IN A MANNER THAT MAINTAINS THE LEVEL OF PROTECTION PROVIDED FOR THE EXISTING MEANS OF EGRESS. PROTECTION WILL BE PROVIDED BY A GROUNDS MAINTENANCE PROGRAM ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION.
- VERTICAL RISE OF FLIGHT OF STAIRS = NO GREATER THAN 12 FEET BETWEEN FLOORS AND LANDINGS
- HANDRAIL HEIGHT = MEASURED ABOVE TREAD NOSING SHALL BE UNIFORM AND BETWEEN 34" AND 38"
- HANDRAIL TYPE I = CIRCULAR CROSS SECTION WITH AN OUTER DIAMETER BETWEEN 1 1/4" AND 2"
- HANDRAILS GRIPPING SURFACES = CONTINUOUS, WITHOUT INTERRUPTION, EXCEPT FOR ATTACHMENT BRACKETS
- HANDRAIL EXTENSIONS = RETURN AND AT LEAST 12" BEYOND TOP RISER AND ONE TREAD BEYOND AT BOTTOM
- HANDRAIL CLEARANCE = CLEAR SPACE SHALL BE MINIMUM OF 1 1/2"
- GUARDRAIL HEIGHT = NOT BE LESS THAN 42"
- OPENING LIMITATIONS = 4" DIAMETER SPHERE



**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

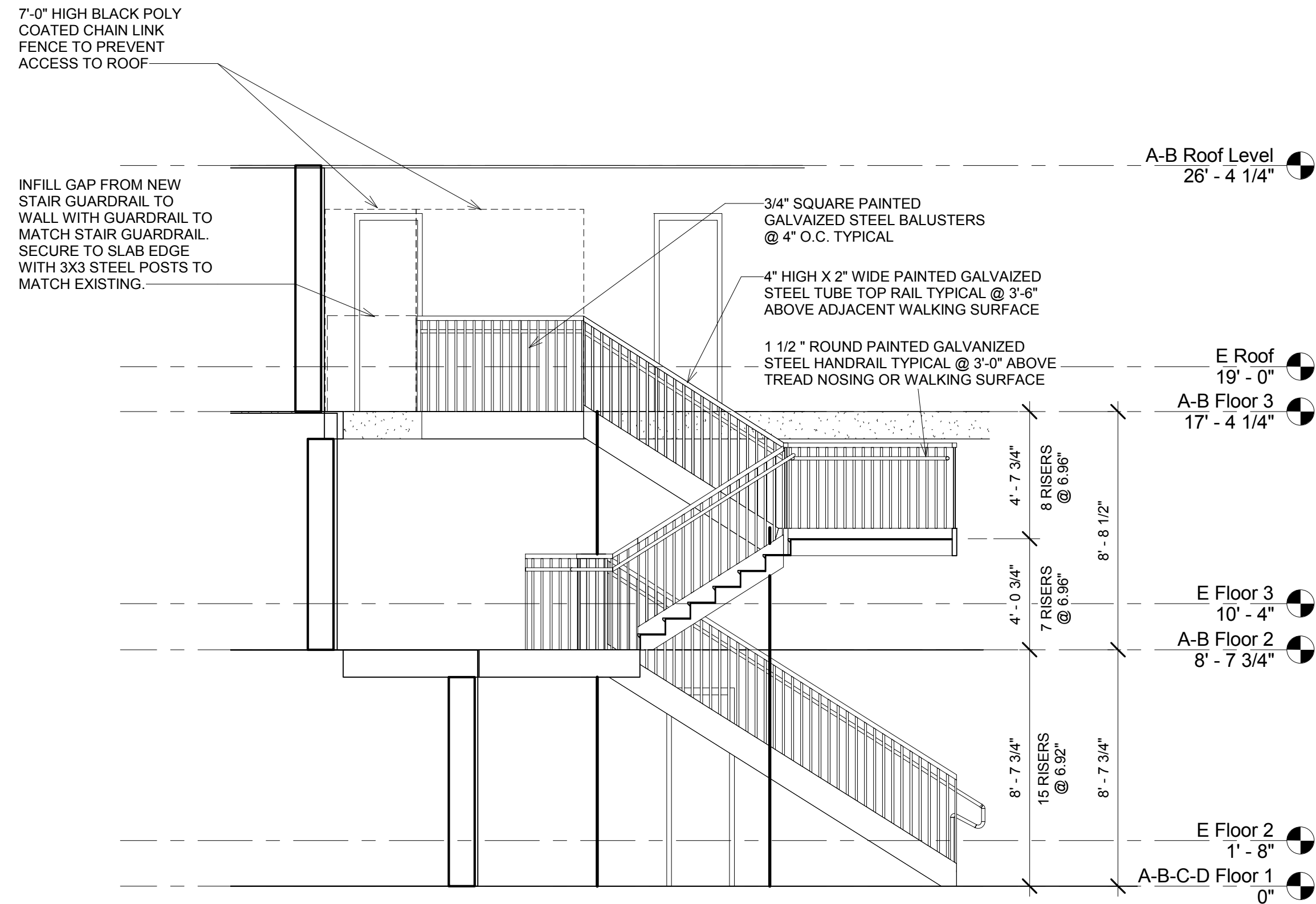
	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

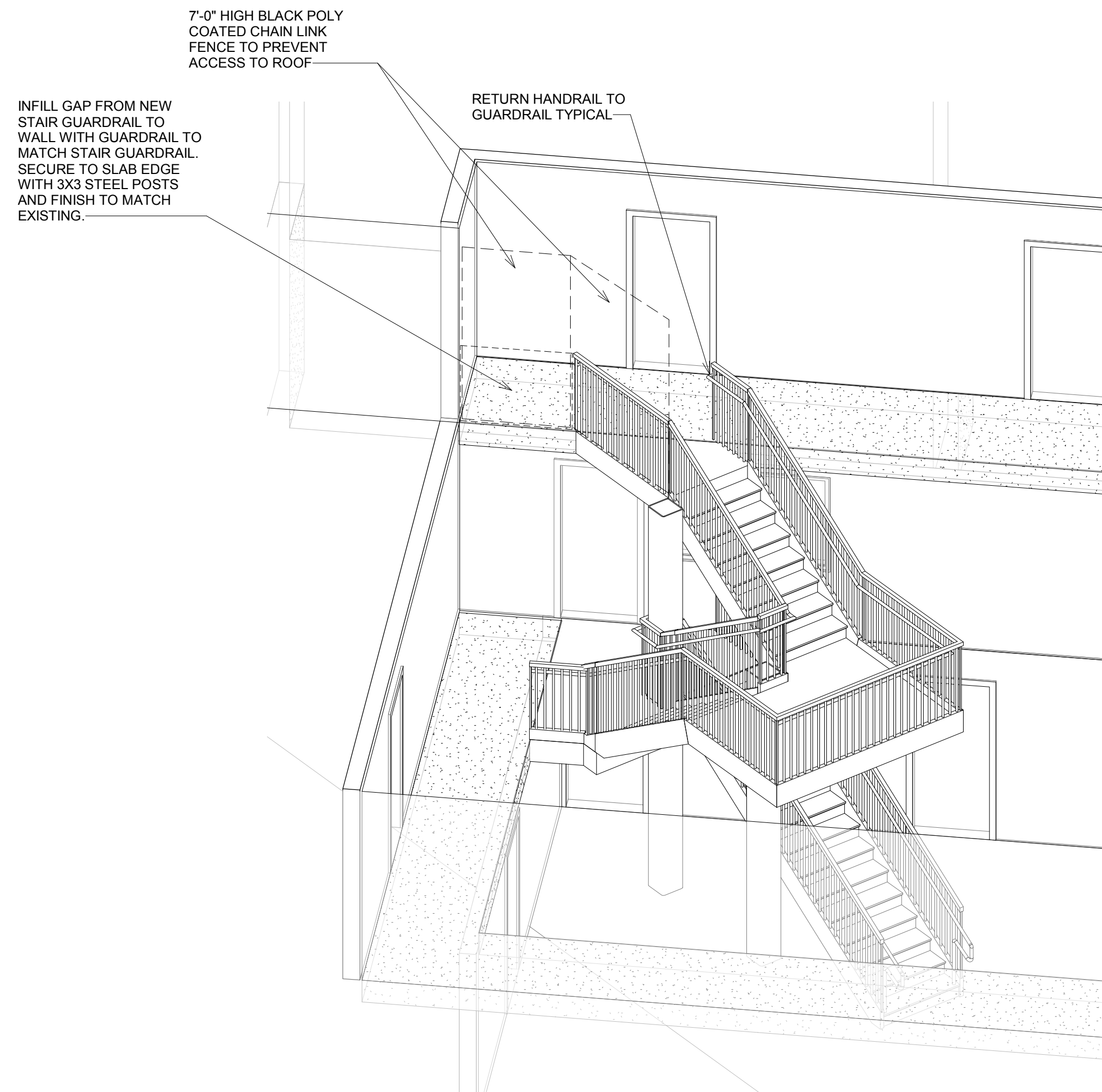
DRAWING NAME:  
**GENERAL INFORMATION**

Project No.: **ECSU 2016-9 (Phase II)**  
 Date: **12/6/2017** Drawing No.:  
 Scale: **G-1**  
 Plot Size: **24 x 36**

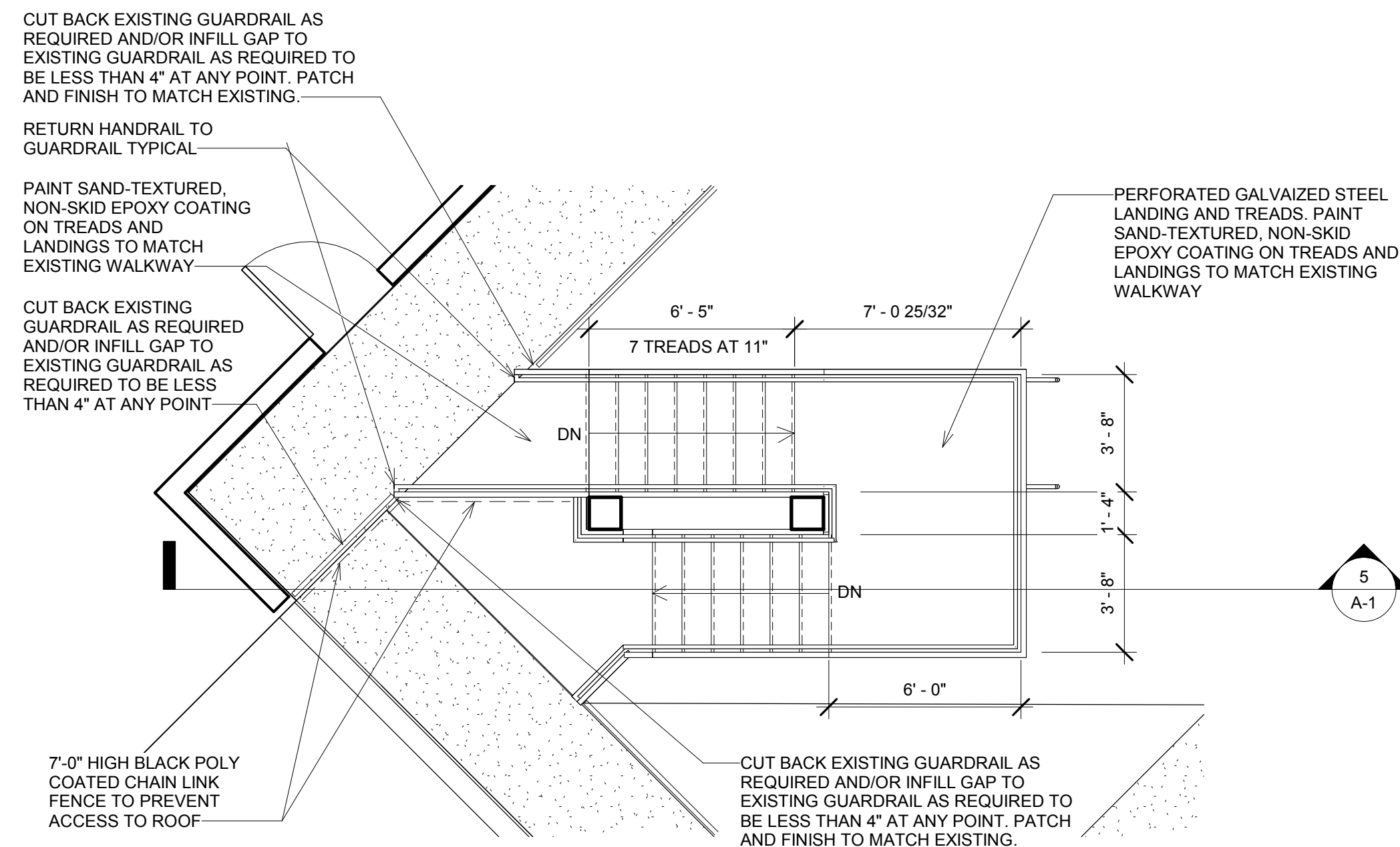




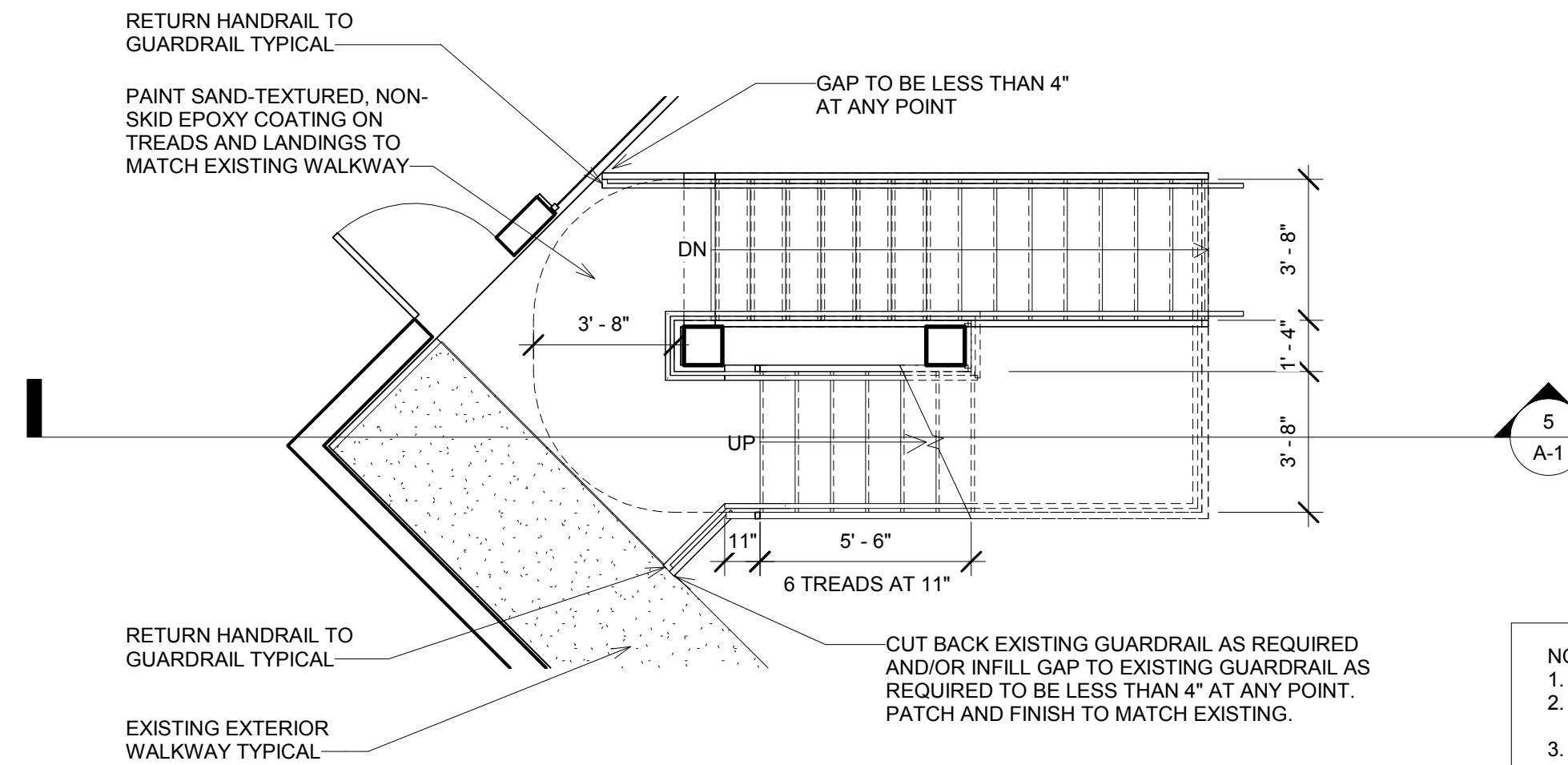
5 STAIR A - SECTION  
1/4" = 1'-0"



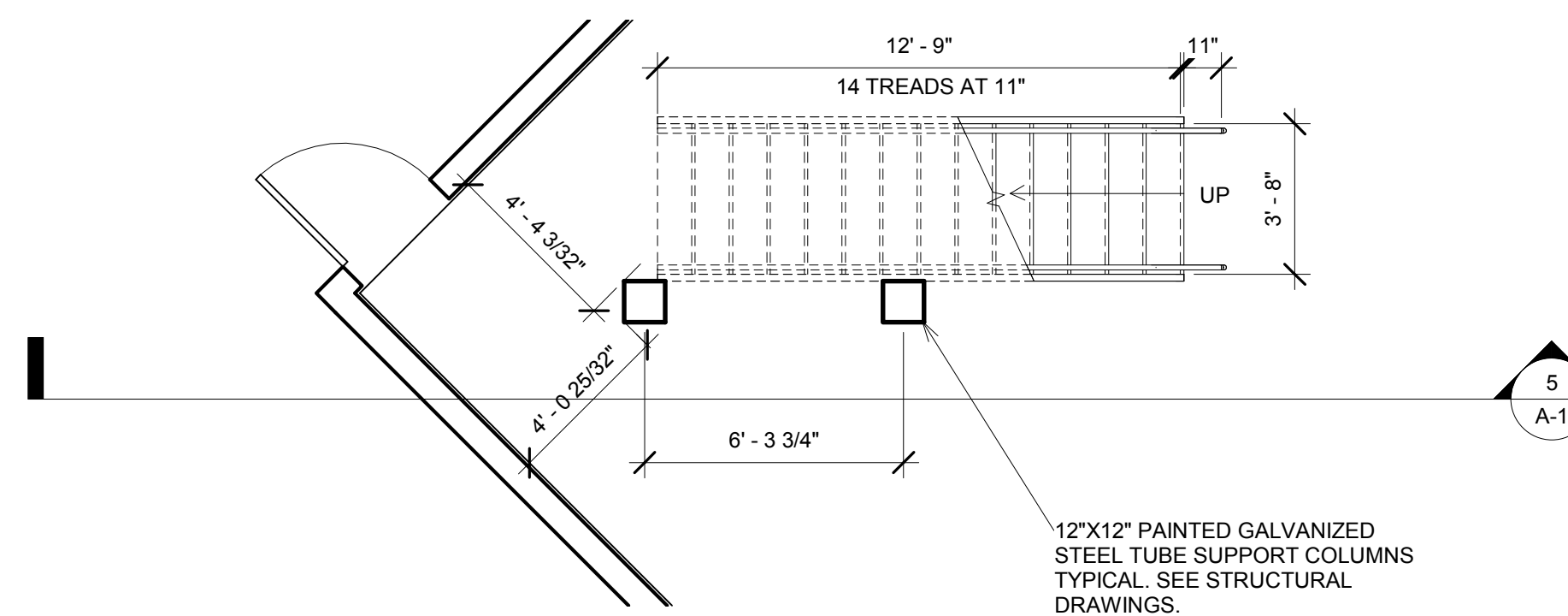
4 STAIR A - 3D VIEW



3 STAIR A - 3RD FLOOR  
1/4" = 1'-0"

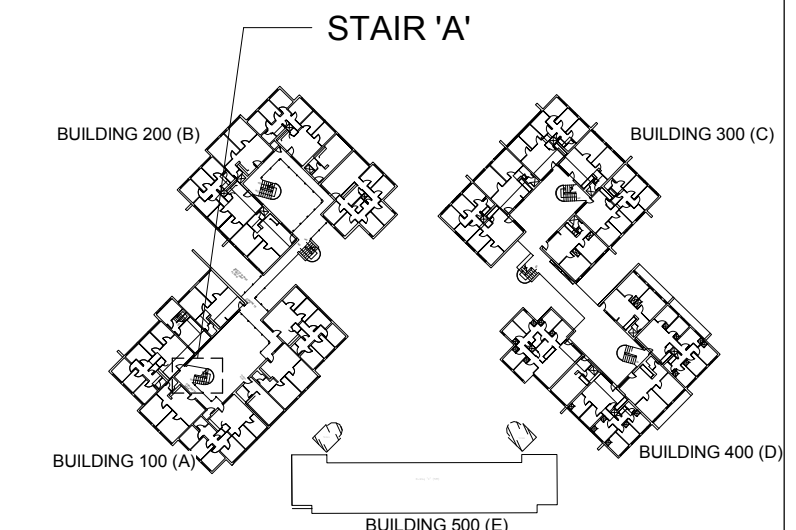


2 STAIR A - 2ND FLOOR  
1/4" = 1'-0"



1 STAIR A - 1ST FLOOR  
1/4" = 1'-0"

- NOTES
1. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION
  2. COLOR OF ALL METAL COMPONENTS TO BE BLACK, EXCEPT LANDING WHICH ARE TO BE GREY TO MATCH EXISTING WALKWAY COATINGS.
  3. VERIFY ALL DIMENSIONS IN THE FIELD.
  4. APPLY SELF-LEVELING, HEAVY PEDESTRIAN TRAFFIC-GRADE SEALANT COMPATIBLE WITH TRAFFIC COATING, AND AS RECOMMENDED BY TRAFFIC COATING MANUFACTURER, WHEREVER METAL STAIR LANDINGS MEET EXISTING CONCRETE WALKWAYS TO FILL ANY VOIDS AND LEVEL THE WALKING SURFACE.



# EASTERN CONNECTICUT STATE UNIVERSITY

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

Bid Set	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue Date

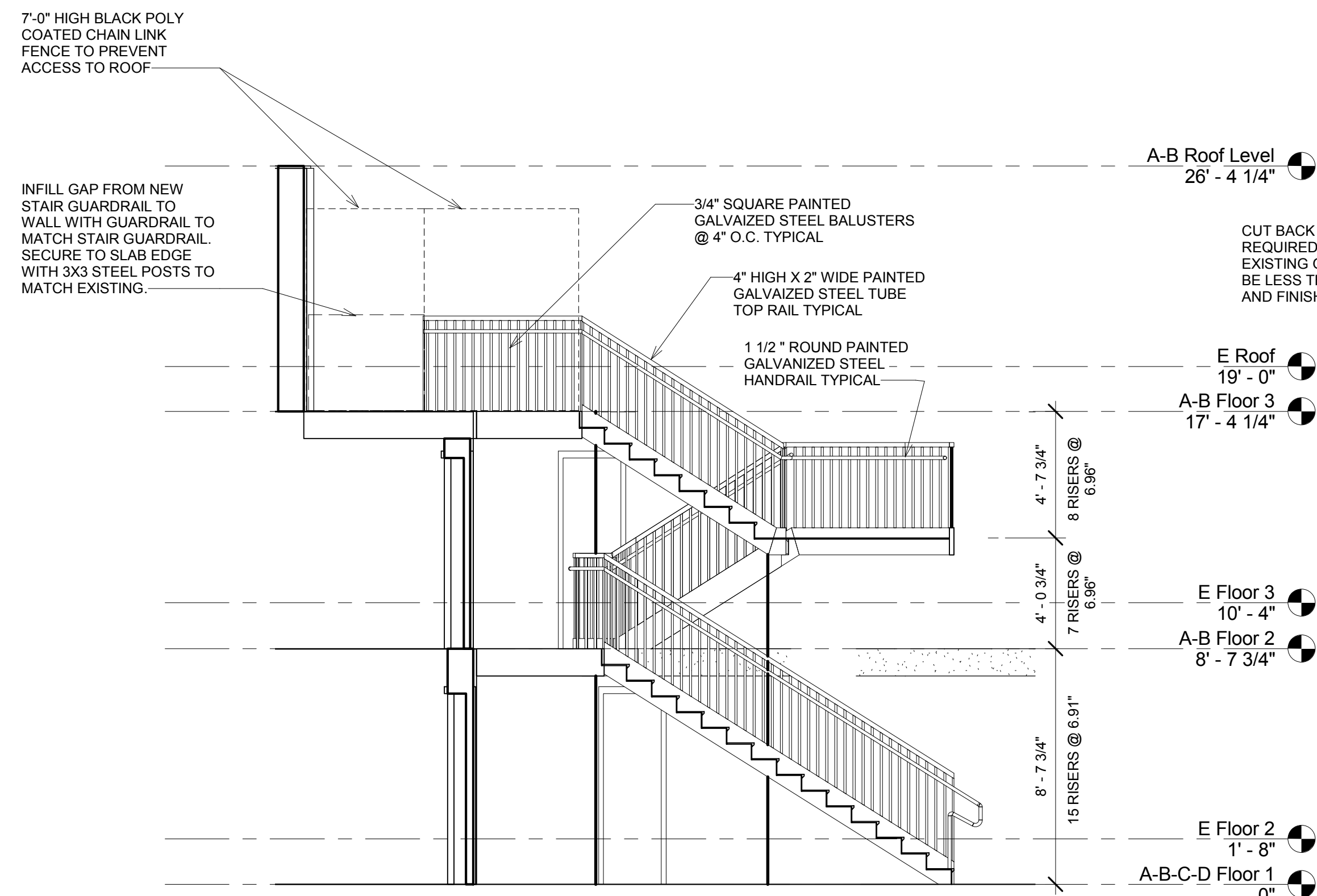
PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR A**

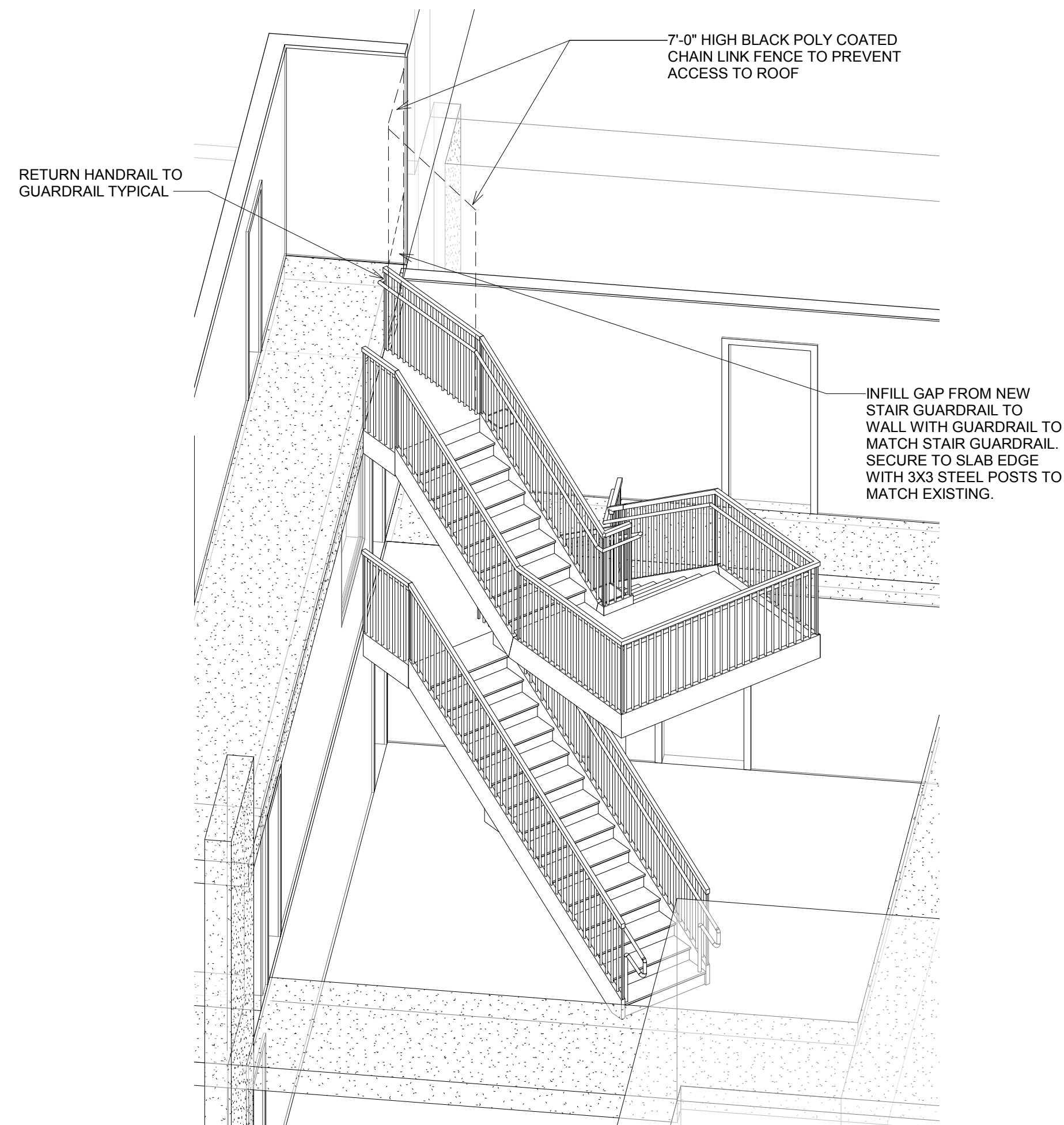
Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017**  
Scale: **1/4" = 1'-0"**  
Plot Size: **24 x 36**



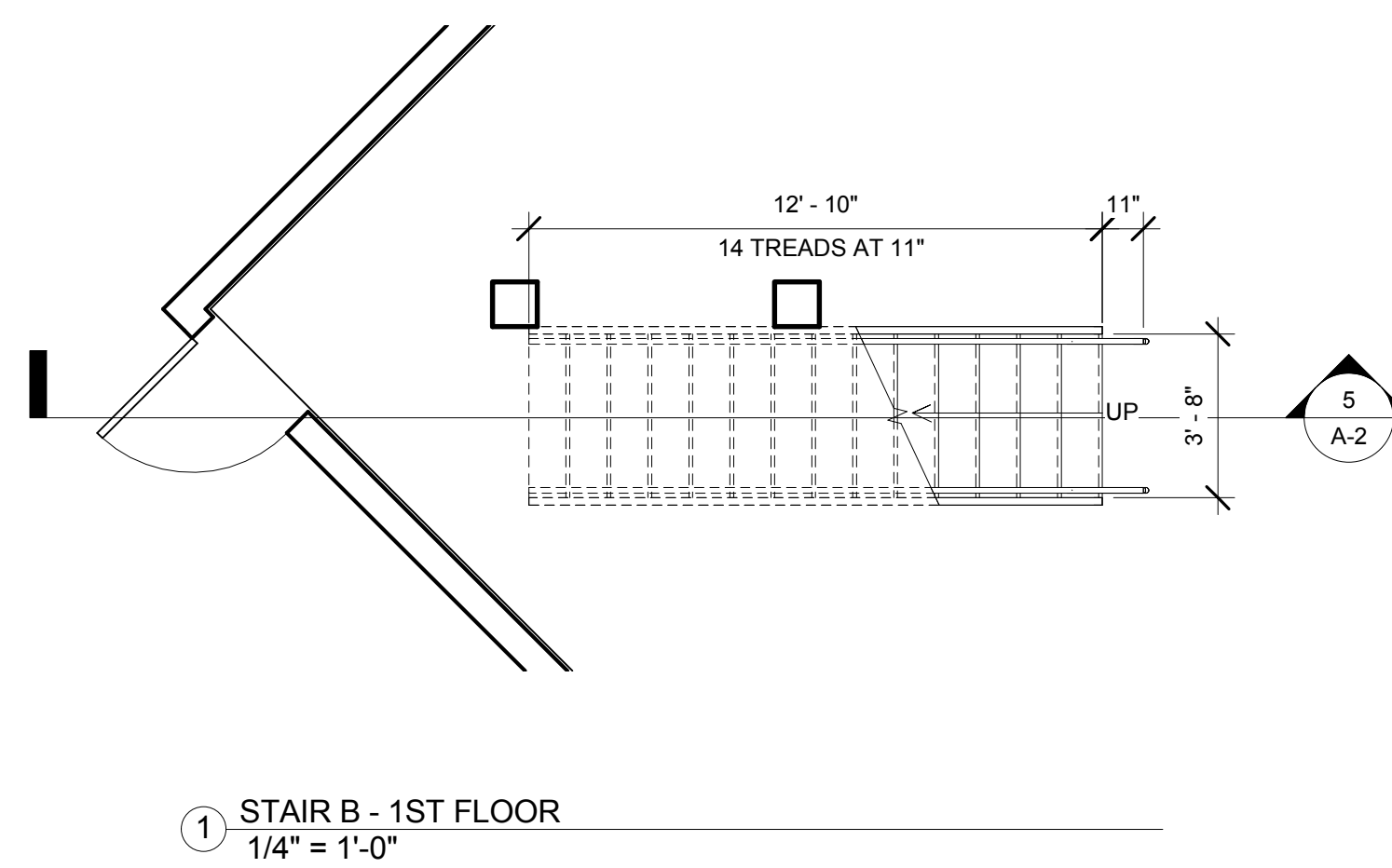
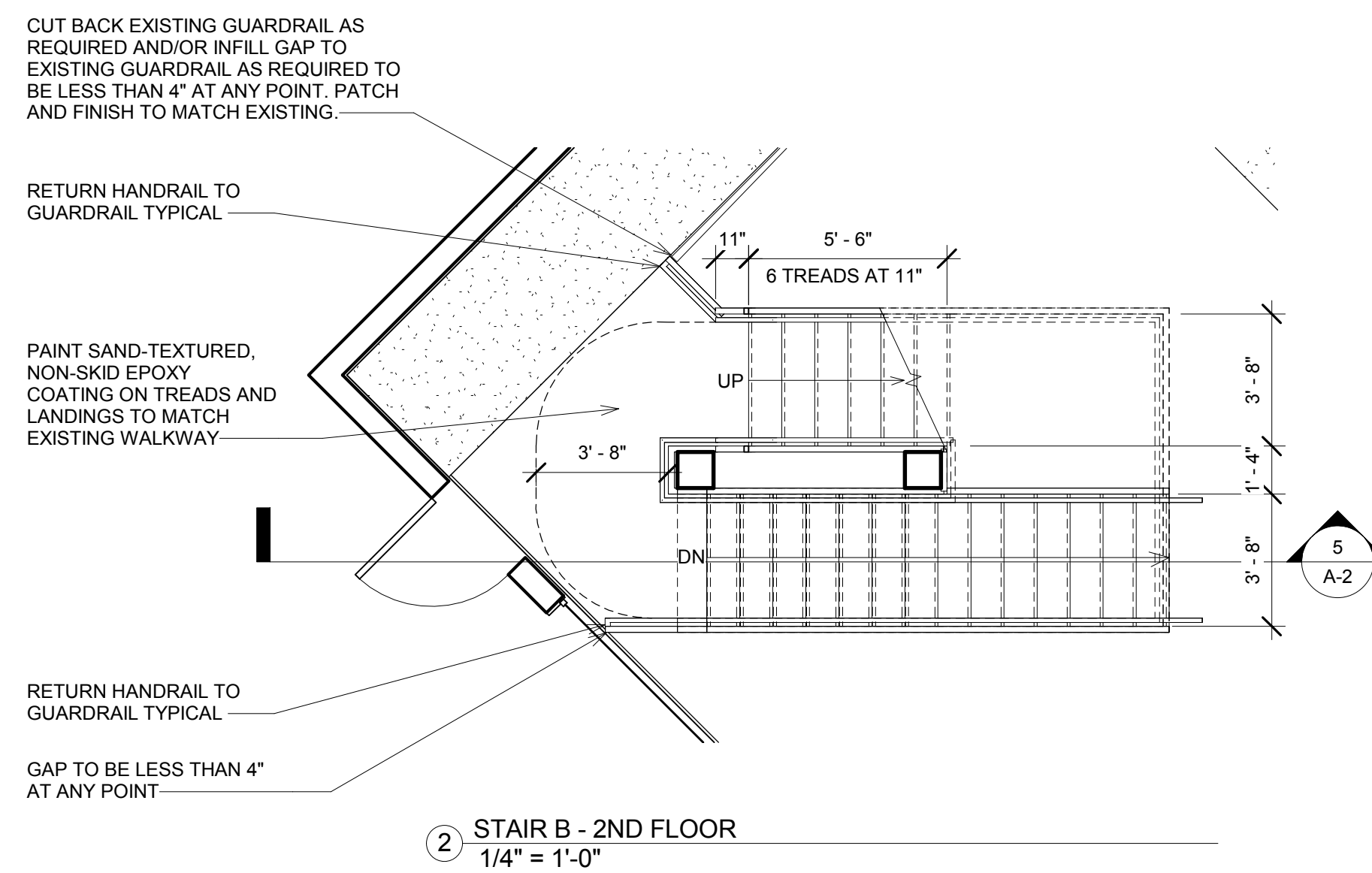
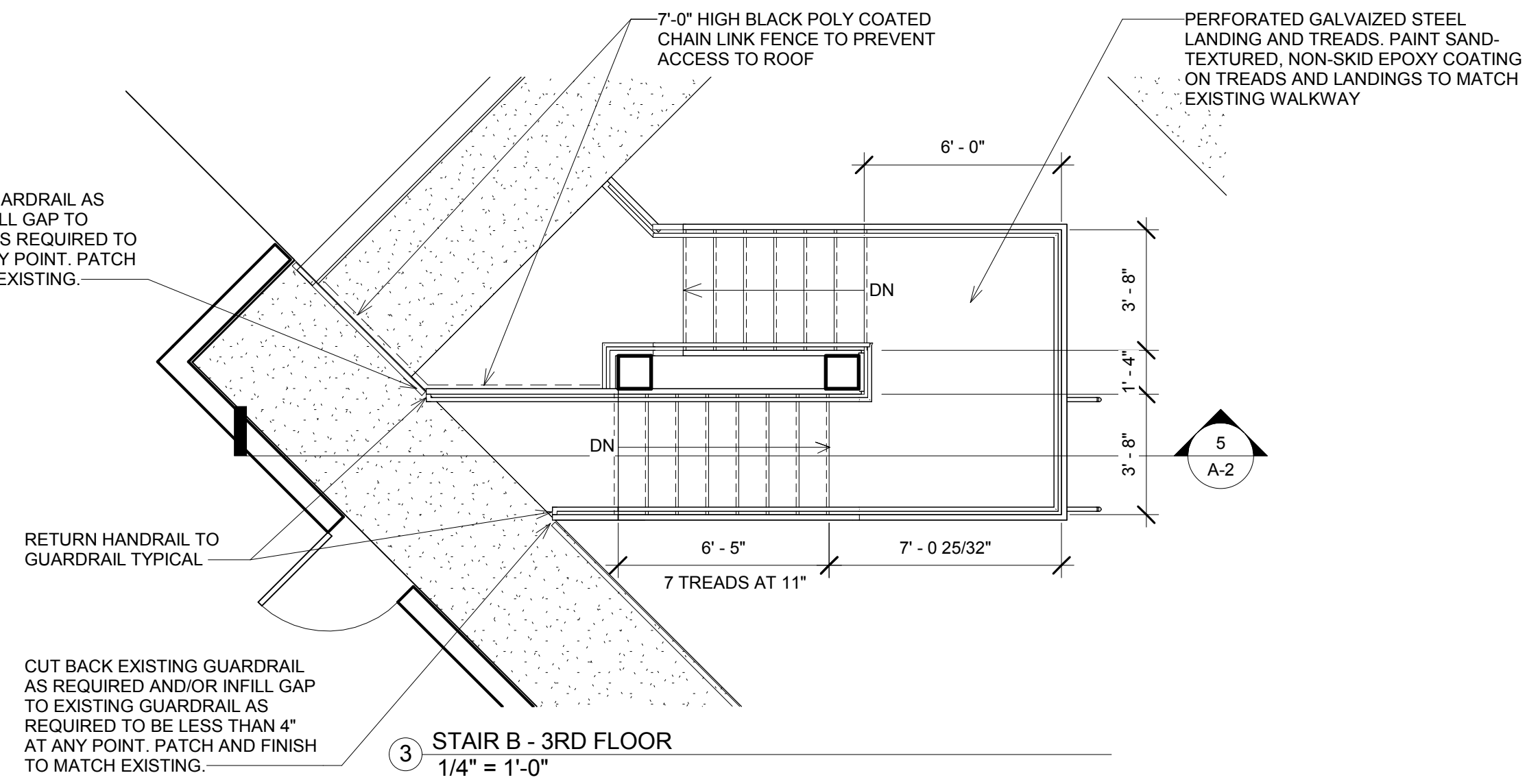
3/14/2018 11:03:45 AM W:\2017\2117050 - ECSU Low Rise Dorm Stairs\DWGS\Revit Model\2117050 - ECSU Low-Rise Stair (17) - Roofed Stairs.rvt



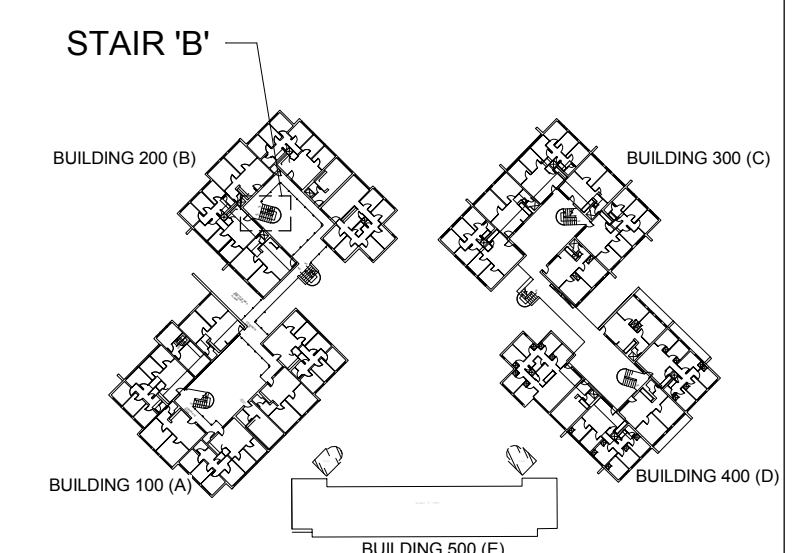
5 STAIR B - SECTION  
1/4" = 1'-0"



4 STAIR B - 3D VIEW



- NOTES
- SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION
  - COLOR OF ALL METAL COMPONENTS TO BE BLACK, EXCEPT LANDING WHICH ARE TO BE GREY TO MATCH EXISTING WALKWAY COATINGS.
  - VERIFY ALL DIMENSIONS IN THE FIELD
  - APPLY SELF-LEVELING, HEAVY PEDESTRIAN TRAFFIC-GRADE SEALANT COMPATIBLE WITH TRAFFIC COATING, AND AS RECOMMENDED BY TRAFFIC COATING MANUFACTURER, WHEREVER METAL STAIR LANDINGS MEET EXISTING CONCRETE WALKWAYS TO FILL ANY VOIDS AND LEVEL THE WALKING SURFACE.



	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR B**

Project No.:  
**ECSU 2016-9 (Phase II)**

Date: **12/6/2017** Drawing No.: **A-2**

Scale: **1/4" = 1'-0"**

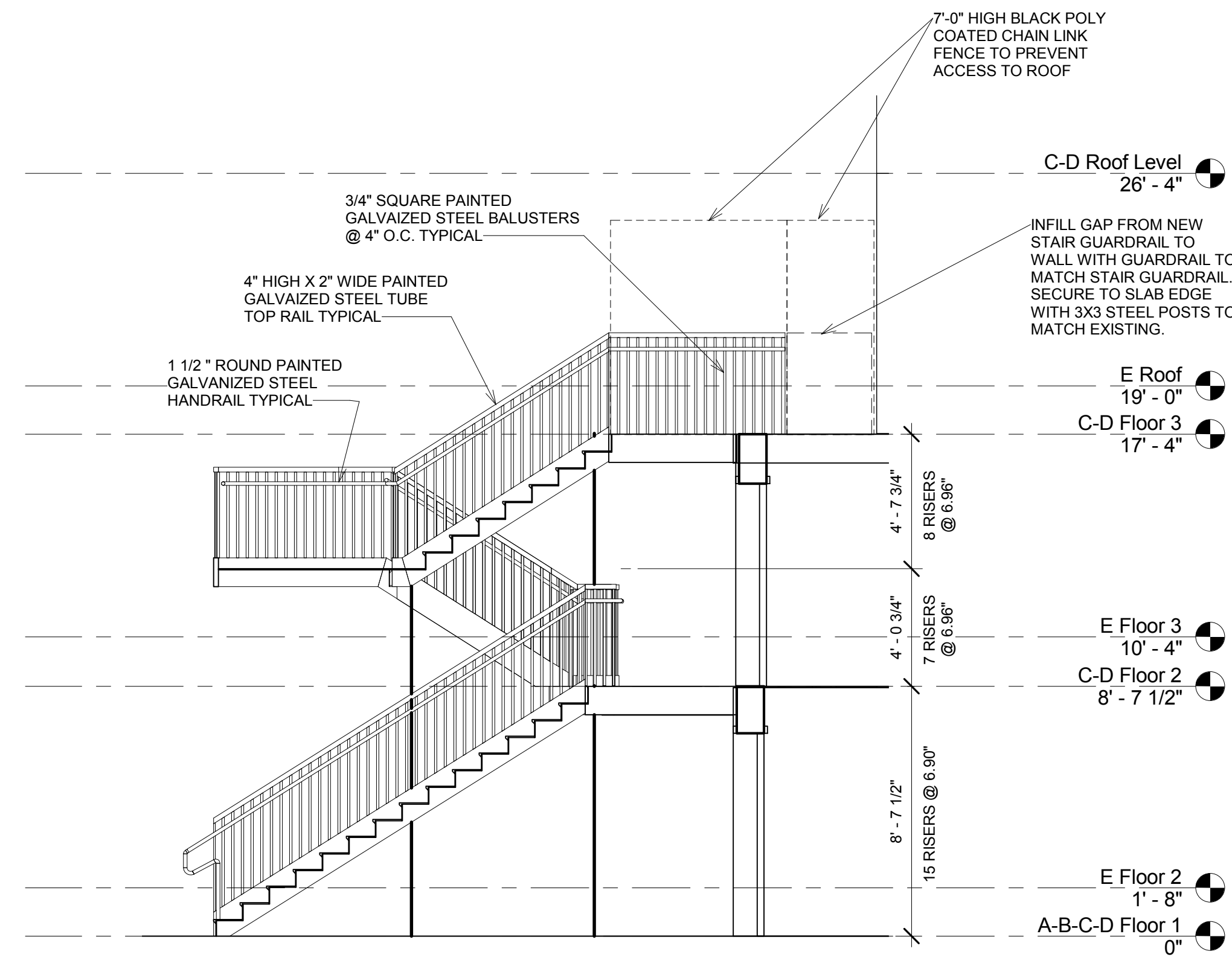
Plot Size: **24 x 36**

**EASTERN CONNECTICUT STATE UNIVERSITY**

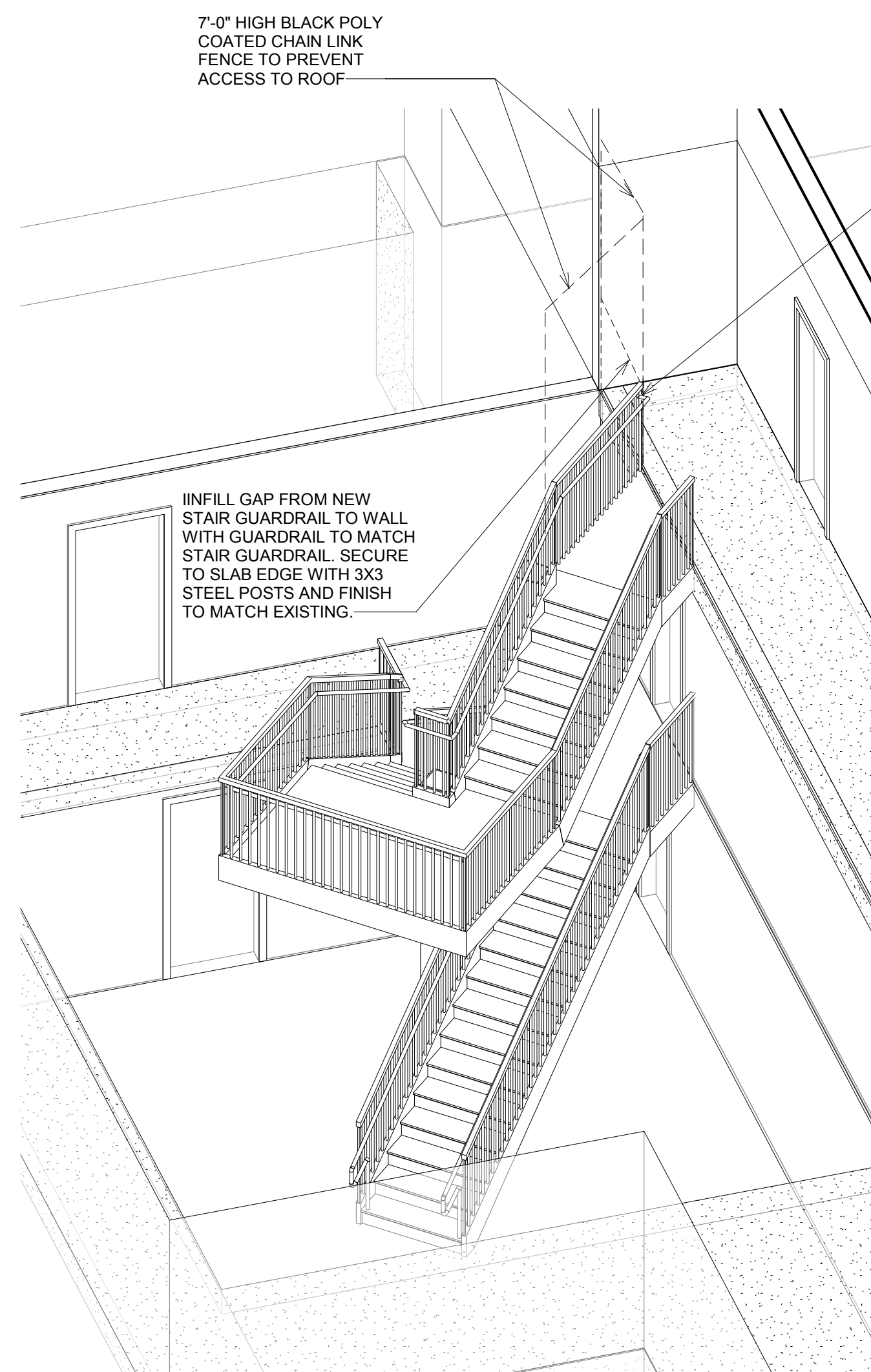
Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226



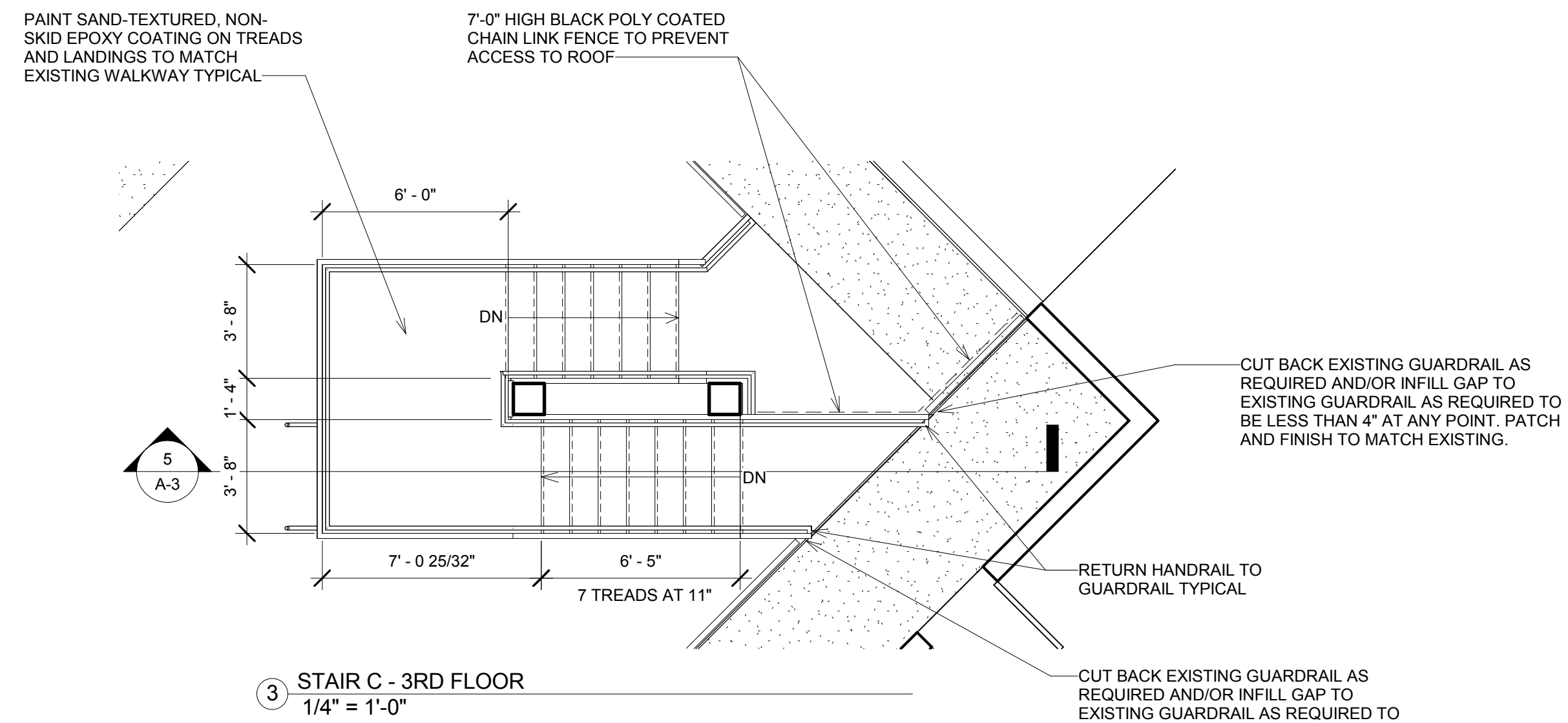
3/14/2018 11:03:46 AM W:\2017\2117050 - ECSU Low Rise Dorm Stairs\DWGS\Revit Model\2117050 - ECSU Low-Rise Stair (17) - Roofed Stairs.rvt



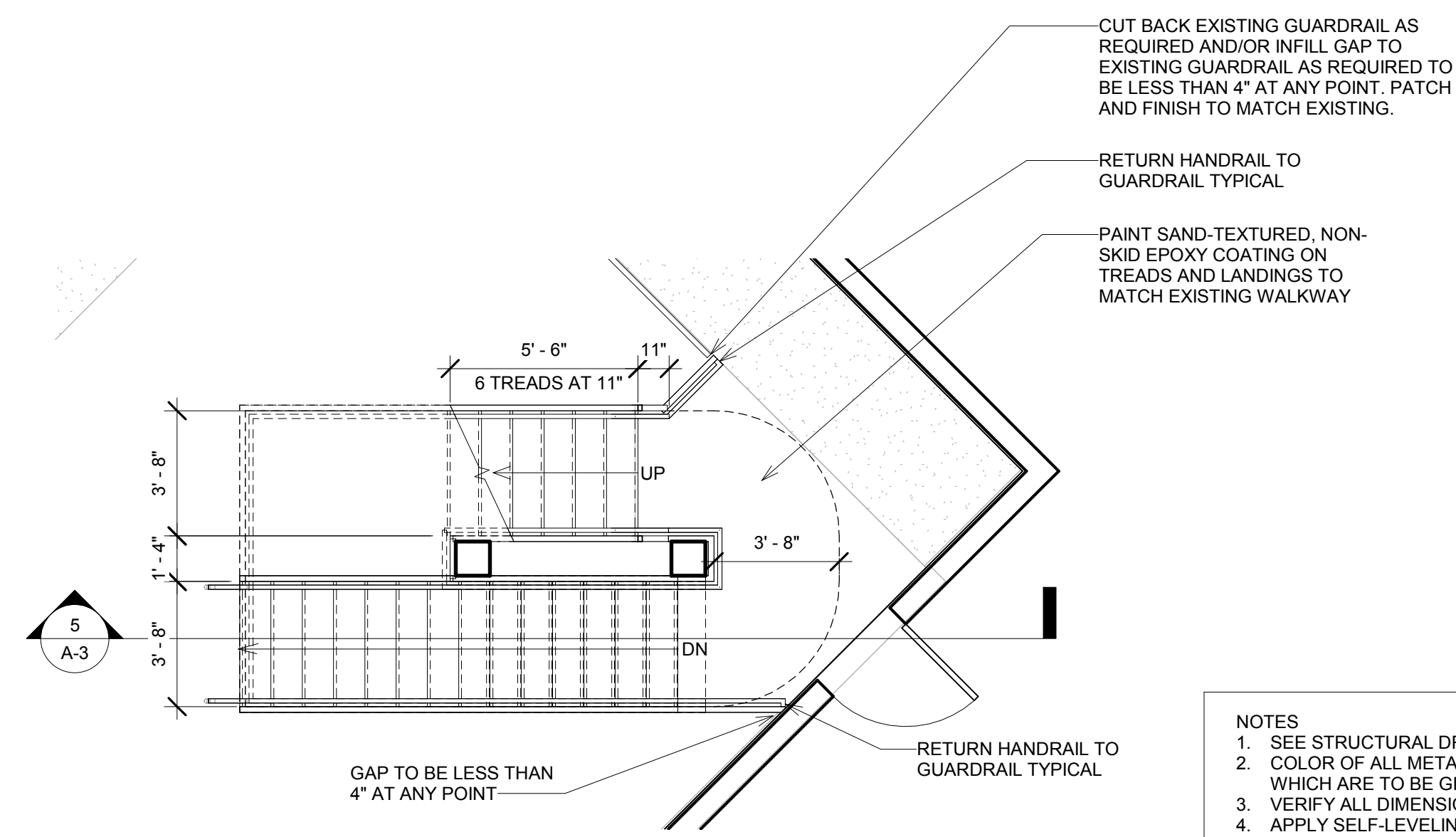
5 STAIR C - SECTION  
1/4" = 1'-0"



4 STAIR C - 3D VIEW

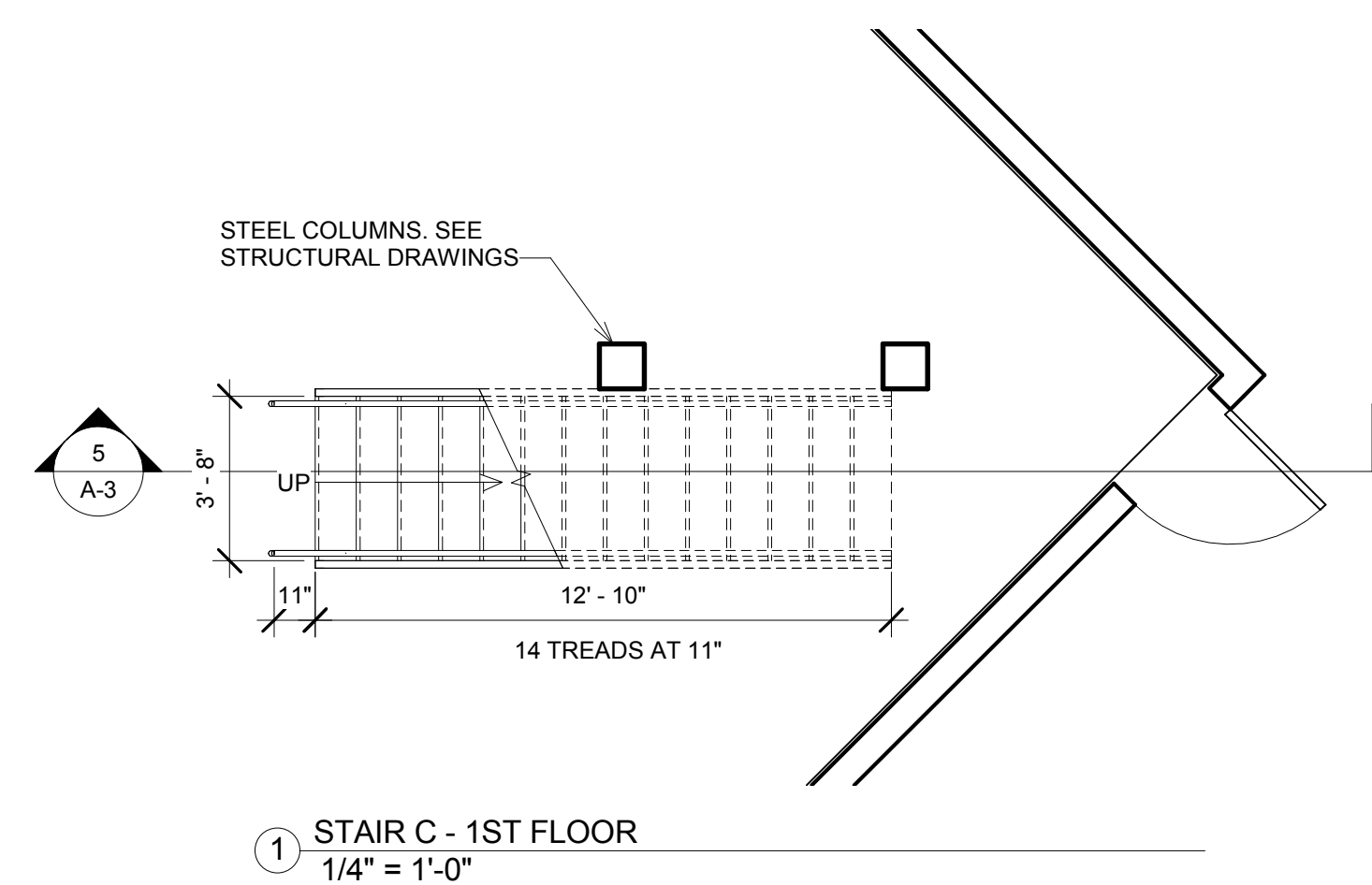


3 STAIR C - 3RD FLOOR  
1/4" = 1'-0"

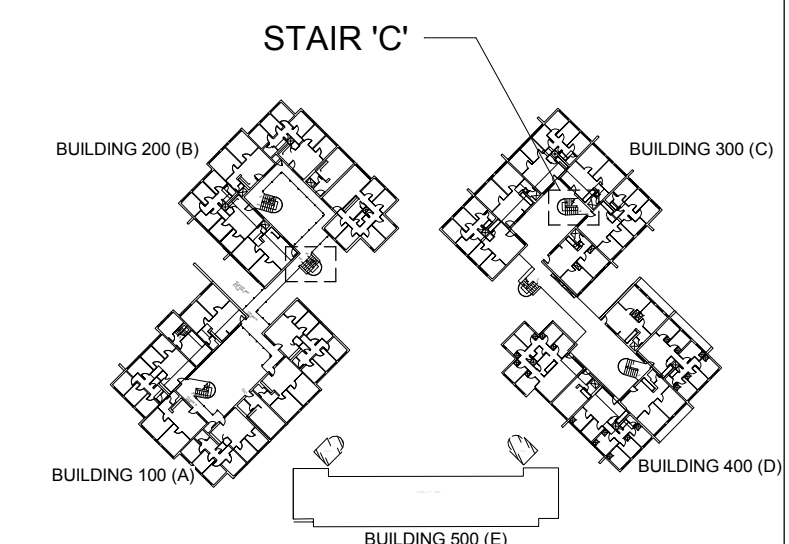


2 STAIR C - 2ND FLOOR  
1/4" = 1'-0"

- NOTES
1. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION
  2. COLOR OF ALL METAL COMPONENTS TO BE BLACK, EXCEPT LANDING WHICH ARE TO BE GREY TO MATCH EXISTING WALKWAY COATINGS.
  3. VERIFY ALL DIMENSIONS IN THE FIELD.
  4. APPLY SELF-LEVELING, HEAVY PEDESTRIAN TRAFFIC-GRADE SEALANT COMPATIBLE WITH TRAFFIC COATING, AND AS RECOMMENDED BY TRAFFIC COATING MANUFACTURER, WHEREVER METAL STAIR LANDINGS MEET EXISTING CONCRETE WALKWAYS TO FILL ANY VOIDS AND LEVEL THE WALKING SURFACE.



1 STAIR C - 1ST FLOOR  
1/4" = 1'-0"



# EASTERN CONNECTICUT STATE UNIVERSITY

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

Bid Set	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

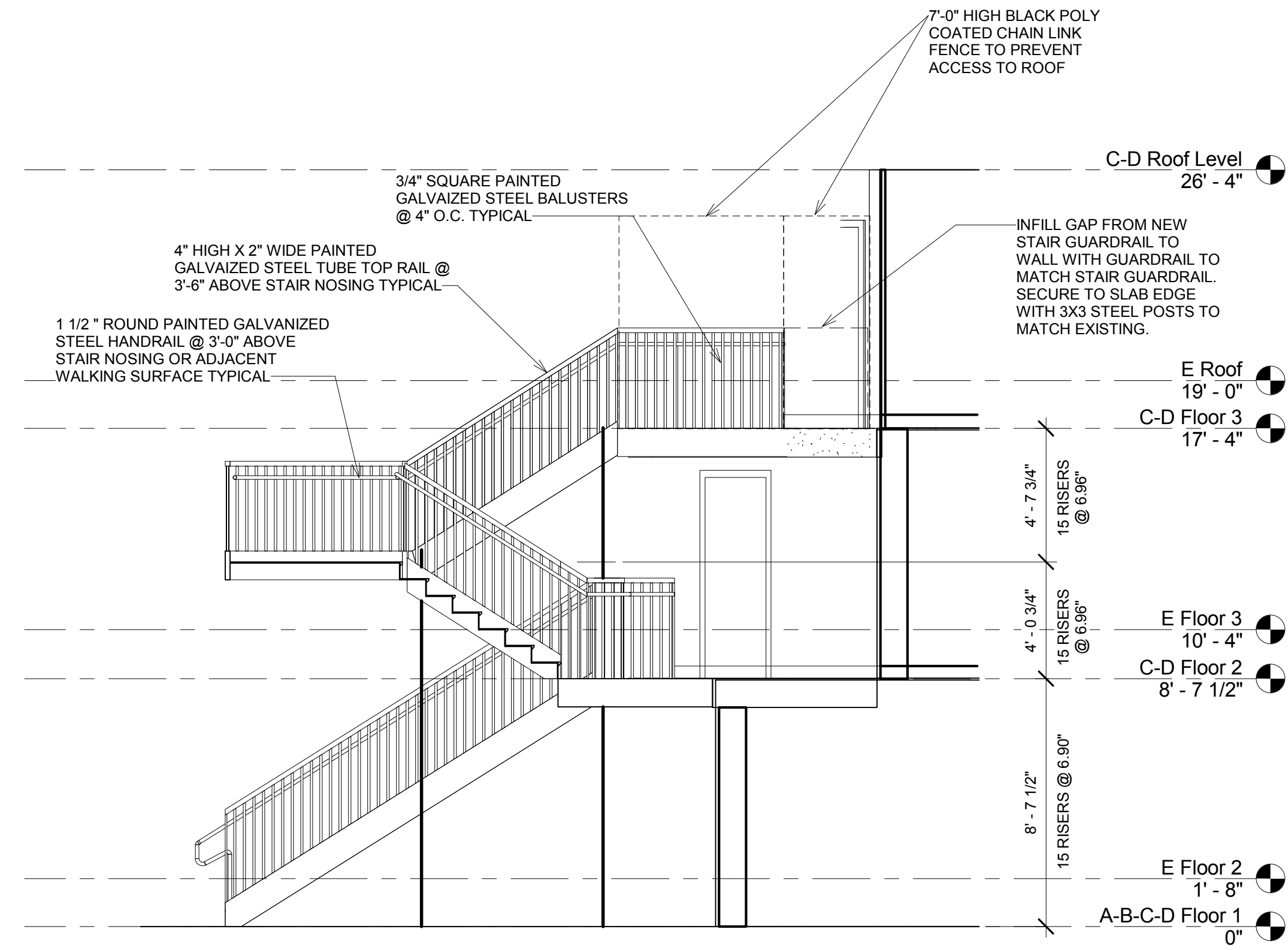
DRAWING NAME:  
**STAIR C**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017**  
Scale: **1/4" = 1'-0"**  
Plot Size: **24 x 36**

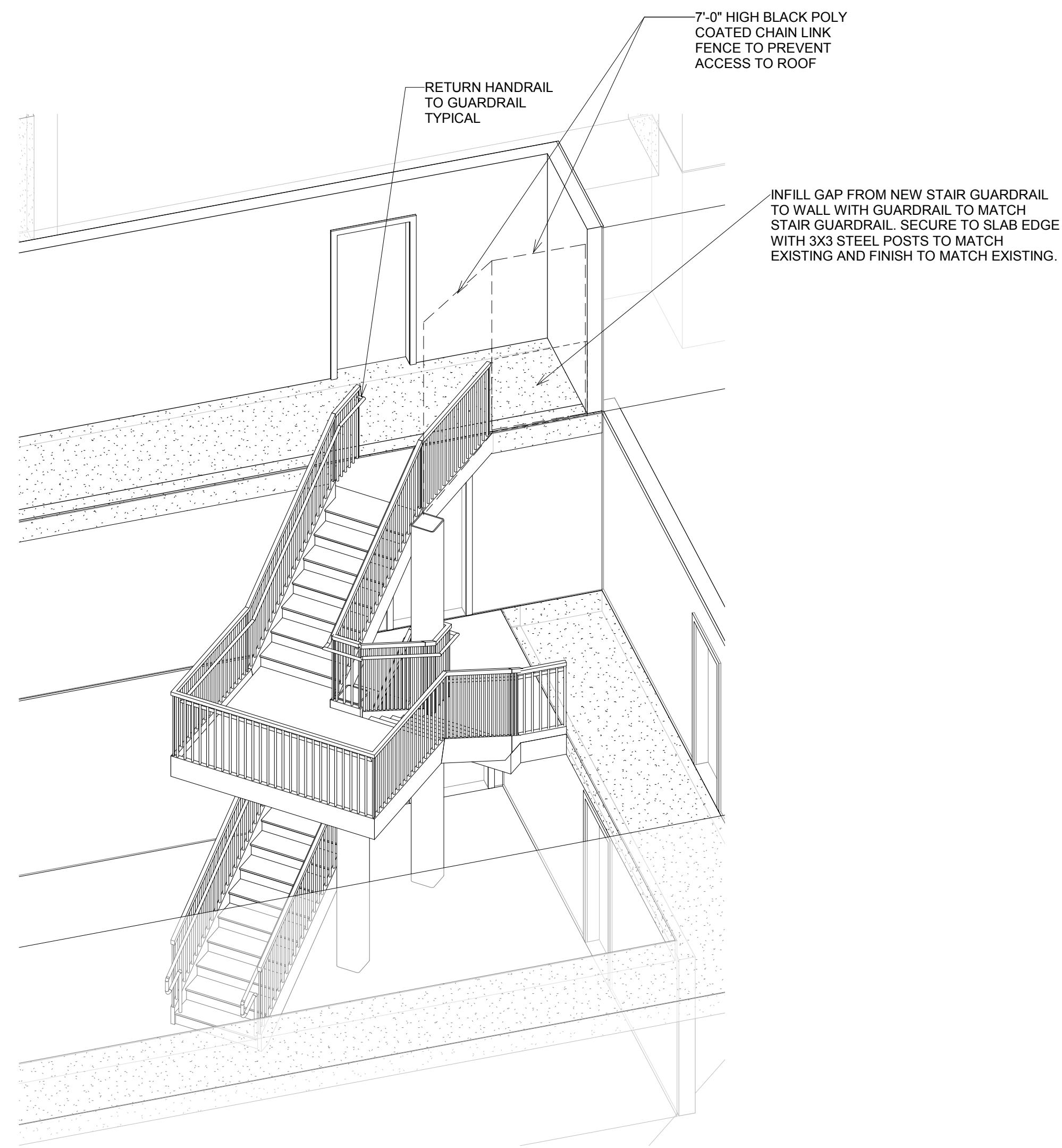
Drawing No.: **A-3**



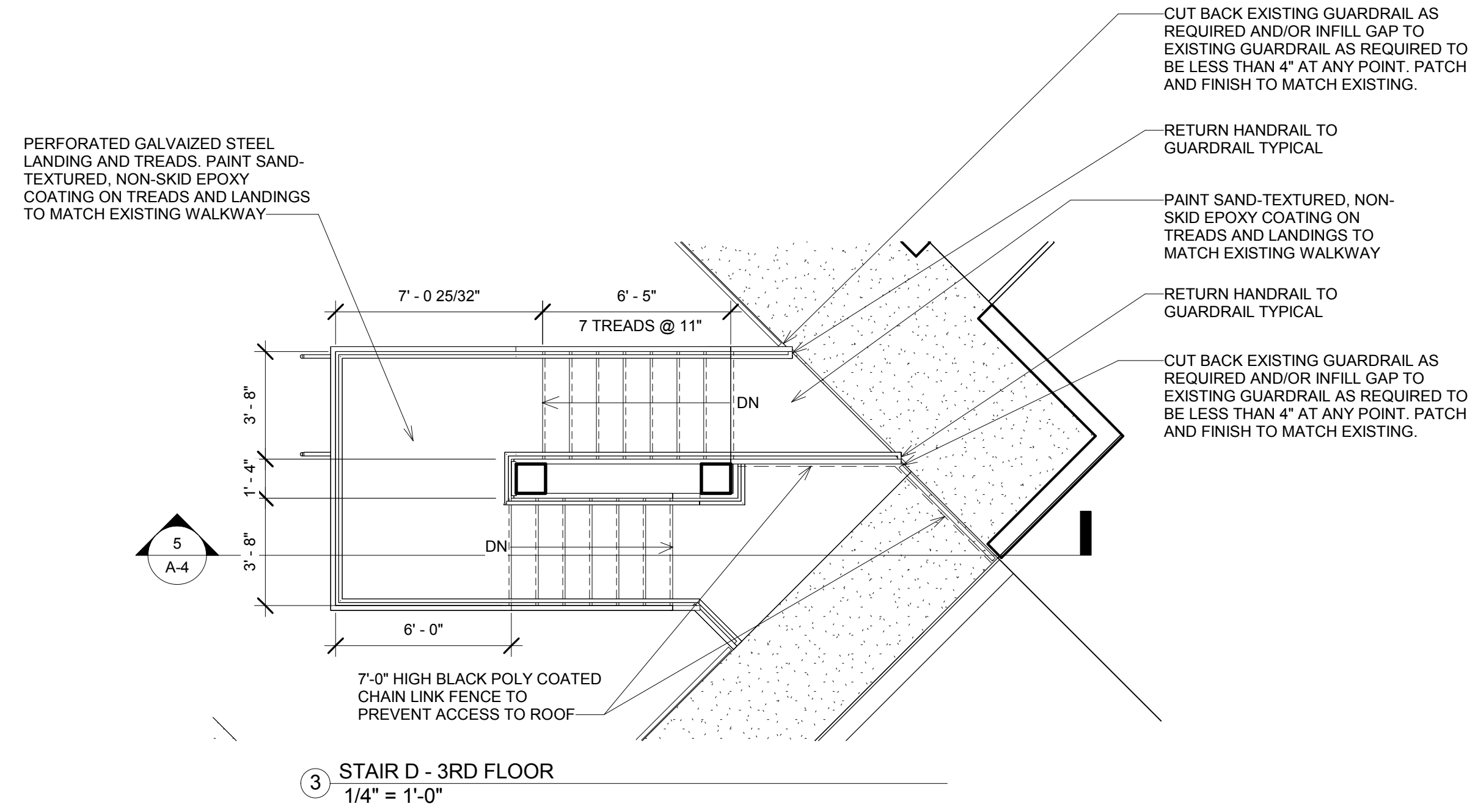
3/14/2018 11:03:48 AM W:\2017\2117050 - ECSU Low Rise Dorm Stairs\DWGS\Revit Model\2117050 - ECSU Low-Rise Stair (17) - Roofed Stairs.rvt



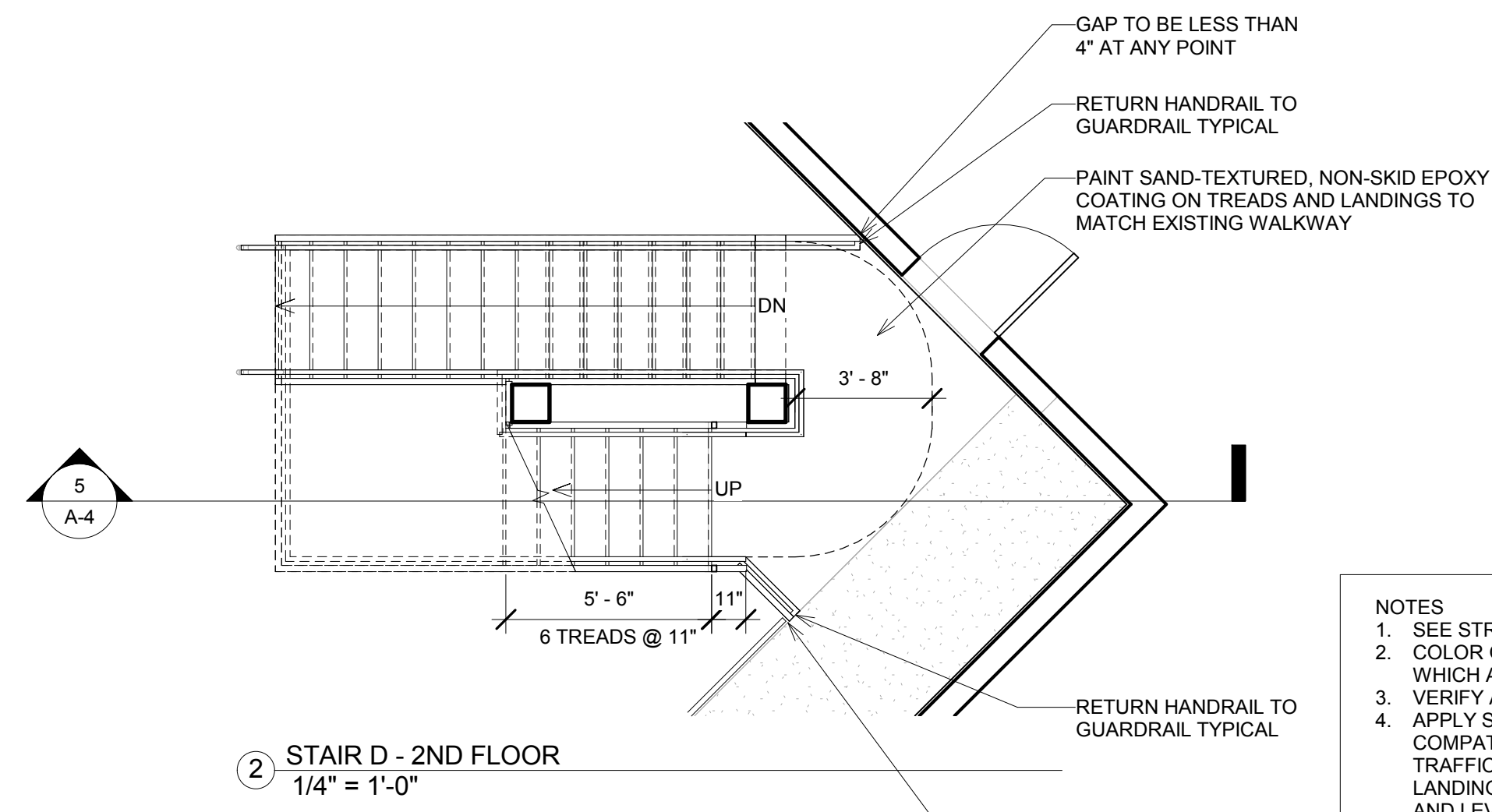
5 STAIR D - SECTION  
1/4" = 1'-0"



4 STAIR D - 3D VIEW

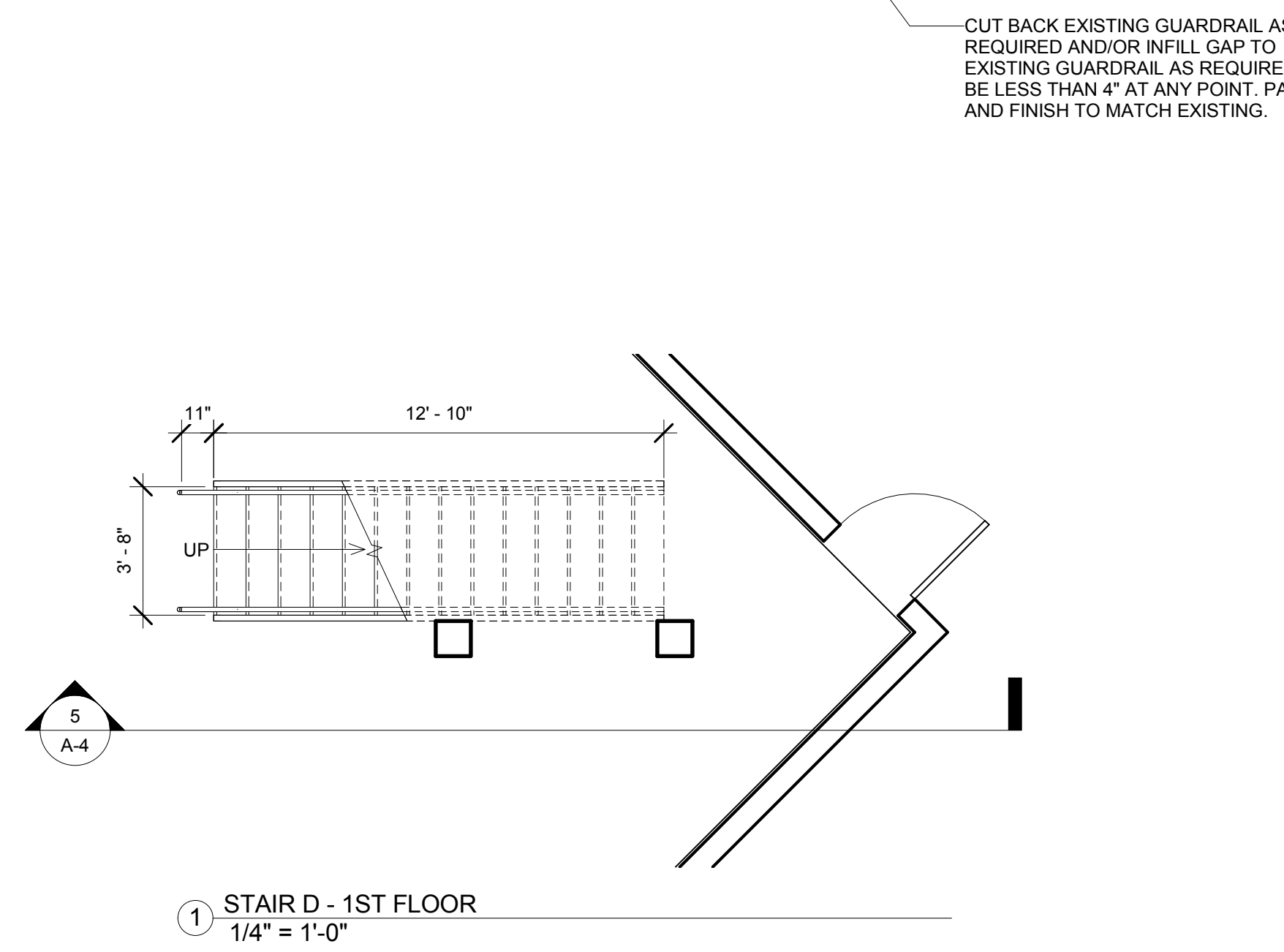


3 STAIR D - 3RD FLOOR  
1/4" = 1'-0"

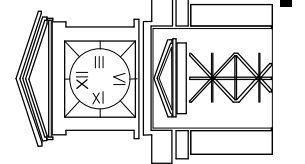
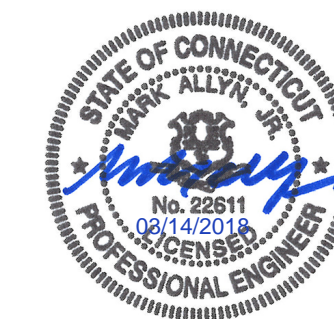
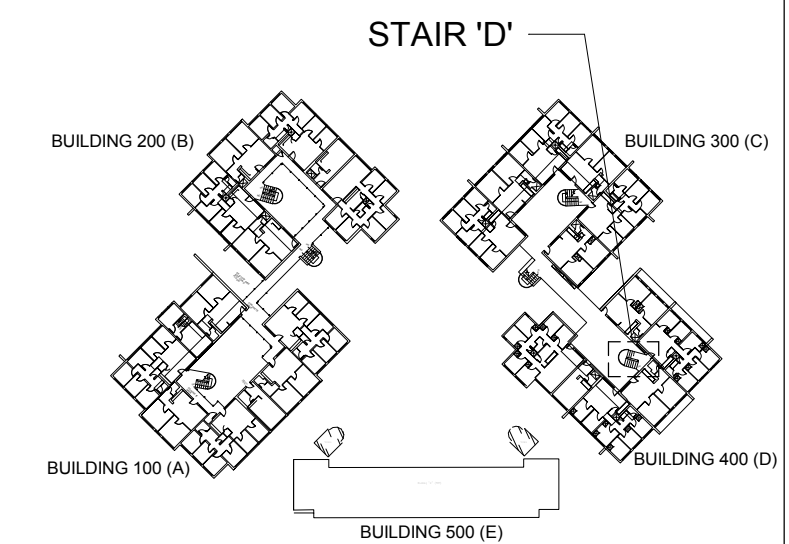


2 STAIR D - 2ND FLOOR  
1/4" = 1'-0"

- NOTES
- SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION
  - COLOR OF ALL METAL COMPONENTS TO BE BLACK, EXCEPT LANDING WHICH ARE TO BE GREY TO MATCH EXISTING WALKWAY COATINGS.
  - VERIFY ALL DIMENSIONS IN THE FIELD.
  - APPLY SELF-LEVELING, HEAVY PEDESTRIAN TRAFFIC-GRADE SEALANT COMPATIBLE WITH TRAFFIC COATING, AND AS RECOMMENDED BY TRAFFIC COATING MANUFACTURER, WHEREVER METAL STAIR LANDINGS MEET EXISTING CONCRETE WALKWAYS TO FILL ANY VOIDS AND LEVEL THE WALKING SURFACE.



1 STAIR D - 1ST FLOOR  
1/4" = 1'-0"



	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:

**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:

STAIR D

Project No.:	ECSU 2016-9 (Phase II)
Date:	12/6/2017
Scale:	1/4" = 1'-0"
Plot Size:	24 x 36

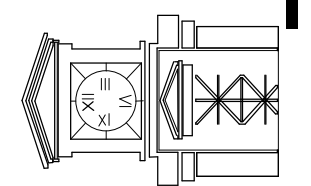
**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226



# EASTERN CONNECTICUT STATE UNIVERSITY

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

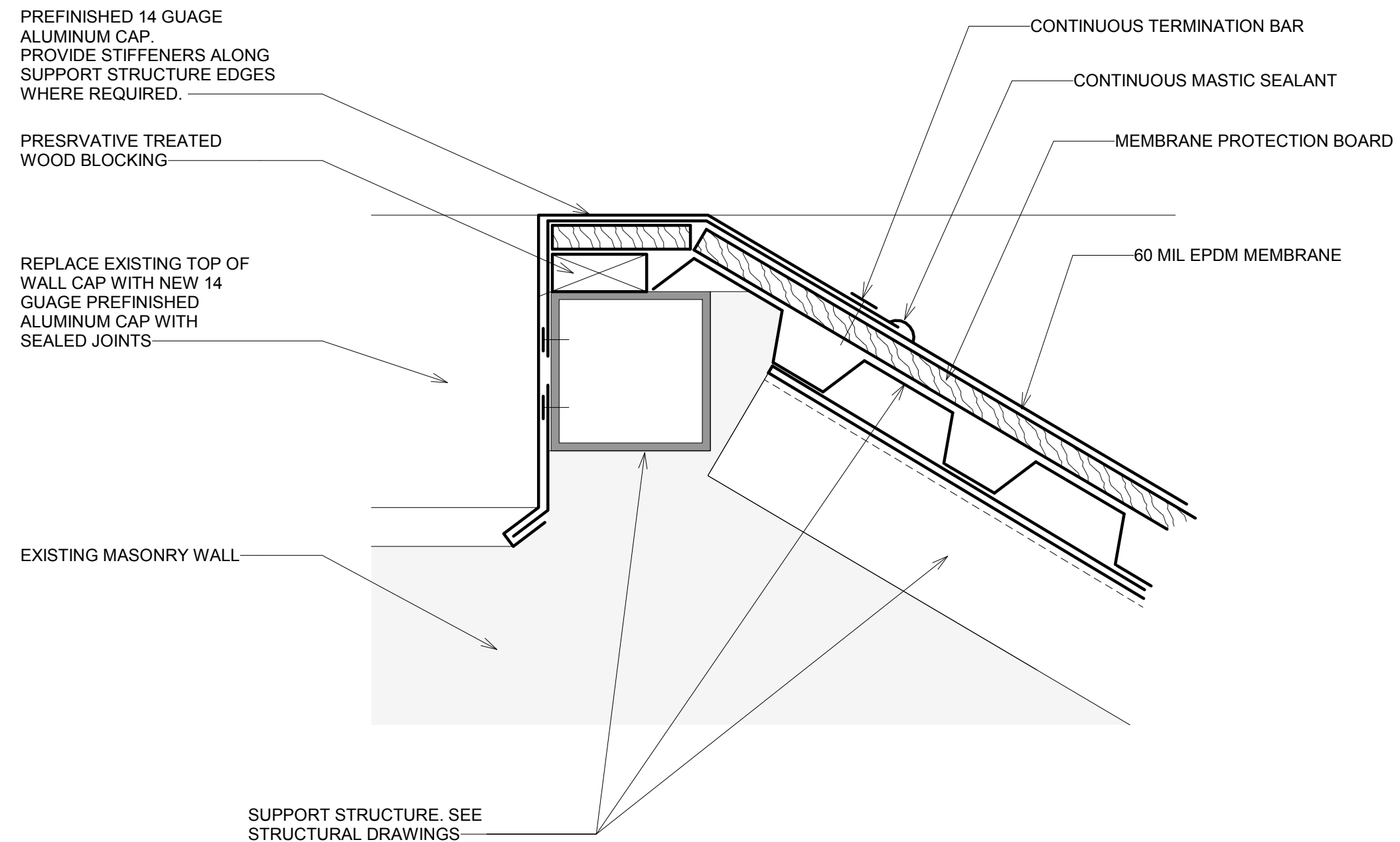


Bid Set	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue Date

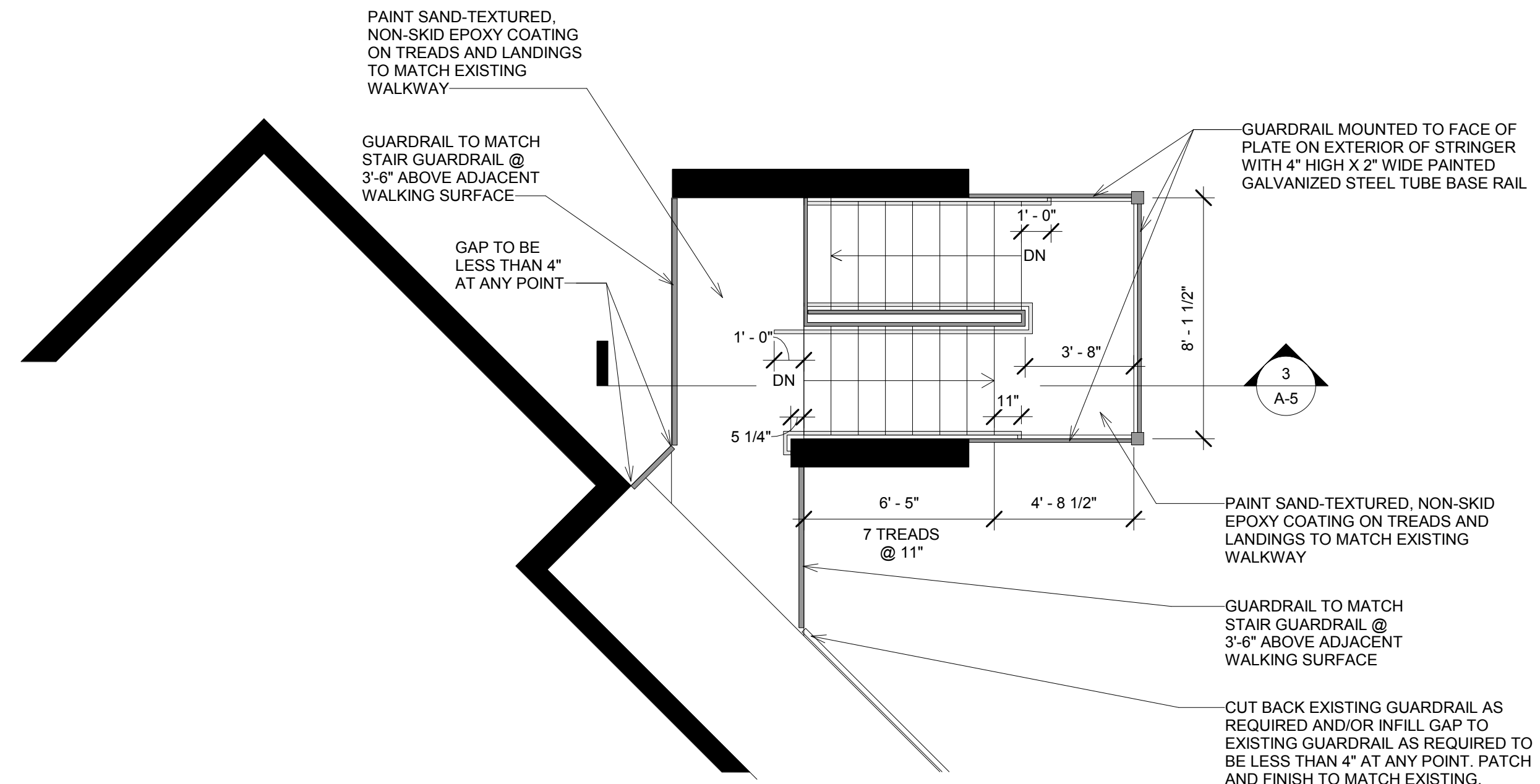
PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR E-WEST**

Project No.:  
**ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **A-5**  
Scale: **As indicated**  
Plot Size: **24 x 36**

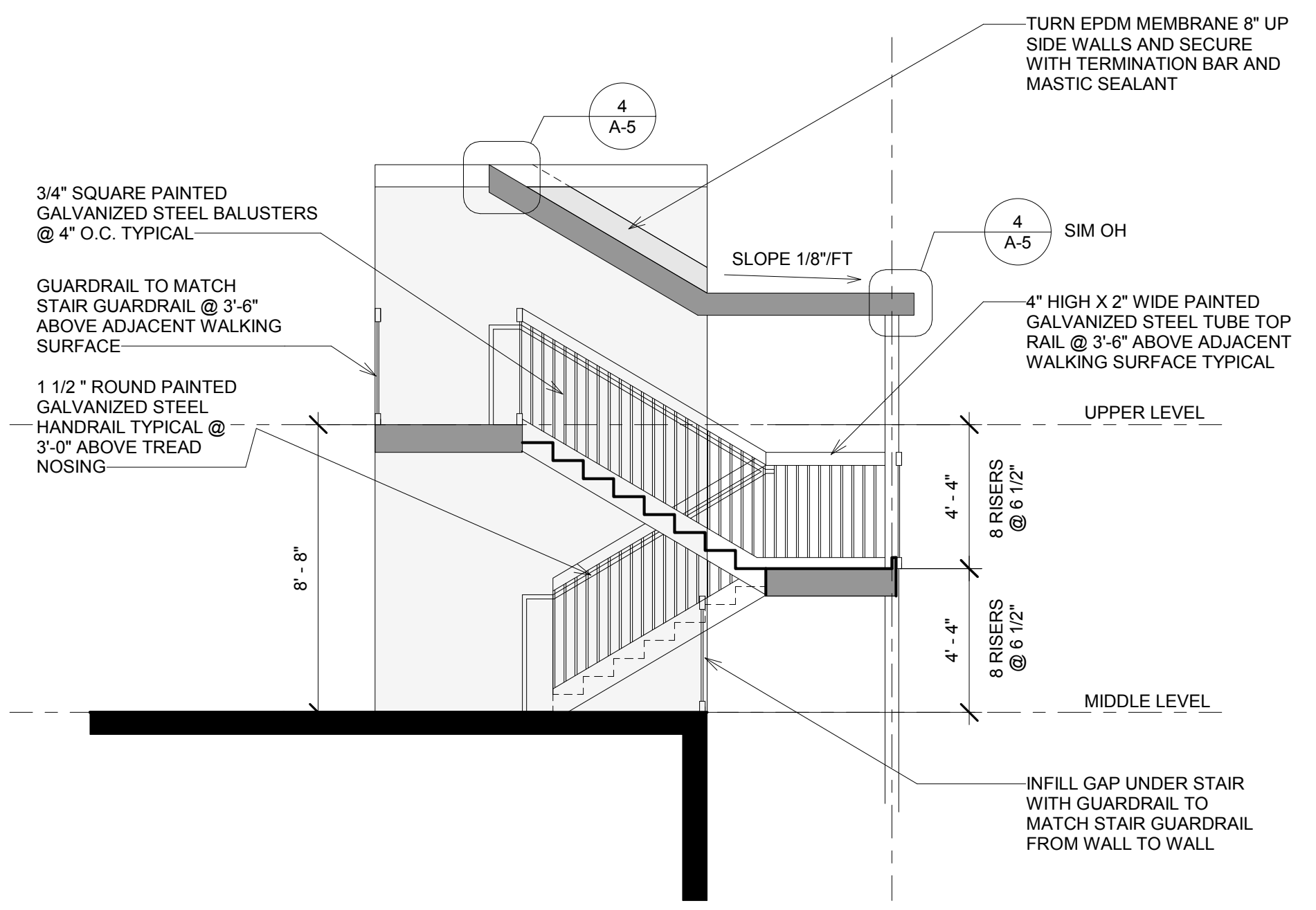


4 DETAIL AT STAIR ROOF  
3" = 1'-0"

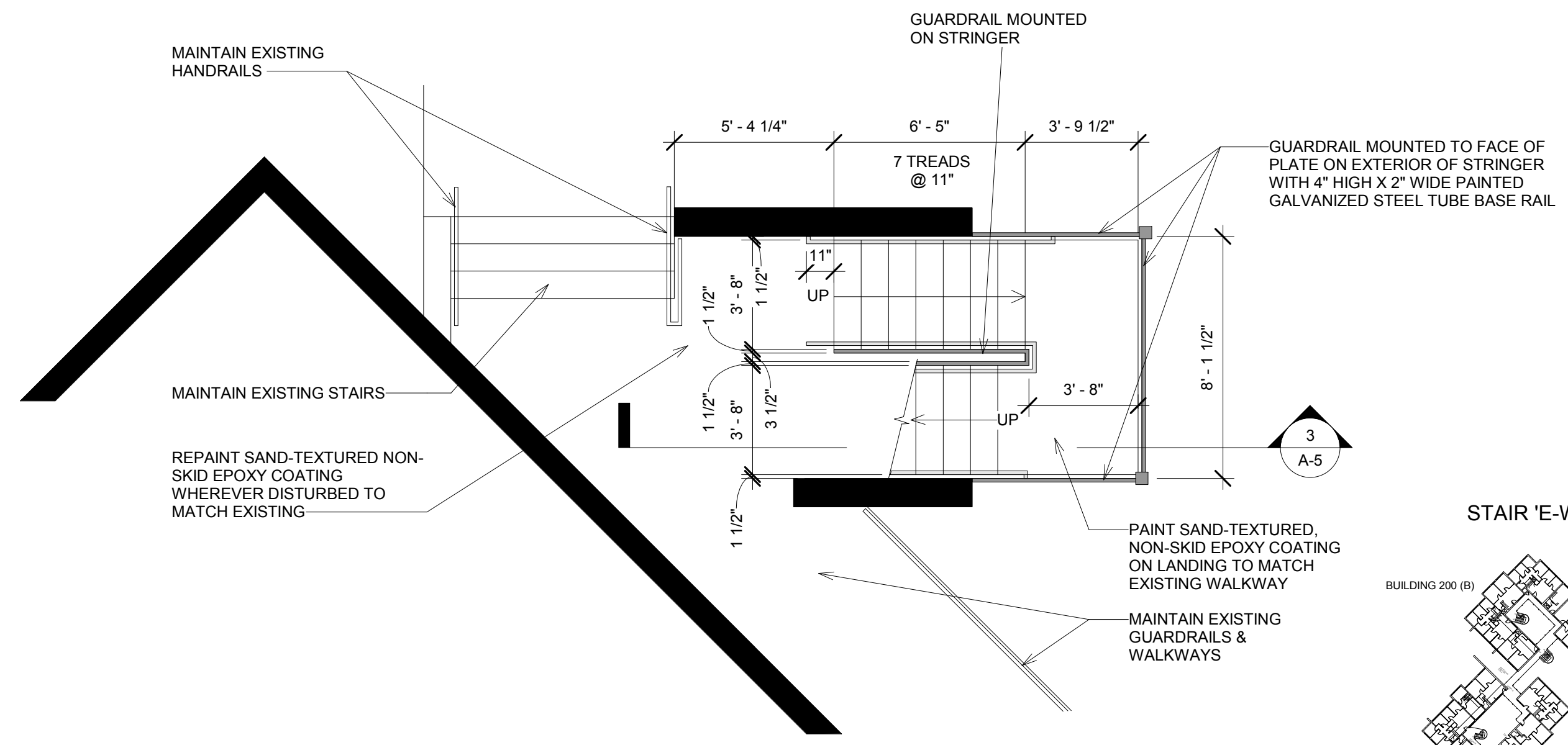


2 STAIR E-WEST - UPPER LEVEL  
1/4" = 1'-0"

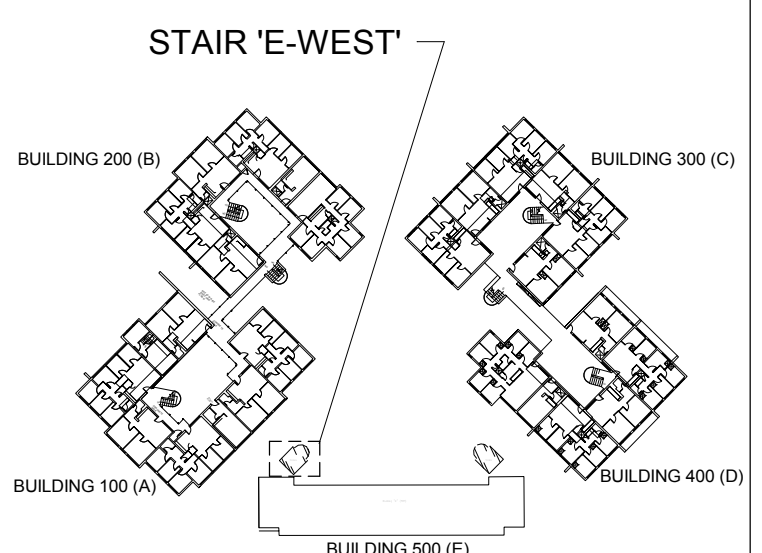
- NOTES
- SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
  - COLOR OF ALL METAL COMPONENTS TO BE BLACK, EXCEPT LANDING WHICH ARE TO BE GREY TO MATCH EXISTING WALKWAY COATINGS.
  - VERIFY ALL DIMENSIONS IN THE FIELD.
  - APPLY SELF-LEVELING, HEAVY PEDESTRIAN TRAFFIC-GRADE SEALANT COMPATIBLE WITH TRAFFIC COATING, AND AS RECOMMENDED BY TRAFFIC COATING MANUFACTURER, WHEREVER METAL STAIR LANDINGS MEET EXISTING CONCRETE WALKWAYS TO FILL ANY VOIDS AND LEVEL THE WALKING SURFACE.



3 STAIR E-WEST - SECTION  
1/4" = 1'-0"



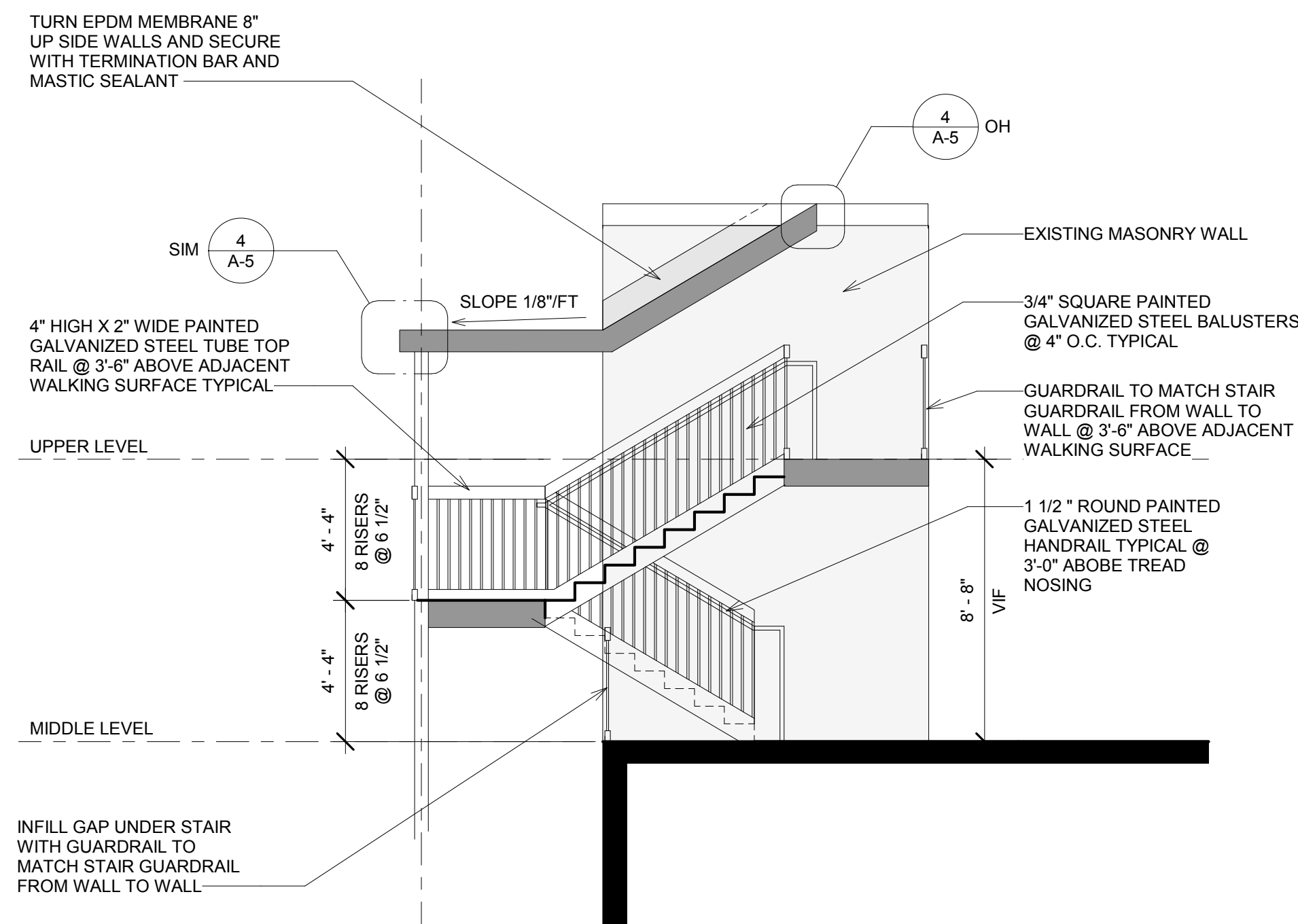
1 STAIR E-WEST - MIDDLE LEVEL  
1/4" = 1'-0"



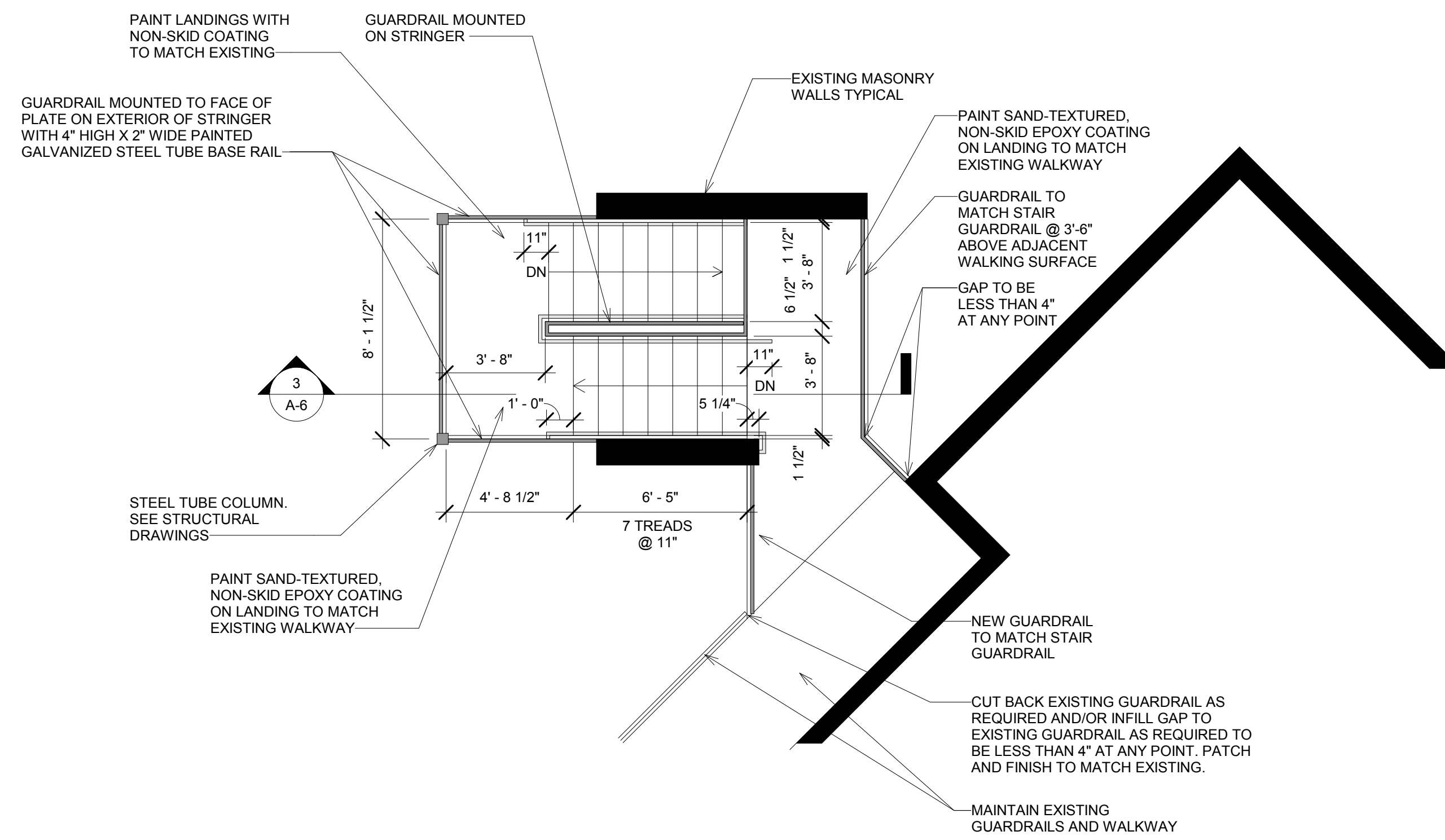
3/14/2018 11:03:48 AM W:\2017\2117050 - ECSU Low Rise Dorm Stairs\DWGS\Revit Model\2117050 - ECSU Low-Rise Stair (17) - Roofed Stairs.rvt



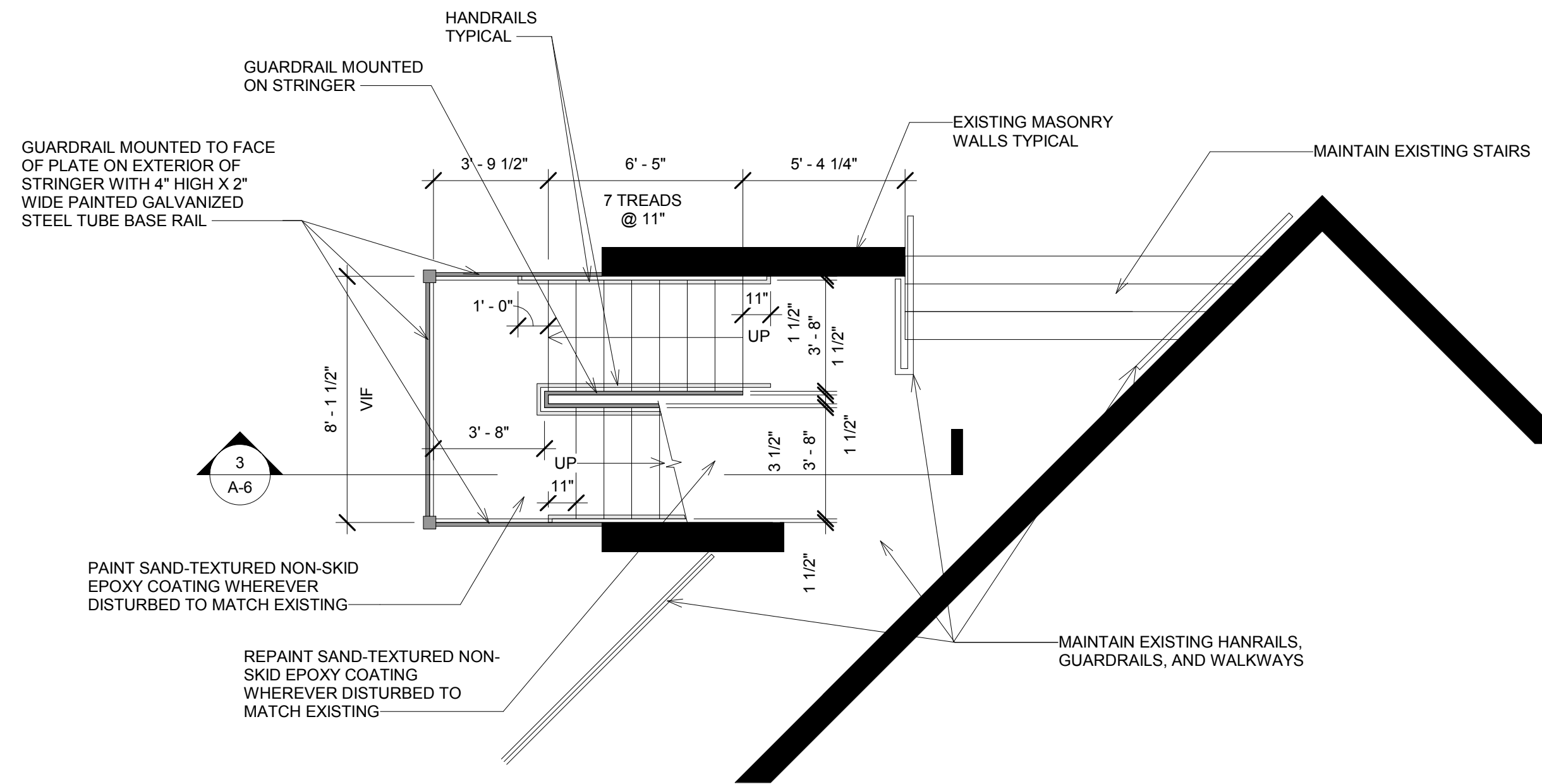
3/14/2018 11:03:48 AM W:\2017\2117050 - ECSU Low Rise Dorm Stairs\DWGS\Revit Model\2117050 - ECSU Low-Rise Stair (17) - Roofed Stairs.rvt



3 STAIR E-EAST - SECTION  
1/4" = 1'-0"

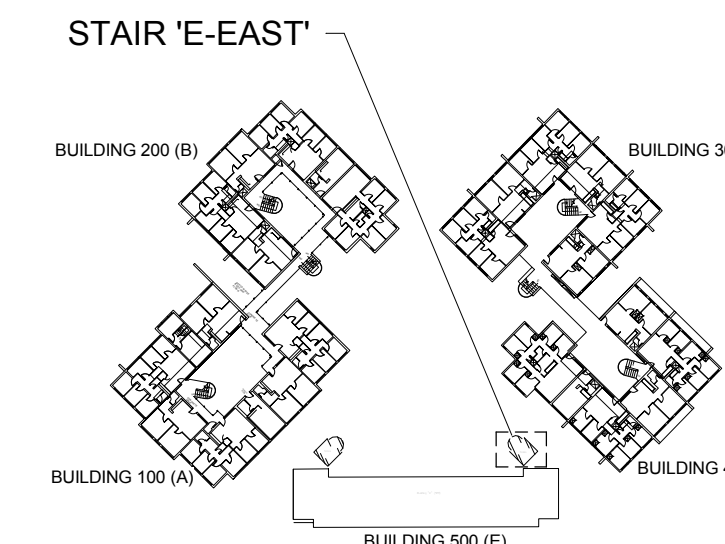


2 STAIR E-EAST - UPEER LEVEL  
1/4" = 1'-0"



1 STAIR E-EAST - MIDDLE LEVEL  
1/4" = 1'-0"

- NOTES
- SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION
  - COLOR OF ALL METAL COMPONENTS TO BE BLACK, EXCEPT LANDING WHICH ARE TO BE GREY TO MATCH EXISTING WALKWAY COATINGS.
  - VERIFY ALL DIMENSIONS IN THE FIELD.
  - APPLY SELF-LEVELING, HEAVY PEDESTRIAN TRAFFIC-GRADE SEALANT COMPATIBLE WITH TRAFFIC COATING, AND AS RECOMMENDED BY TRAFFIC COATING MANUFACTURER, WHEREVER METAL STAIR LANDINGS MEET EXISTING CONCRETE WALKWAYS TO FILL ANY VOIDS AND LEVEL THE WALKING SURFACE.



Bid Set	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR E-EAST**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **A-6**  
Scale: **1/4" = 1'-0"**  
Plot Size: **24 x 36**

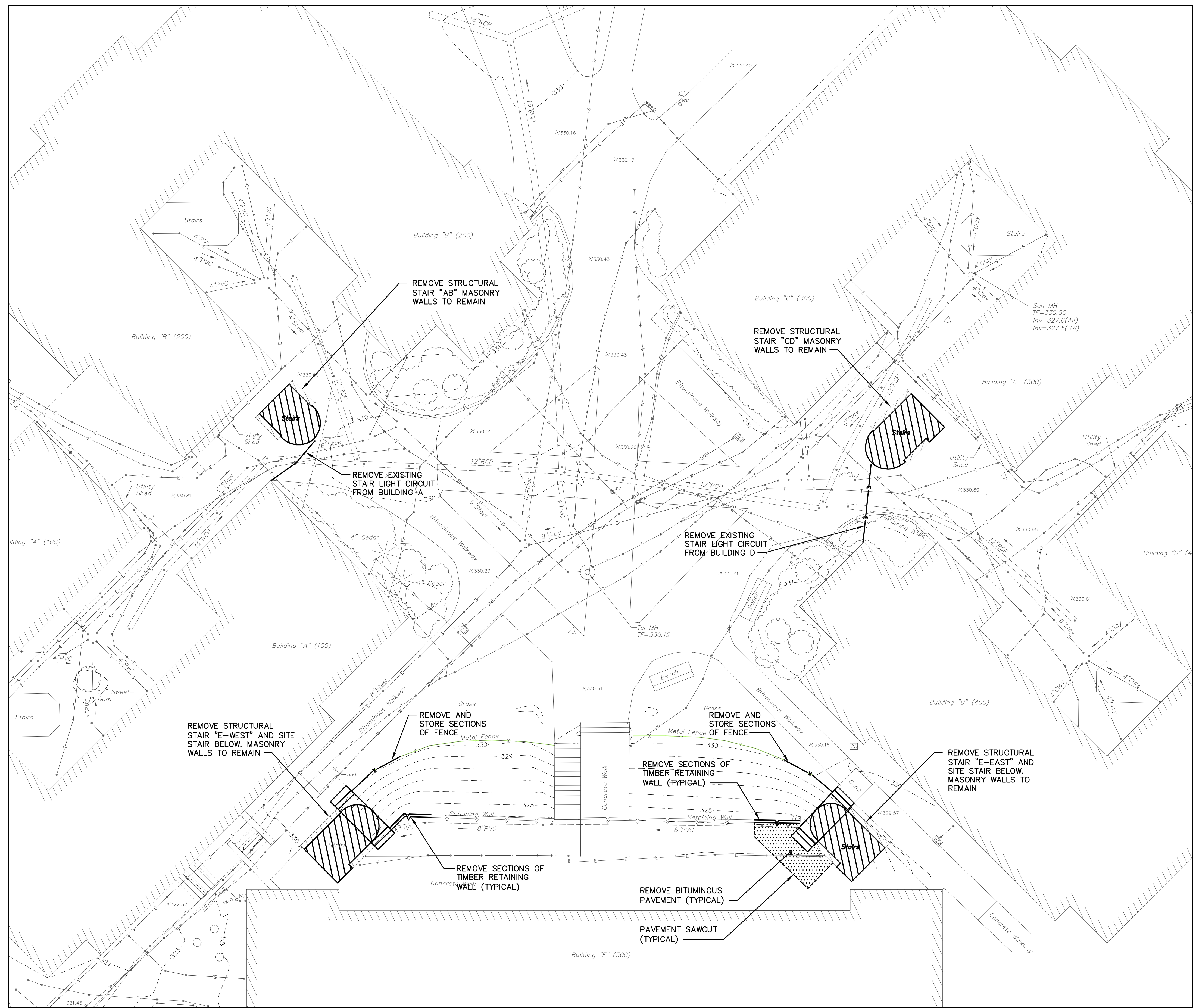








3/14/18 11:32:22 AM W:\2017\2117050 - ECSU Low Rise Dorm Stairs\DWGS\C\2117050 - Demo.dwg

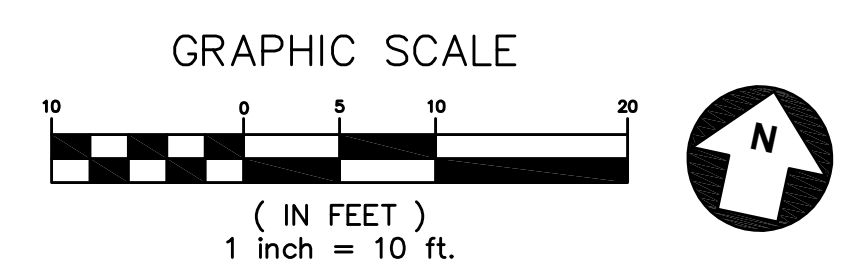


**CIVIL GENERAL NOTES**

- BASE INFORMATION IS TAKEN FROM CLASS B SURVEY PLANS PROVIDED BY BL COMPANIES, DATED 05/08/2016. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF NEW WORK. BVH INTEGRATED SERVICES ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE SURVEY NOR CHANGES TO THE WORK DUE TO ERROR IN THE SURVEY.
- PRIOR TO COMMENCING CONSTRUCTION NOTIFY "CALL BEFORE YOU DIG" (1-800-922-4455) FOR FIELD LOCATION AND MARKING OF SUBSURFACE UTILITIES AT LEAST 48 HOURS IN ADVANCE BUT NO MORE THAN 30 DAYS. THE CONTRACTOR SHALL ALSO OBTAIN THE SERVICES OF A QUALIFIED UNDERGROUND UTILITY LOCATION FIRM, AT NO COST TO THE OWNER, TO VERIFY LOCATIONS OF UNDERGROUND UTILITIES NOT IDENTIFIED BY "CALL BEFORE YOU DIG".
- ALL CONSTRUCTION METHODS SHALL CONFORM TO THE DRAWINGS AND SPECIFICATIONS AND ANY REFERENCED STANDARDS SUCH AS BUT NOT LIMITED TO THE FOLLOWING:
  - THE STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION (FORM 816, AS AMENDED).
  - MATERIAL AND INSTALLATION SPECIFICATIONS OF EACH UTILITY COMPANY.
  - SPECIFIC TOWN OF WINDHAM REQUIREMENTS.
  - 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.
- ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND SPECIFICATIONS AND REFERENCED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
- PROVIDE ALL NECESSARY SURVEY WORK REQUIRED FOR THE CONSTRUCTION STAKE-OUT AND PRODUCTION OF AS-BUILT PLANS. AS-BUILT PLANS SHALL SHOW LOCATION AND ELEVATION OF CONSTRUCTED BUILDINGS, STRUCTURES, EQUIPMENT, PIPING AND CONDUITS. CONTRACTOR TO PROVIDE RECORD DRAWINGS TO THE OWNER AT THE END OF THE PROJECT. REFER TO GENERAL CONDITIONS OF SPECIFICATIONS FOR REQUIREMENTS.
- OBTAIN ALL NECESSARY PERMITS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DEVELOP THE CONSTRUCTION SCHEDULE AND PHASING, COORDINATE ALL ACTIVITIES WITH THE STATE OF CONNECTICUT AND THE TOWN OF WINDHAM AND NOTIFY ADJACENT PROPERTY OWNERS, AS REQUIRED. NOTIFY NECESSARY PARTIES AT LEAST 5 DAYS IN ADVANCE.
- ALL EXISTING SITE UTILITIES WHICH ARE NOT INDICATED ON PLANS SHALL NOT BE INTERRUPTED FROM CONTINUOUS SERVICE. CONTRACTOR TO NOTIFY ENGINEER OF ANY CONFLICTS OR CONCERNS. EXISTING UTILITIES TO REMAIN ARE TO BE PROTECTED DURING CONSTRUCTION.
- ESTABLISH AND MAINTAIN AT LEAST FOUR BENCHMARKS ON SITE FOR VERTICAL AND HORIZONTAL CONTROL.
- SAFETY ISSUES & HOURS OF OPERATION ARE THE RESPONSIBILITY OF THE CONTRACTOR AND ARE TO BE COORDINATED & APPROVED BY THE OWNER.

**DEMOLITION GENERAL NOTES:**

- ALL EXISTING UTILITIES, PLANTINGS, SIGNS, CURBING, PAVEMENT, SITE WALLS, ETC. SHOWN IN BOLD TO BE REMOVED WITHIN LIMIT OF DISTURBANCE.
- COORDINATE LIMIT OF DEMOLITION WITH ALL PROPOSED WORK.
- EXISTING BITUMINOUS PAVEMENT TO BE SAWCUT AS SHOWN ON THE LANDSCAPE DRAWINGS. NEW BITUMINOUS PAVEMENT SURFACE WILL MATCH EXISTING BITUMINOUS PAVEMENT.
- EXISTING SIDEWALKS (BITUMINOUS AND CONCRETE) TO BE SAWCUT AS SHOWN ON THE LANDSCAPE DRAWINGS. NEW SIDEWALK SURFACE WILL MATCH EXISTING SIDEWALK SURFACE. CONCRETE SIDEWALKS TO BE SAWCUT AT JOINTS.
- CONTRACTOR IS TO PROTECT AND MAINTAIN ALL EXISTING UTILITIES TO REMAIN.
- CONTRACTOR TO INSTALL ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AND TREE PROTECTION FENCING PRIOR TO START OF DEMOLITION OR CONSTRUCTION.



206 West Newberry Road  
 Bloomfield, CT 06002  
 Tel: (860) 286-9171 www.bvhis.com

BID SET	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue Date

PROJECT NAME:  
**Low Rise Courtyard Improvements**

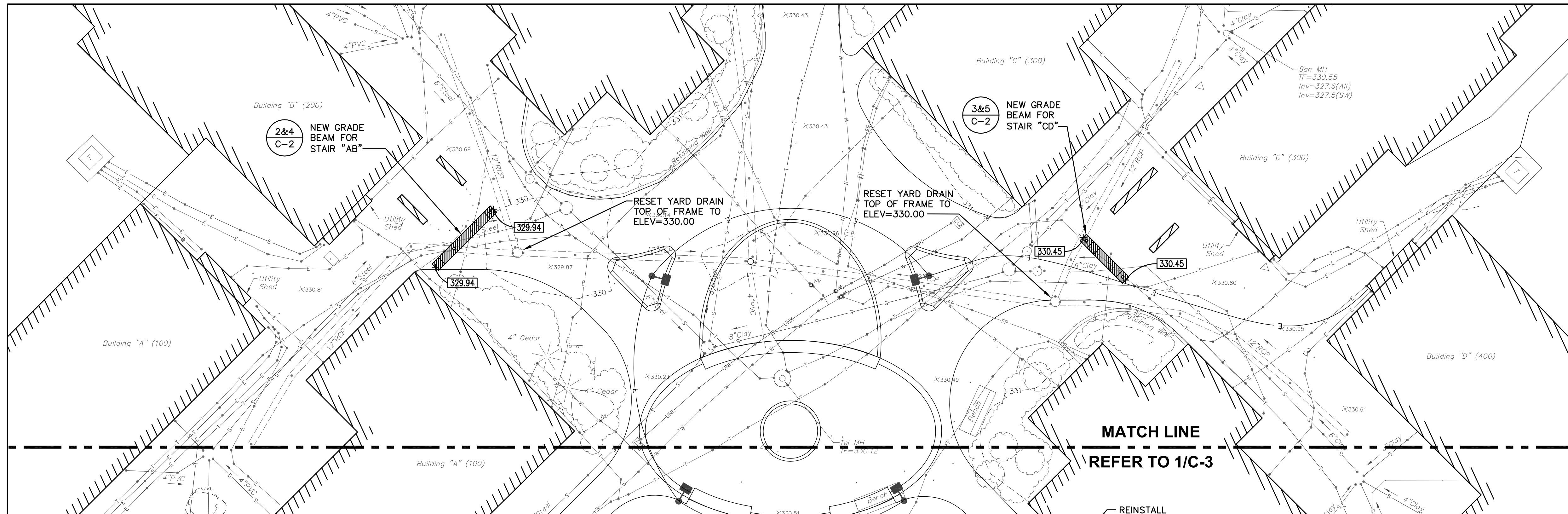
DRAWING NAME:  
**STAIR DEMO PLAN**

Project No.:  
**ECSU 2016-9 (Phase II)**  
 Date: **12/6/2017** Drawing No.:  
**C-1**  
 Scale: **AS NOTED**  
 Plot Size: **24 x 36**

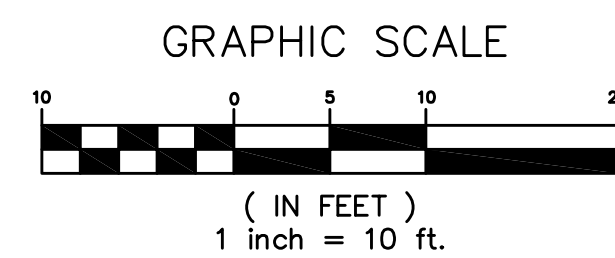
**EASTERN CONNECTICUT STATE UNIVERSITY**  
 Facilities Management and Planning  
 83 Windham Street, Willimantic CT 06226



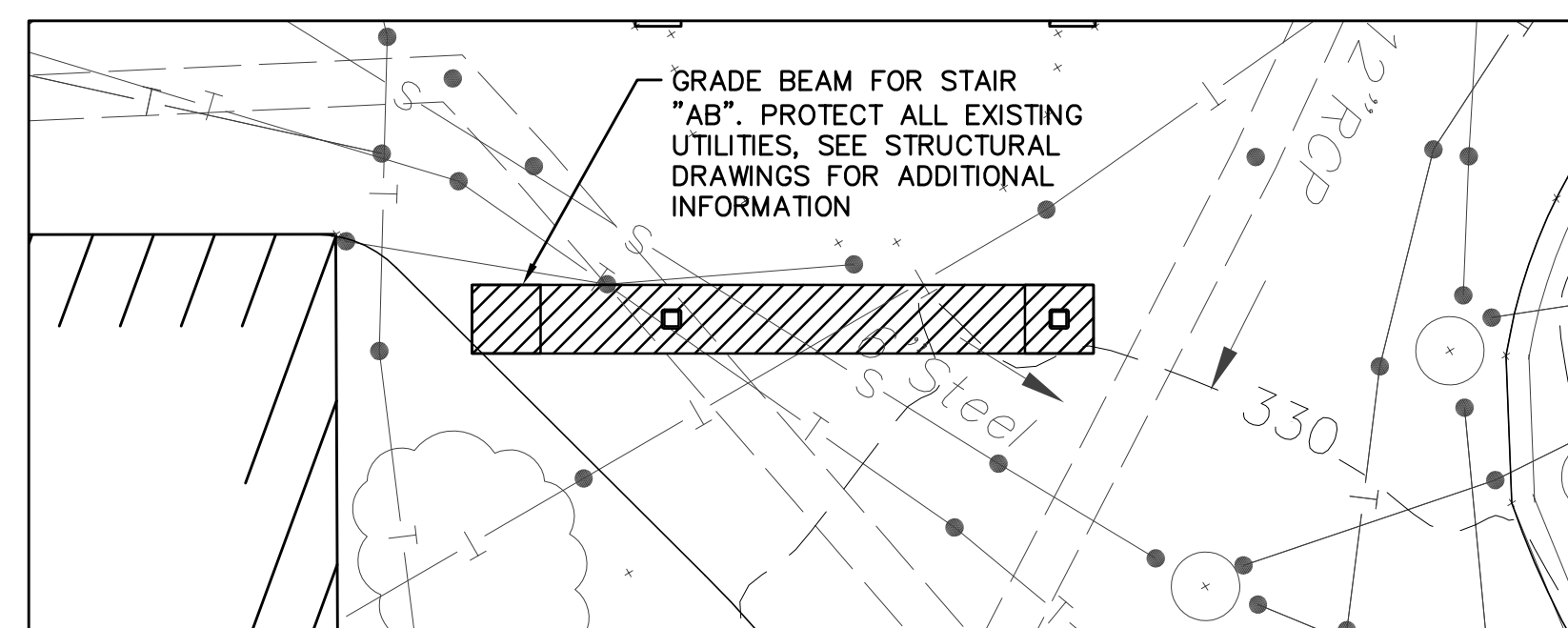
3/14/18 11:32:13 AM W:\2017\2117050 - ECSU Low Rise Dorm Stairs DWGS\C\2117050 - Stairs.dwg



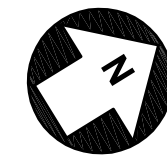
1 STAIRS "AB" AND "CD"  
C-2 1" = 10'



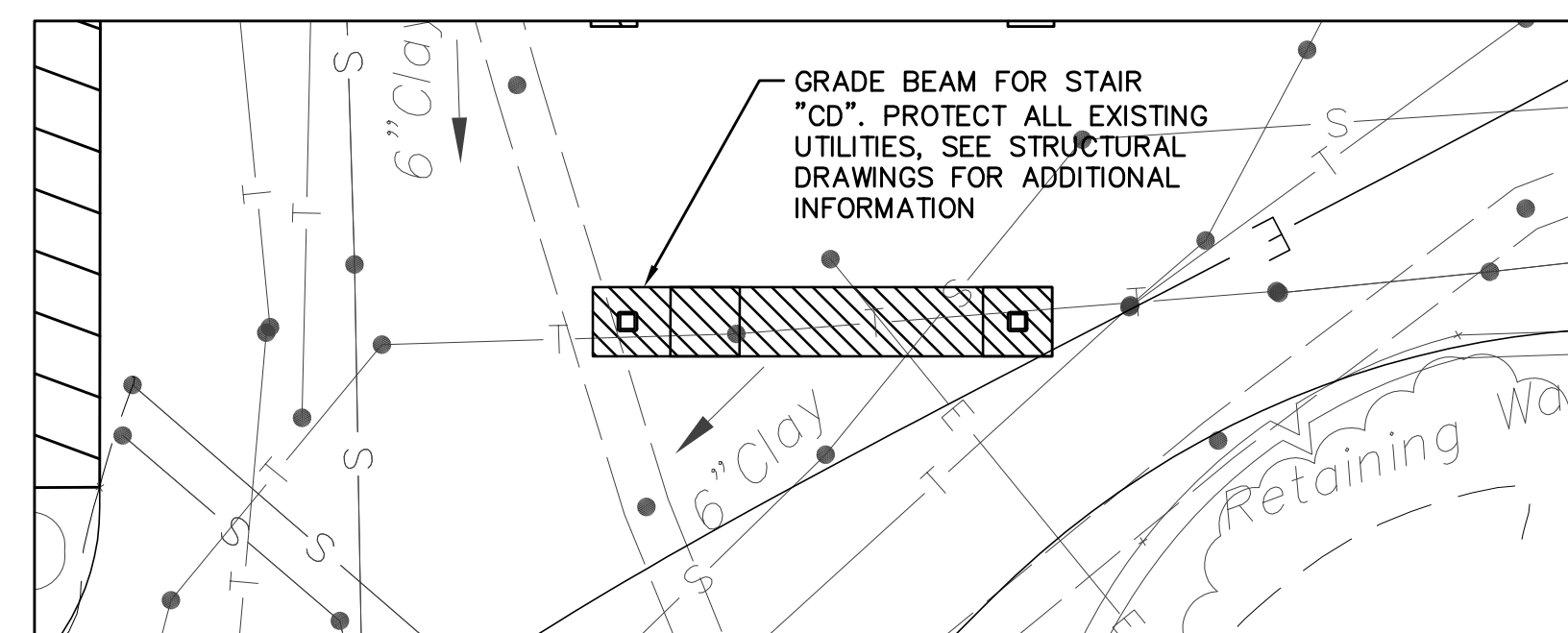
**NOTE:**  
HAND DIG AROUND ALL UTILITIES



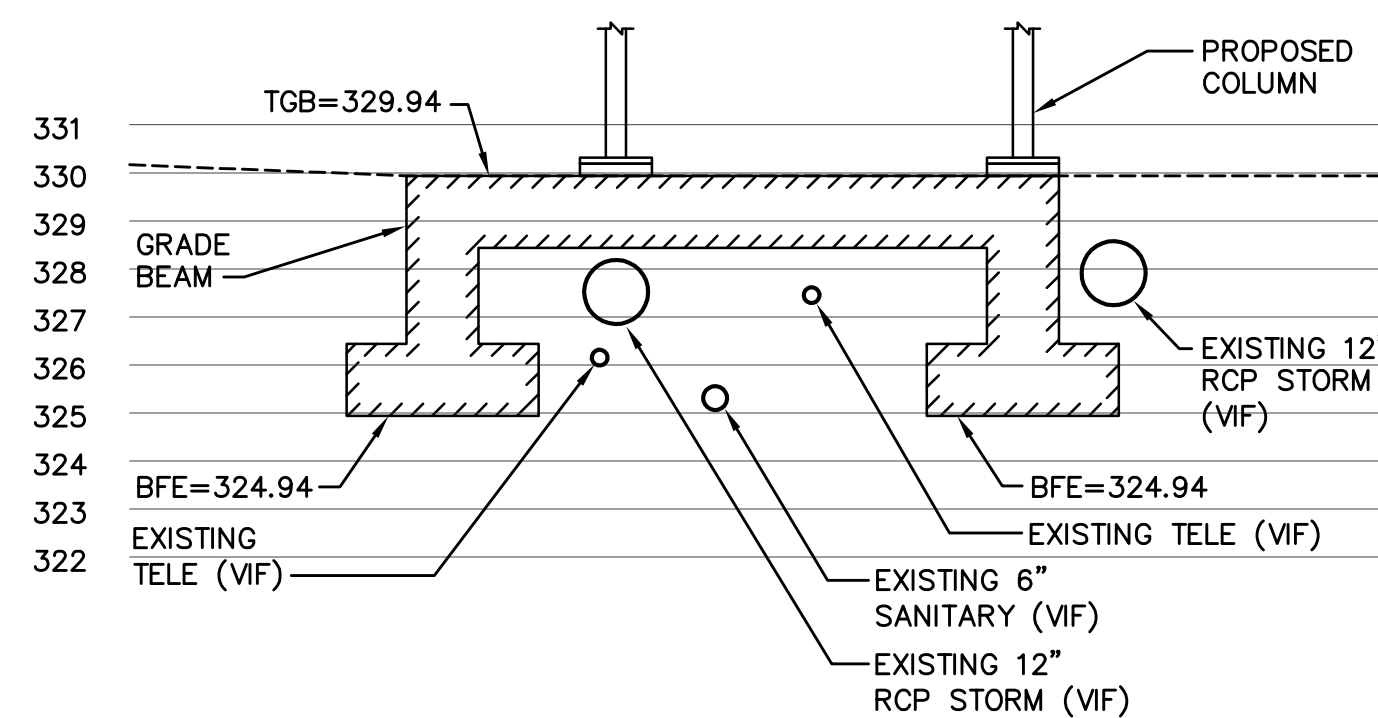
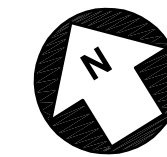
2 GRADE BEAM "AB" PLAN  
C-2 1/4" = 1'



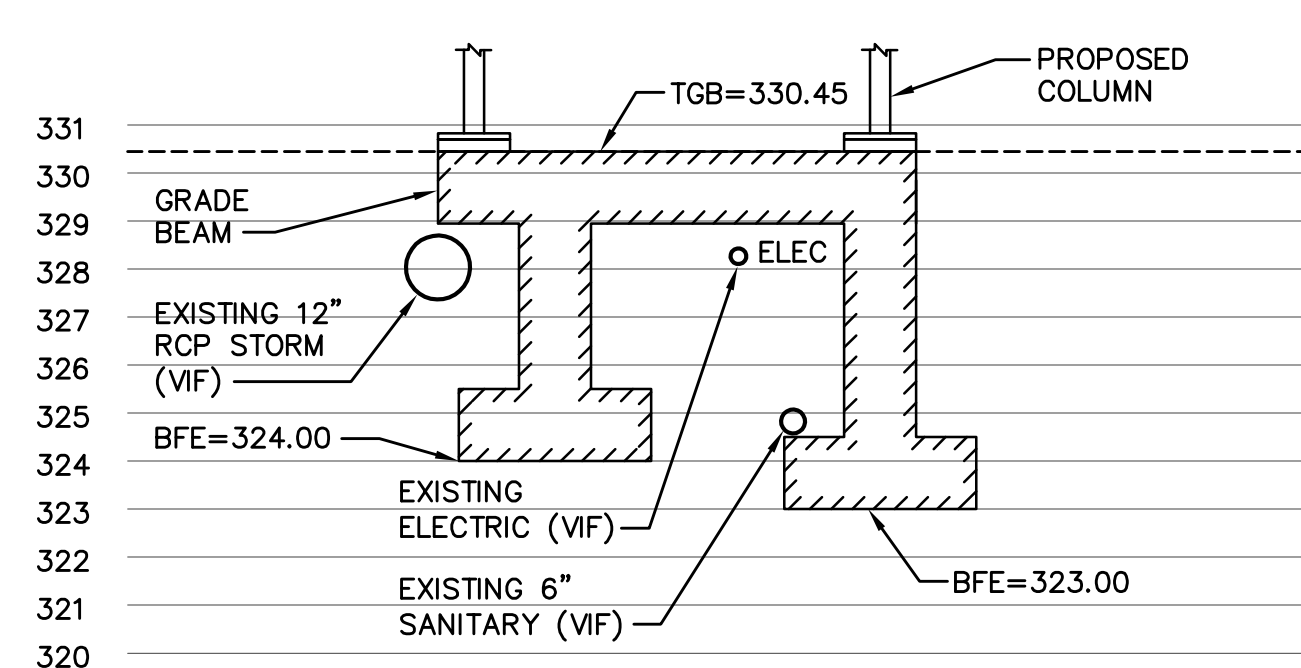
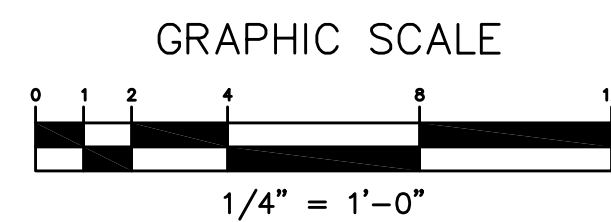
**NOTE:**  
SEE STRUCTURAL DRAWINGS FOR FOOTING, PIER, AND GRADE BEAM REQUIREMENTS.



3 GRADE BEAM "CD" PLAN  
C-2 1/4" = 1'



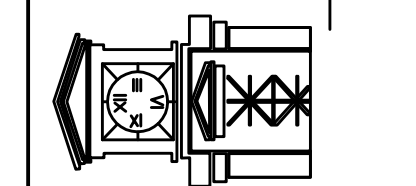
4 GRADE BEAM "AB" PROFILE  
C-2 1/4" = 1'



5 GRADE BEAM "CD" PROFILE  
C-2 1/4" = 1'

**NOTES:**

1. PROPOSED GRADES INDICATE INTENT. THE CONTRACTOR SHALL VERIFY ELEVATIONS AND MAKE FIELD ADJUSTMENTS AS REQUIRED AND AUTHORIZED BY THE OWNER, TO MEET FIELD CONDITIONS AND TO PROVIDE POSITIVE SURFACE DRAINAGE TOWARD NEW OR EXISTING DRAINAGE INLETS. ADJUST EXISTING DRAINAGE STRUCTURES TOP ELEVATIONS AS REQUIRED.
2. HANDICAP ACCESSIBLE ROUTE MUST COMPLY WITH CITY AND STATE REQUIREMENTS.
3. UTILITIES ARE SHOWN FOR REFERENCE ONLY.
4. FINAL TOP OF FRAME ELEVATIONS FOR EXISTING DRAINAGE STRUCTURES NEED TO BE ADJUSTED TO COORDINATE WITH SITE CONDITIONS AND FINAL GRADING (TYPICAL).
5. INFORMATION REGARDING THE LOCATION OF EXISTING UTILITIES HAS BEEN BASED UPON AVAILABLE INFORMATION AND MAY BE INCOMPLETE AND WHERE SHOWN SHOULD BE CONSIDERED APPROXIMATE.
6. LOCATIONS OF EXISTING UTILITIES SHOWN ON PROFILE DRAWINGS NOT RELATED TO STORM OR SANITARY I.E. "ELECTRICAL", "TELECOMMUNICATIONS", "GAS" ETC. ARE BASED ON ASSUMED TYPICAL COVER REQUIREMENTS AND HAVE NOT BEEN FIELD VERIFIED.
7. LOCATIONS OF EXISTING STORM AND SANITARY SHOWN ON PROFILE DRAWINGS ARE BASED ON INVERTS PROVIDED BY THE SURVEY AND CALCULATED PIPE SLOPES TO DETERMINE INVERT ELEVATIONS AT CROSSINGS OF PROPOSED UTILITIES.
8. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY LOCATIONS OF EXISTING UTILITIES PRIOR TO INSTALLATION OF NEW WORK. MEANS AND METHODS FOR VERIFICATION OF EXISTING UTILITIES TO BE DETERMINED BY THE CONTRACTOR AND COORDINATED WITH THEIR CONSTRUCTION ACTIVITIES. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES AT A MINIMUM OF THREE (3) BUSINESS DAYS IN ADVANCE OF SCHEDULED INSTALLATION OF NEW WORK. ANY NEW WORK THAT IS INSTALLED WITHOUT PRIOR VERIFICATION OF EXISTING UTILITIES THAT REQUIRES REMOVAL AND REINSTALLATION SHALL BE PERFORMED AT NO COST TO THE OWNER.



	BID SET	3/7/18
	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

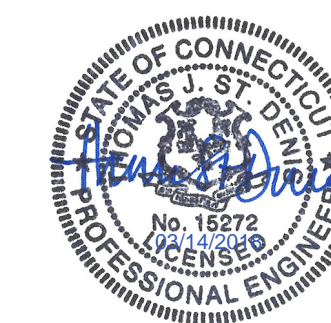
PROJECT NAME:

**Low Rise  
Courtyard  
Improvements**

DRAWING NAME:

**STAIR PLAN**

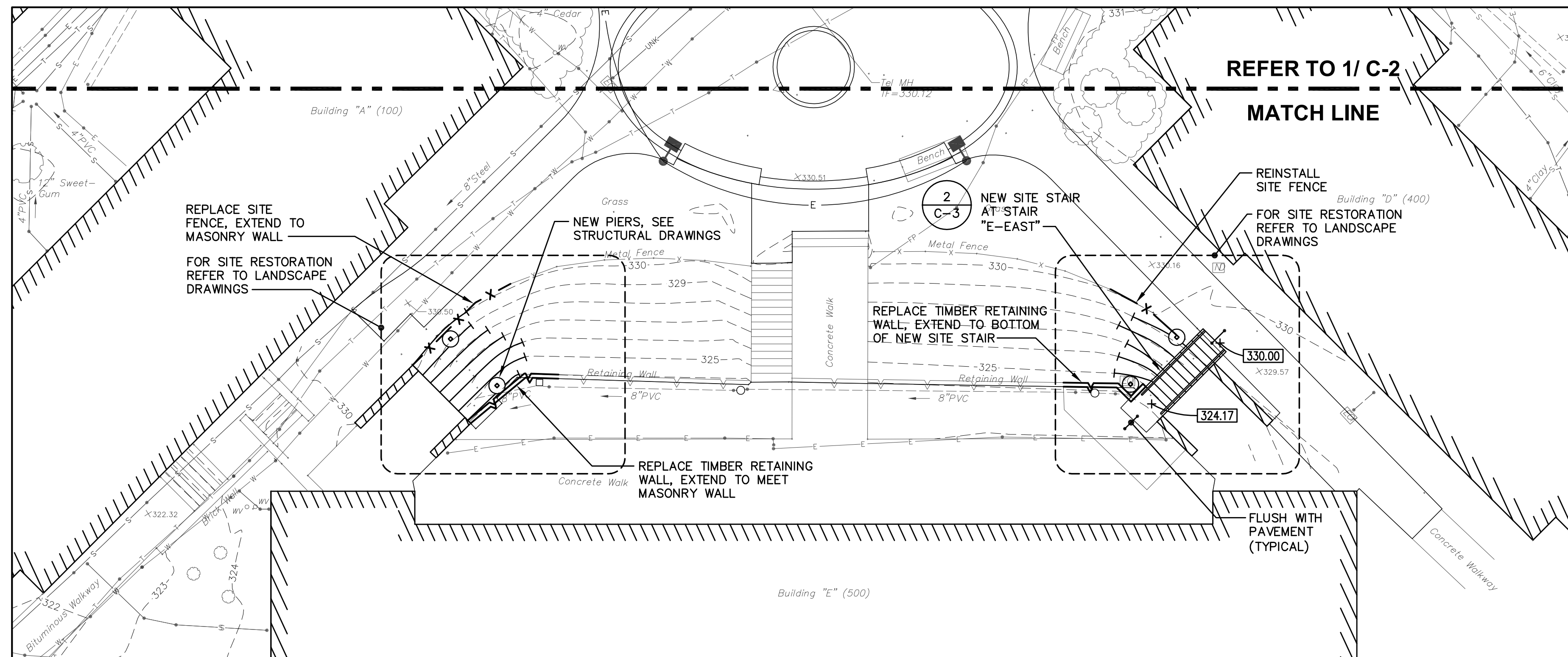
Project No.:	ECSU 2016-9 (Phase II)
Date:	12/6/2017
Scale:	AS NOTED
Plot Size:	24 x 36



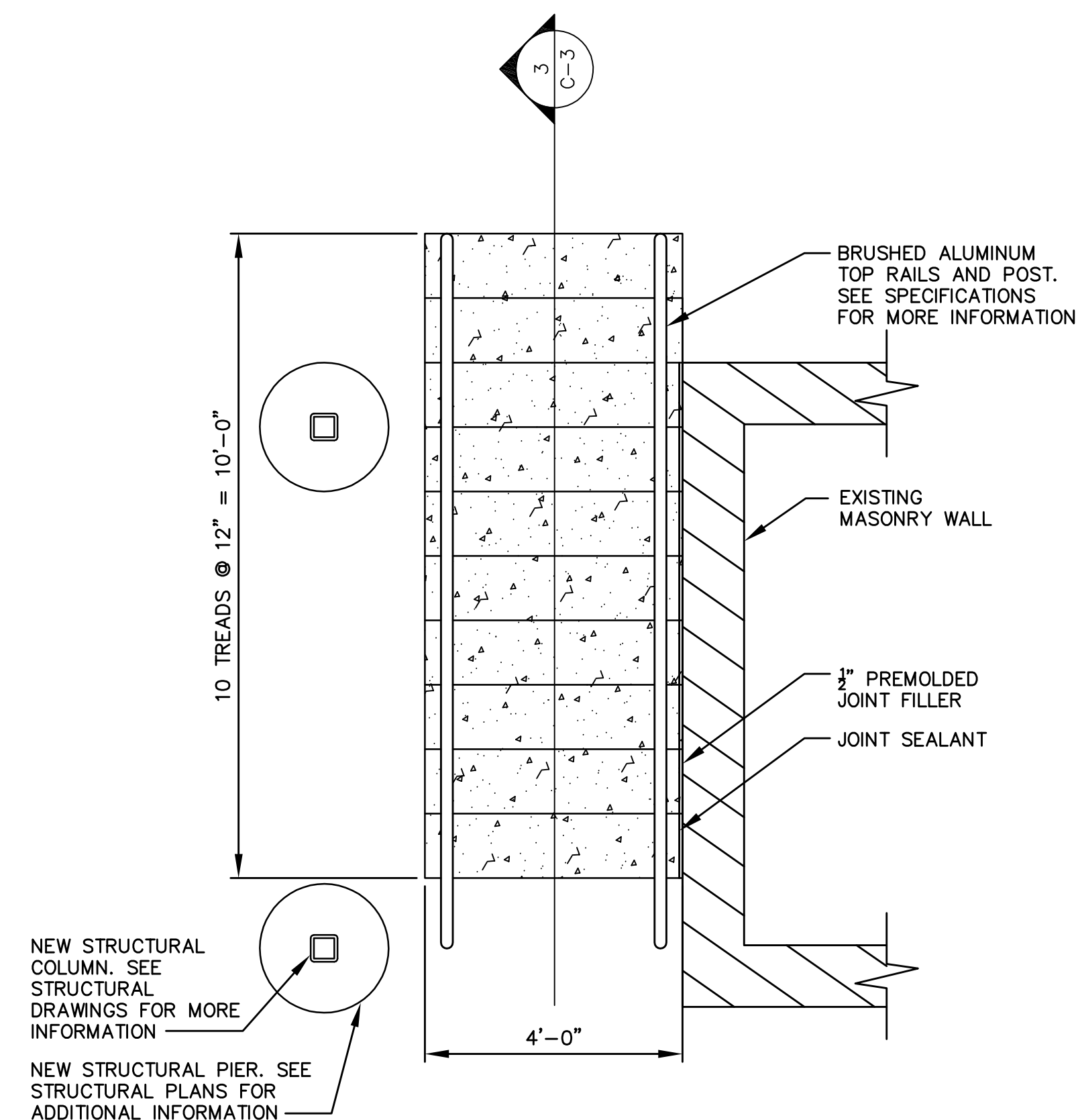
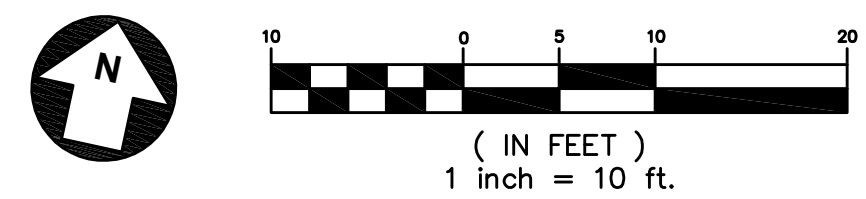
**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

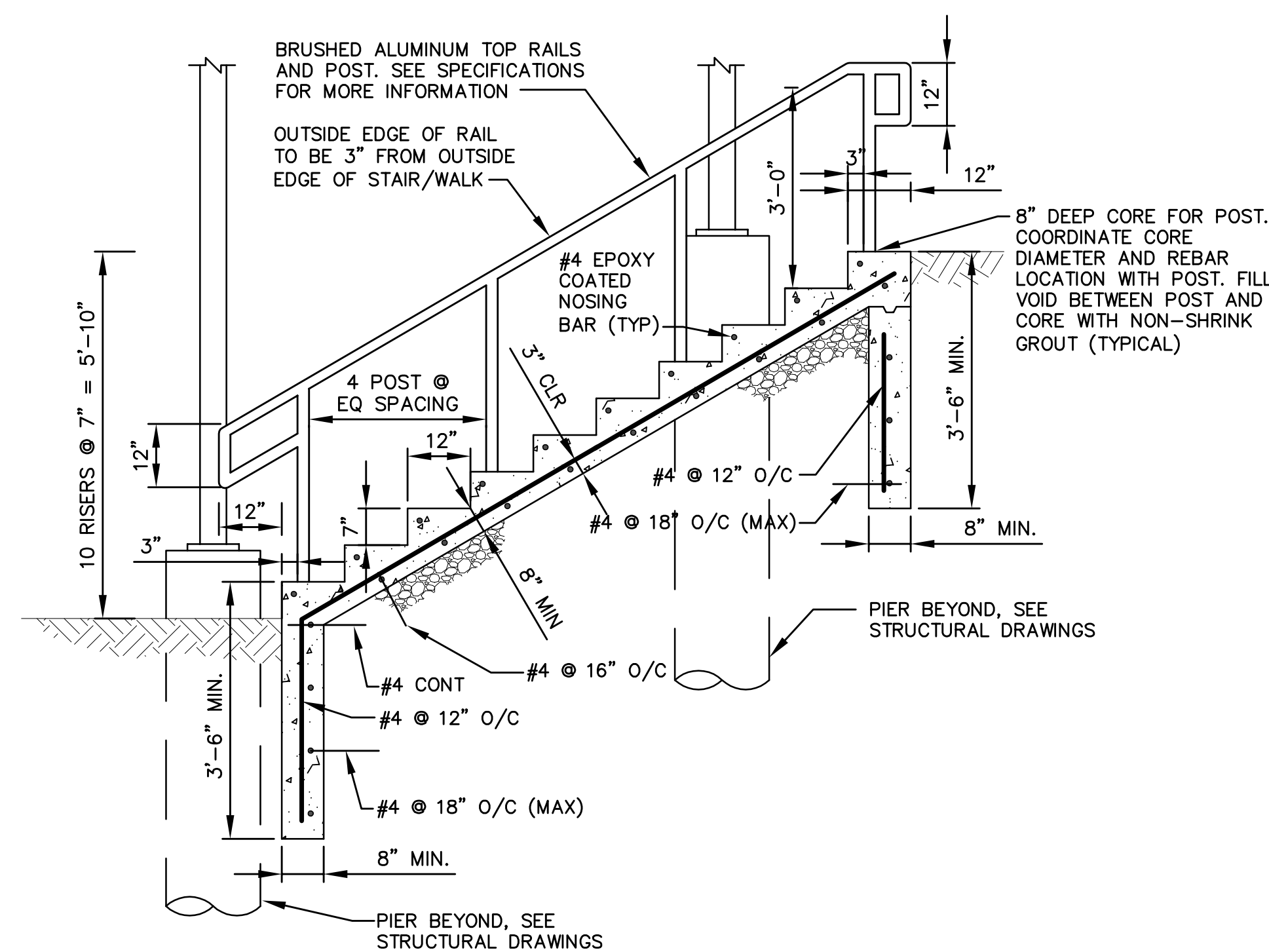




1 NEW SITE STAIRS "E-WEST" AND "E-EAST"  
C-3 1" = 10'



2 SITE STAIR PLAN VIEW  
C-3 NOT TO SCALE



3 SITE STAIR PROFILE VIEW  
C-3 NOT TO SCALE

**NOTES:**

- PROPOSED GRADES INDICATE INTENT. THE CONTRACTOR SHALL VERIFY ELEVATIONS AND MAKE FIELD ADJUSTMENTS AS REQUIRED AND AUTHORIZED BY THE OWNER, TO MEET FIELD CONDITIONS AND TO PROVIDE POSITIVE SURFACE DRAINAGE TOWARD NEW OR EXISTING DRAINAGE INLETS. ADJUST EXISTING DRAINAGE STRUCTURES TOP ELEVATIONS AS REQUIRED.
- HANDICAP ACCESSIBLE ROUTE MUST COMPLY WITH CITY AND STATE REQUIREMENTS.
- UTILITIES ARE SHOWN FOR REFERENCE ONLY.
- FINAL TOP OF FRAME ELEVATIONS FOR EXISTING DRAINAGE STRUCTURES NEED TO BE ADJUSTED TO COORDINATE WITH SITE CONDITIONS AND FINAL GRADING (TYPICAL).
- INFORMATION REGARDING THE LOCATION OF EXISTING UTILITIES HAS BEEN BASED UPON AVAILABLE INFORMATION AND MAY BE INCOMPLETE AND WHERE SHOWN SHOULD BE CONSIDERED APPROXIMATE.
- LOCATIONS OF EXISTING UTILITIES SHOWN ON PROFILE DRAWINGS NOT RELATED TO STORM OR SANITARY I.E. "ELECTRICAL", "TELECOMMUNICATIONS", "GAS" ETC. ARE BASED ON ASSUMED TYPICAL COVER REQUIREMENTS AND HAVE NOT BEEN FIELD VERIFIED.
- LOCATIONS OF EXISTING STORM AND SANITARY SHOWN ON PROFILE DRAWINGS ARE BASED ON INVERTS PROVIDED BY THE SURVEY AND CALCULATED PIPE SLOPES TO DETERMINE INVERT ELEVATIONS AT CROSSINGS OF PROPOSED UTILITIES.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY LOCATIONS OF EXISTING UTILITIES PRIOR TO INSTALLATION OF NEW WORK. MEANS AND METHODS FOR VERIFICATION OF EXISTING UTILITIES TO BE DETERMINED BY THE CONTRACTOR AND COORDINATED WITH THEIR CONSTRUCTION ACTIVITIES. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES AT A MINIMUM OF THREE (3) BUSINESS DAYS IN ADVANCE OF SCHEDULED INSTALLATION OF NEW WORK. ANY NEW WORK THAT IS INSTALLED WITHOUT PRIOR VERIFICATION OF EXISTING UTILITIES THAT REQUIRES REMOVAL AND REINSTALLATION SHALL BE PERFORMED AT NO COST TO THE OWNER.

BID SET	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue Date

PROJECT NAME:  
**Low Rise Courtyard Improvements**

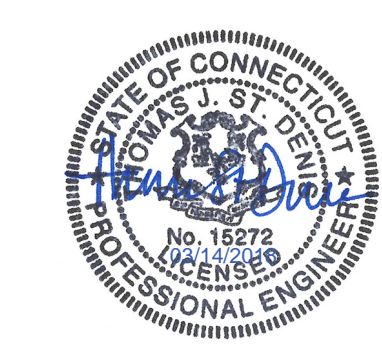
DRAWING NAME:  
**STAIR PLAN**

Project No.:  
**ECSU 2016-9 (Phase II)**

Date: **12/6/2017** Drawing No.: **C-3**

Scale: **AS NOTED**

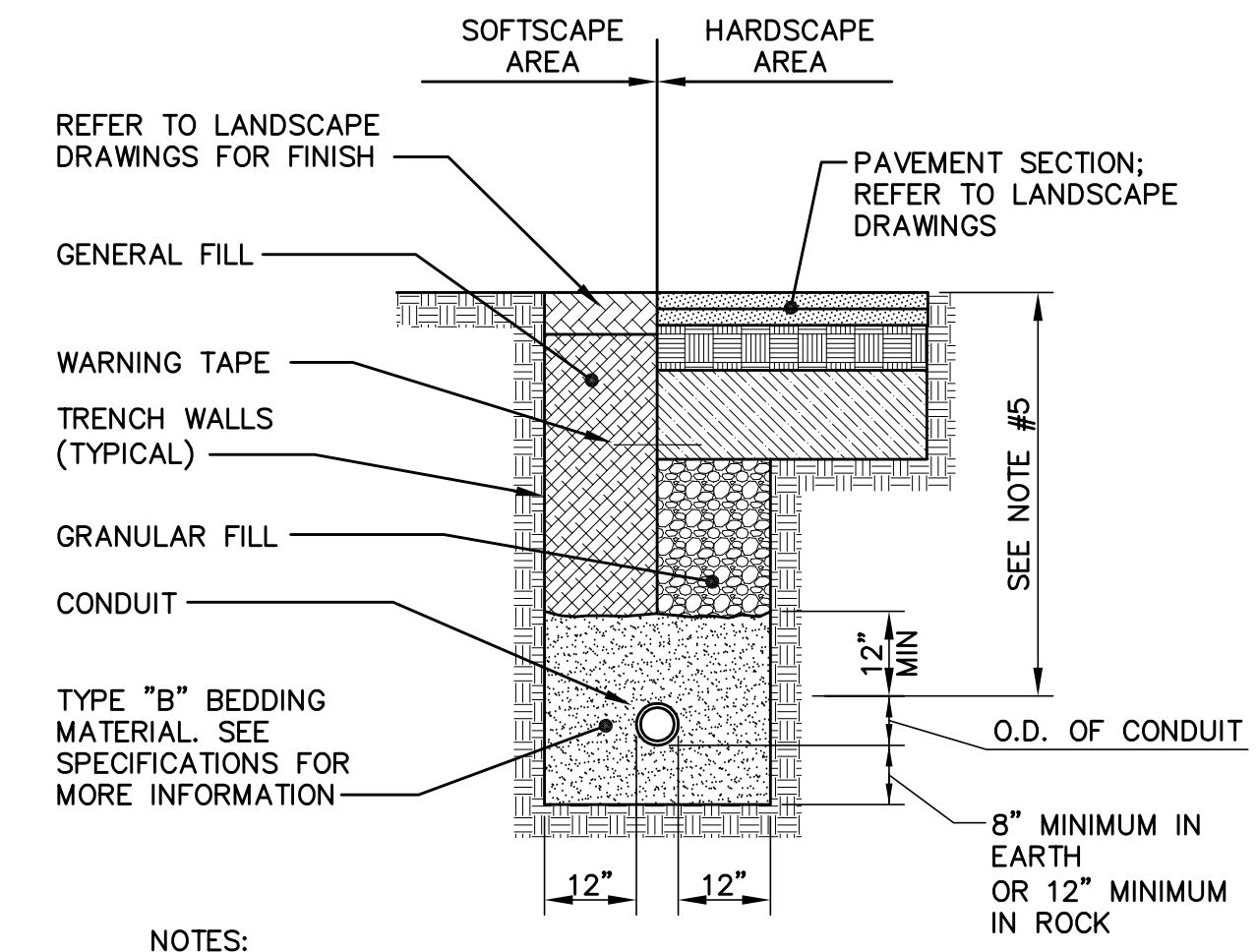
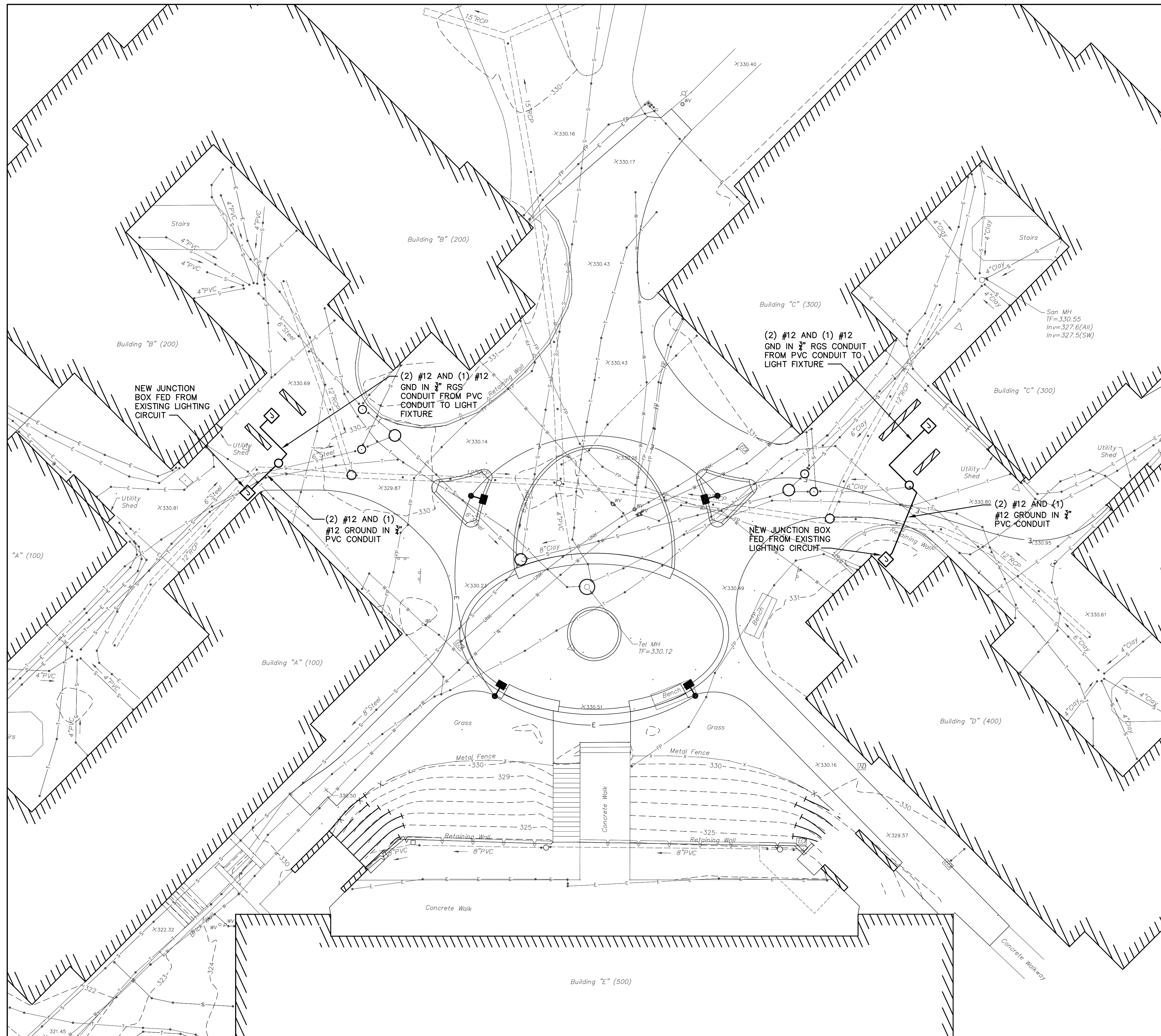
Plot Size: **24 x 36**





# EASTERN CONNECTICUT STATE UNIVERSITY

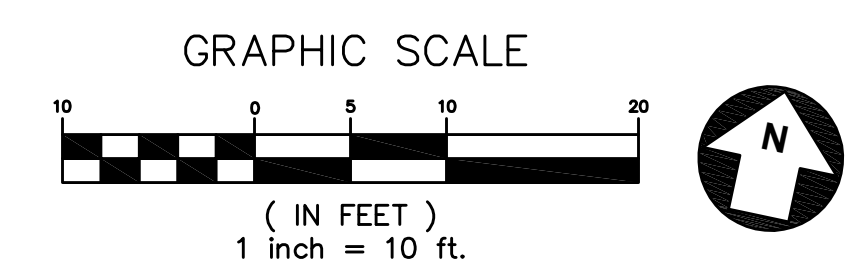
Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226



- NOTES:**
1. SEE SITE UTILITY PLANS FOR NUMBER OF CONDUITS IN EACH DUCTBANK.
  2. SEE SPECIFICATIONS FOR CLEARANCES, SPACER DETAILS, BACKFILL, AND WARNING TAPE INFORMATION.
  3. INSTALL TOP OF CONDUIT A MINIMUM OF 24 INCHES AND A MAXIMUM OF 30 INCHES BELOW FINISHED GRADE, UNLESS OTHERWISE INDICATED.

**1** **TYPICAL DIRECT BURY CONDUIT TRENCH SECTION**  
C-4 NOT TO SCALE

- UTILITY GENERAL NOTES:**
1. ALL SITE DISTURBANCE DUE TO LAYOUT OF SITE LIGHTING WIRING SHALL BE RESTORED TO EXISTING CONDITIONS.
  2. FOR UTILITY TRENCH DETAILS, REFER TO 1/E-1
  3. EXISTING MANHOLES ARE TO BE RESET AS REQUIRED TO MATCH NEW GRADES.
  4. FINAL TOP OF FRAME ELEVATIONS FOR NEW UTILITY STRUCTURES MAY NEED TO BE FIELD ADJUSTED TO COORDINATE WITH SITE CONDITIONS AND FINAL GRADING (TYPICAL).



	BID SET	3/7/18
	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

**PROJECT NAME:**  
**Low Rise Courtyard Improvements**

**DRAWING NAME:**  
**ELECTRIC PLAN**

Project No.: **ECSU 2016-9 (Phase II)**  
 Date: **12/6/2017**  
 Scale: **AS NOTED**  
 Plot Size: **24 x 36**



**BVH**  
integrated services  
206 West Newberry Road  
Bloomfield, CT 06002  
Tel: (860) 286-9171 www.bvhis.com



**STRUCTURAL GENERAL NOTES**

**GENERAL**

- THE STRUCTURE IS DESIGNED TO BE STABLE AND SELF SUPPORTING AT THE COMPLETION OF CONSTRUCTION. TEMPORARY BRACES, GUYS, TIE-DOWNS, SHORING, ETC. DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND DETAILS. ALSO, SEE STRUCTURAL SPECIFICATIONS.
- STRUCTURAL CONDITIONS WHERE SECTIONS OR DETAILS ARE CUT SHALL ALSO APPLY TO COMPARABLE SIMILAR LOCATIONS ELSEWHERE ON THE PLANS REGARDLESS IF THE SECTION MARK IS NOT INDICATED. DETAILS SHOWN APPLY TO ALL SIMILAR CONDITIONS UNLESS OTHERWISE NOTED. DO NOT SCALE DRAWINGS.
- CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, DIMENSIONS, ELEVATIONS, QUANTITIES, ETC., IN THE FIELD PRIOR TO BEGINNING OF ANY NEW CONSTRUCTION. NOTIFY ENGINEER/ARCHITECT OF ANY DISCREPANCIES FOUND IMMEDIATELY.
- CONTRACTOR SHALL VERIFY AND COORDINATE THE DIMENSIONS, LAYOUT AND DETAILS OF ALL OPENINGS, SLEEVES, SLAB DEPRESSIONS, DRAINS, SLOPED SLABS, ETC. CONTRACTOR SHALL REVIEW ALL OF THE CONTRACT DOCUMENTS AND CONSULT WITH THE SUBCONTRACTORS AND SUPPLIERS TO OBTAIN THE REQUIRED INFORMATION. OPENINGS, SLEEVES, SLAB DEPRESSIONS, DRAINS, SLOPED SLABS, ETC. THAT VARY FROM OR HAVE NOT BEEN INDICATED ON THE STRUCTURAL DOCUMENTS, SHALL BE INSTALLED AT NO ADDITIONAL COST, ONLY AFTER APPROVAL BY THE STRUCTURAL ENGINEER HAS BEEN OBTAINED.
- CONTRACTOR SHALL VERIFY AND COORDINATE THE FINAL LOCATION, LAYOUT, AND DETAILS OF ALL FRAMING FOR DRAINS, ETC. THE CONTRACTOR SHALL CONSULT WITH THE SUBCONTRACTORS AND SUPPLIERS TO OBTAIN THE REQUIREMENTS FOR EQUIPMENT AND/OR MATERIALS THAT WILL BE PROVIDED FOR THE PROJECT. VARIATIONS TO THE FRAMING INDICATED ON THE STRUCTURAL DOCUMENTS INCLUDING ADDITIONAL SUPPORT AT MECHANICAL SHIPPING SPLITS SHALL BE COORDINATED AND INSTALLED AT NO ADDITIONAL COST, AFTER REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER IS OBTAINED.

**CODES**

- ALLOWABLE UNIT STRESSES AND DESIGN CRITERIA IN ACCORDANCE WITH THE FOLLOWING -
  - A) 'THE 2016 CONNECTICUT STATE BUILDING CODE'.
  - B) 'MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES', ASCE/SEI 7-10.
  - C) 'SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS', AISC 360-10.
  - D) 'BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE', ACI 318-11.

**DESIGN CRITERIA (NEW WORK ONLY)**

- LIVE LOADS:
  - STAIR:
    - GROUND SNOW LOAD (Pg) 30 PSF
    - FLAT-ROOF SNOW LOAD (P<sub>f</sub>) 40 PSF + DRIFT WHERE APPLICABLE
    - SNOW EXPOSURE FACTOR (C<sub>e</sub>) 1.0
    - SNOW THERMAL FACTOR (C<sub>t</sub>) 1.2
    - SNOW LOAD IMPORTANCE FACTOR (I<sub>s</sub>) 1.0
  - FLOOR:
    - STAIR 100 PSF
- LATERAL LOADS:
  - WIND DESIGN DATA:
    - ULTIMATE WIND SPED (V<sub>ult</sub>) 130 MPH
    - NOMINAL WIND SPED (V<sub>asd</sub>) 101 MPH
    - WIND IMPORTANCE FACTOR (I<sub>w</sub>) 1.0
    - BUILDING RISK CATEGORY II
    - WIND EXPOSURE C
    - INTERNAL PRESSURE COEFFICIENT (GC/PI) +/- 0.00 FOR STAIRS 'A', 'B', 'C', AND 'D' +/- 0.55 FOR STAIRS 'E-WEST', 'E-EAST', 'AB', AND 'CD'
    - COMPONENTS AND CLADDING WIND DESIGN PRESSURE ASCE 7-10 CHAPTER 30
  - EARTHQUAKE DESIGN DATA:
    - SEISMIC IMPORTANCE FACTOR (I<sub>e</sub>) 1.0
    - BUILDING RISK CATEGORY II
    - MAPPED SPECTRAL ACCEL AT SHORT PERIODS (SS) 0.173
    - MAPPED SPECTRAL ACCEL AT 1-SEC PERIOD (S1) 0.062
    - SITE CLASS D
    - DESIGN SPECTRAL ACCEL AT SHORT PERIODS (SDS) 0.185
    - DESIGN SPECTRAL ACCEL AT 1 SEC PERIOD (SD1) 0.099
    - SEISMIC DESIGN CATEGORY B
    - BASIC SEISMIC-FORCE-RESISTING SYSTEM(S) STRUCTURAL STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
- PRESUMED SOIL BEARING PRESSURE 1.25 TSF (ASSUMED)
  - FROST DEPTH 3'-6"
- W SHAPES, STRUCTURAL STEEL SECTIONS UNLESS OTHERWISE NOTED. ASTM A 992, F<sub>y</sub>=50 KSI
- ROLLED CHANNELS, ANGLES, PLATES AND SHAPES UNLESS OTHERWISE NOTED. ASTM A 36, F<sub>y</sub>=36 KSI
- MOMENT FRAME CONTINUITY PLATES ASTM A 572 F<sub>y</sub>=50 KSI
- HOLLOW STRUCTURAL SECTIONS (HSS) (RECTANGULAR) ASTM A 500, GRADE B GRADE C (ROUND), F<sub>y</sub>=46 KSI
- STRUCTURAL STEEL PIPES ASTM A 53, GRADE B F<sub>y</sub>=35 KSI
- WELDED WIRE FABRIC ASTM A 185 F<sub>y</sub>=60 KSI
- REINFORCING STEEL ASTM A 615 GRADE 60, F<sub>y</sub>=60 KSI
- WELDABLE REINFORCING STEEL ASTM A 706 (WELDED PER ANSII/AWS D1.4) GRADE 60, F<sub>y</sub>=60 KSI

**DESIGN CRITERIA (NEW WORK ONLY)**

- CONCRETE FOR FOUNDATION WALLS, FOOTINGS, AND GRADE BEAMS f'<sub>c</sub>=4,500 PSI (UNLESS OTHERWISE NOTED)
- CONCRETE FOR SLABS ON GRADE, SLABS ON METAL DECK AND STRUCTURAL SLABS f'<sub>c</sub>=4,500 PSI (UNLESS OTHERWISE NOTED)
- STEEL FRAME - THE STEEL FRAME SHALL BE TYPE 2 CONSTRUCTION, WITH THE EXCEPTION OF RIGID MOMENT CONNECTIONS AS INDICATED ON CONSTRUCTION DOCUMENTS.

**FOUNDATION**

- FOOTINGS ARE INTENDED TO BEAR ON SUITABLE UNDISTURBED MATERIAL UNLESS OTHERWISE NOTED. THE SOIL SUBGRADE FOR ALL FOOTINGS AND SLABS ON GRADE SHALL BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER OR THE OWNER'S TESTING LABORATORY IMMEDIATELY PRIOR TO PLACING FOOTING FORMS AND CONCRETE. CONTRACTOR SHALL NOTIFY THE STRUCTURAL AND GEOTECHNICAL ENGINEERS WHERE PROPOSED FOOTING ELEVATIONS WOULD BEAR ON UNSUITABLE MATERIAL AND PROCEED AS DIRECTED.
- DO NOT USE EQUIPMENT WEIGHING MORE THAN 5,000 POUNDS WITHIN (10') FEET OF ALL WALLS. EQUIPMENT WEIGHING MORE THAN 5,000 POUNDS SHALL NOT BE USED ADJACENT TO WALLS, EXCEPT AS EXPRESSLY APPROVED BY THE ENGINEER.
- NO FOOTING OR SLABS SHALL BE PLACED INTO OR AGAINST SUBGRADE CONTAINING FREE WATER, FROST OR ICE.
- PROVIDE AN ADEQUATE DEWATERING SYSTEM TO MAINTAIN DRY EXCAVATIONS.
- ANY CHANGES IN THE DIMENSIONS OR DETAILS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND STRUCTURAL ENGINEER. ALL EXISTING CONSTRUCTION AND UTILITIES SHALL BE SAFEGUARDED AND PROTECTED FROM DAMAGE OR SETTLEMENT DURING EXCAVATION AND CONSTRUCTION. ALL DIMENSIONS AND DETAILS RELATING TO THE EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
- FOOTINGS SHALL BE CENTERED ON COLUMN LINES UNLESS OTHERWISE NOTED. WALL FOOTINGS SHALL BE CENTERED ON WALLS UNLESS OTHERWISE NOTED.

**CONCRETE**

- DOWEL ALL VERTICAL REINFORCING STEEL IN WALLS, COLUMNS, PIERS, PIERS INTEGRAL WITH WALLS, ETC. INTO FOOTINGS.
- AIR ENTRAIN ALL CONCRETE EXPOSED TO FREEZE THAW ACTION.
- ALL CONCRETE REINFORCING SHALL BE DETAILED, FABRICATED, LABELED, SUPPORTED AND SPACED IN FORMS AND SECURED IN PLACE IN ACCORDANCE WITH ACI PROCEDURES AND THE REQUIREMENTS OF THE CODES IN THE PREVIOUSLY OUTLINED "CODES" SECTION AND THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI-315.
- CHECKED SHOP DRAWINGS SHOWING REINFORCING DETAILS, INCLUDING CONSTRUCTION JOINTS, OPENINGS, REINFORCING SIZES, SPACING AND PLACEMENT SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO FABRICATION. UNCHECKED SHOP DRAWINGS WILL BE REJECTED WITHOUT REVIEW.
- ALL WELDED WIRE FABRIC SHALL BE LAPPED TWO (2)-FULL MESH PANELS AND TIED SECURELY.
- NO CALCIUM CHLORIDE SHALL BE USED IN ANY CONCRETE.
- ALL EXTERIOR SLABS ON GRADE, AND ALL STRUCTURAL SLABS SHALL CONTAIN 6x6-W2.9xW2.9 WELDED WIRE FABRIC MINIMUM, UNLESS OTHERWISE NOTED IN DETAILS OR ON PLAN.

**CLEAR COVER FOR REINFORCING (UNLESS OTHERWISE NOTED)**

A) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3 INCHES
B) FORMED CONCRETE EXPOSED TO GROUND OR WEATHER -	
#6 AND LARGER	2 INCHES
#5 AND SMALLER	1 1/2 INCHES
C) BEAMS AND COLUMNS NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND (PRIMARY REINFORCING, TIES AND STIRRUPS)	1 1/2 INCHES
D) STRUCTURAL SLABS, WALLS AND JOISTS NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	3/4 INCHES

**STRUCTURAL STEEL**

- ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERRECTED IN ACCORDANCE WITH THE REFERENCED EDITION OF THE AISC 'SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS'.
- ALL WELDING ELECTRODES SHALL BE E70XX UNLESS OTHERWISE NOTED.
- ALL BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 325 OR ASTM A 490.
- ALL WELDING SHALL BE BY CERTIFIED WELDERS AND SHALL CONFORM TO AWS 'CODE OF ARC AND GAS WELDING IN BUILDING CONSTRUCTION', LATEST EDITION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ERECTION PROCEDURES AND SEQUENCES INCLUDING TEMPORARY BRACING AND SHORING.
- THERE SHALL BE NO FIELD CUTTING OF STRUCTURAL STEEL MEMBERS WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.
- ANY ADDITIONAL STEEL REQUIRED BY THE CONTRACTOR FOR ERECTION PURPOSES AND SITE ACCESS OR MATERIALS FOR STOCKPILING STEEL SHALL BE PROVIDED AT NO COST TO THE OWNER. ALL SUCH ADDITIONAL STEEL SHALL BE REMOVED BY THE CONTRACTOR UNLESS APPROVED BY THE OWNER IN WRITING.
- FABRICATE AND ERRECT ALL BEAMS WITH CAMBER UP.
- SHOP AND FIELD TESTING OF WELDS AND BOLTS BY TESTING LAB SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 051200, SHOP QUALITY CONTROL, AND FIELD QUALITY CONTROL.
- BEAM END CONNECTIONS SHALL BE SELECTED AND DETAILED FOR 1.25 TIMES THE REACTIONS INDICATED. A MINIMUM CONNECTION CAPACITY OF 6 KIPS SHALL BE PROVIDED. REACTIONS GOVERNED BY THE 6K MINIMUM ARE DESIGNATED AS "<XXXXXX>" ON PLAN, AND NEED NOT BE INCREASED BY THE FACTOR OF 1.25.
- CONNECTIONS WHERE NO END REACTIONS ARE INDICATED MAY BE ESTIMATED FOR A REACTION EQUAL TO ONE HALF THE ALLOWABLE UNIFORM LOAD FOR THE BEAM SPAN. CONNECTIONS FOR COMPOSITE BEAMS WITH NO END REACTION INDICATED MAY BE ESTIMATED FOR 1.5 TIMES ONE HALF THE ALLOWABLE UNIFORM LOAD FOR THE BEAM SPAN. FOR FINAL DESIGN PURPOSES, THE FABRICATOR SHALL SUBMIT AN RFI TO THE ENGINEER TO REFINISH VALUES FOR ANY REACTIONS THAT ARE NOT INDICATED.
- STRUCTURAL STEEL FABRICATOR SHALL SUBMIT TO ENGINEER FOR REVIEW CALCULATIONS FOR EACH TYPE CONNECTION UTILIZED ON THE PROJECT TWO (2) WEEKS PRIOR TO SUBMITTING DETAILED SHOP DRAWINGS. FABRICATOR SHALL ALSO SUBMIT TO THE ENGINEER ANY SHOP STANDARD DETAILS APPLICABLE TO CONNECTIONS FOR USE ON THE PROJECT. SHOP DRAWINGS WILL NOT BE REVIEWED UNTIL THIS SUBMISSION IS MADE.
- ALL FIELD WELDS SHALL BE SCRAPED AND CLEANED FREE OF SLAG BY WELDER/ERECTOR TO ENABLE VISUAL WELD INSPECTION.
- FIELD WELDING TO GALVANIZED STEEL: PRIOR TO FIELD WELDING CONNECTIONS, ZINC COATING AT ALL WELD CONNECTION AREAS SHALL BE REMOVED BY BURNING WITH OXYGEN FUEL GAS TORCH OR GRINDING TO BARE STEEL, APPLY A MINIMUM OF TWO COATS OF ZINC-RICH PAINT AFTER CLEANING COMPLETED WELD.
- ALL STRUCTURAL STEEL INCLUDING BEAMS, COLUMNS, PLATES, ANCHOR RODS, BOLTS, NUTS, ETC. TO BE HOT DIPPED GALVANIZED

**POST INSTALLED ANCHORS (PIA)**

- POST INSTALLED ADHESIVE ANCHORS SHALL BE INSTALLED USING A TWO-COMPONENT MATERIAL MEETING ASTM C 881 REQUIREMENTS. SEE PROJECT SPECIFICATIONS FOR ACCEPTABLE MANUFACTURERS AND PRODUCTS.
- POST INSTALLED MECHANICAL ANCHORS: SEE PROJECT SPECIFICATIONS FOR ACCEPTABLE MANUFACTURERS AND PRODUCTS.
- ALL POST INSTALLED ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- TESTING AGENCY SHALL RANDOMLY REVIEW ANCHORING INSTALLATION TO VERIFY CONFORMANCE WITH CONTRACT DOCUMENTS AND MANUFACTURER'S INSTALLATION REQUIREMENTS. INITIAL INSPECTIONS SHALL OCCUR AT FIRST APPLICATION FOR EACH TYPE OF ANCHOR TO VERIFY CONFORMANCE. THE NUMBER OF POST INSTALLED ANCHOR INSTALLATIONS TO BE WITNESSED BY THE OWNER'S TESTING AGENCY SHALL MEET THE FOLLOWING CRITERIA:
  - 4a) A MINIMUM OF 25% OF ADHESIVE ANCHOR INSTALLATIONS PER SUB CONTRACTOR SHALL BE WITNESSED. THE PERCENTAGE WITNESSED MAY BE MODIFIED BY THE STRUCTURAL ENGINEER OF RECORD, DEPENDING UPON INITIAL RESULTS.
  - 5) LOAD TESTING OF POST INSTALLED ANCHORS MAY BE REQUESTED BY THE STRUCTURAL ENGINEER OF RECORD FOLLOWING THE RESULT OF THE TESTING AGENCY'S INSTALLATION REPORTS. LOAD TESTING SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
  - 6) SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

**TEMPORARY SHORING**

- THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE PROJECT IS CONSTRUCTED TO PREPARE ALL SUBMITTALS REQUIRED AND TO BE FULLY RESPONSIBLE FOR DETAILED DESIGN AND CONSTRUCTION SPECIFICATIONS AND PROVIDE SUPERVISION DURING CONSTRUCTION OF THE TEMPORARY SHORING WORK.
- THE CONTRACTOR AND THE CONTRACTOR'S ENGINEER SHALL DESIGN, FURNISH, INSTALL AND PERFORM THE NECESSARY WORK REQUIRED TO SAFELY SUPPORT, PROTECT AND MAINTAIN EXISTING CONSTRUCTION. ANY MOVEMENT OR DAMAGE OF THE BUILDING OR STRUCTURE SHALL BE CORRECTED TO THE SATISFACTION OF THE OWNER AND ENGINEER AT THE SOLE EXPENSE OF THE CONTRACTOR.
- THE CONTRACTOR'S ENGINEER SHALL PREPARE A REPORT OF THE STRUCTURAL PRECONDITION SURVEY OF THE EXISTING BUILDING. THIS ON-SITE SURVEY SHALL BE DONE IN THE PRESENCE OF A REPRESENTATIVE FOR THE OWNER OF THE EXISTING BUILDING. THIS PRECONDITION SURVEY REPORT SHALL INCLUDE A DETAILED ON-SITE INSPECTION OF THE INTERIOR AND THE EXTERIOR OF THE BUILDING WITH PHOTOGRAPHS OF THE INTERIOR OF THE BUILDING SHOWING EXISTING CONDITIONS.
- THE CONTRACTOR'S ENGINEER SHALL SUBMIT A COMPLETE SEALED, DETAILED DESIGN IN THE FORM OF COMPUTATIONS AND WORKING SHOP DRAWINGS AND CALCULATIONS FOR REVIEW AND COMMENT BY THE ENGINEER. THE SUBMITTAL SHALL INCLUDE ALL CONSTRUCTION SEQUENCES, METHODS, DETAILS, SPECIFICATIONS, DESIGN LOADS AND OPERATIONS NECESSARY FOR PROPER EXECUTION OF THE TEMPORARY SHORING WORK. THE CONTRACTOR SHALL SCHEDULE A MINIMUM 15 DAYS FOR REVIEW.

**STRUCTURAL ABBREVIATIONS**

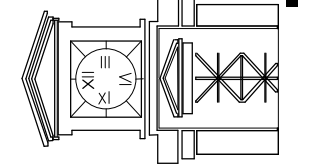
#	NUMBER OR POUND	K	KIP(S)
&	AND	L	ANGLE
@	AT	LG	LIGHT GAGE FRAMING
AESS	ARCHITECTURAL EXPOSED STRUCTURAL STEEL	LLH	LONG LEG HORIZONTAL
AFF	ABOVE FINISHED FLOOR	LLV	LONG LEG VERTICAL
ARCH	ARCHITECTURAL/ARCHITECT	LSH	LONG SIDE HORIZONTAL
AVG	AVERAGE	LSV	LONG SIDE VERTICAL
B/S	BOTH SIDES	MAX	MAXIMUM
BF	BRACE FRAME	MECH	MECHANICAL
BFE	BOTTOM OF FOOTING ELEVATION	MFR	MANUFACTURER
BLDG	BUILDING	MIN	MINIMUM
BM	BEAM	MISC	MISCELLANEOUS
BTM	BOTTOM	MO	MASONRY OPENING
C	CHANNEL	NTS	NOT TO SCALE
CANT	CANTILEVER	O/C	ON CENTER
CFMF	COLD-FORMED METAL FRAMING	OD	OUTSIDE DIAMETER
CJ	CONTROL JOINT	OF	OUTSIDE FACE
CL	CENTER LINE	OH	OPPOSITE HAND
CLR	CLEAR	OPP	OPPOSITE
CMU	CONCRETE MASONRY UNIT	P	CONCRETE PIER
CO	UNDERDRAIN CLEANOUT	PAF	POWDER ACTUATED FASTENER
COL	COLUMN	PEN	PENETRATION
CONC	CONCRETE	PIA	POST-INSTALLED ANCHOR
CONST	CONSTRUCTION	PL	PLATE
COORD	COORDINATE	QTY	QUANTITY
DEM	DEMOLITION	R	REACTION
DIA	DIAMETER	RAD	RADIUS
DIAG	DIAGONAL	RD	ROOF DRAIN
DM	DIMENSION	REINF	REINFORCEMENT
DOF	DECK OPENING FRAME	REQD	REQUIRED
DWGS	DRAWINGS	RL	ROOF DRAIN LEADER
EA	EACH	RTU	ROOF TOP UNIT
EACH END	EACH END	SECT	SECTION
EACH FACE	EACH FACE	SF	SQUARE FOOT
EXPANSION JOINT	EXPANSION JOINT	SIM	SIMILAR
ELEVATION	ELEVATION	SJ	SEISMIC JOINT
ELECTRICAL	ELECTRICAL	SL	SLOPE
EDGE OF SLAB	EDGE OF SLAB	SOG	SLAB ON GRADE
EQUAL	EQUAL	SPEC	SPECIFICATION
EACH WAY	EACH WAY	STR	STRUCTURAL
EXISTING	EXISTING	T&B	TOP AND BOTTOM
EXTERIOR	EXTERIOR	TS/SLAB	TOP OF SLAB ELEVATION
FD	FLOOR DRAIN	TCE	TOP OF CONCRETE ELEVATION
FDN	FOUNDATION	TGE	TOP OF GRADE BEAM ELEVATION
FF	FINISHED FLOOR	TPC	TOP OF PILE CAP ELEVATION
FF	FINISHED FLOOR	TPE	TOP OF PIER ELEVATION
FT	FOOTING STEP	TPL	TOP OF PLANK ELEVATION
FS	FOOT/FEET	TSE	TOP OF SHELF ELEVATION
FTG	FOOTING	TWE	TOP OF WALL ELEVATION
GALV	GALVANIZED	TYP	TYPICAL
GR	GRADE	UON	UNLESS OTHERWISE NOTED
HORIZ	HORIZONTAL	VERT	VERTICAL
HSS	HOLLOW STRUCTURAL SECTIONS	VIF	VERIFY IN FIELD
ID	INSIDE DIAMETER	W	WIDE FLANGE
IN	INCHES)	WI	WITH
INT	INTERIOR	WO	WITHOUT
INV	INVERT	WP	WORKING POINT
		WWF	WELDED WIRE FABRIC

**STRUCTURAL DRAWING LIST**

- S-1 GENERAL NOTES, ABBREVIATIONS
  - S-2 STAIR DEMOLITION PLAN
  - S-3 STAIR 'A' FOUNDATION AND FRAMING PLANS
  - S-4 STAIR 'B' FOUNDATION AND FRAMING PLANS
  - S-5 STAIR 'C' FOUNDATION AND FRAMING PLANS
  - S-6 STAIR 'D' FOUNDATION AND FRAMING PLANS
  - S-7 STAIR 'E-WEST' FOUNDATION AND FRAMING PLANS
  - S-8 STAIR 'E-EAST' FOUNDATION AND FRAMING PLANS
  - S-9 STAIR 'AB' FOUNDATION AND FRAMING PLANS
  - S-10 STAIR 'CD' FOUNDATION AND FRAMING PLANS
  - S-11 TYPICAL FOUNDATION DETAILS
  - S-12 TYPICAL FRAMING DETAILS
  - S-13 FRAMING DETAILS - STAIR 'A, B, C, D'
  - S-14 FRAMING DETAILS - STAIR 'E-WEST & E-EAST'
  - S-15 FRAMING DETAILS - STAIR 'AB & CD'
  - S-16 ROOF FRAMING DETAILS
- Grand total: 16

**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226



	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**GENERAL NOTES, ABBREVIATIONS**

Project No.:	<b>ECSU 2016-9 (Phase II)</b>	
Date:	<b>12/6/2017</b>	Drawing No.:
Scale:	NOT TO SCALE	<b>S-1</b>
Plot Size:	<b>24 x 36</b>	

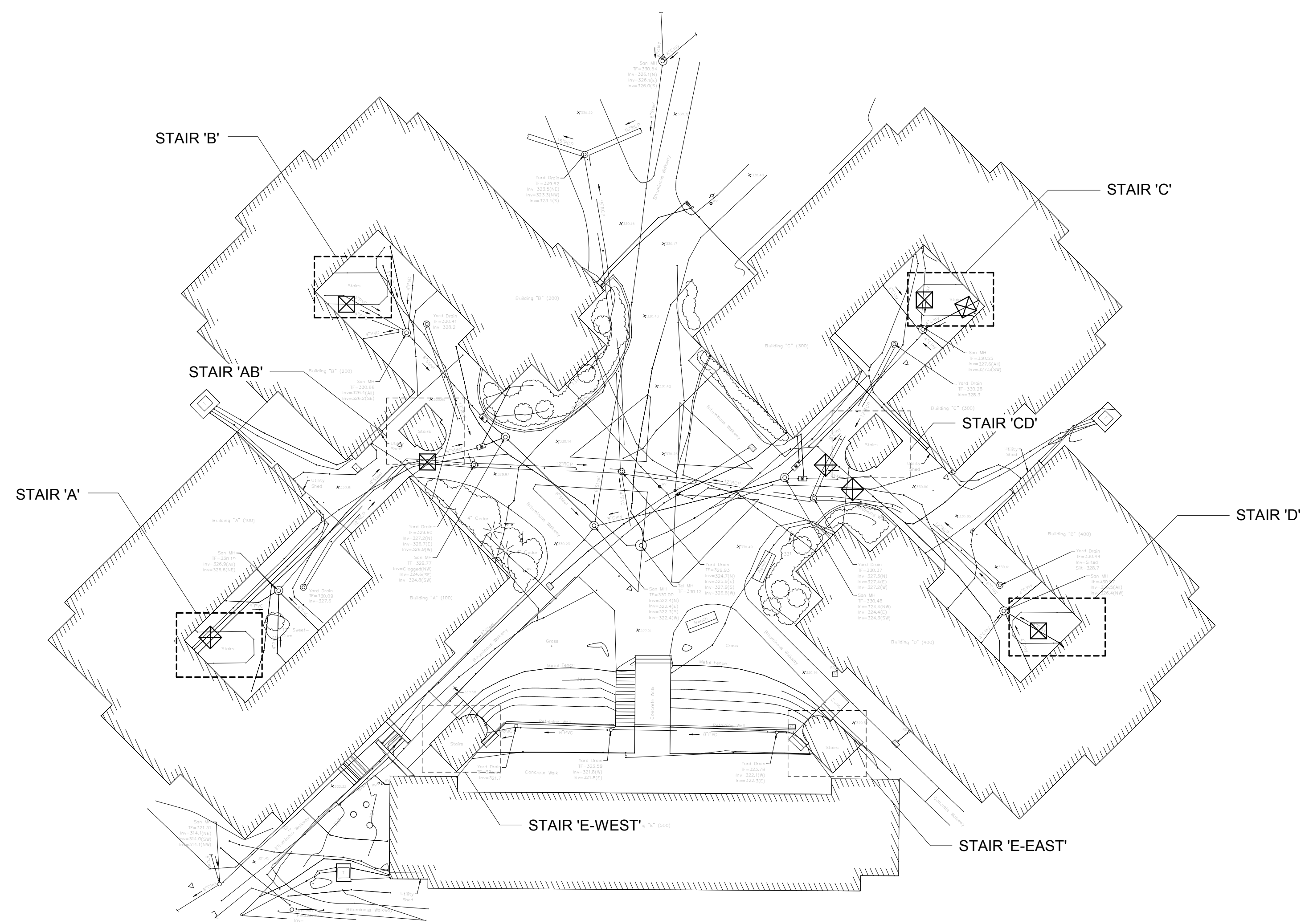


**BVH**  
integrated services

206 West Newbury Road  
Bloomfield, CT 06002  
Tel: (860) 286-9171 www.bvhis.com



3/14/2018 10:38:48 AM E:\Revit\Local Files\Revit Structural\2017\ECSU Stairs (21-17-060) (17)\ECSU Low-Rise Stair STR (17) (JMM).rvt



**SITE UTILITY PLAN**

1. THE CLASS B SURVEY SHOWN WAS CREATED BY BL COMPANIES, DATED 05/08/2016, AND WAS PROVIDED BY EASTERN CONNECTICUT STATE UNIVERSITY FOR USE ON THIS PROJECT. THIS PLAN SHOULD BE USED FOR REFERENCE AND VERIFIED BY THE CONTRACTOR AS NEEDED FOR THIS PROJECT.
2. EXISTING UTILITIES SHOULD BE LOCATED IN THE FIELD BY AN UNDERGROUND LOCATING SERVICE PRIOR TO ANY EXCAVATION, SEE CIVIL GENERAL NOTE #2, SHEET "C-1".
3.  INDICATES LOCATIONS FOR THE CONTRACTOR TO HAND DIG PITS TO EXPOSE AND LOCATE EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION.
4. CONFLICTS BETWEEN NEW FOUNDATIONS AND EXISTING UTILITIES SHOULD BE IDENTIFIED BY THE CONTRACTOR AND REPORTED TO THE ENGINEER OF RECORD AND OWNER BEFORE PROCEEDING.
5. ANY UTILITIES EXPOSED DURING THIS WORK SHALL BE PROPERLY PROTECTED AND SUPPORTED. BEDDING AND BACKFILL REQUIREMENTS SHOULD BE PERFORMED PER SPECIFICATIONS.

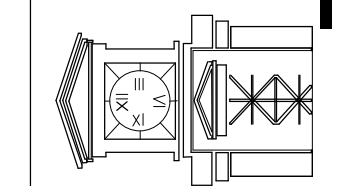


**STAIR DEMOLITION PLAN**

1. EXISTING STAIRS 'A', 'B', 'C', 'D', 'AB', 'CD', 'E-WEST, AND 'E-EAST' FRAMING AND FOUNDATIONS TO BE DEMOLISHED AND COMPLETELY REMOVED. DO NOT DAMAGE EXISTING BUILDING CONSTRUCTION TO REMAIN. ALL DEMOLISHED MATERIALS SHALL BE PROPERLY DISPOSED OF OFF SITE.
2. MASONRY WING WALLS LOCATED AT EXISTING STAIRS "AB", "CD", "E-EAST, AND "E-WEST" ARE TO REMAIN. DO NOT DAMAGE EXISTING CONSTRUCTION TO REMAIN. CONTRACTOR TO REPAIR ANY DAMAGE TO MASONRY WING WALLS RESULTING FROM THE STAIR DEMOLITION.
3. ALL EXISTING MASONRY WING WALLS ARE TO BE BRACED AND SHORED THROUGHOUT DEMOLITION AND CONSTRUCTION. SEE "S-1" FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
4. THE DEMOLITION OF EXISTING STAIRS SHALL BE SCHEDULED AND COORDINATED TO THE SATISFACTION OF EASTERN CONNECTICUT STATE UNIVERSITY. NO DEMOLITION SHOULD BEGIN WITHOUT APPROVAL FROM EASTERN CONNECTICUT STATE UNIVERSITY.
5. CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS INCLUDING SIZES, QUANTITIES, DIMENSIONS, ELEVATIONS, ETC. PRIOR TO FABRICATION AND CONSTRUCTION. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES IMMEDIATELY. WITHIN (1)-WEEK OF COMPLETING DEMOLITION, CONTRACTOR TO CONTACT ENGINEER OF RECORD TO SCHEDULE A FIELD INSPECTION. ALLOW DESIGN TEAM (2)-WEEKS PRIOR TO FABRICATION TO MAKE ANY REQUIRED MODIFICATIONS TO DOCUMENTS.
6. SEE "S-1" FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226



	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

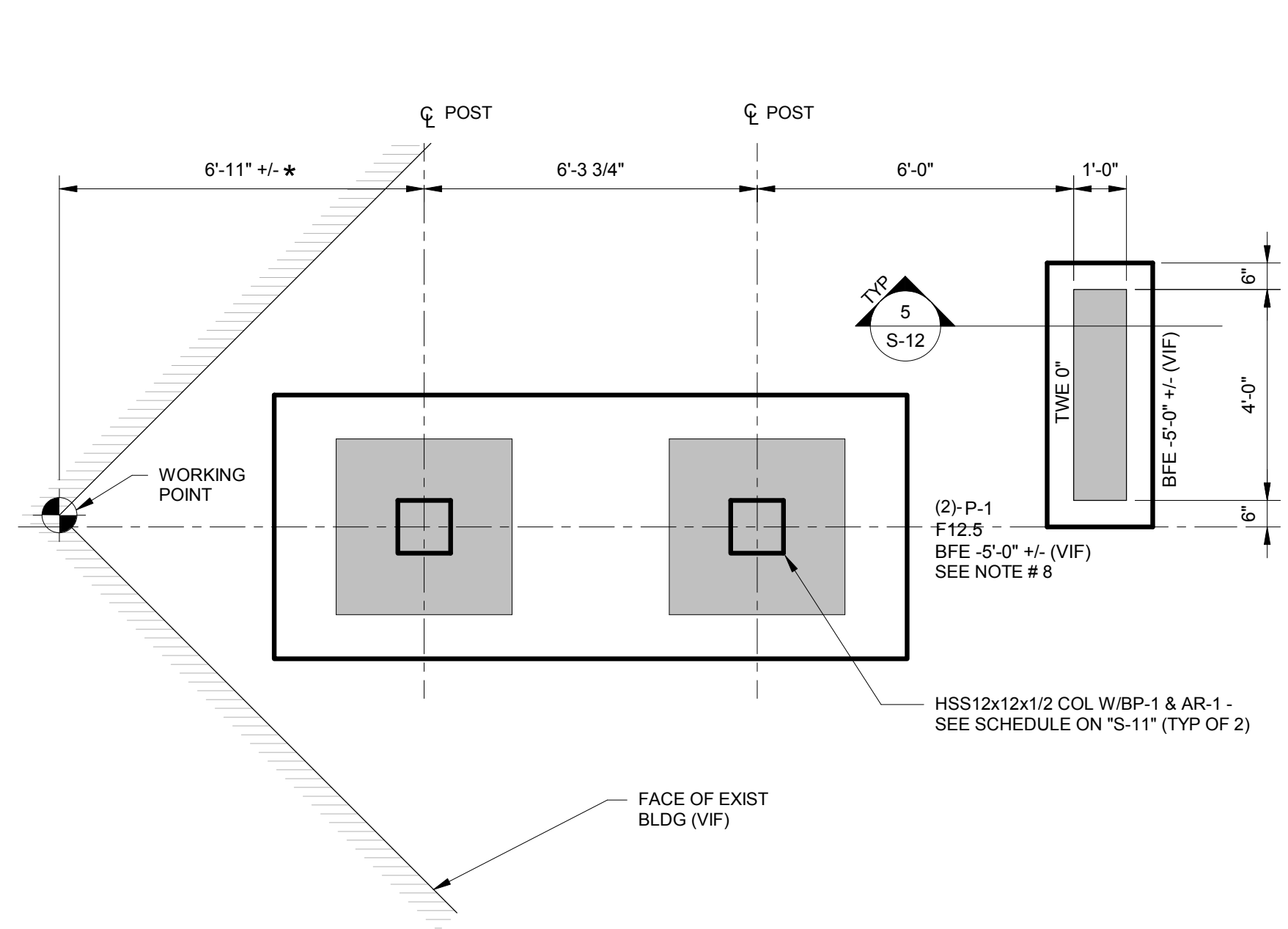
PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR DEMOLITION PLAN**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **S-2**  
Scale: **NOT TO SCALE**  
Plot Size: **24 x 36**

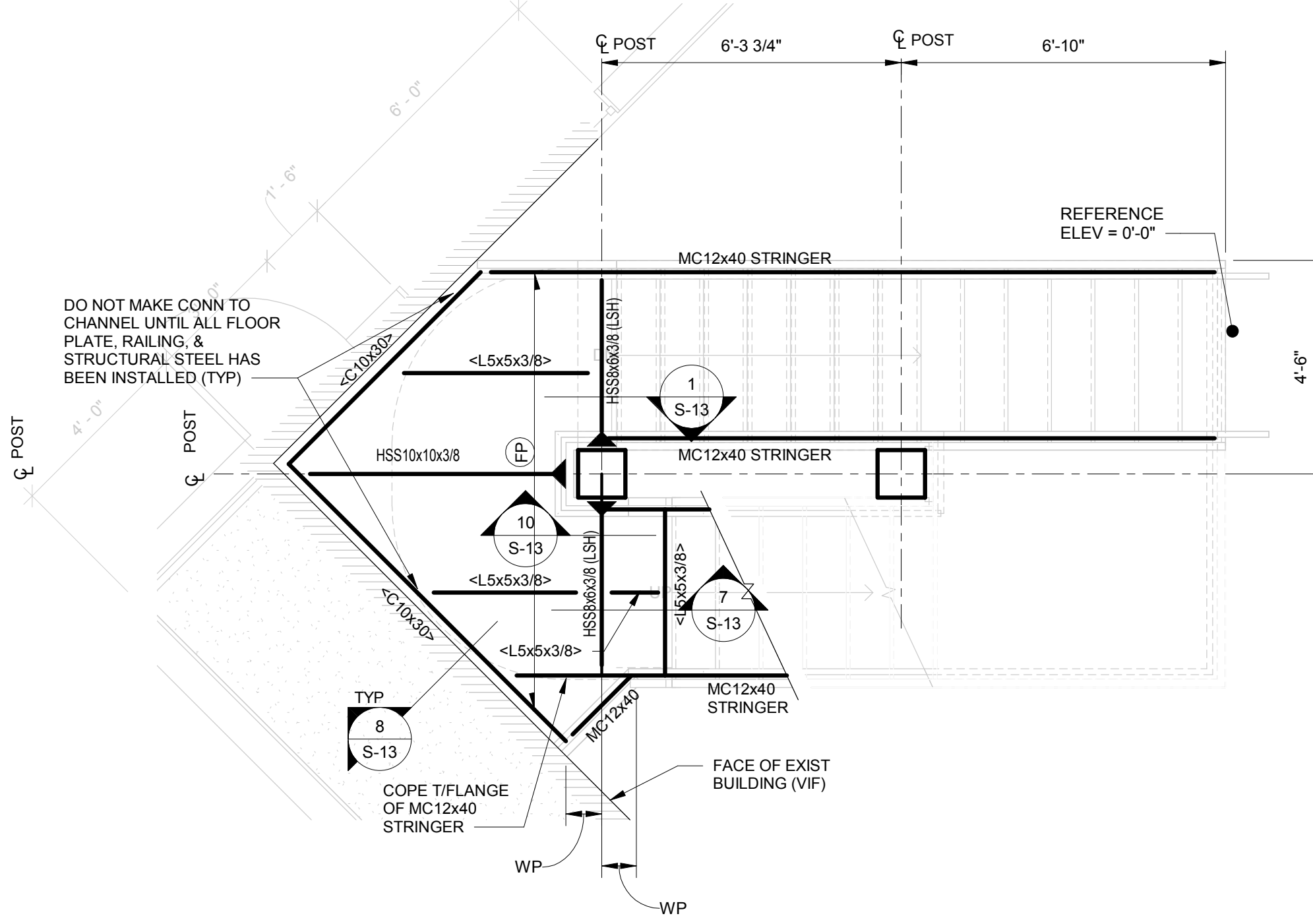






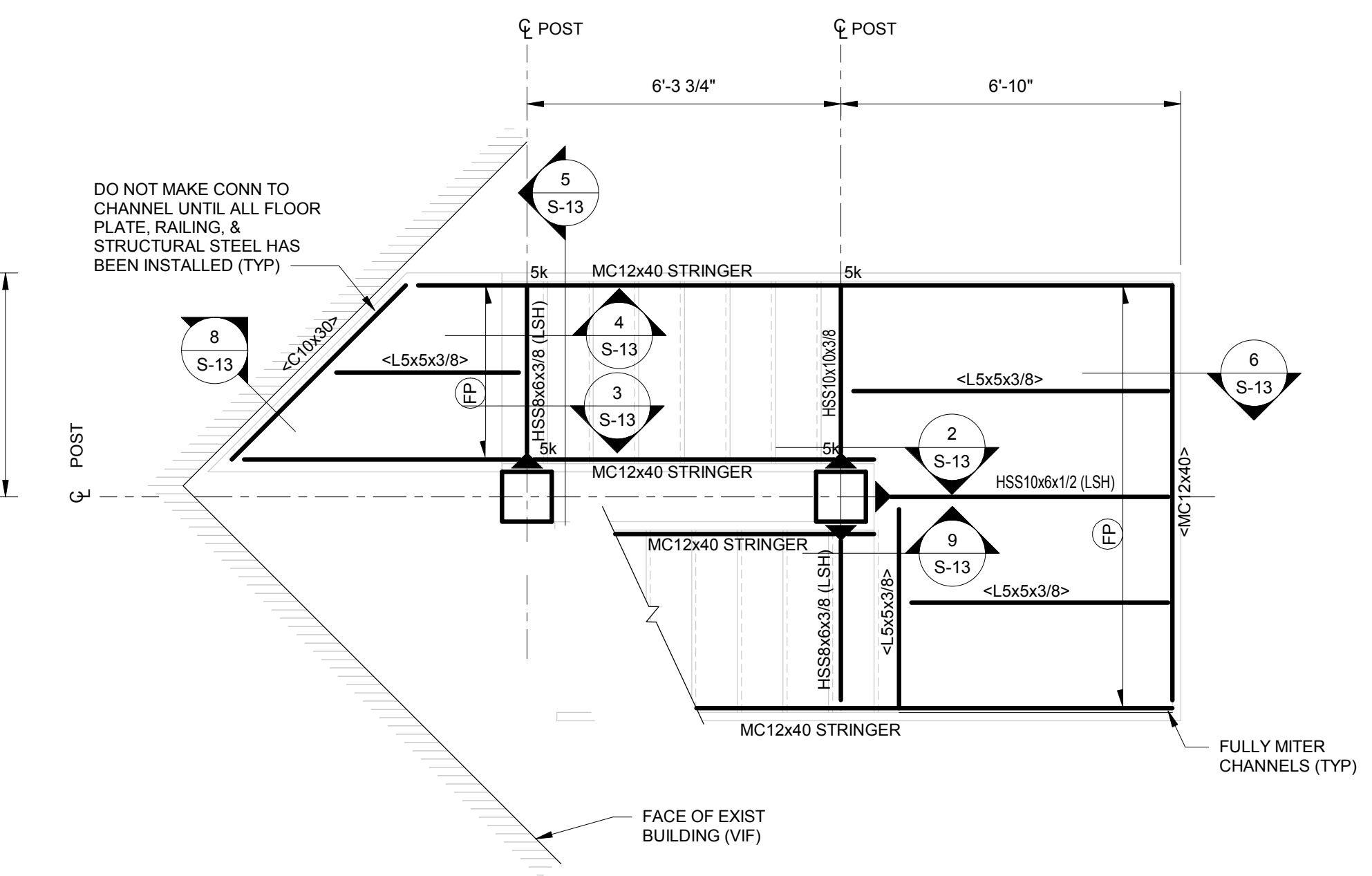
**STAIR 'A' FOUNDATION PLAN**  
3/8" = 1'-0"

1. F...INDICATES CONCRETE FOOTING, SEE SCHEDULE ON "S-11".
2. P...INDICATES CONCRETE PIER, SEE SCHEDULE ON "S-11".
3. SEE GENERAL NOTES AND TYPICAL DETAILS FOR ADDITIONAL REQUIREMENTS.
4. CONTRACTORS TO VERIFY ALL CONDITIONS, DIMENSIONS, ELEVATIONS, QUANTITIES, ETC. IN THE FIELD PRIOR TO THE BEGINNING OF ANY NEW CONSTRUCTION. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES FOUND IMMEDIATELY.
5. CONTRACTOR TO OVER EXCAVATE AND PLACE A 6" THICK PAD OF 3/4" CRUSHED STONE ON GEOTEXTILE FILTER FABRIC UNDERNEATH ALL FOOTINGS. STONE AND FILTER FABRIC TO EXTEND 1'-0" BEYOND FACE OF WALL AND SPREAD FOOTING. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
6. CONTRACTOR TO PROVIDE EARTH SUPPORT OF EXISTING STRUCTURES AND UTILITIES FOR THE INSTALLATION OF NEW STRUCTURES AND UTILITIES. NOTE THAT LOCATIONS REQUIRING EARTH SUPPORT ARE NOT INDICATED ON THE DRAWINGS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALL LOCATIONS REQUIRED AND EXTENT NEEDED. SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
7. ALL REINFORCING BARS TO BE EPOXY COATED, SEE SPECIFICATION FOR REQUIREMENTS.
8. BOTTOM OF FOOTING ELEVATION TO MATCH BOTTOM OF FOOTING ELEVATION OF EXISTING ADJACENT FOOTING. CONTRACTOR TO VERIFY EXISTING BOTTOM OF FOOTING ELEVATION PRIOR TO BEGINNING OF FABRICATION. ALL BOTTOM OF FOUNDATIONS TO BE 4'-0" MINIMUM BELOW FINISHED GRADE. COORDINATE WITH CIVIL DRAWINGS.



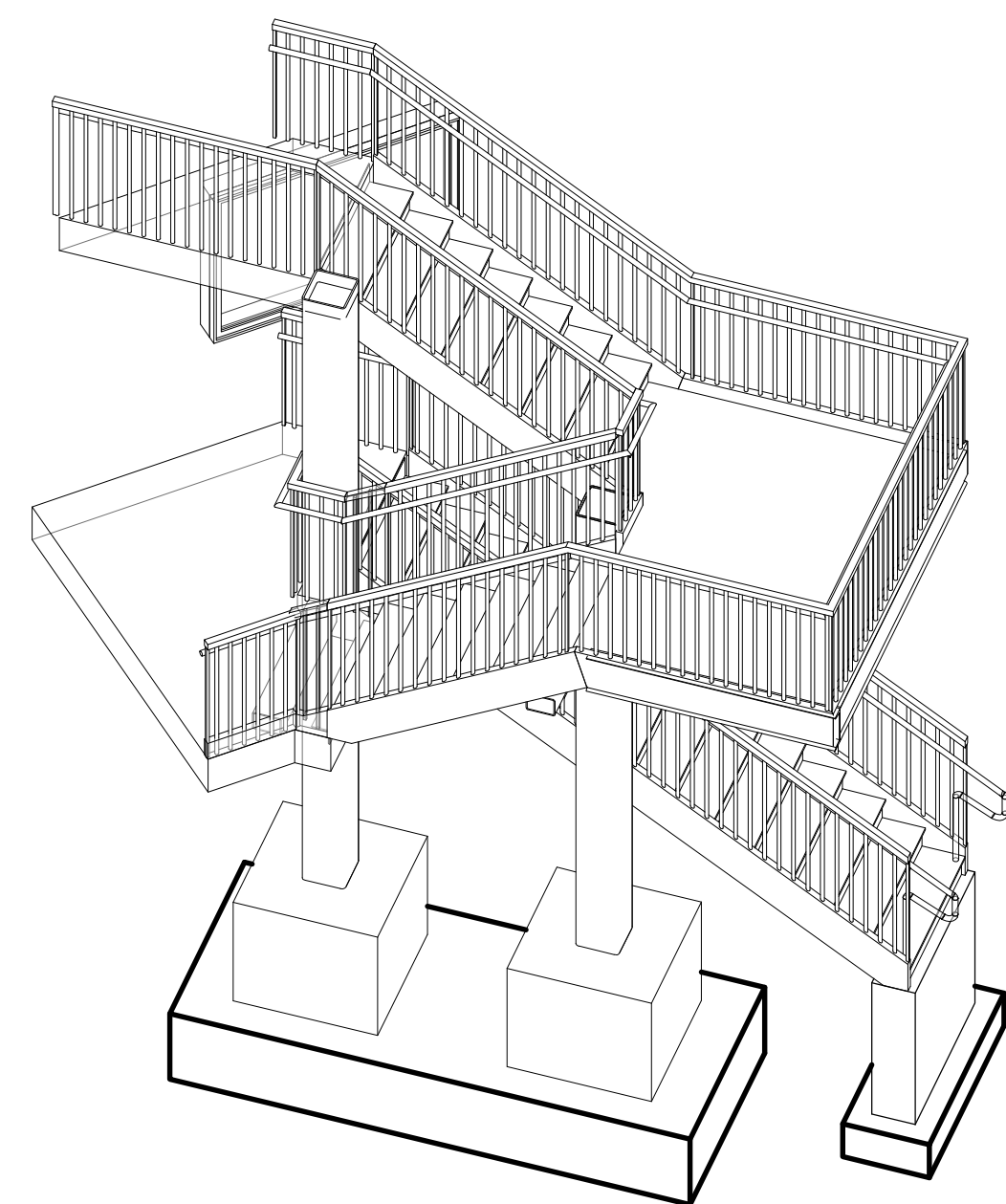
**STAIR 'A' LOWER PLAN**  
3/8" = 1'-0"

1. TOP OF STAIR LOWER LANDING TO BE AT REFERENCE ELEVATION +4'-4 1/4" +/- UNLESS OTHERWISE NOTED BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THE REFERENCE ELEVATION.
2. CONTRACTOR PERFORMING STRUCTURAL WORK SHALL BE RESPONSIBLE FOR ALL SHORING OF EXISTING CONSTRUCTION REQUIRED TO SAFELY COMPLETE WORK.
3. ON ALL TUBE SECTION COLUMNS AND BEAMS PROVIDE A 1/4" THICK WEATHER CAP PLATE (EACH END) SEAL WELDED TO MEMBER.
4. GROUT AT BASE PLATES WITH LEVELING NUTS TO BE INSTALLED AND ATTAIN REQUIRED DESIGN STRENGTH BEFORE PLACEMENT OF SITE SLABS AND PAVING.
5. ALL CONNECTIONS TO BE BOLTED OR SHOP WELDED. NO FIELD WELDING TO GALVANIZED STEEL TO BE PERMITTED.
6. ALL STRUCTURAL STEEL CONNECTIONS, BOLTS, BASE PLATES, ANCHOR RODS, ETC. SHALL BE HOT DIPPED GALVANIZED AND FACTORY COATED. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'A' UPPER PLAN**  
3/8" = 1'-0"

1. TOP OF STAIR MAIN LANDING TO BE AT REFERENCE ELEVATION 17'-4 1/4" +/- VERIFY IN FIELD. TOP OF NEW STAIR LANDING ELEVATION TO MATCH EXISTING. ADJUST LANDING ELEVATION AND TOP OF STEEL ELEVATION AS REQUIRED. WITHIN (2)-WEEKS OF MOBILIZING TO SITE, CONTRACTOR TO SURVEY EXISTING FINISHED FLOOR ELEVATIONS AND PROVIDE ELEVATIONS TO ENGINEER/ARCHITECT. ALLOW DESIG TEAM (2)-WEEKS TO MAKE REQUIRED MODIFICATIONS TO THE CONTRACT DOCUMENTS.
2. SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'A' ISOMETRIC**

FLOOR FRAMING PLAN SYMBOL LEGEND	
* (with dimension line)	INDICATES COORDINATE FINAL DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND EXISTING CONDITIONS.
— (with beam/girder)	INDICATES MOMENT CONNECTION TO DEVELOP FULL BENDING AND SHEAR CAPACITY OF BEAM OR GIRDER, UNLESS OTHERWISE NOTED.
FP (with arrow)	INDICATES DIRECTION OF SPAN OF GALVANIZED 3/8" STEEL RAISED PATTERN FLOOR PLATE WITH 3/8" DIAMETER HOLES AT 12" O/C WITH FACTORY APPLIED FINISH COATING. FASTEN TO SUPPORTING STRUCTURAL STEEL WITH STAINLESS STEEL COUNTERSUNK ATTACHMENTS PER MANUFACTURER'S APPROVED CONNECTION. SEE SPECIFICATIONS AND ARCHITECTURAL DRAWINGS.
R (with arrow)	INDICATES DIRECTION OF SPAN OF 1 1/2" DEEP WIDE RIB, 18 GAGE GALVANIZED METAL ROOF DECK. PROVIDE G30 GALVANIZED FINISH. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

STAIR 'A'

206 West Newberry Road  
Bloomfield, CT 06002  
Tel: (860) 286-9171 www.bvhis.com

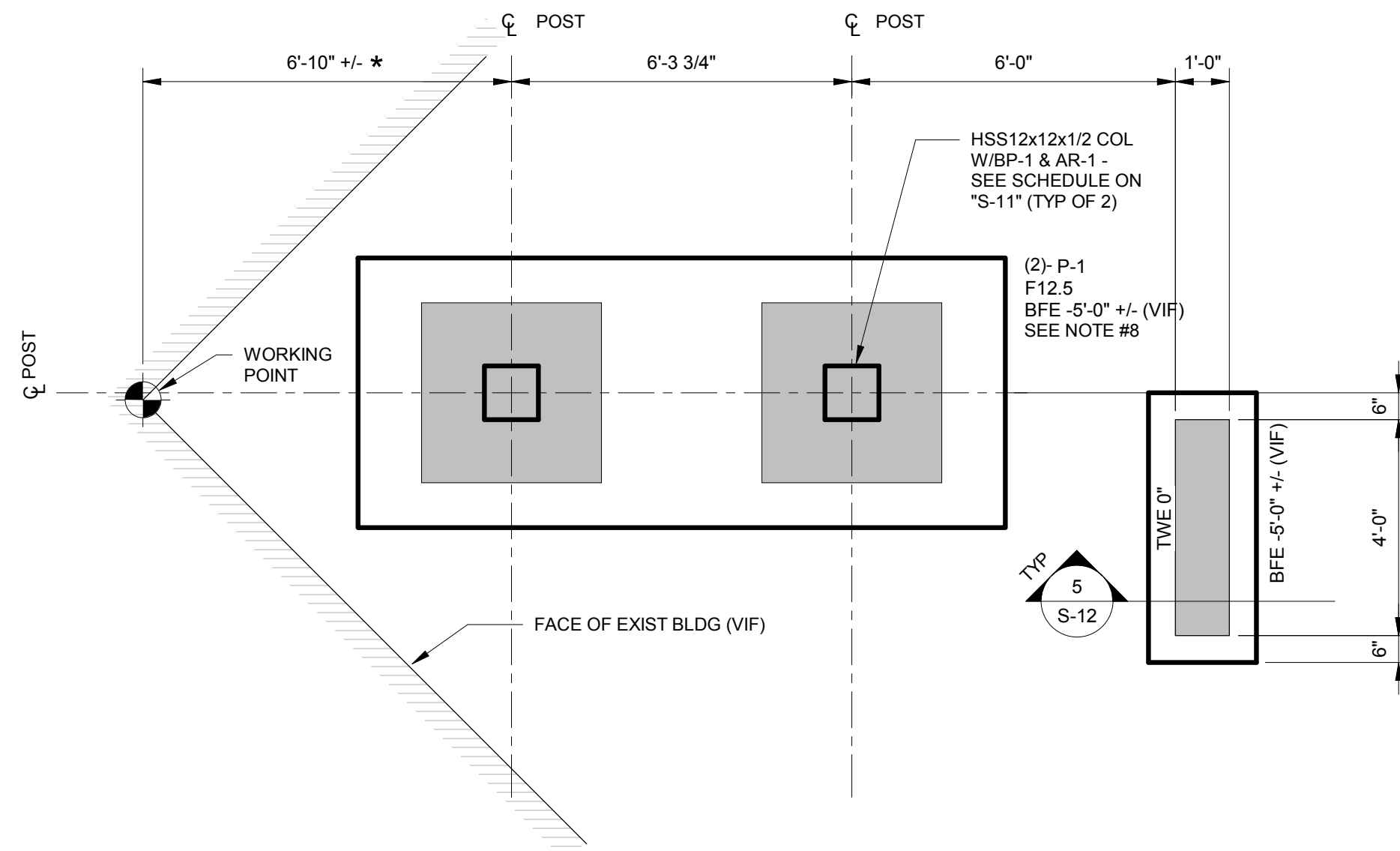
	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR 'A' FOUNDATION AND FRAMING PLANS**

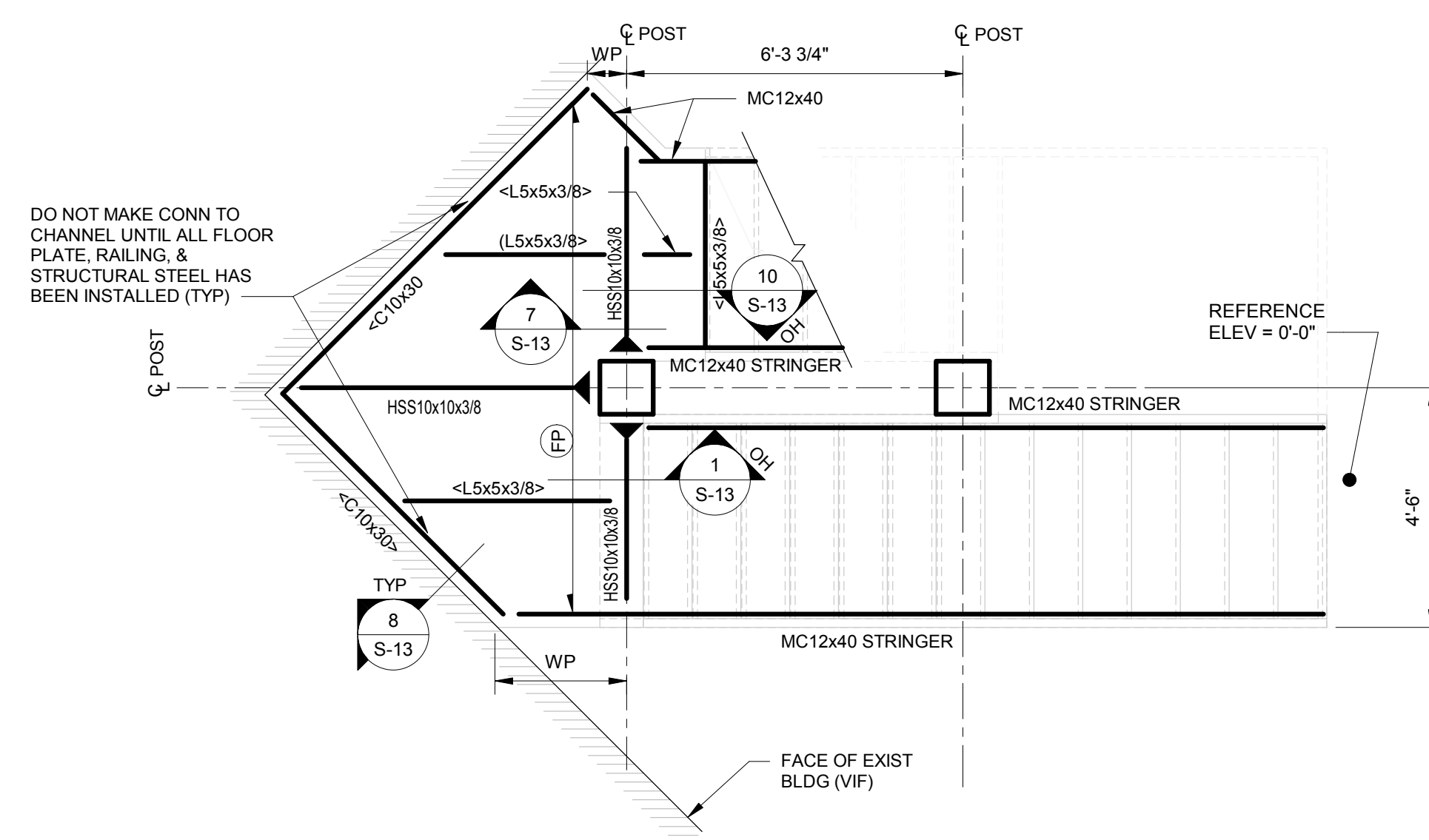
Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **S-3**  
Scale: **As indicated**  
Plot Size: **24 x 36**





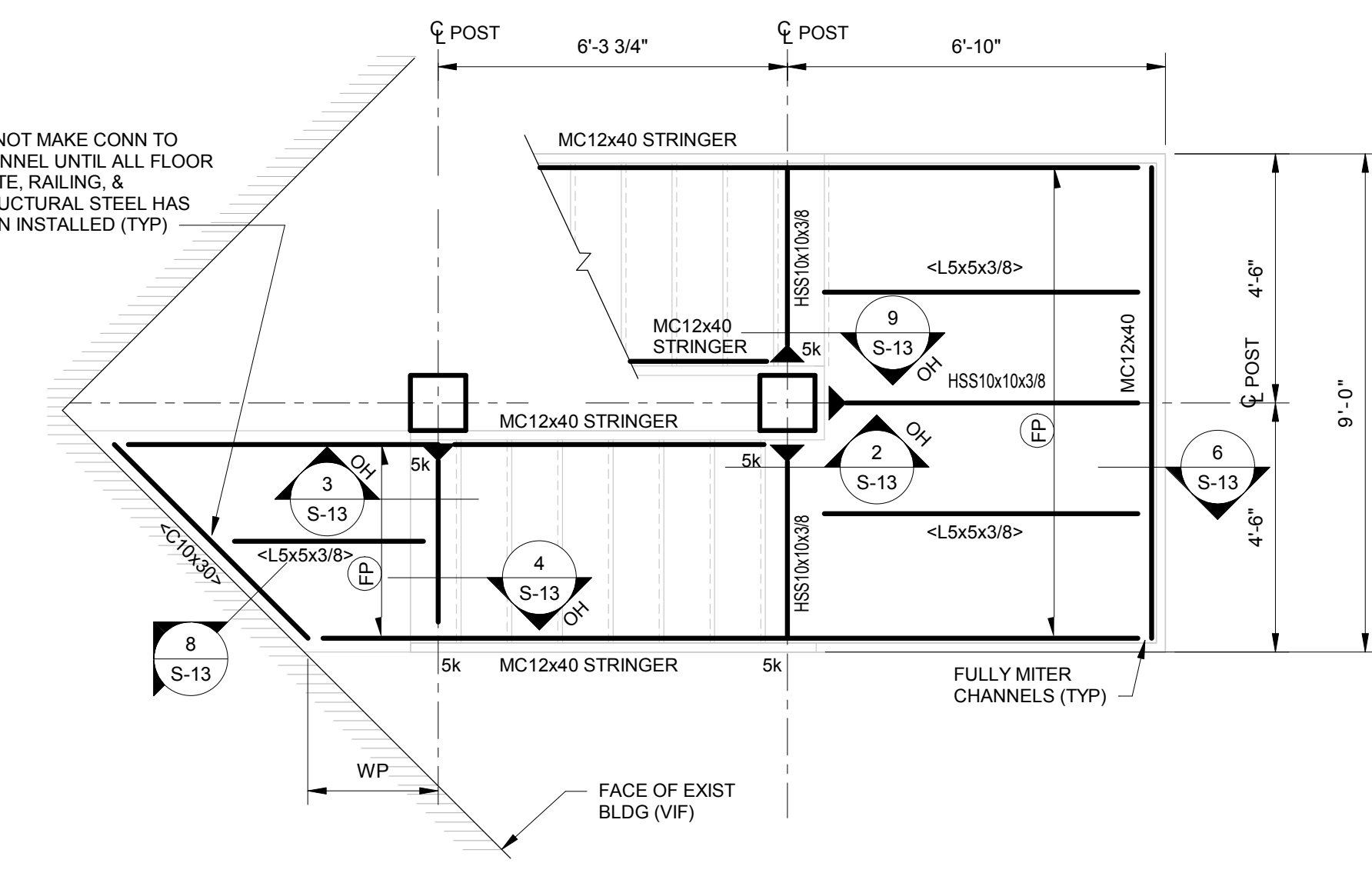
**STAIR 'B' FOUNDATION PLAN**  
3/8" = 1'-0"

1. F...INDICATES CONCRETE FOOTING, SEE SCHEDULE ON "S-11".
2. P...INDICATES CONCRETE PIER, SEE SCHEDULE ON "S-11".
3. SEE GENERAL NOTES AND TYPICAL DETAILS FOR ADDITIONAL REQUIREMENTS.
4. CONTRACTORS TO VERIFY ALL CONDITIONS, DIMENSIONS, ELEVATIONS, QUANTITIES, ETC. IN THE FIELD PRIOR TO THE BEGINNING OF ANY NEW CONSTRUCTION. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES FOUND IMMEDIATELY.
5. CONTRACTOR TO OVER EXCAVATE AND PLACE A 6" THICK PAD OF 3/4" CRUSHED STONE ON GEOTEXTILE FILTER FABRIC UNDERNEATH ALL FOOTINGS. STONE AND FILTER FABRIC TO EXTEND 1'-0" BEYOND FACE OF WALL AND SPREAD FOOTING. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
6. CONTRACTOR TO PROVIDE EARTH SUPPORT OF EXISTING STRUCTURES AND UTILITIES FOR THE INSTALLATION OF NEW STRUCTURES AND UTILITIES. NOTE THAT LOCATIONS REQUIRING EARTH SUPPORT ARE NOT INDICATED ON THE DRAWINGS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALL LOCATIONS REQUIRED AND EXTENT NEEDED. SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
7. ALL REINFORCING BARS TO BE EPOXY COATED, SEE SPECIFICATION FOR REQUIREMENTS.
8. BOTTOM OF FOOTING ELEVATION TO MATCH BOTTOM OF FOOTING ELEVATION OF EXISTING ADJACENT FOOTING. CONTRACTOR TO VERIFY EXISTING BOTTOM OF FOOTING ELEVATION PRIOR TO BEGINNING OF FABRICATION. ALL BOTTOM OF FOUNDATIONS TO BE 4'-0" MINIMUM BELOW FINISHED GRADE. COORDINATE WITH CIVIL DRAWINGS.



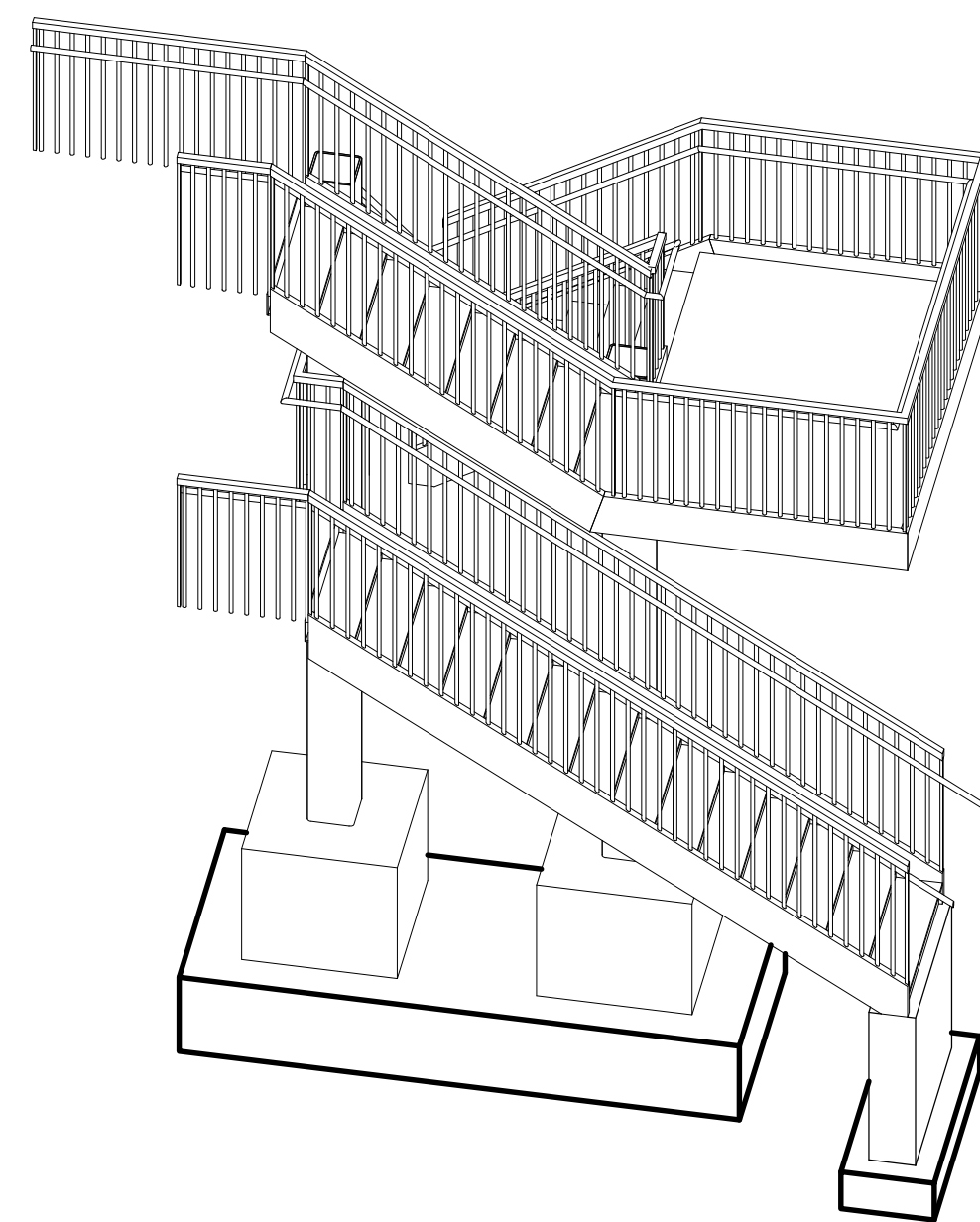
**STAIR 'B' LOWER PLAN**  
3/8" = 1'-0"

1. TOP OF STAIR LOWER LANDING TO BE AT REFERENCE ELEVATION +4'-4 1/4" +/- UNLESS OTHERWISE NOTED BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THE REFERENCE ELEVATION.
2. CONTRACTOR PERFORMING STRUCTURAL WORK SHALL BE RESPONSIBLE FOR ALL SHORING OF EXISTING CONSTRUCTION REQUIRED TO SAFELY COMPLETE WORK.
3. ON ALL TUBE SECTION COLUMNS AND BEAMS PROVIDE A 1/4" THICK WEATHER CAP PLATE (EACH END) SEAL WELDED TO MEMBER.
4. GROUT AT BASE PLATES WITH LEVELING NUTS TO BE INSTALLED AND ATTAIN REQUIRED DESIGN STRENGTH BEFORE PLACEMENT OF SITE SLABS AND PAVING.
5. ALL CONNECTIONS TO BE BOLTED OR SHOP WELDED. NO FIELD WELDING TO GALVANIZED STEEL TO BE PERMITTED.
6. ALL STRUCTURAL STEEL, CONNECTIONS, BOLTS, BASE PLATES, ANCHOR RODS, ETC. SHALL BE HOT DIPPED GALVANIZED AND FACTORY COATED. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



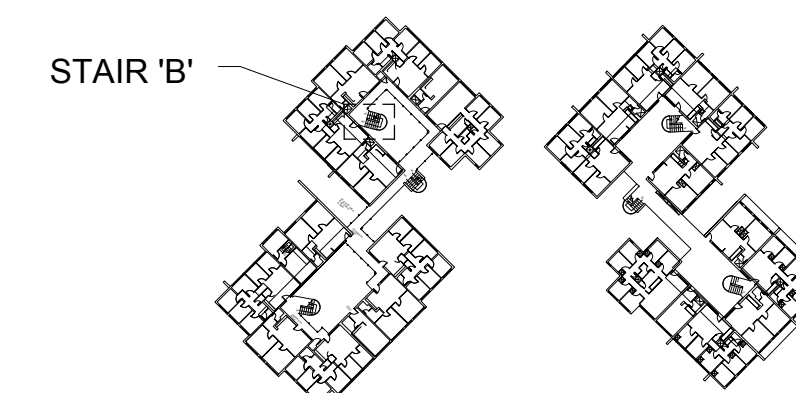
**STAIR 'B' UPPER PLAN**  
3/8" = 1'-0"

1. TOP OF STAIR MAIN LANDING TO BE AT REFERENCE ELEVATION +7'-4 1/4" +/- VERIFY IN FIELD. TOP OF NEW STAIR LANDING ELEVATION TO MATCH EXISTING. ADJUST LANDING ELEVATION AND TOP OF STEEL ELEVATION AS REQUIRED. WITHIN (2)-WEEKS OF MOBILIZING TO SITE, CONTRACTOR TO SURVEY EXISTING FINISHED FLOOR ELEVATIONS AND PROVIDE ELEVATIONS TO ENGINEER/ARCHITECT. ALLOW DESIGN TEAM (2)-WEEKS TO MAKE REQUIRED MODIFICATIONS TO THE CONTRACT DOCUMENTS.
2. SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'B' ISOMETRIC**

FLOOR FRAMING PLAN SYMBOL LEGEND	
* (with dimension line)	INDICATES COORDINATE FINAL DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND EXISTING CONDITIONS.
— (with beam/girder)	INDICATES MOMENT CONNECTION TO DEVELOP FULL BENDING AND SHEAR CAPACITY OF BEAM OR GIRDER, UNLESS OTHERWISE NOTED.
FP (with arrow)	INDICATES DIRECTION OF SPAN OF GALVANIZED 3/8" STEEL RAISED PATTERN FLOOR PLATE WITH 3/8" DIAMETER HOLES AT 12" O/C WITH FACTORY APPLIED FINISH COATING. FASTEN TO SUPPORTING STRUCTURAL STEEL WITH STAINLESS STEEL COUNTERSUNK ATTACHMENTS PER MANUFACTURER'S APPROVED CONNECTION. SEE SPECIFICATIONS AND ARCHITECTURAL DRAWINGS.
R (with arrow)	INDICATES DIRECTION OF SPAN OF 1 1/2" DEEP WIDE RIB, 18 GAGE GALVANIZED METAL ROOF DECK. PROVIDE G90 GALVANIZED FINISH. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



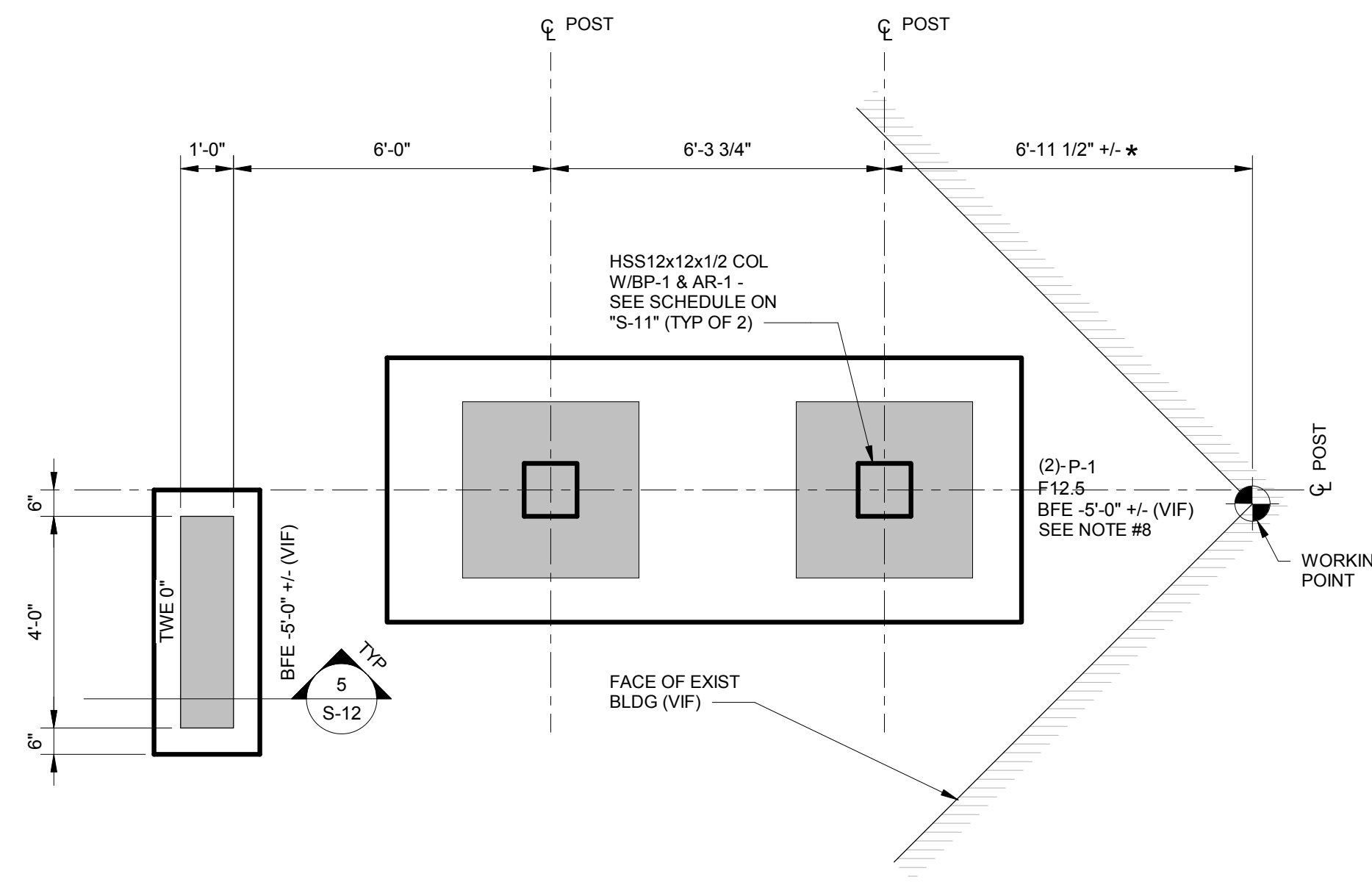
No.	Revision/Issue	Date
	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR 'B' FOUNDATION AND FRAMING PLANS**

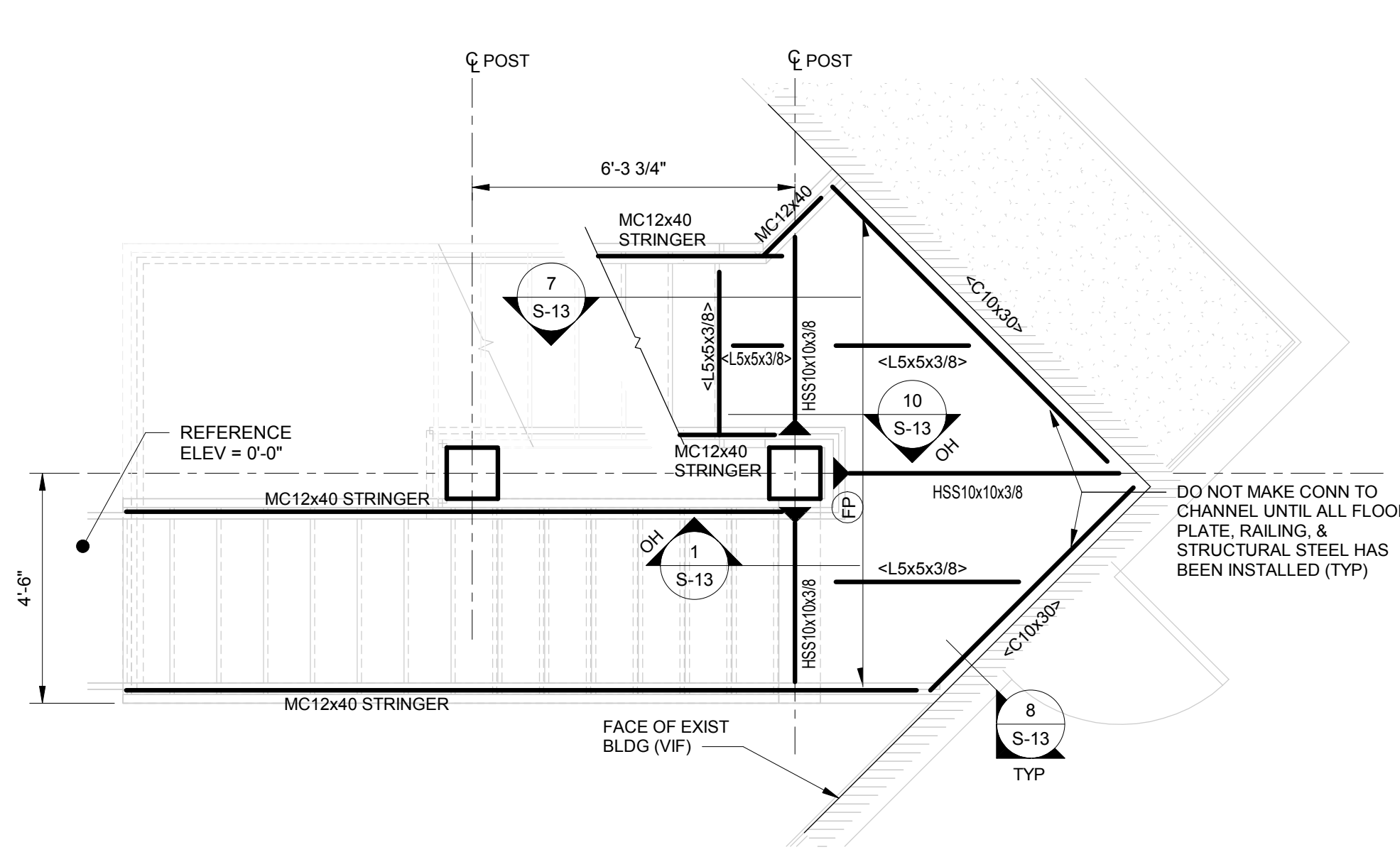
Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017**  
Scale: **As indicated**  
Plot Size: **24 x 36**





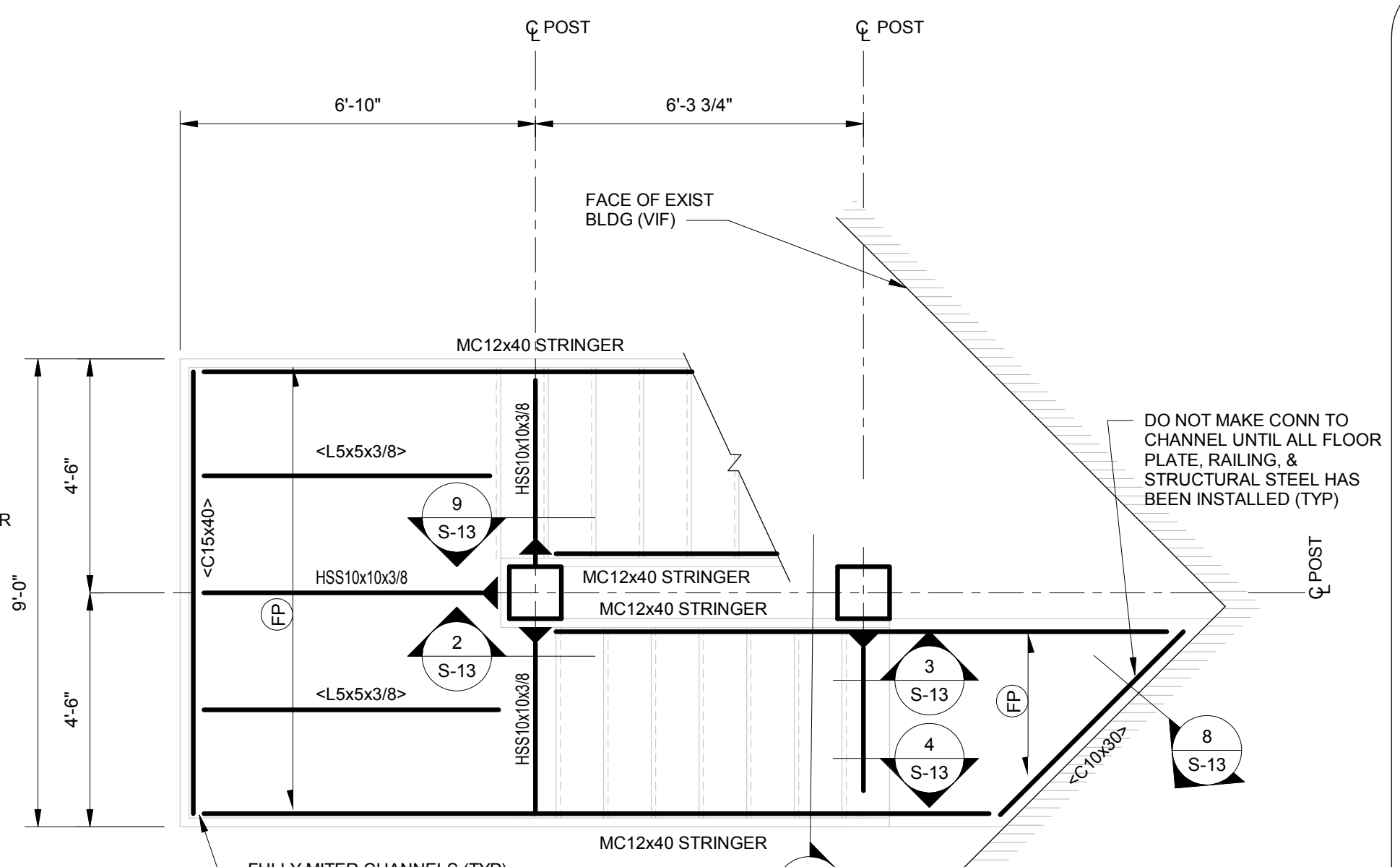
**STAIR 'C' FOUNDATION PLAN**  
3/8" = 1'-0"

1. F...INDICATES CONCRETE FOOTING, SEE SCHEDULE ON "S-11".
2. P...INDICATES CONCRETE PIER, SEE SCHEDULE ON "S-11".
3. SEE GENERAL NOTES AND TYPICAL DETAILS FOR ADDITIONAL REQUIREMENTS.
4. CONTRACTORS TO VERIFY ALL CONDITIONS, DIMENSIONS, ELEVATIONS, QUANTITIES, ETC. IN THE FIELD PRIOR TO THE BEGINNING OF ANY NEW CONSTRUCTION. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES FOUND IMMEDIATELY.
5. CONTRACTOR TO OVER EXCAVATE AND PLACE A 6" THICK PAD OF 3/4" CRUSHED STONE ON GEOTEXTILE FILTER FABRIC UNDERNEATH ALL FOOTINGS. STONE AND FILTER FABRIC TO EXTEND 1'-0" BEYOND FACE OF WALL AND SPREAD FOOTING. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
6. CONTRACTOR TO PROVIDE EARTH SUPPORT OF EXISTING STRUCTURES AND UTILITIES FOR THE INSTALLATION OF NEW STRUCTURES AND UTILITIES. NOTE THAT LOCATIONS REQUIRING EARTH SUPPORT ARE NOT INDICATED ON THE DRAWINGS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALL LOCATIONS REQUIRED AND EXTENT NEEDED. SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
7. ALL REINFORCING BARS TO BE EPOXY COATED, SEE SPECIFICATION FOR REQUIREMENTS.
8. BOTTOM OF FOOTING ELEVATION TO MATCH BOTTOM OF FOOTING ELEVATION OF EXISTING ADJACENT FOOTING. CONTRACTOR TO VERIFY EXISTING BOTTOM OF FOOTING ELEVATION PRIOR TO BEGINNING OF FABRICATION. ALL BOTTOM OF FOUNDATIONS TO BE 4'-0" MINIMUM BELOW FINISHED GRADE. COORDINATE WITH CIVIL DRAWINGS.



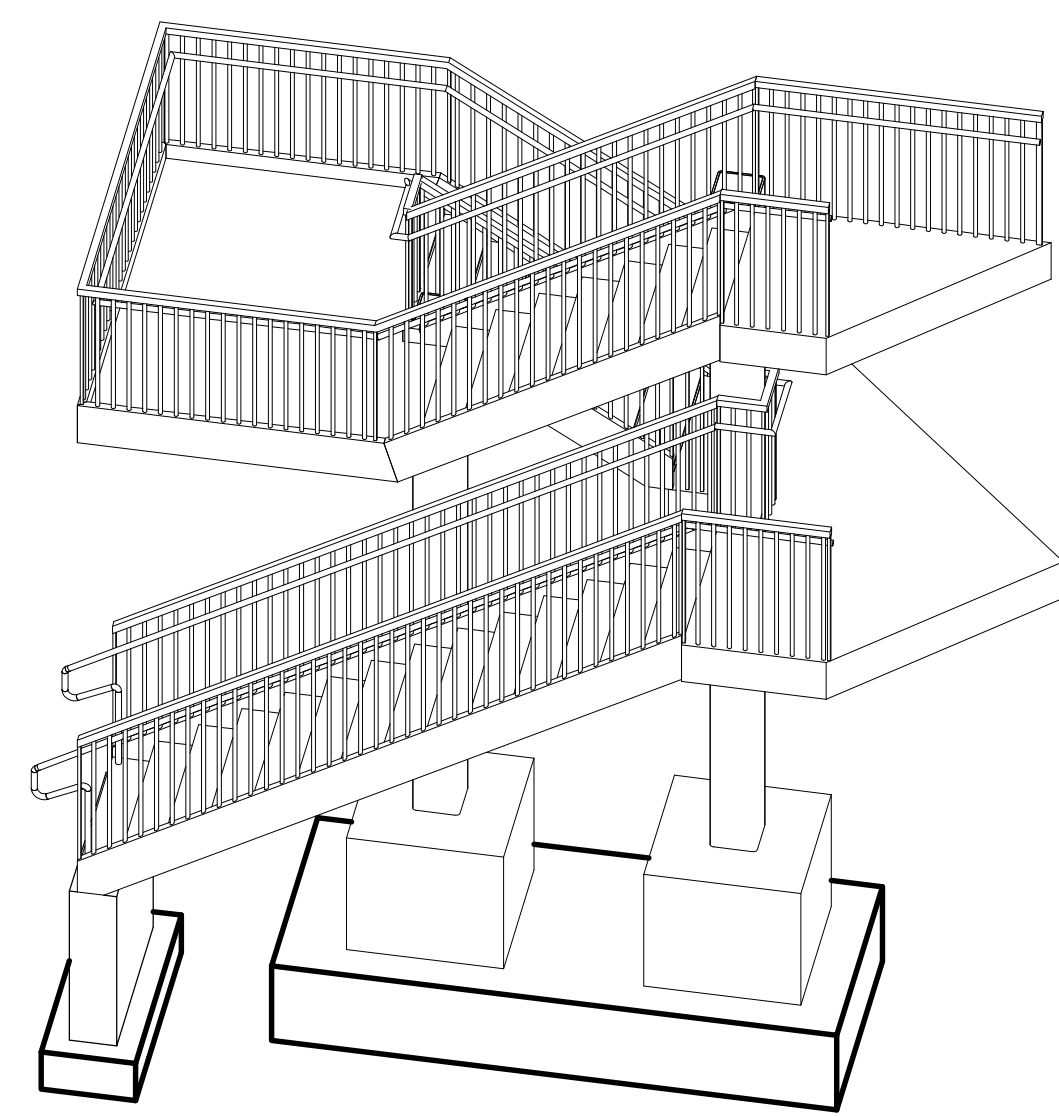
**STAIR 'C' LOWER PLAN**  
3/8" = 1'-0"

1. TOP OF STAIR LOWER LANDING TO BE AT REFERENCE ELEVATION +4'-4 1/4" +/- UNLESS OTHERWISE NOTED BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THE REFERENCE ELEVATION.
2. CONTRACTOR PERFORMING STRUCTURAL WORK SHALL BE RESPONSIBLE FOR ALL SHORING OF EXISTING CONSTRUCTION REQUIRED TO SAFELY COMPLETE WORK.
3. ON ALL TUBE SECTION COLUMNS AND BEAMS PROVIDE A 1/4" THICK WEATHER CAP PLATE (EACH END) SEAL WELDED TO MEMBER.
4. GROUT AT BASE PLATES WITH LEVELING NUTS TO BE INSTALLED AND ATTAIN REQUIRED DESIGN STRENGTH BEFORE PLACEMENT OF SITE SLABS AND PAVING.
5. ALL CONNECTIONS TO BE BOLTED OR SHOP WELDED. NO FIELD WELDING TO GALVANIZED STEEL TO BE PERMITTED.
6. ALL STRUCTURAL STEEL, CONNECTIONS, BOLTS, BASE PLATES, ANCHOR RODS, ETC. SHALL BE HOT DIPPED GALVANIZED AND FACTORY COATED. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



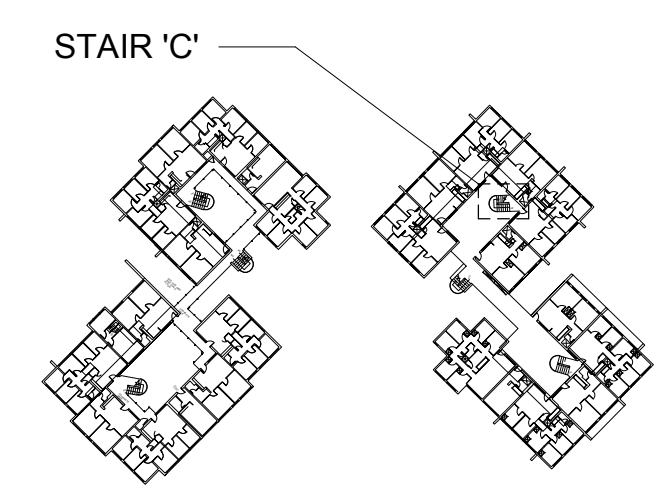
**STAIR 'C' UPPER PLAN**  
3/8" = 1'-0"

1. TOP OF STAIR MAIN LANDING TO BE AT REFERENCE ELEVATION 17'-4 1/4" +/- VERIFY IN FIELD. TOP OF NEW STAIR LANDING ELEVATION TO MATCH EXISTING. ADJUST LANDING ELEVATION AND TOP OF STEEL ELEVATION AS REQUIRED. WITHIN (2) WEEKS OF MOBILIZING TO SITE. CONTRACTOR TO SURVEY EXISTING FINISHED FLOOR ELEVATIONS AND PROVIDE ELEVATIONS TO ENGINEER/ARCHITECT. ALLOW DESIGN TEAM (2) WEEKS TO MAKE REQUIRED MODIFICATIONS TO THE CONTRACT DOCUMENTS.
2. SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'C' ISOMETRIC**

FLOOR FRAMING PLAN SYMBOL LEGEND	
* (Coordinate)	INDICATES COORDINATE FINAL DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND EXISTING CONDITIONS.
— (Moment Connection)	INDICATES MOMENT CONNECTION TO DEVELOP FULL BENDING AND SHEAR CAPACITY OF BEAM OR GIRDER, UNLESS OTHERWISE NOTED.
FP (Span Direction)	INDICATES DIRECTION OF SPAN OF GALVANIZED 3/8" STEEL RAISED PATTERN FLOOR PLATE WITH 3/8" DIAMETER HOLES AT 12" O/C WITH FACTORY APPLIED FINISH COATING. FASTEN TO SUPPORTING STRUCTURAL STEEL WITH STAINLESS STEEL COUNTERSUNK ATTACHMENTS PER MANUFACTURER'S APPROVED CONNECTION. SEE SPECIFICATIONS AND ARCHITECTURAL DRAWINGS.
R (Span Direction)	INDICATES DIRECTION OF SPAN OF 1 1/2" DEEP WIDE RIB, 18 GAGE GALVANIZED METAL ROOF DECK. PROVIDE G90 GALVANIZED FINISH. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**EASTERN CONNECTICUT STATE UNIVERSITY**  
Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

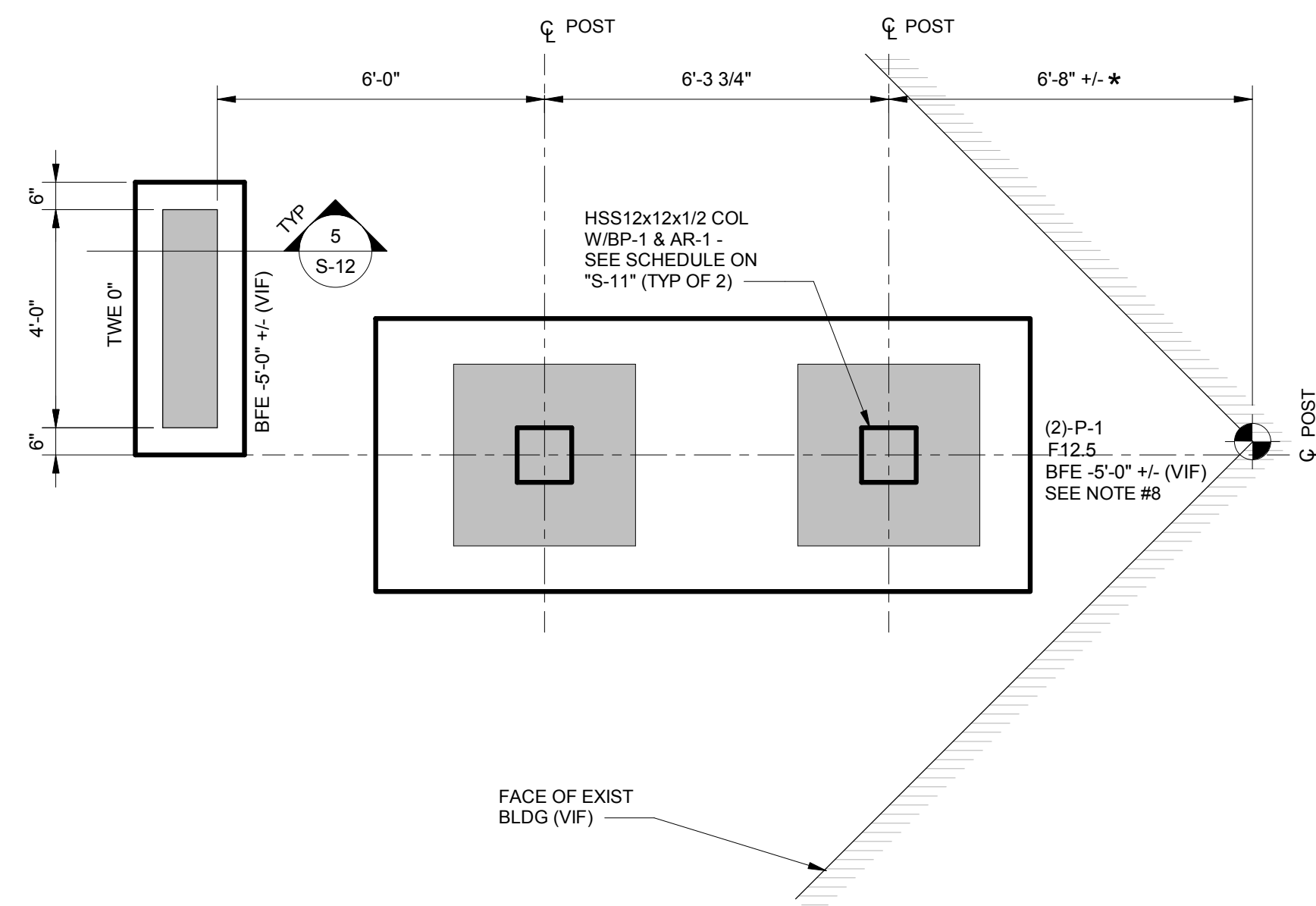
PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR 'C' FOUNDATION AND FRAMING PLANS**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **S-5**  
Scale: **As indicated**  
Plot Size: **24 x 36**



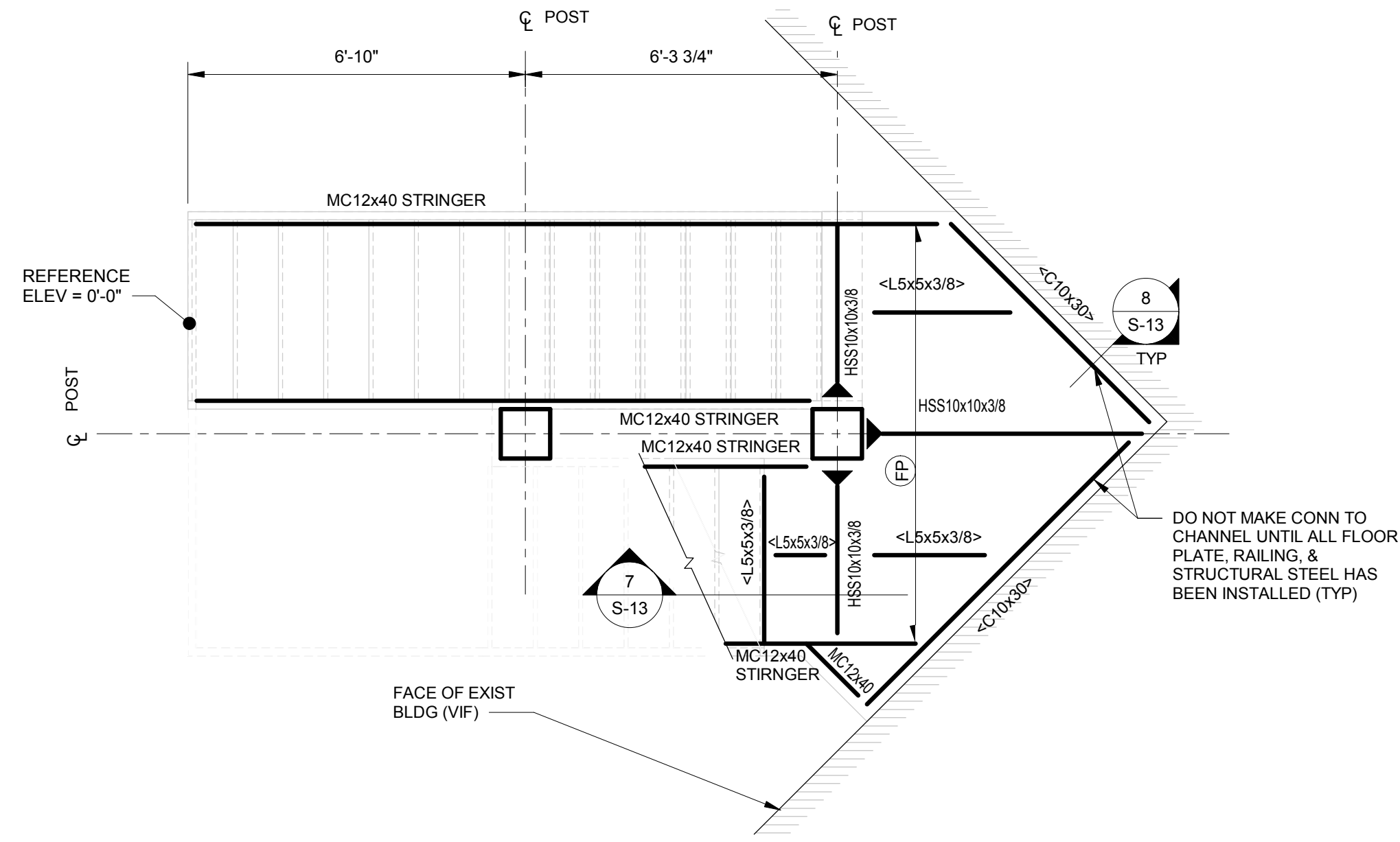
3/14/2018 10:35:01 AM E:\Revit\Local Files\Revit Structural\2017\ECSU Stairs (21-17-050) (17)\ECSU Low-Rise Stair STR (17) (JWM)\rvt



**STAIR 'D' FOUNDATION PLAN**

3/8" = 1'-0"

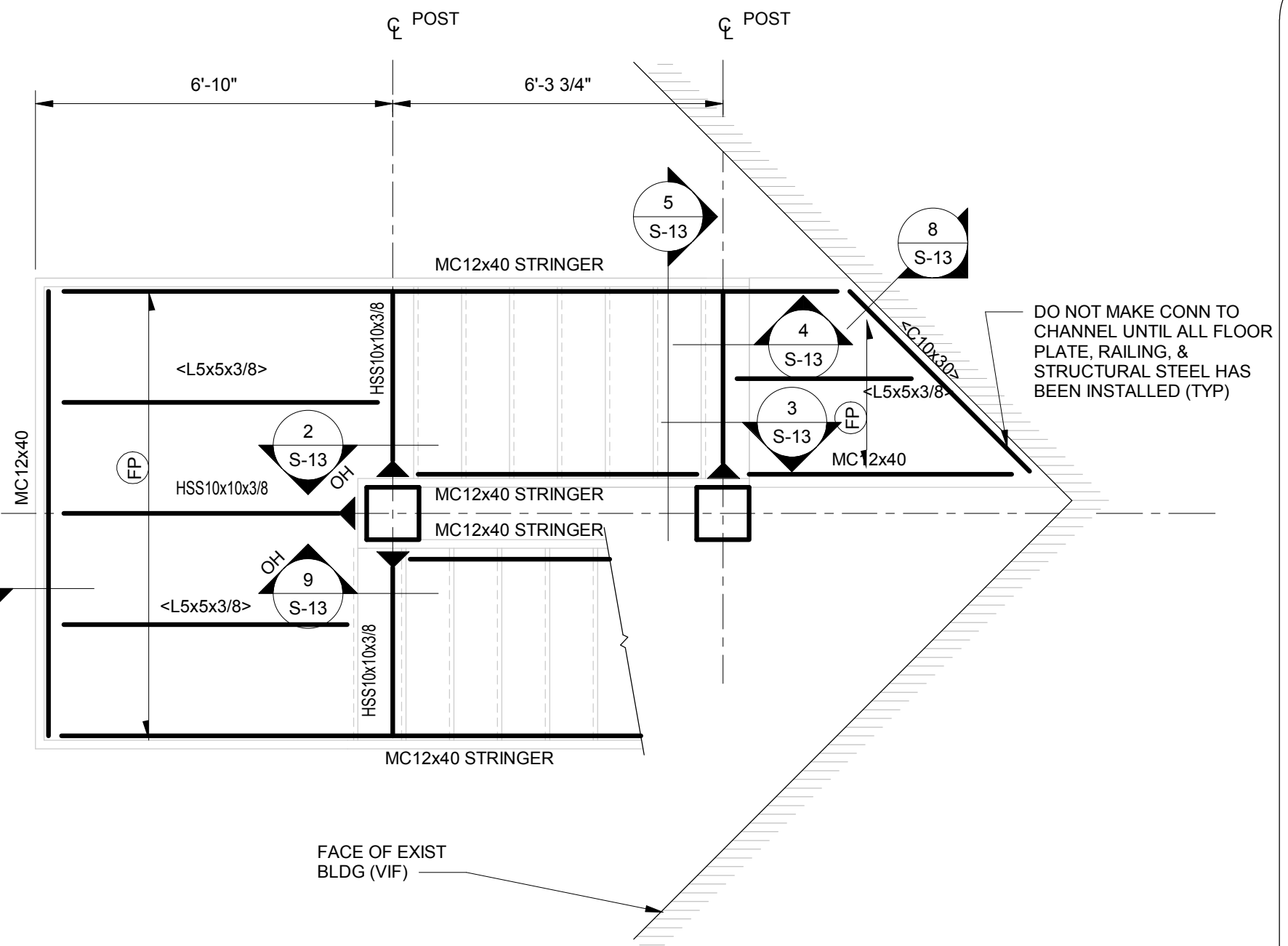
1. F...INDICATES CONCRETE FOOTING, SEE SCHEDULE ON "S-11".
2. P...INDICATES CONCRETE PIER, SEE SCHEDULE ON "S-11".
3. SEE GENERAL NOTES AND TYPICAL DETAILS FOR ADDITIONAL REQUIREMENTS.
4. CONTRACTORS TO VERIFY ALL CONDITIONS, DIMENSIONS, ELEVATIONS, QUANTITIES, ETC. IN THE FIELD PRIOR TO THE BEGINNING OF ANY NEW CONSTRUCTION. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES FOUND IMMEDIATELY.
5. CONTRACTOR TO OVER EXCAVATE AND PLACE A 6" THICK PAD OF 3/4" CRUSHED STONE ON GEOTEXTILE FILTER FABRIC UNDERNEATH ALL FOOTINGS. STONE AND FILTER FABRIC TO EXTEND 1'-0" BEYOND FACE OF WALL AND SPREAD FOOTING. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
6. CONTRACTOR TO PROVIDE EARTH SUPPORT OF EXISTING STRUCTURES AND UTILITIES FOR THE INSTALLATION OF NEW STRUCTURES AND UTILITIES. NOTE THAT LOCATIONS REQUIRING EARTH SUPPORT ARE NOT INDICATED ON THE DRAWINGS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALL LOCATIONS REQUIRED AND EXTENT NEEDED. SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
7. ALL REINFORCING BARS TO BE EPOXY COATED, SEE SPECIFICATION FOR REQUIREMENTS.
8. BOTTOM OF FOOTING ELEVATION TO MATCH BOTTOM OF FOOTING ELEVATION OF EXISTING ADJACENT FOOTING. CONTRACTOR TO VERIFY EXISTING BOTTOM OF FOOTING ELEVATION PRIOR TO BEGINNING OF FABRICATION. ALL BOTTOM OF FOUNDATIONS TO BE 4'-0" MINIMUM BELOW FINISHED GRADE. COORDINATE WITH CIVIL DRAWINGS.



**STAIR 'D' LOWER PLAN**

3/8" = 1'-0"

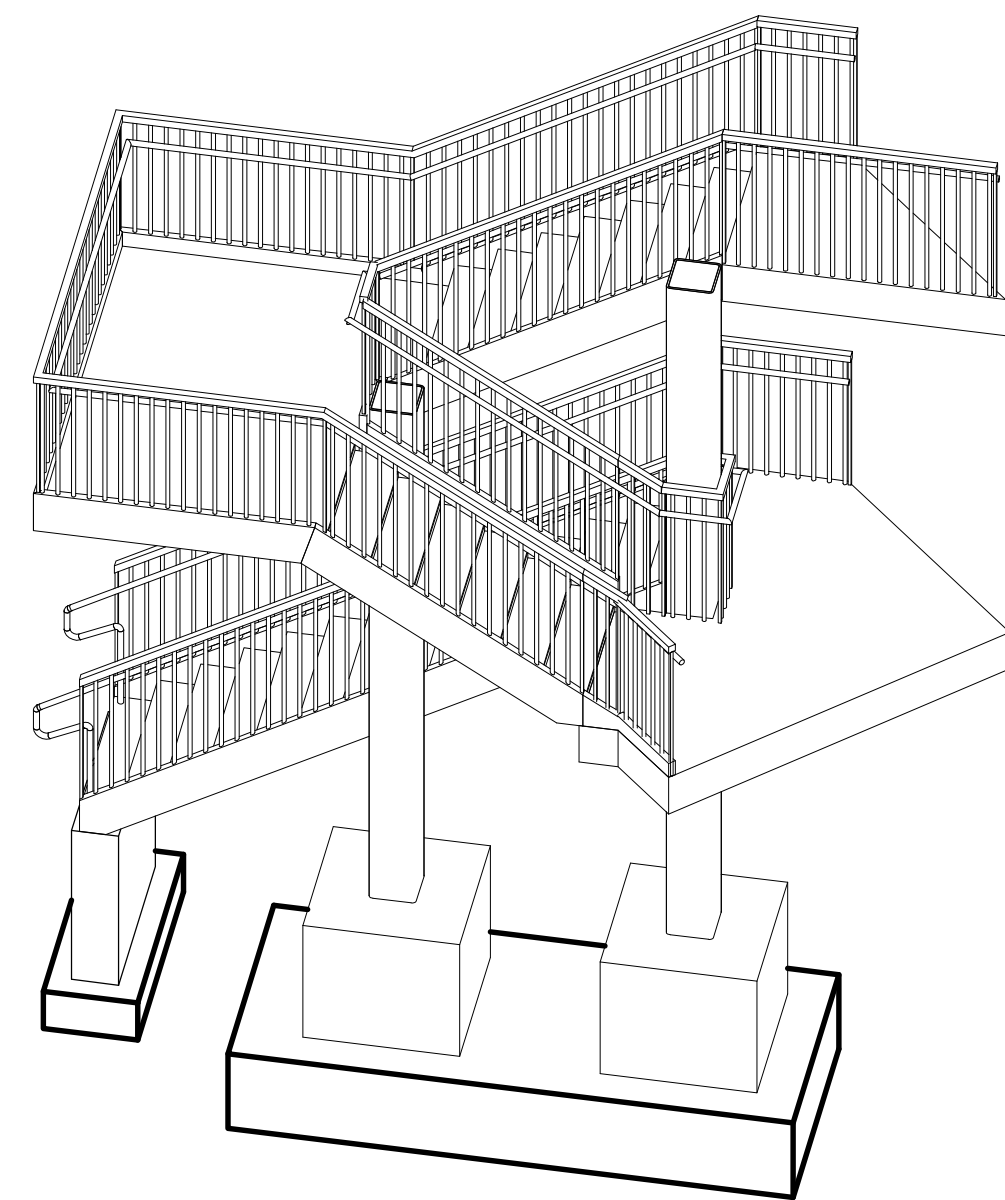
1. TOP OF STAIR LOWER LANDING TO BE AT REFERENCE ELEVATION +4'-4 1/4" +/- UNLESS OTHERWISE NOTED BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THE REFERENCE ELEVATION.
2. CONTRACTOR PERFORMING STRUCTURAL WORK SHALL BE RESPONSIBLE FOR ALL SHORING OF EXISTING CONSTRUCTION REQUIRED TO SAFELY COMPLETE WORK.
3. ON ALL TUBE SECTION COLUMNS AND BEAMS PROVIDE A 1/4" THICK WEATHER CAP PLATE (EACH END) SEAL WELDED TO MEMBER.
4. GROUT AT BASE PLATES WITH LEVELING NUTS TO BE INSTALLED AND ATTAIN REQUIRED DESIGN STRENGTH BEFORE PLACEMENT OF SITE SLABS AND PAVING.
5. ALL CONNECTIONS TO BE BOLTED OR SHOP WELDED. NO FIELD WELDING TO GALVANIZED STEEL TO BE PERMITTED.
6. ALL STRUCTURAL STEEL, CONNECTIONS, BOLTS, BASE PLATES, ANCHOR RODS, ETC. SHALL BE HOT DIPPED GALVANIZED AND FACTORY COATED. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'D' UPPER PLAN**

3/8" = 1'-0"

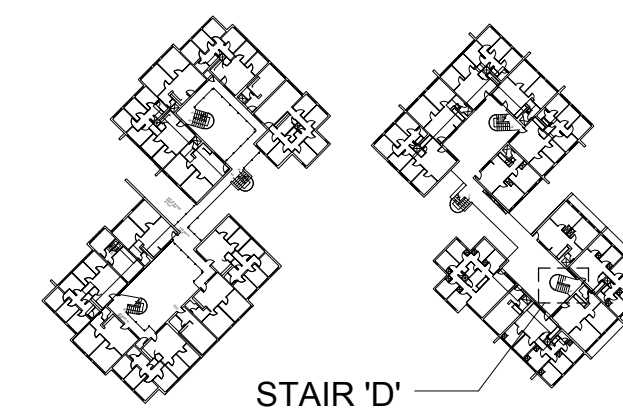
1. TOP OF STAIR MAIN LANDING TO BE AT REFERENCE ELEVATION 17'-4 1/4" +/- VERIFY IN FIELD. TOP OF NEW STAIR LANDING ELEVATION TO MATCH EXISTING. ADJUST LANDING ELEVATION AND TOP OF STEEL ELEVATION AS REQUIRED. WITHIN (2)-WEEKS OF MOBILIZING TO SITE, CONTRACTOR TO SURVEY EXISTING FINISHED FLOOR ELEVATIONS AND PROVIDE ELEVATIONS TO ENGINEER/ARCHITECT. ALLOW DESIGN TEAM (2)-WEEKS TO MAKE REQUIRED MODIFICATIONS TO THE CONTRACT DOCUMENTS.
2. SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'D' ISOMETRIC**

**FLOOR FRAMING PLAN SYMBOL LEGEND**

- \* INDICATES COORDINATE FINAL DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND EXISTING CONDITIONS.
- INDICATES MOMENT CONNECTION TO DEVELOP FULL BENDING AND SHEAR CAPACITY OF BEAM OR GIRDER, UNLESS OTHERWISE NOTED.
- (FP) INDICATES DIRECTION OF SPAN OF GALVANIZED 3/8" STEEL RAISED PATTERN FLOOR PLATE WITH 3/8" DIAMETER HOLES AT 12" O/C WITH FACTORY APPLIED FINISH COATING. FASTEN TO SUPPORTING STRUCTURAL STEEL WITH STAINLESS STEEL COUNTERSUNK ATTACHMENTS PER MANUFACTURER'S APPROVED CONNECTION. SEE SPECIFICATIONS AND ARCHITECTURAL DRAWINGS.
- (R) INDICATES DIRECTION OF SPAN OF 1 1/2" DEEP WIDE RIB, 18 GAGE GALVANIZED METAL ROOF DECK. PROVIDE G90 GALVANIZED FINISH. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



STAIR 'D'



**EASTERN CONNECTICUT STATE UNIVERSITY**  
 Facilities Management and Planning  
 83 Windham Street, Willimantic CT 06226

	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

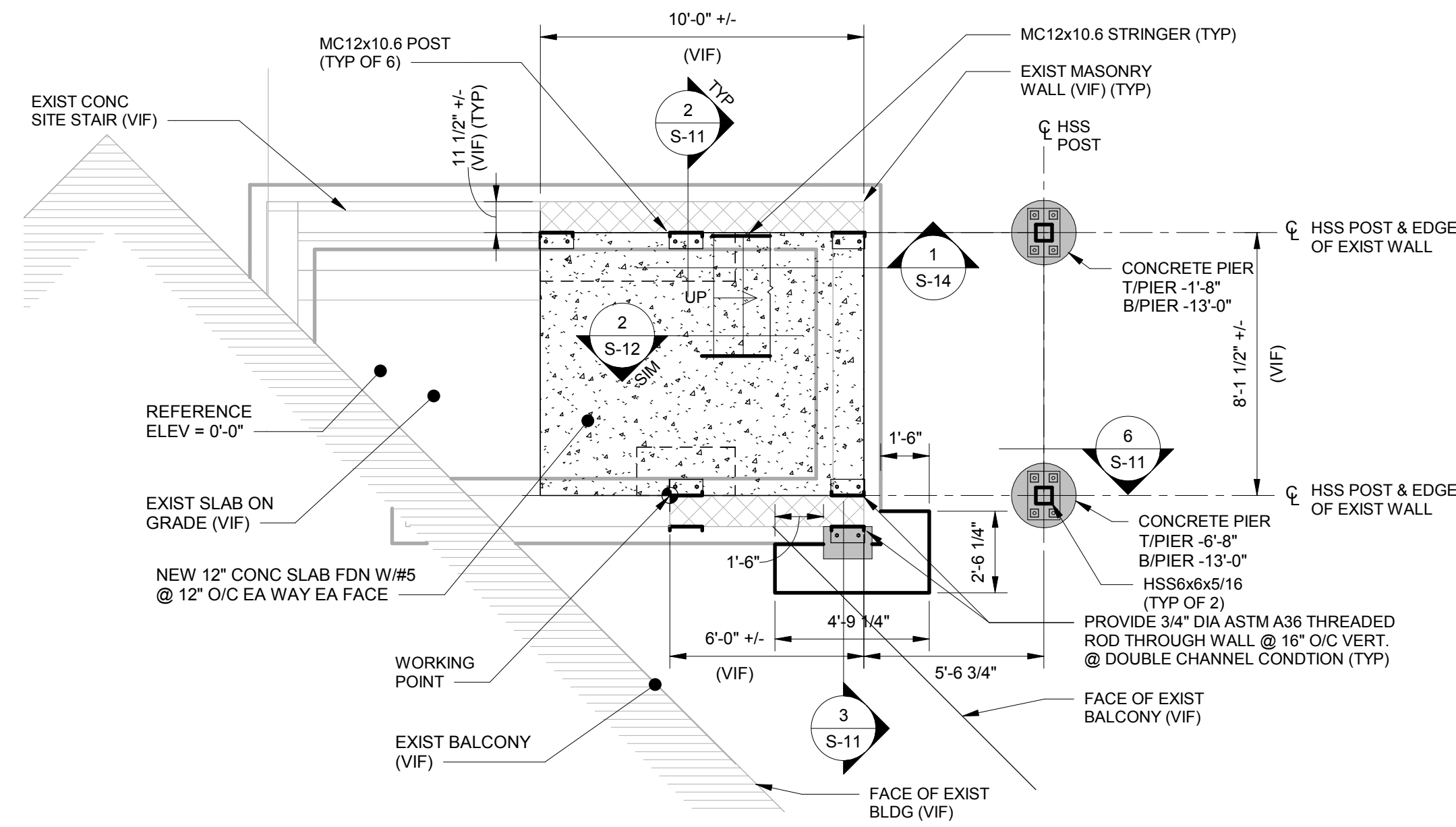
PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR 'D' FOUNDATION AND FRAMING PLANS**

Project No.: **ECSU 2016-9 (Phase II)**  
 Date: **12/6/2017** Drawing No.: **S-6**  
 Scale: **As indicated**  
 Plot Size: **24 x 36**

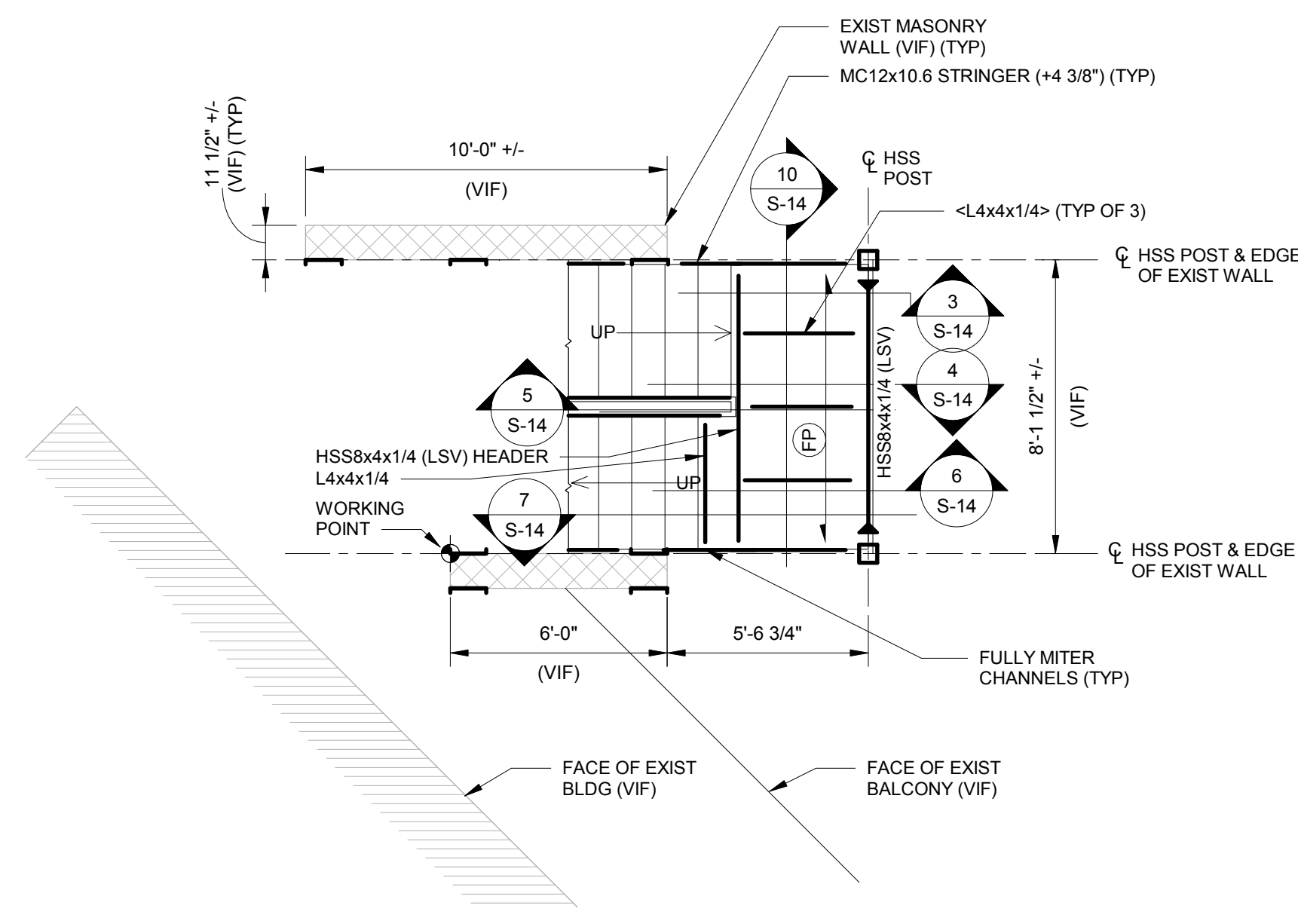


3/14/2018 10:35:04 AM E:\Revit\Local Files\Revit Structural\2017\ECSU Stairs (21-17-050) (17)\ECSU Low-Rise Stair STR (17) (JMM).rvt



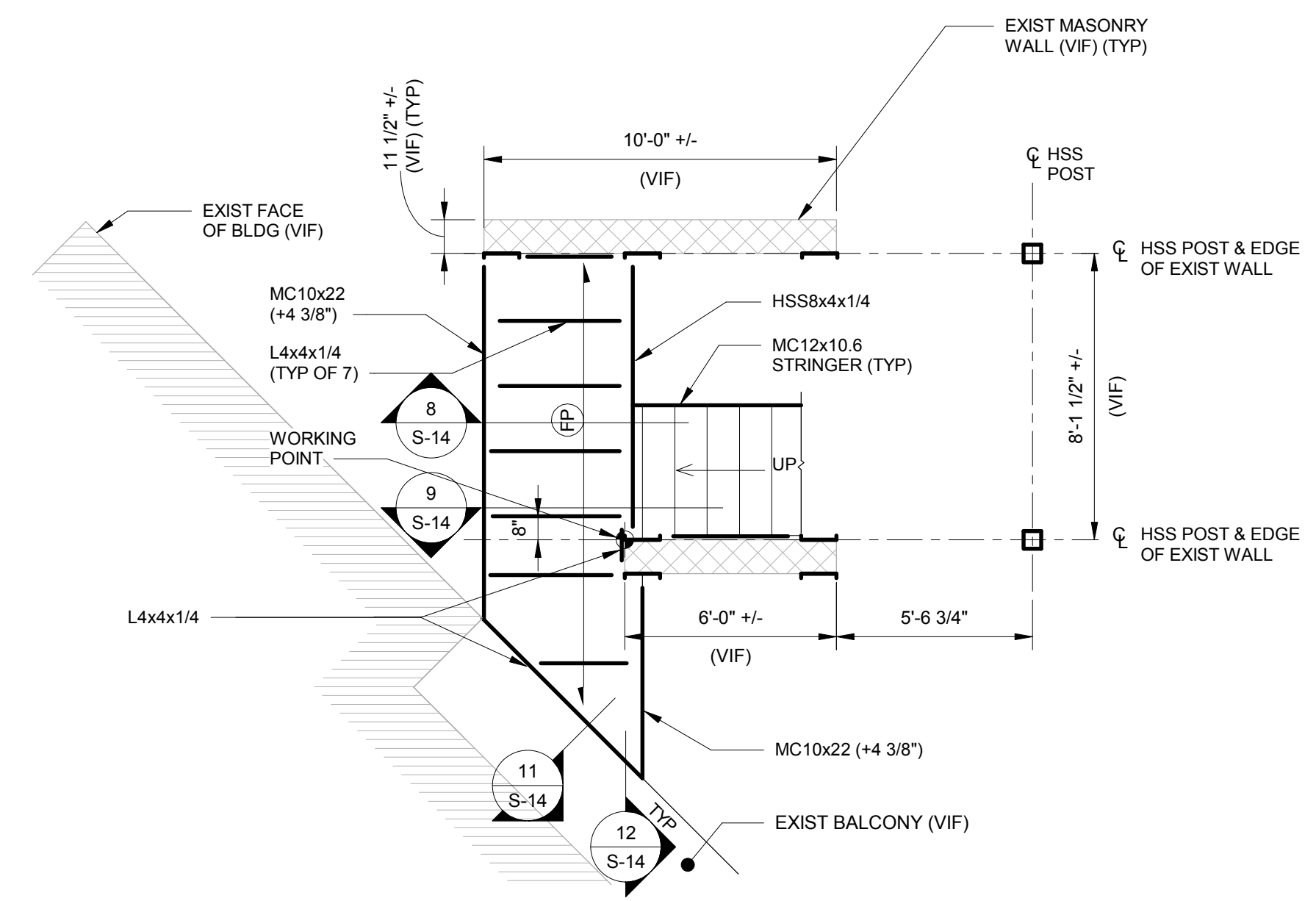
**STAIR 'E-WEST' FOUNDATION PLAN**  
1/4" = 1'-0"

1. F...INDICATES CONCRETE FOOTING, SEE SCHEDULE ON "S-11".
2. P...INDICATES CONCRETE PIER, SEE SCHEDULE ON "S-11".
3. SEE GENERAL NOTES AND TYPICAL DETAILS FOR ADDITIONAL REQUIREMENTS.
4. CONTRACTORS TO VERIFY ALL CONDITIONS, DIMENSIONS, ELEVATIONS, QUANTITIES, ETC. IN THE FIELD PRIOR TO THE BEGINNING OF ANY NEW CONSTRUCTION. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES FOUND IMMEDIATELY.
5. CONTRACTOR TO OVER EXCAVATE AND PLACE A 6" THICK PAD OF 3/4" CRUSHED STONE ON GEOTEXTILE FILTER FABRIC UNDERNEATH ALL FOOTINGS. STONE AND FILTER FABRIC TO EXTEND 1'-0" BEYOND FACE OF WALL AND SPREAD FOOTING. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
6. CONTRACTOR TO PROVIDE EARTH SUPPORT OF EXISTING STRUCTURES AND UTILITIES FOR THE INSTALLATION OF NEW STRUCTURES AND UTILITIES. NOTE THAT LOCATIONS REQUIRING EARTH SUPPORT ARE NOT INDICATED ON THE DRAWINGS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALL LOCATIONS REQUIRED AND EXTENT NEEDED. SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
7. ALL REINFORCING BARS TO BE EPOXY COATED, SEE SPECIFICATION FOR REQUIREMENTS.
8. BOTTOM OF FOOTING ELEVATION TO MATCH BOTTOM OF FOOTING ELEVATION OF EXISTING ADJACENT FOOTING. CONTRACTOR TO VERIFY EXISTING BOTTOM OF FOOTING ELEVATION PRIOR TO BEGINNING OF FABRICATION. ALL BOTTOM OF FOUNDATIONS TO BE 4'-0" MINIMUM BELOW FINISHED GRADE. COORDINATE WITH CIVIL DRAWINGS.
9. SEE "1/S-14" FOR TYPICAL MC POST CONNECTIONS TO EXISTING MASONRY WALL.



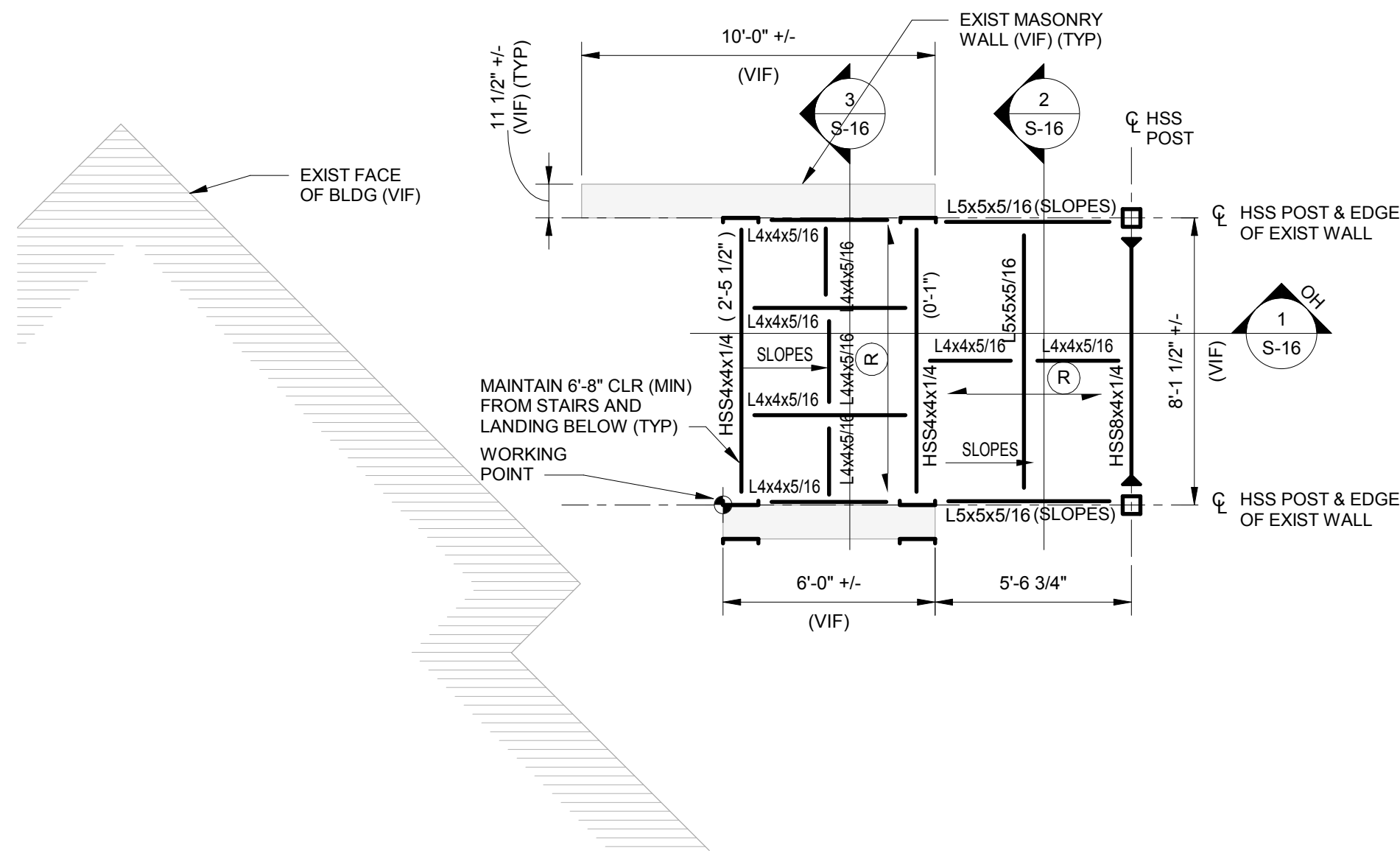
**STAIR 'E-WEST' LOWER LEVEL FRAMING PLAN**  
1/4" = 1'-0"

1. TOP OF STAIR MID LANDING STEEL TO BE AT REFERENCE ELEVATION +4'-3 5/8" UNLESS OTHERWISE NOTED. BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THE REFERENCE ELEVATION.
2. CONTRACTOR PERFORMING STRUCTURAL WORK SHALL BE RESPONSIBLE FOR ALL SHORING OF EXISTING CONSTRUCTION REQUIRED TO SAFELY COMPLETE WORK.
3. ON ALL TUBE SECTION COLUMNS AND BEAMS PROVIDE A 1/4" THICK WEATHER CAP PLATE (EACH END) SEAL WELDED TO MEMBER.
4. GROUT AT BASE PLATES WITH LEVELING NUTS TO BE INSTALLED AND ATTAIN REQUIRED DESIGN STRENGTH BEFORE PLACEMENT OF SITE SLABS AND PAVING.
5. ALL CONNECTIONS TO BE BOLTED OR SHOP WELDED. NO FIELD WELDING TO GALVANIZED STEEL TO BE PERMITTED.
6. ALL STRUCTURAL STEEL, CONNECTIONS, BOLTS, BASE PLATES, ANCHOR RODS, ETC. SHALL BE HOT DIPPED GALVANIZED AND FACTORY COATED. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'E-WEST' UPPER LEVEL FRAMING PLAN**  
1/4" = 1'-0"

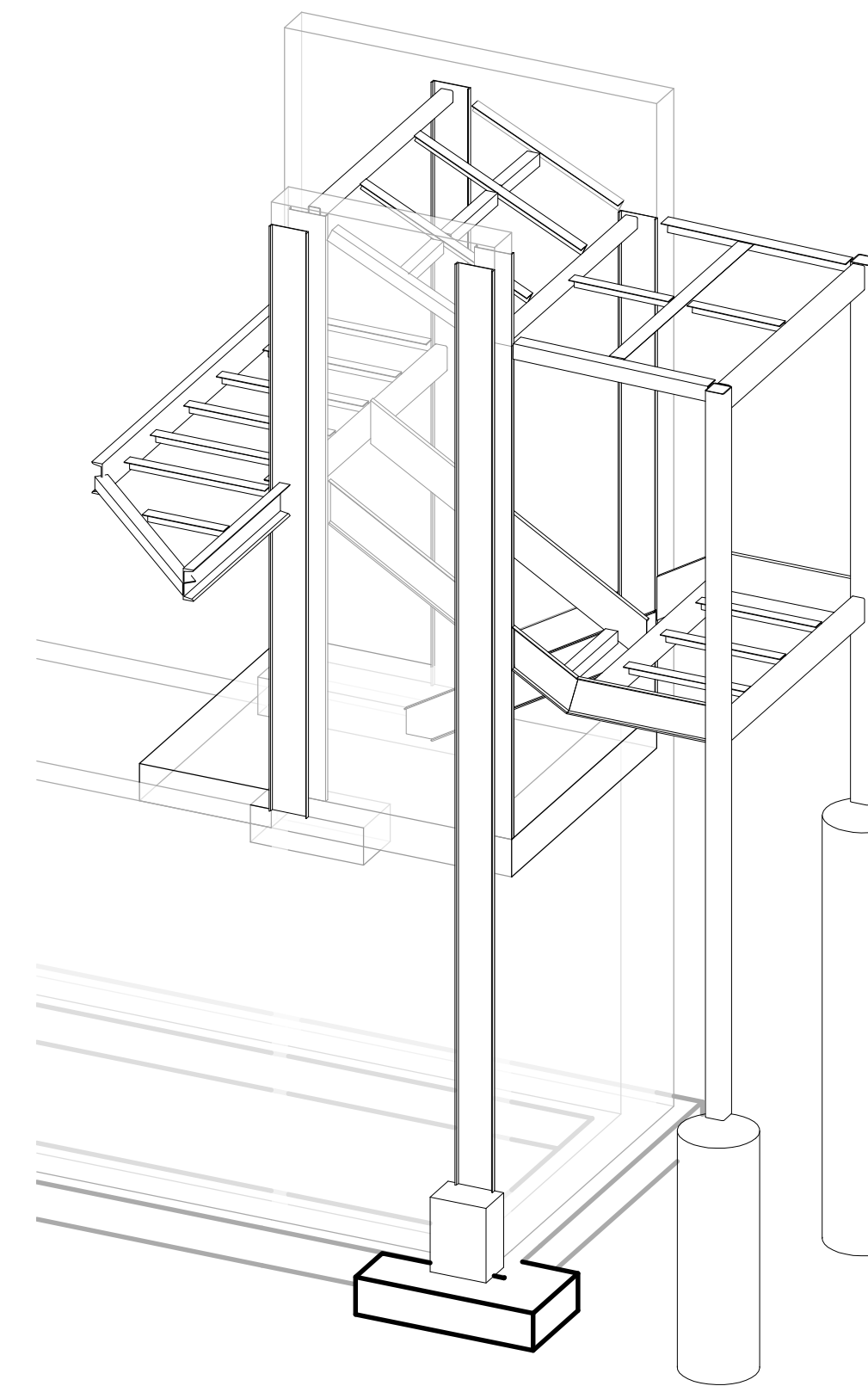
1. TOP OF STAIR MAIN LANDING STEEL TO BE AT REFERENCE ELEVATION 8'-7 5/8" +/- VERIFY IN FIELD. TOP OF NEW STAIR LANDING ELEVATION TO MATCH EXISTING. ADJUST LANDING ELEVATION AND TOP OF STEEL ELEVATION AS REQUIRED. WITHIN (2)-WEEKS OF MOBILIZING TO SITE, CONTRACTOR TO SURVEY EXISTING FINISHED FLOOR ELEVATIONS AND PROVIDE ELEVATIONS TO ENGINEER/ARCHITECT. ALLOW DESIGN TEAM (2)-WEEKS TO MAKE REQUIRED MODIFICATIONS TO THE CONTRACT DOCUMENTS.
2. SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



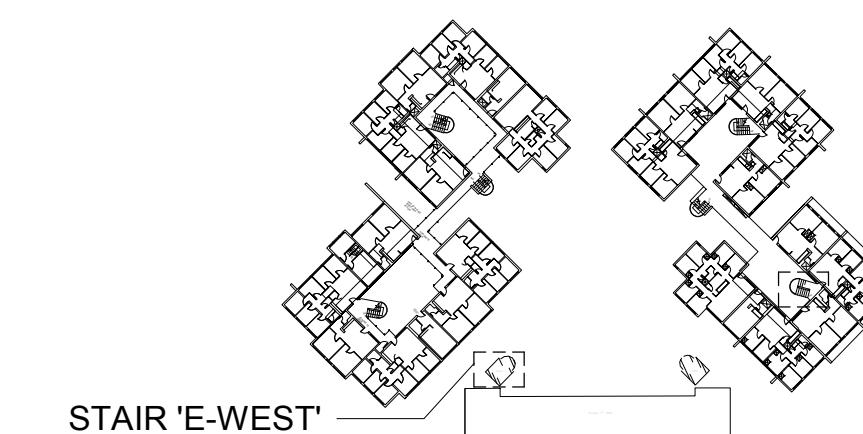
**STAIR 'E-WEST' ROOF FRAMING PLAN**  
1/4" = 1'-0"

1. TOP OF STEEL TO BE AT REFERENCE ELEVATION +13'-2 1/2" UNLESS OTHERWISE NOTED BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THIS REFERENCE ELEVATION.
2. SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

FLOOR FRAMING PLAN SYMBOL LEGEND	
	INDICATES COORDINATE FINAL DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND EXISTING CONDITIONS.
	INDICATES MOMENT CONNECTION TO DEVELOP FULL BENDING AND SHEAR CAPACITY OF BEAM OR GIRDER, UNLESS OTHERWISE NOTED.
	INDICATES DIRECTION OF SPAN OF GALVANIZED 3/8" STEEL RAISED PATTERN FLOOR PLATE WITH 3/8" DIAMETER HOLES AT 12" O/C WITH FACTORY APPLIED FINISH COATING. FASTEN TO SUPPORTING STRUCTURAL STEEL WITH STAINLESS STEEL COUNTERSUNK ATTACHMENTS PER MANUFACTURER'S APPROVED CONNECTION. SEE SPECIFICATIONS AND ARCHITECTURAL DRAWINGS.
	INDICATES DIRECTION OF SPAN OF 1 1/2" DEEP WIDE RIB, 18 GAGE GALVANIZED METAL ROOF DECK. PROVIDE G90 GALVANIZED FINISH. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'E-WEST' ISOMETRIC**



**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

Bid Set	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue Date

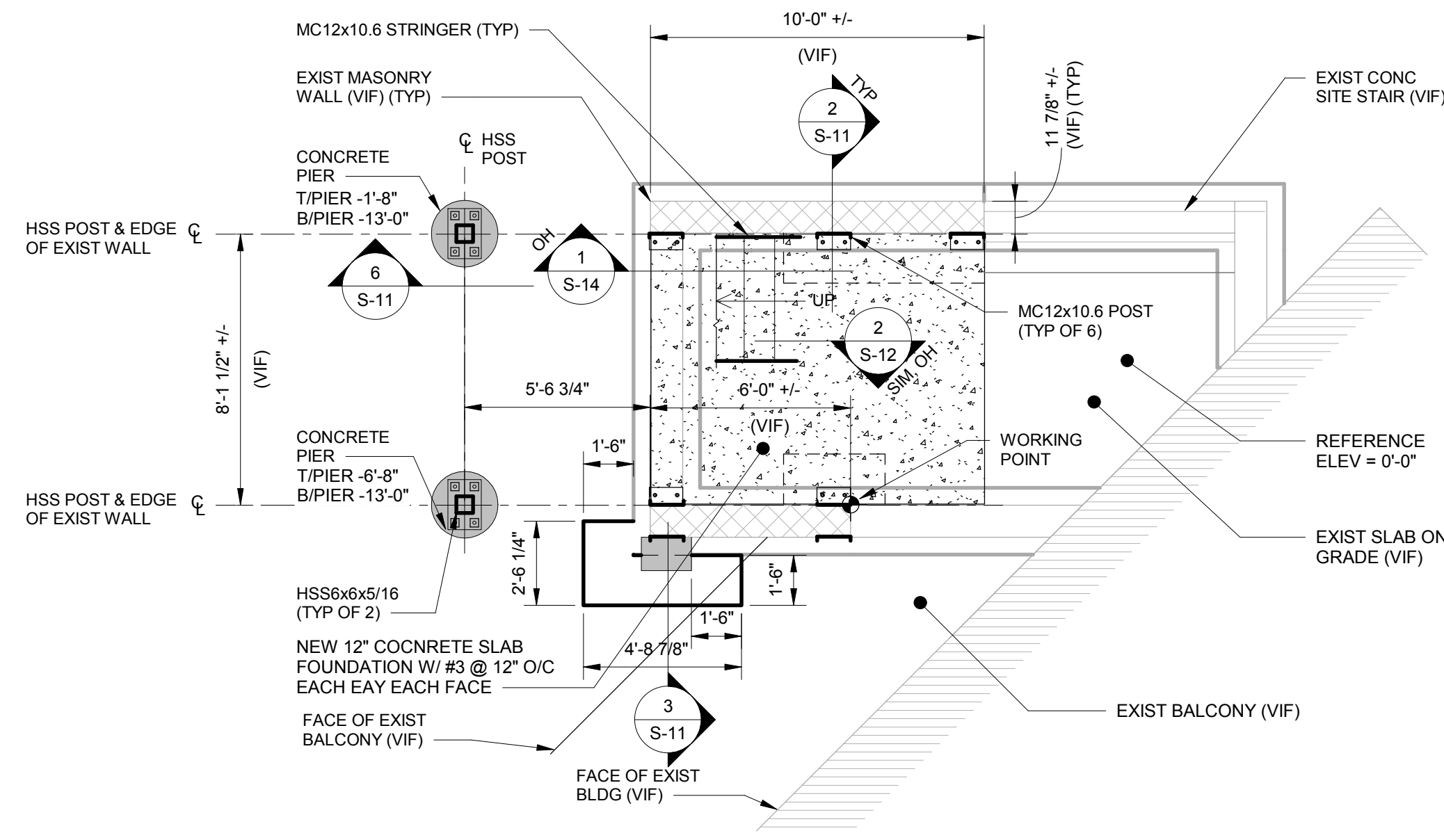
PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR 'E-WEST' FOUNDATION AND FRAMING PLANS**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **S-7**  
Scale: **As indicated**  
Plot Size: **24 x 36**



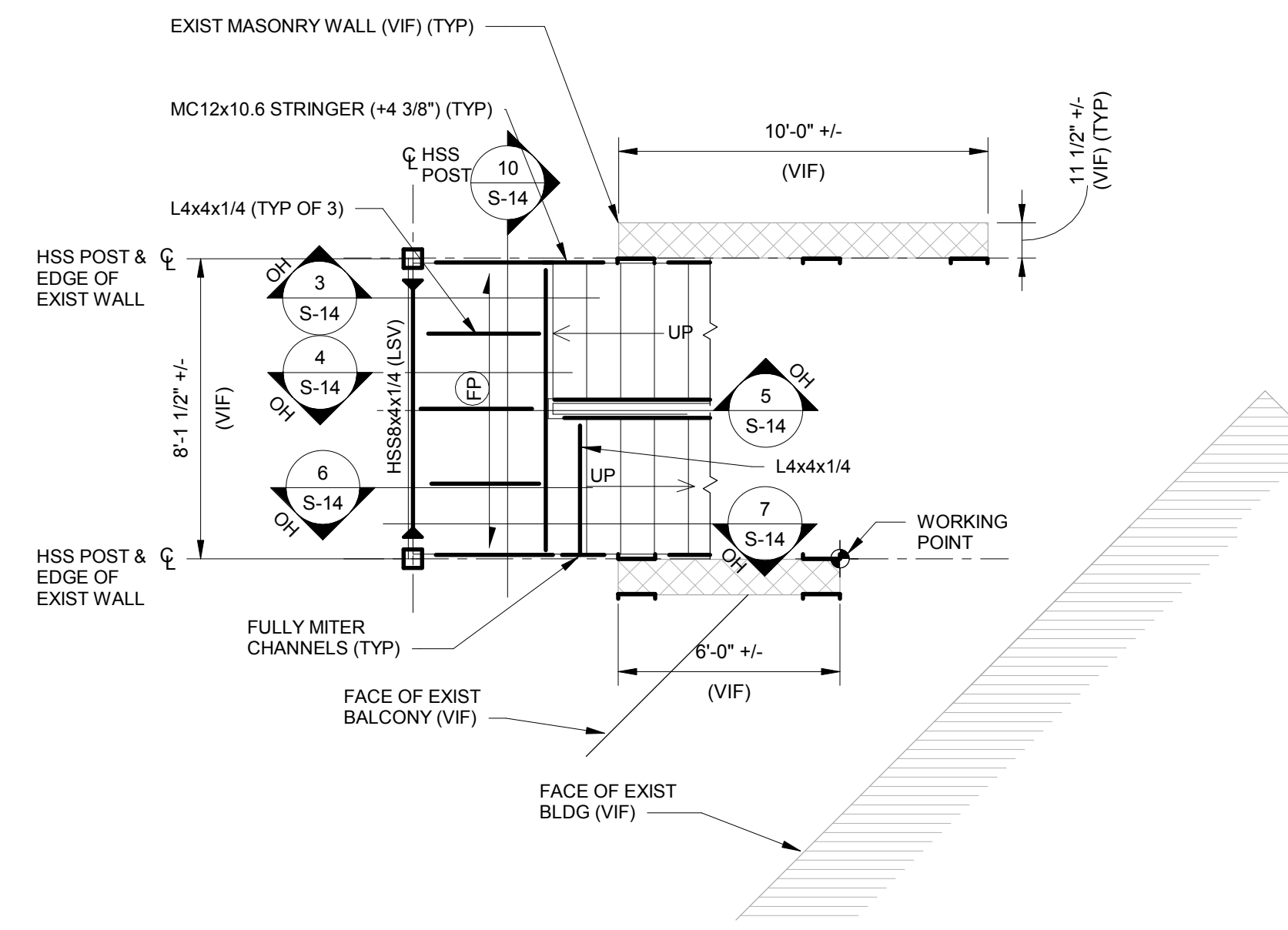
3/14/2018 10:39:06 AM E:\Revit\Local Files\Revit Structural\2017\ECSU Stairs (21-17-050) (17)\ECSU Low-Rise Stair STR (17) (JMM).rvt



**STAIR 'E-EAST' FOUNDATION PLAN**

1/4" = 1'-0"

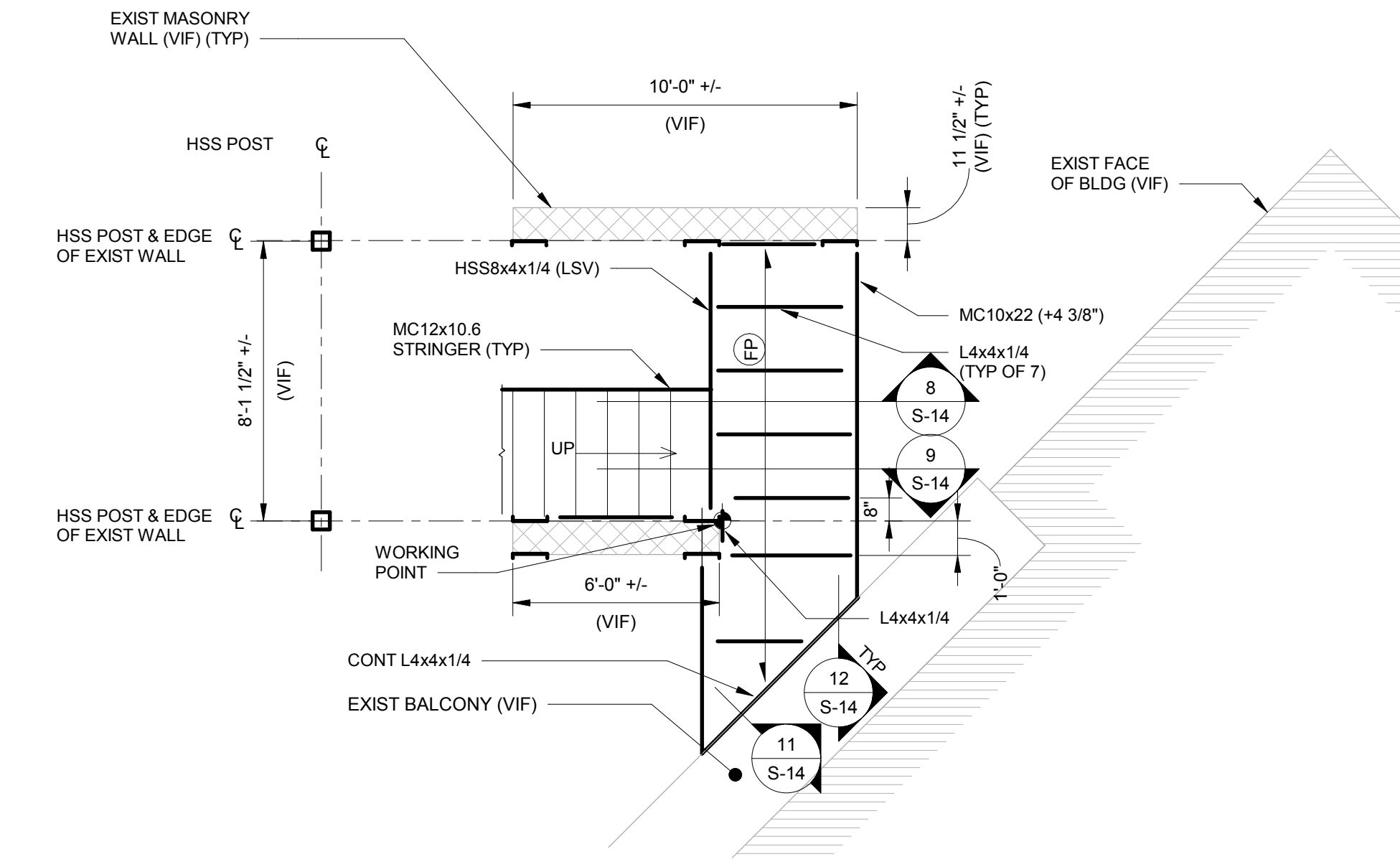
- F... INDICATES CONCRETE FOOTING, SEE SCHEDULE ON "S-11".
- P... INDICATES CONCRETE PIER, SEE SCHEDULE ON "S-11".
- SEE GENERAL NOTES AND TYPICAL DETAILS FOR ADDITIONAL REQUIREMENTS.
- CONTRACTORS TO VERIFY ALL CONDITIONS, DIMENSIONS, ELEVATIONS, QUANTITIES, ETC. IN THE FIELD PRIOR TO THE BEGINNING OF ANY NEW CONSTRUCTION. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES FOUND IMMEDIATELY.
- CONTRACTOR TO OVER EXCAVATE AND PLACE A 6" THICK PAD OF 3/4" CRUSHED STONE ON GEOTEXTILE FILTER FABRIC UNDERNEATH ALL FOOTINGS. STONE AND FILTER FABRIC TO EXTEND 1'-0" BEYOND FACE OF WALL AND SPREAD FOOTING. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- CONTRACTOR TO PROVIDE EARTH SUPPORT OF EXISTING STRUCTURES AND UTILITIES FOR THE INSTALLATION OF NEW STRUCTURES AND UTILITIES. NOTE THAT LOCATIONS REQUIRING EARTH SUPPORT ARE NOT INDICATED ON THE DRAWINGS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALL LOCATIONS REQUIRED AND EXTENT NEEDED. SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
- ALL REINFORCING BARS TO BE EPOXY COATED, SEE SPECIFICATION FOR REQUIREMENTS.
- BOTTOM OF FOOTING ELEVATION TO MATCH BOTTOM OF FOOTING ELEVATION OF EXISTING ADJACENT FOOTING. CONTRACTOR TO VERIFY EXISTING BOTTOM OF FOOTING ELEVATION PRIOR TO BEGINNING OF FABRICATION. ALL BOTTOM OF FOUNDATIONS TO BE 4'-0" MINIMUM BELOW FINISHED GRADE. COORDINATE WITH CIVIL DRAWINGS.
- SEE "1/S-14" FOR TYPICAL MC POST CONNECTIONS TO EXISTING MASONRY WALL.



**STAIR 'E-EAST' LOWER LEVEL FRAMING PLAN**

1/4" = 1'-0"

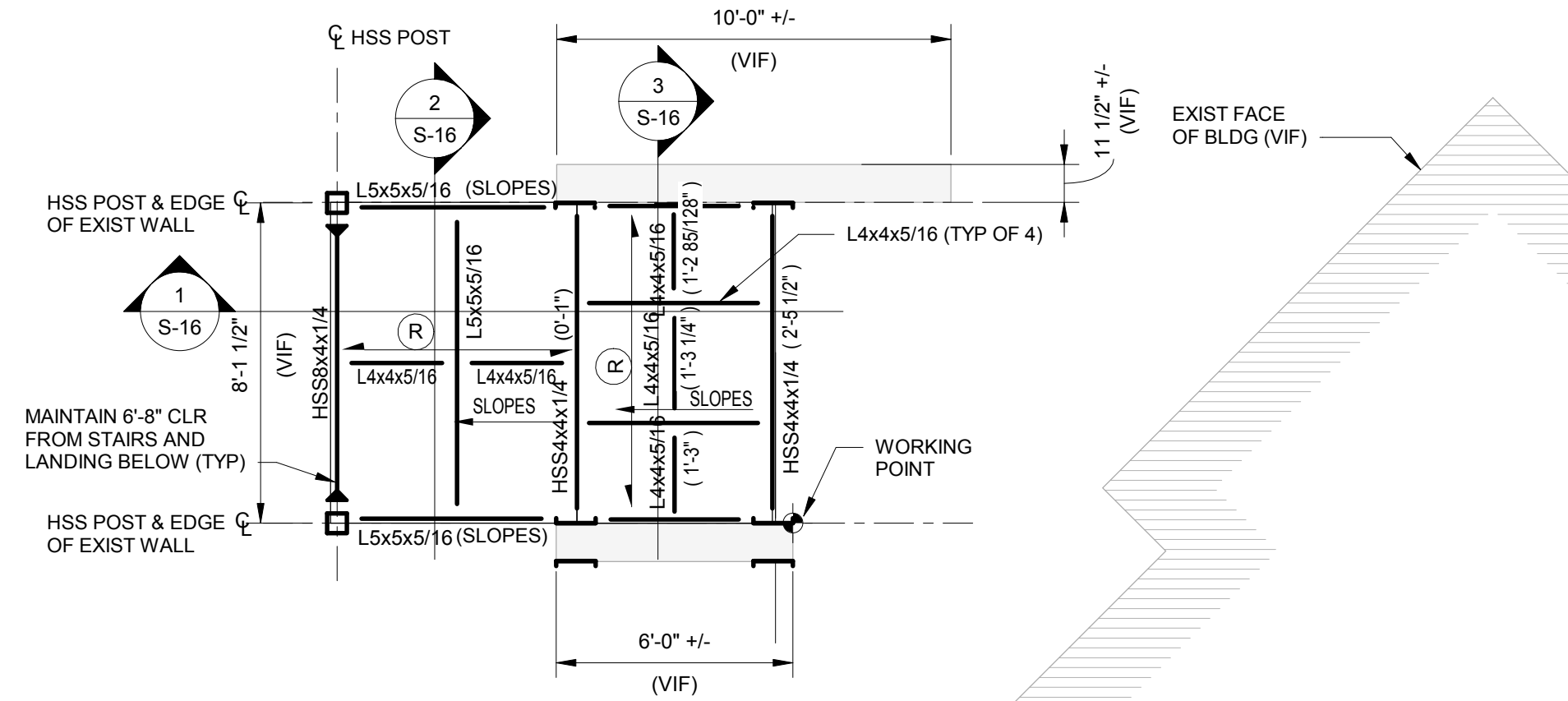
- TOP OF STAIR MID LANDING STEEL TO BE AT REFERENCE ELEVATION +4'-3 5/8" UNLESS OTHERWISE NOTED BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THE REFERENCE ELEVATION.
- CONTRACTOR PERFORMING STRUCTURAL WORK SHALL BE RESPONSIBLE FOR ALL SHORING OF EXISTING CONSTRUCTION REQUIRED TO SAFELY COMPLETE WORK.
- ON ALL TUBE SECTION COLUMNS AND BEAMS PROVIDE A 1/4" THICK WEATHER CAP PLATE (EACH END) SEAL WELDED TO MEMBER.
- GROUT AT BASE PLATES WITH LEVELING NUTS TO BE INSTALLED AND ATTAIN REQUIRED DESIGN STRENGTH BEFORE PLACEMENT OF SITE SLABS AND PAVING.
- ALL CONNECTIONS TO BE BOLTED OR SHOP WELDED. NO FIELD WELDING TO GALVANIZED STEEL TO BE PERMITTED.
- ALL STRUCTURAL STEEL, CONNECTIONS, BOLTS, BASE PLATES, ANCHOR RODS, ETC. SHALL BE HOT DIPPED GALVANIZED AND FACTORY COATED. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'E-EAST' UPPER LEVEL FRAMING PLAN**

1/4" = 1'-0"

- TOP OF STAIR MAIN LANDING STEEL TO BE AT REFERENCE ELEVATION +8'-7 5/8" +/- VERIFY IN FIELD. TOP OF NEW STAIR LANDING ELEVATION TO MATCH EXISTING. ADJUST LANDING ELEVATION AND TOP OF STEEL ELEVATION AS REQUIRED. WITHIN (2)-WEEKS OF MOBILIZING TO SITE, CONTRACTOR TO SURVEY EXISTING FINISHED FLOOR ELEVATIONS AND PROVIDE ELEVATIONS TO ENGINEER/ARCHITECT. ALLOW DESIGN TEAM (2)-WEEKS TO MAKE REQUIRED MODIFICATIONS TO THE CONTRACT DOCUMENTS.
- SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

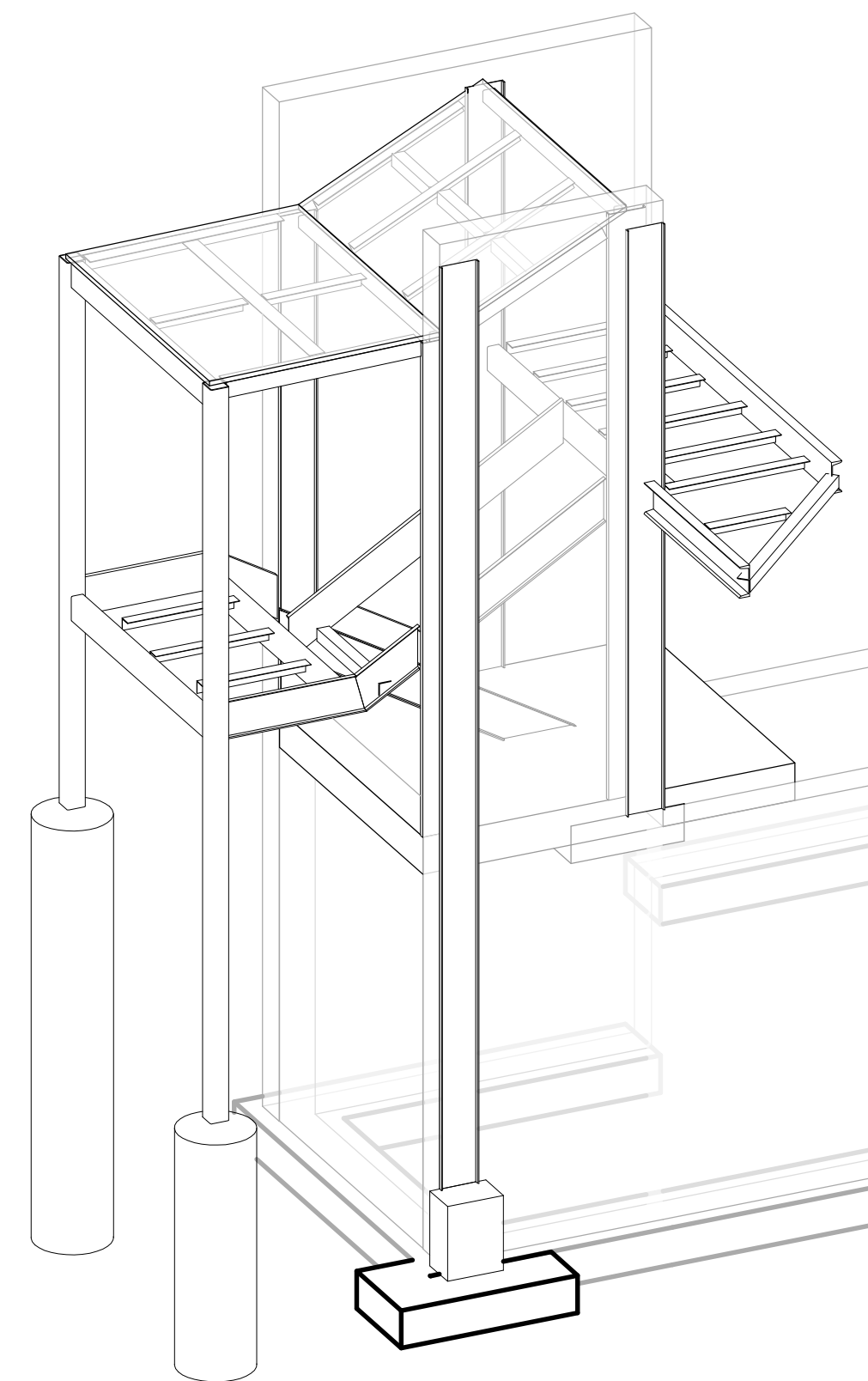


**STAIR 'E-EAST' ROOF FRAMING PLAN**

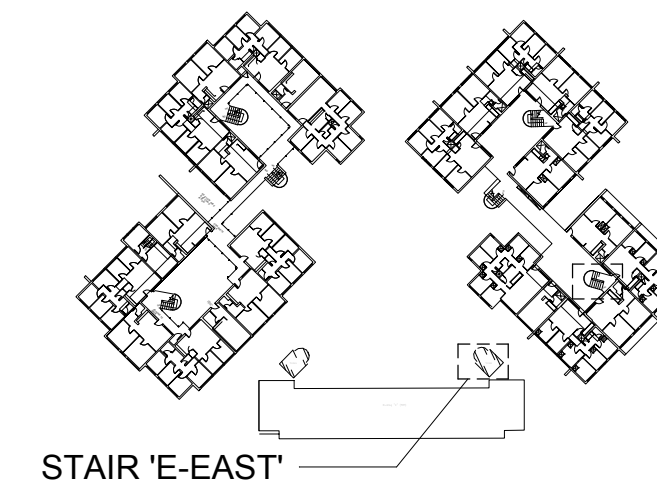
1/4" = 1'-0"

- TOP OF STEEL TO BE AT REFERENCE ELEVATION +13'-2 1/2" UNLESS OTHERWISE NOTED BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THIS REFERENCE ELEVATION.
- SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

FLOOR FRAMING PLAN SYMBOL LEGEND	
* (with dimension line)	INDICATES COORDINATE FINAL DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND EXISTING CONDITIONS.
— (with arrow)	INDICATES MOMENT CONNECTION TO DEVELOP FULL BENDING AND SHEAR CAPACITY OF BEAM OR GIRDER, UNLESS OTHERWISE NOTED.
FP (with arrow)	INDICATES DIRECTION OF SPAN OF GALVANIZED 3/8" STEEL RAISED PATTERN FLOOR PLATE WITH 3/8" DIAMETER HOLES AT 12" O/C WITH FACTORY APPLIED FINISH COATING. FASTEN TO SUPPORTING STRUCTURAL STEEL WITH STAINLESS STEEL COUNTERSUNK ATTACHMENTS PER MANUFACTURER'S APPROVED CONNECTION. SEE SPECIFICATIONS AND ARCHITECTURAL DRAWINGS.
R (with arrow)	INDICATES DIRECTION OF SPAN OF 1 1/2" DEEP WIDE RIB, 18 GAGE GALVANIZED METAL ROOF DECK. PROVIDE G90 GALVANIZED FINISH. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'E-EAST' ISOMETRIC**



**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

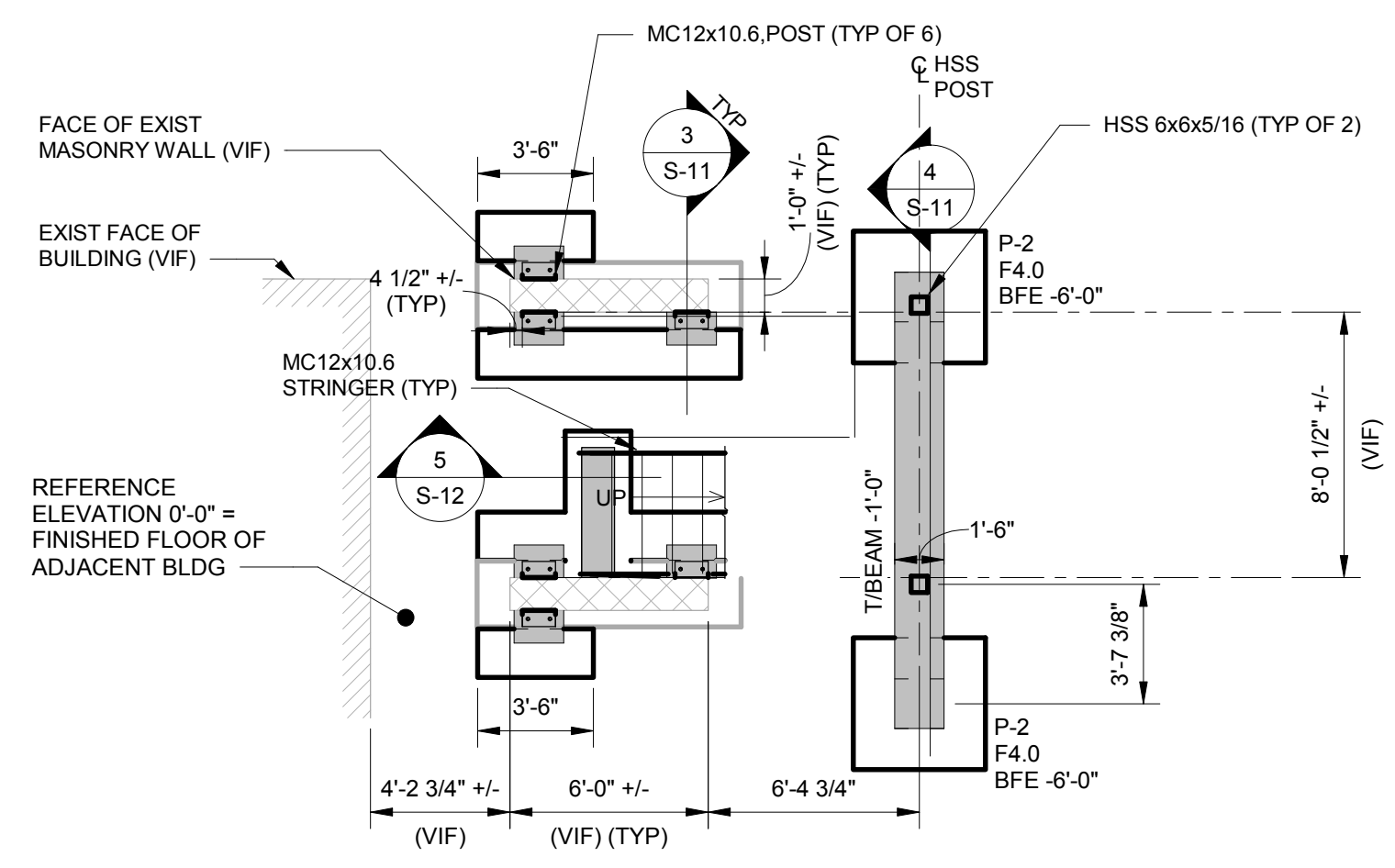
Bid Set	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR 'E-EAST' FOUNDATION AND FRAMING PLANS**

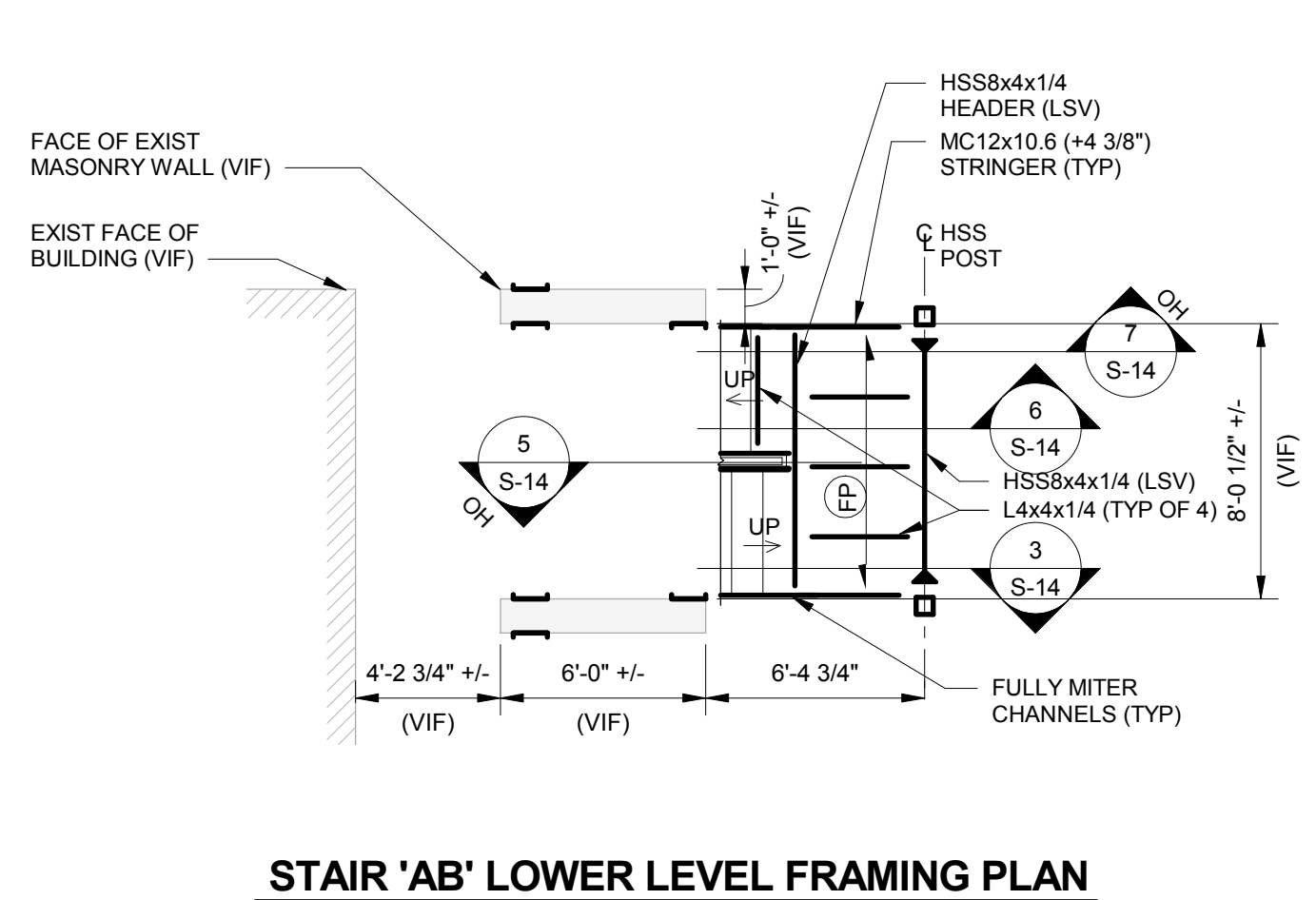
Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **S-8**  
Scale: **As indicated**  
Plot Size: **24 x 36**





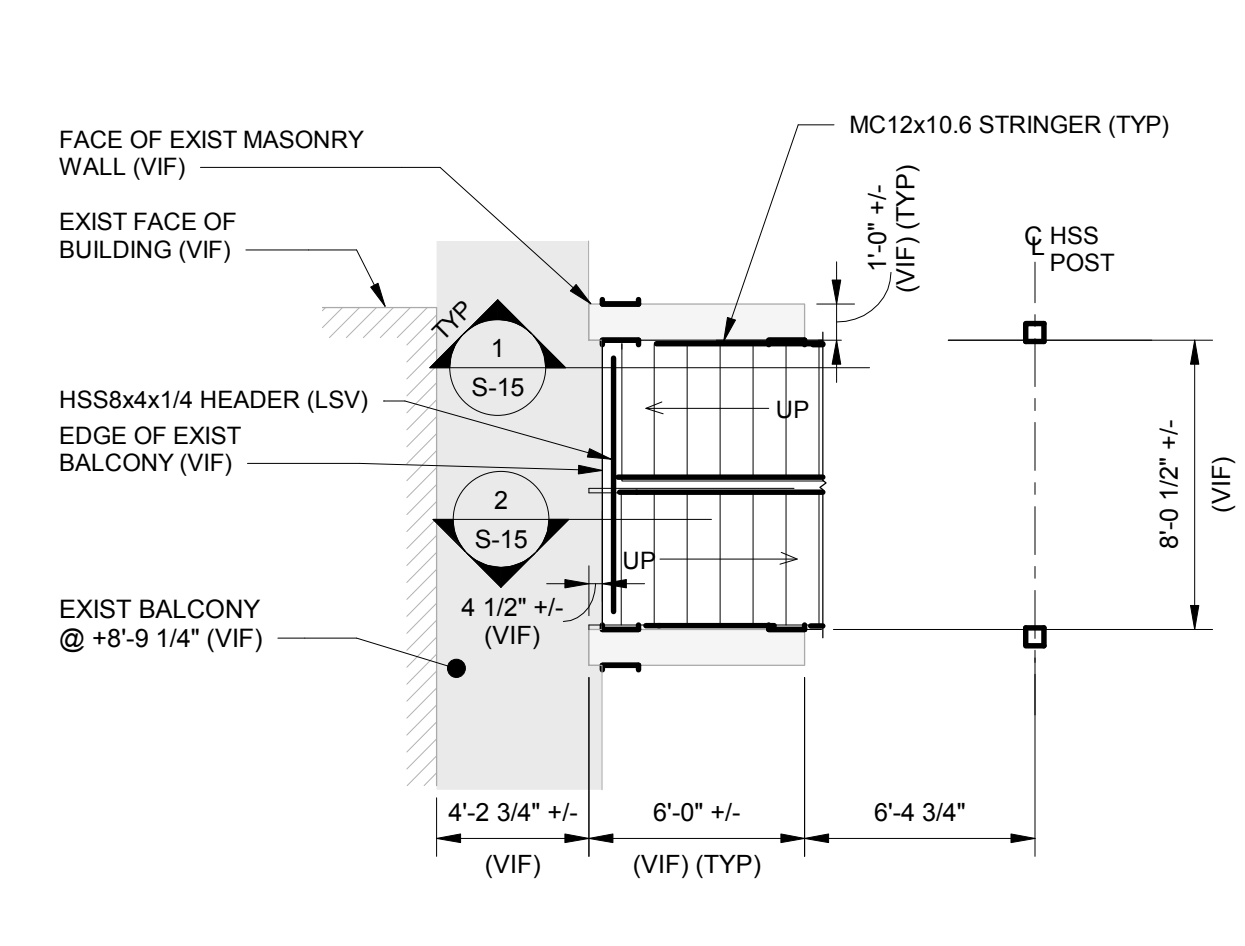
**STAIR 'AB' FOUNDATION PLAN**  
3/16" = 1'-0"

- F...INDICATES CONCRETE FOOTING, SEE SCHEDULE ON "S-11".
- P...INDICATES CONCRETE PIER, SEE SCHEDULE ON "S-11".
- SEE GENERAL NOTES AND TYPICAL DETAILS FOR ADDITIONAL REQUIREMENTS.
- CONTRACTORS TO VERIFY ALL CONDITIONS, DIMENSIONS, ELEVATIONS, QUANTITIES, ETC. IN THE FIELD PRIOR TO THE BEGINNING OF ANY NEW CONSTRUCTION. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES FOUND IMMEDIATELY.
- CONTRACTOR TO OVER EXCAVATE AND PLACE A 6" THICK PAD OF 3/4" CRUSHED STONE ON GEOTEXTILE FILTER FABRIC UNDERNEATH ALL FOOTINGS, STONE AND FILTER FABRIC TO EXTEND 1'-0" BEYOND FACE OF WALL AND SPREAD FOOTING. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- CONTRACTOR TO PROVIDE EARTH SUPPORT OF EXISTING STRUCTURES AND UTILITIES FOR THE INSTALLATION OF NEW STRUCTURES AND UTILITIES. NOTE THAT LOCATIONS REQUIRING EARTH SUPPORT ARE NOT INDICATED ON THE DRAWINGS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALL LOCATIONS REQUIRED AND EXTENT NEEDED. SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
- ALL REINFORCING BARS TO BE EPOXY COATED, SEE SPECIFICATION FOR REQUIREMENTS.
- BOTTOM OF FOOTING ELEVATION TO MATCH BOTTOM OF FOOTING ELEVATION OF EXISTING ADJACENT FOOTING. CONTRACTOR TO VERIFY EXISTING BOTTOM OF FOOTING ELEVATION PRIOR TO BEGINNING OF FABRICATION. ALL BOTTOM OF FOUNDATIONS TO BE 4'-0" MINIMUM BELOW FINISHED GRADE. COORDINATE WITH CIVIL DRAWINGS.
- SEE "1/S-14" FOR TYPICAL MC POST CONNECTIONS TO EXISTING MASONRY WALL.



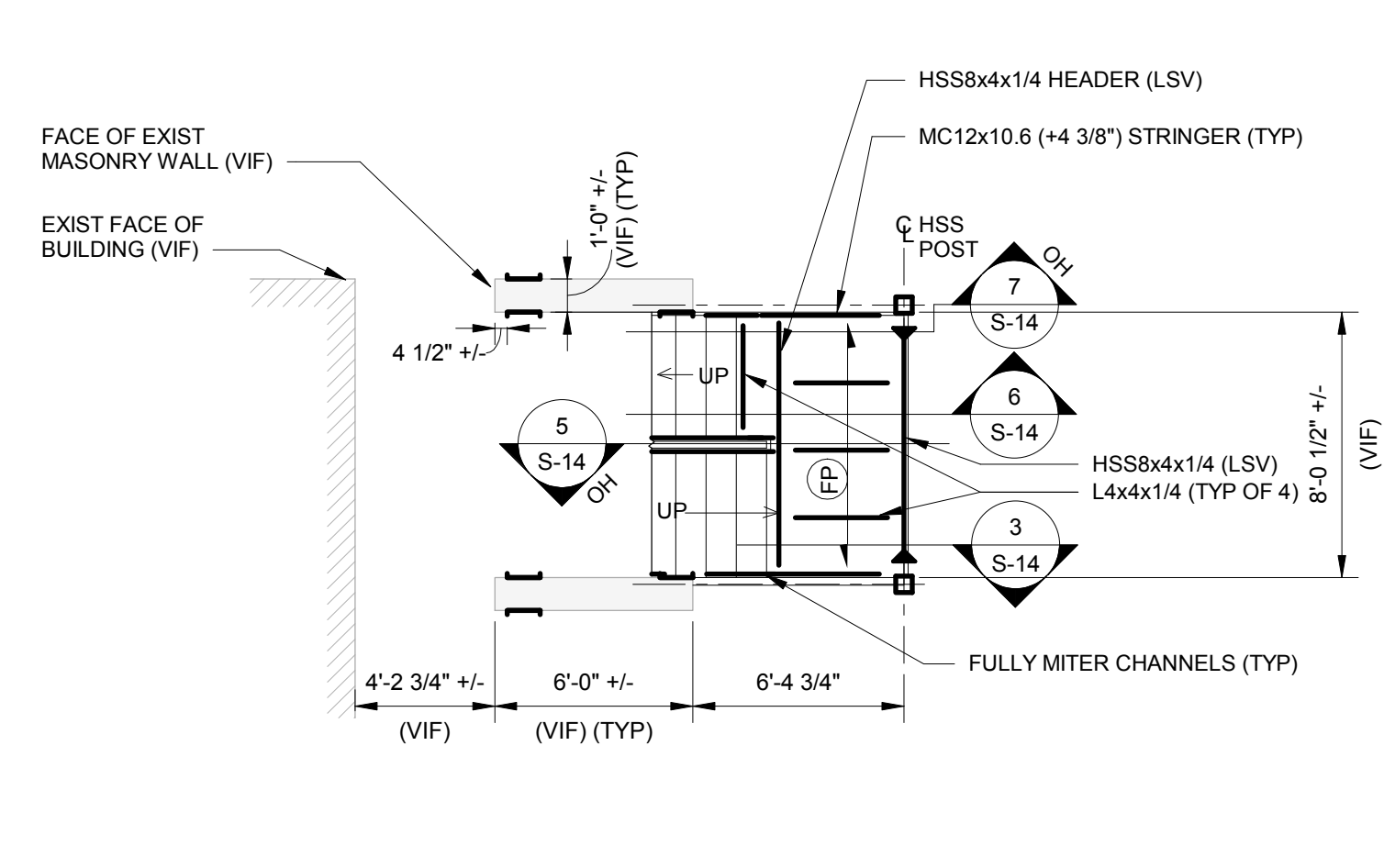
**STAIR 'AB' LOWER LEVEL FRAMING PLAN**  
3/16" = 1'-0"

- TOP OF STAIR LOWER LANDING TO BE AT REFERENCE ELEVATION +4'-4 1/4" +/- UNLESS OTHERWISE NOTED BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THE REFERENCE ELEVATION.
- CONTRACTOR PERFORMING STRUCTURAL WORK SHALL BE RESPONSIBLE FOR ALL SHORING OF EXISTING CONSTRUCTION REQUIRED TO SAFELY COMPLETE WORK.
- ON ALL TUBE SECTION COLUMNS AND BEAMS PROVIDE A 1/4" THICK WEATHER CAP PLATE (EACH END) SEAL WELDED TO MEMBER.
- GROUT AT BASE PLATES WITH LEVELING NUTS TO BE INSTALLED AND ATTAIN REQUIRED DESIGN STRENGTH BEFORE PLACEMENT OF SITE SLABS AND PAVING.
- ALL CONNECTIONS TO BE BOLTED OR SHOP WELDED. NO FIELD WELDING TO GALVANIZED STEEL TO BE PERMITTED.
- ALL STRUCTURAL STEEL CONNECTIONS, BOLTS, BASE PLATES, ANCHOR RODS, ETC. SHALL BE HOT DIPPED GALVANIZED AND FACTORY COATED. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'AB' MID LEVEL FRAMING PLAN**  
3/16" = 1'-0"

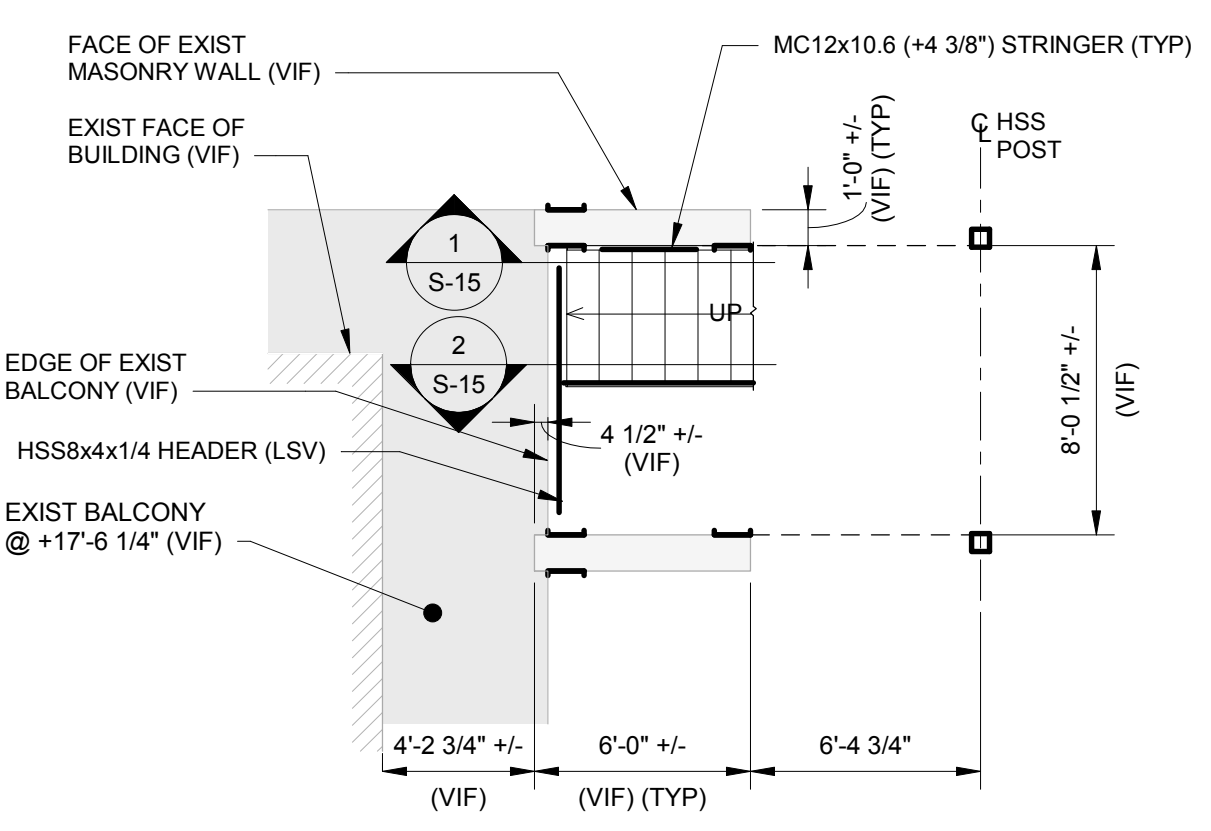
- TOP OF STAIR TO MATCH TOP OF EXISTING LANDING AT REFERENCE ELEVATION +8'-9 1/4" +/- (VIF).
- SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'AB' LANDING LEVEL FRAMING PLAN**  
3/16" = 1'-0"

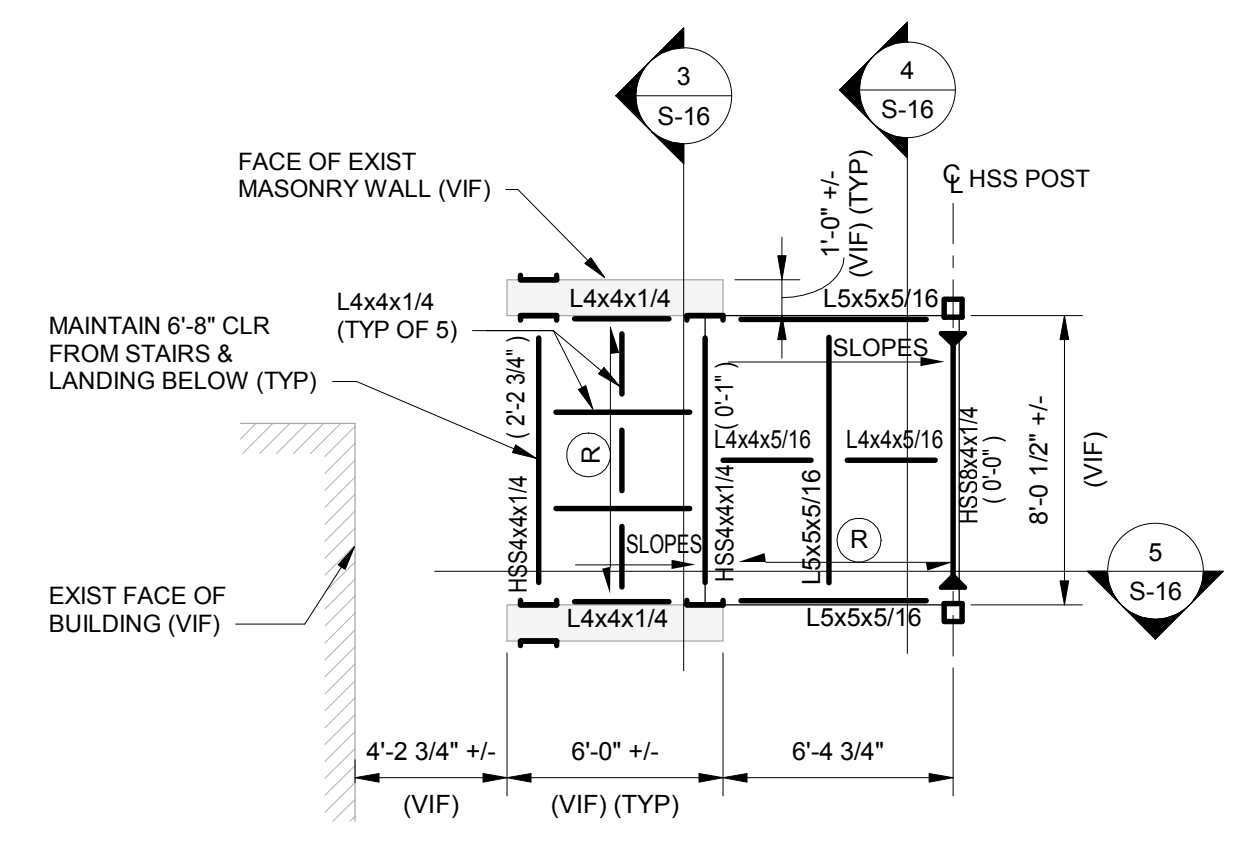
- TOP OF STAIR MID LANDING TO BE AT REFERENCE ELEVATION +13'-1 3/8" +/- UNLESS OTHERWISE NOTED BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THE REFERENCE ELEVATION.
- SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

FLOOR FRAMING PLAN SYMBOL LEGEND	
*	INDICATES COORDINATE FINAL DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND EXISTING CONDITIONS.
—	INDICATES MOMENT CONNECTION TO DEVELOP FULL BENDING AND SHEAR CAPACITY OF BEAM OR GIRDER, UNLESS OTHERWISE NOTED.
FP	INDICATES DIRECTION OF SPAN OF GALVANIZED 3/8" STEEL RAISED PATTERN FLOOR PLATE WITH 3/8" DIAMETER HOLES AT 12" O/C WITH FACTORY APPLIED FINISH COATING. FASTEN TO SUPPORTING STRUCTURAL STEEL WITH STAINLESS STEEL COUNTERSUNK ATTACHMENTS PER MANUFACTURER'S APPROVED CONNECTION. SEE SPECIFICATIONS AND ARCHITECTURAL DRAWINGS.
R	INDICATES DIRECTION OF SPAN OF 1 1/2" DEEP WIDE RIB, 18 GAGE GALVANIZED METAL ROOF DECK. PROVIDE G90 GALVANIZED FINISH. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



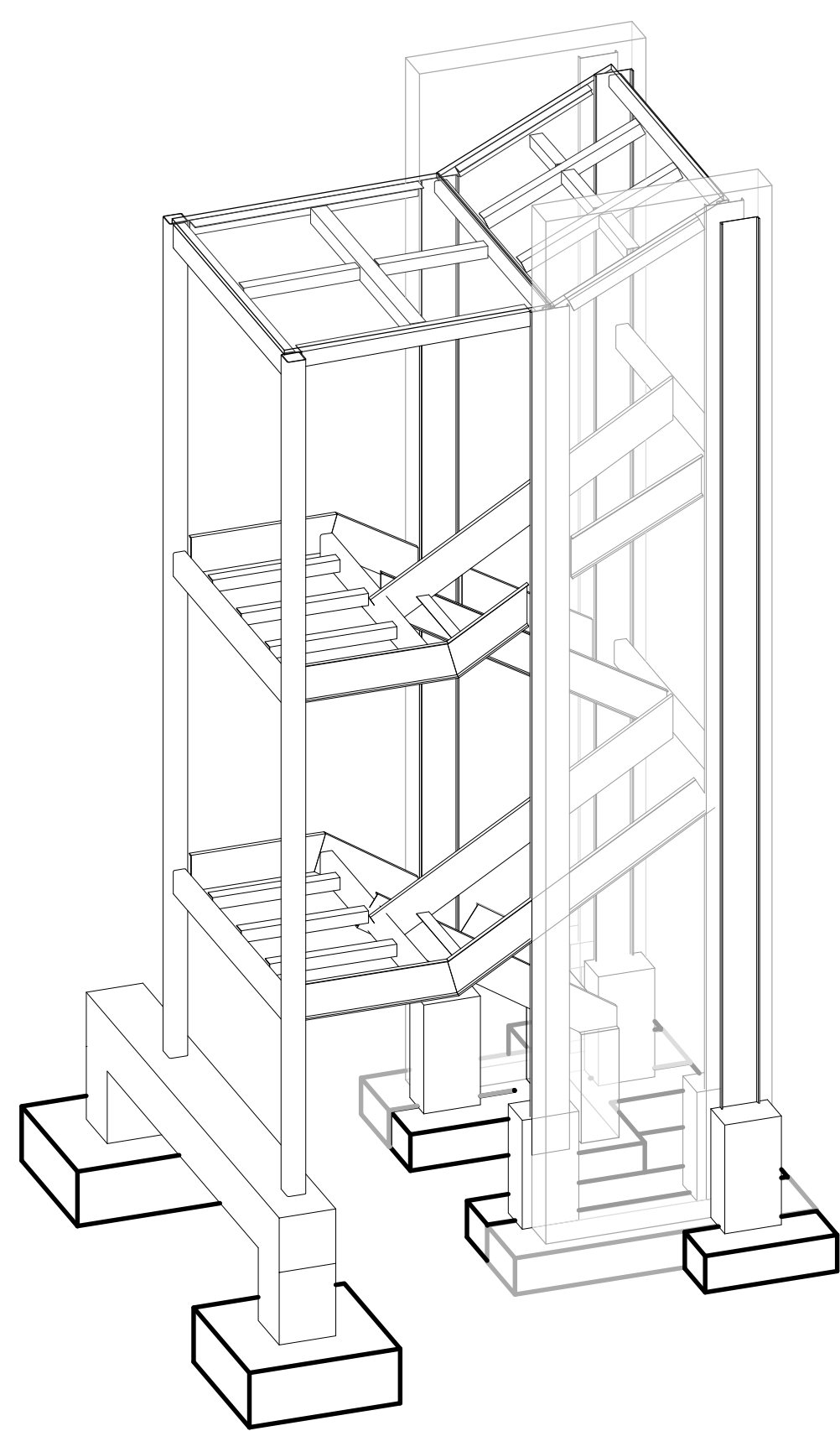
**STAIR 'AB' UPPER LEVEL FRAMING PLAN**  
3/16" = 1'-0"

- TOP OF STAIR TO MATCH EXISTING BALCONY AT REFERENCE ELEVATION +17'-6 1/4" +/- VERIFY IN FIELD.
- SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

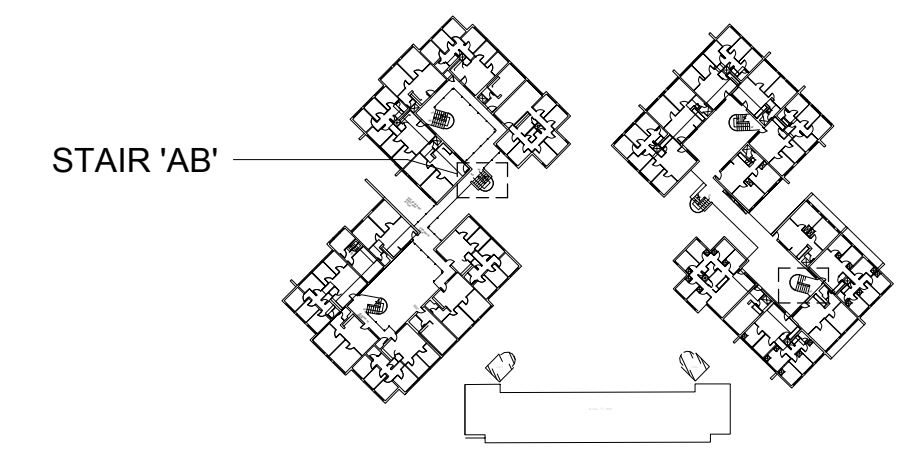


**STAIR 'AB' ROOF FRAMING PLAN**  
3/16" = 1'-0"

- TOP OF STEEL TO BE AT REFERENCE ELEVATION +22'-2" UNLESS OTHERWISE NOTED BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THE REFERENCE ELEVATION.
- SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'AB' ISOMETRIC**



Bid Set	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue Date

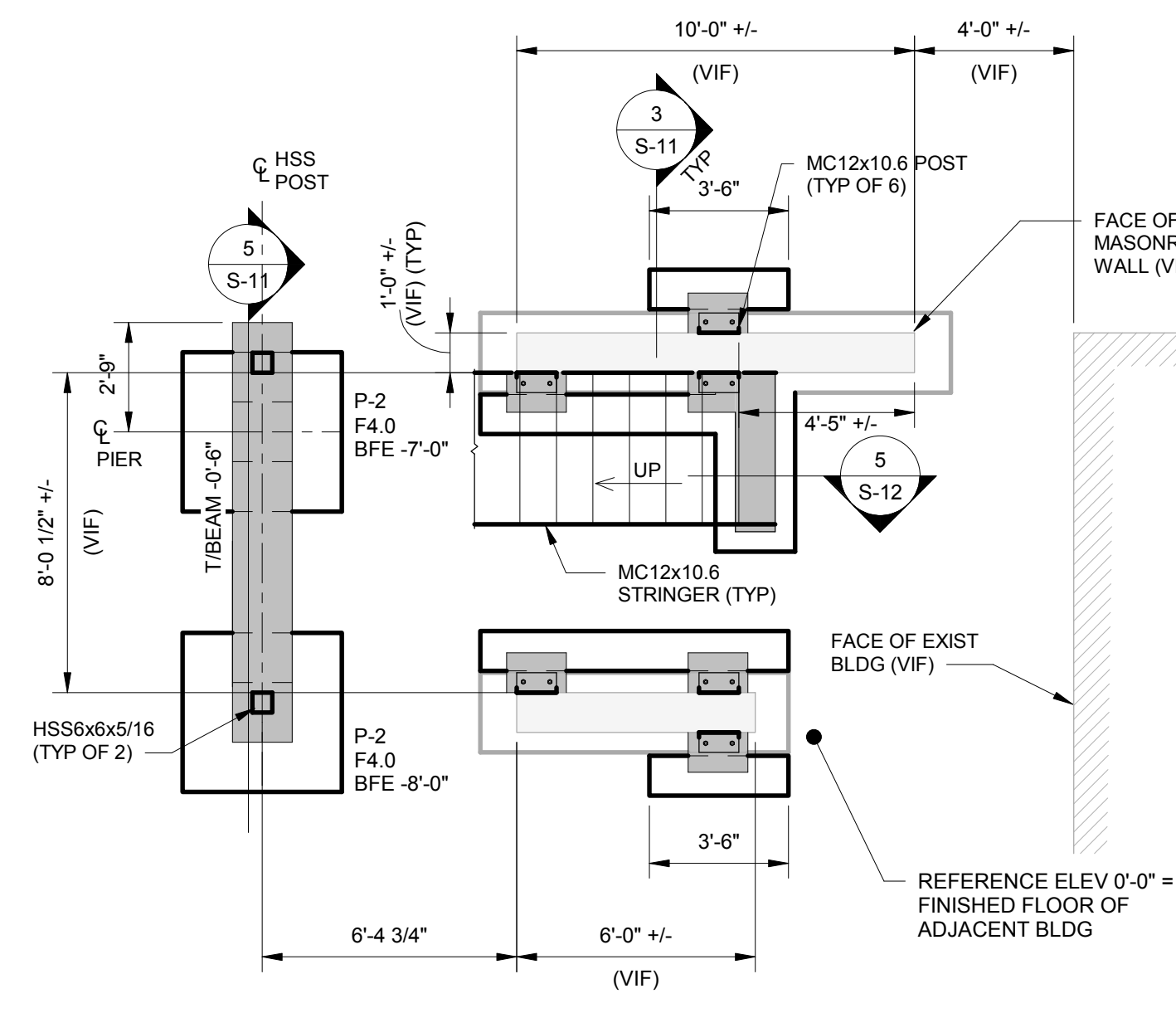
PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR 'AB' FOUNDATION AND FRAMING PLANS**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **S-9**  
Scale: **As indicated**  
Plot Size: **24 x 36**

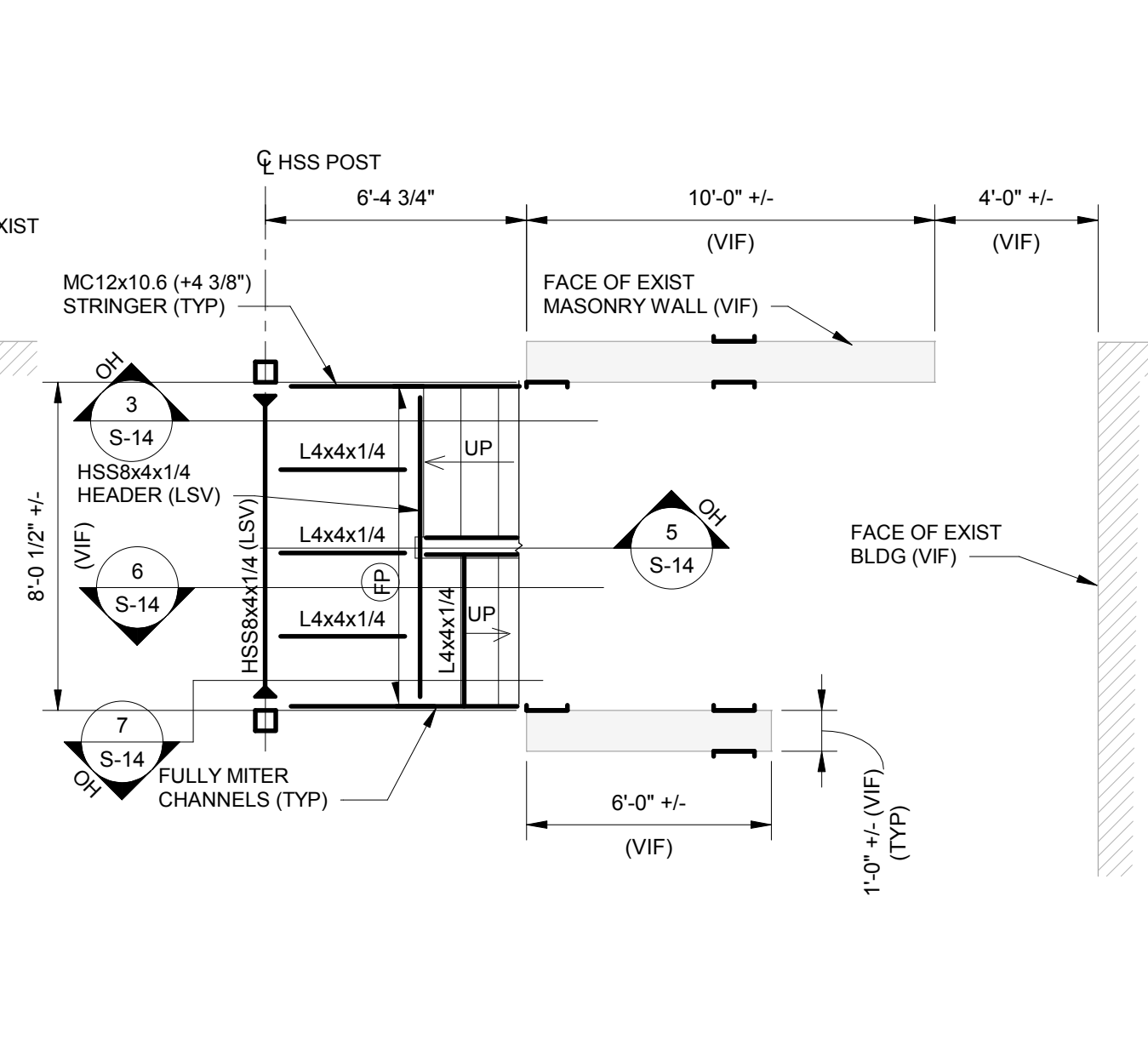


3/14/2018 10:39:13 AM E:\Revit\Local Files\Revit Structural\2017\ECSU Stairs (21-17-050) (17)\ECSU Low-Rise Stair STR (17) (JMM).rvt



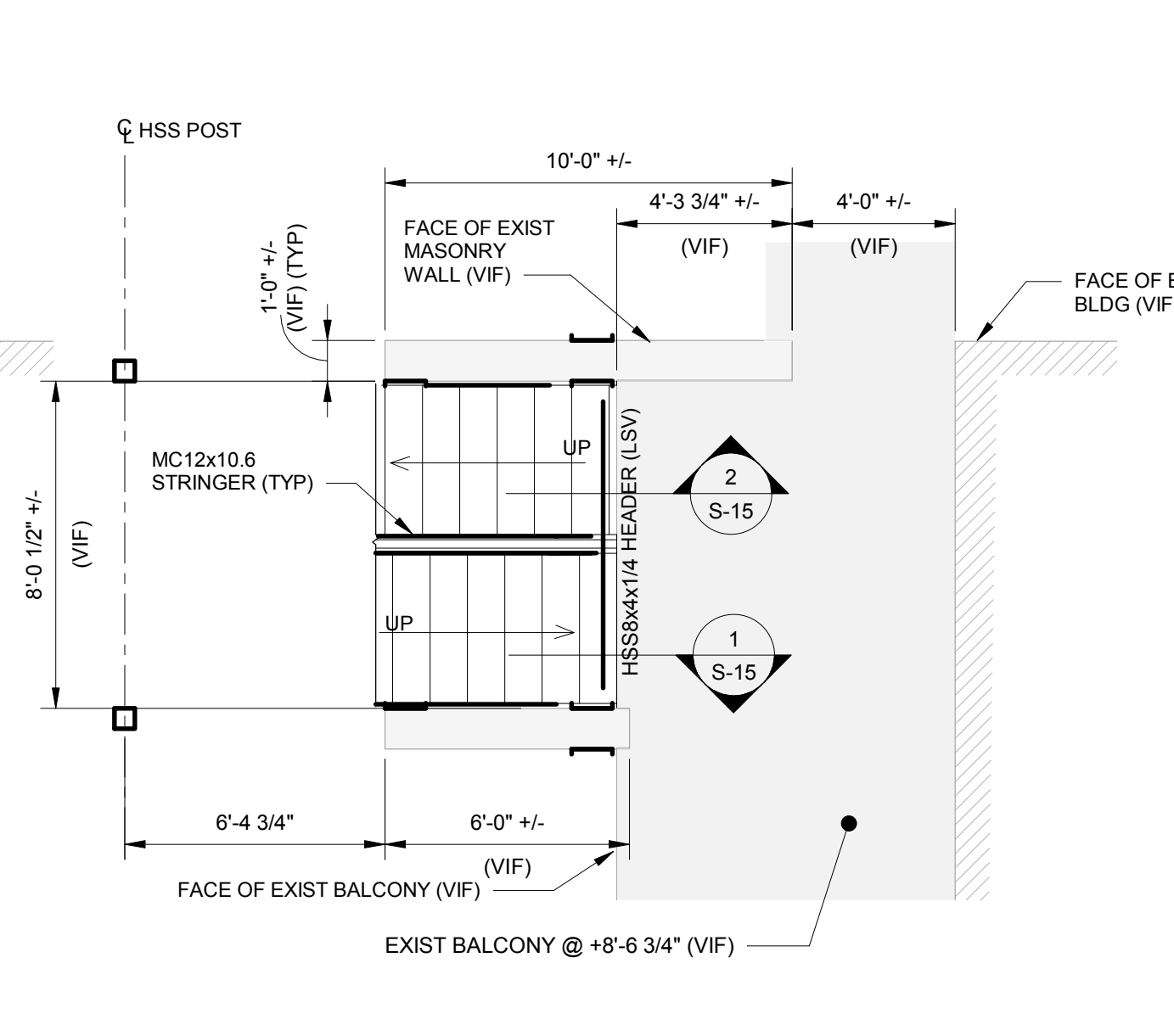
**STAIR 'CD' FOUNDATION PLAN**  
1/4" = 1'-0"

- F...INDICATES CONCRETE FOOTING, SEE SCHEDULE ON "S-11".
- P...INDICATES CONCRETE PIER, SEE SCHEDULE ON "S-11".
- SEE GENERAL NOTES AND TYPICAL DETAILS FOR ADDITIONAL REQUIREMENTS.
- CONTRACTORS TO VERIFY ALL CONDITIONS, DIMENSIONS, ELEVATIONS, QUANTITIES, ETC. IN THE FIELD PRIOR TO THE BEGINNING OF ANY NEW CONSTRUCTION. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES FOUND IMMEDIATELY.
- CONTRACTOR TO OVER EXCAVATE AND PLACE A 6" THICK PAD OF 3/4" CRUSHED STONE ON GEOTEXTILE FILTER FABRIC UNDERNEATH ALL FOOTINGS. STONE AND FILTER FABRIC TO EXTEND 1'-0" BEYOND FACE OF WALL AND SPREAD FOOTING. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- CONTRACTOR TO PROVIDE EARTH SUPPORT OF EXISTING STRUCTURES AND UTILITIES FOR THE INSTALLATION OF NEW STRUCTURES AND UTILITIES. NOTE THAT LOCATIONS REQUIRING EARTH SUPPORT ARE NOT INDICATED ON THE DRAWINGS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALL LOCATIONS REQUIRED AND EXTENT NEEDED. SEE SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
- ALL REINFORCING BARS TO BE EPOXY COATED. SEE SPECIFICATION FOR REQUIREMENTS.
- BOTTOM OF FOOTING ELEVATION TO MATCH BOTTOM OF FOOTING ELEVATION OF EXISTING ADJACENT FOOTING. CONTRACTOR TO VERIFY EXISTING BOTTOM OF FOOTING ELEVATION PRIOR TO BEGINNING OF FABRICATION. ALL BOTTOM OF FOUNDATIONS TO BE 4'-0" MINIMUM BELOW FINISHED GRADE. COORDINATE WITH CIVIL DRAWINGS.
- SEE "S-14" FOR TYPICAL MC POST CONNECTIONS TO EXISTING MASONRY WALL.



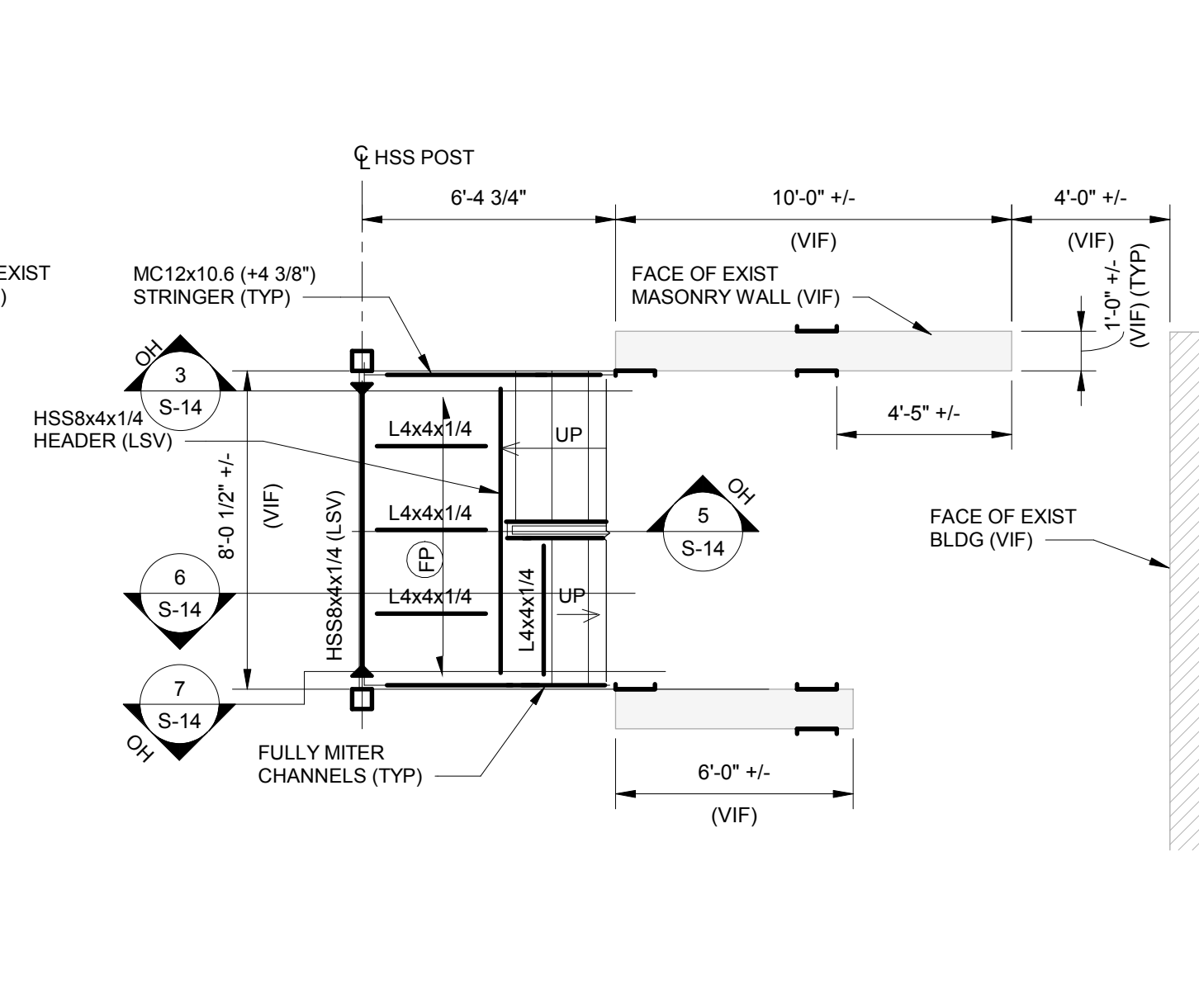
**STAIR 'CD' LOWER LEVEL LANDING FRAMING PLAN**  
1/4" = 1'-0"

- TOP OF STAIR LOWER LANDING TO BE AT REFERENCE ELEVATION +4'-3" +/- UNLESS OTHERWISE NOTED BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THE REFERENCE ELEVATION.
- CONTRACTOR PERFORMING STRUCTURAL WORK SHALL BE RESPONSIBLE FOR ALL SHORING OF EXISTING CONSTRUCTION REQUIRED TO SAFELY COMPLETE WORK.
- ON ALL TUBE SECTION COLUMNS AND BEAMS PROVIDE A 1/4" THICK WEATHER CAP PLATE (EACH END) SEAL WELDED TO MEMBER.
- GROUT AT BASE PLATES WITH LEVELING NUTS TO BE INSTALLED AND ATTAIN REQUIRED DESIGN STRENGTH BEFORE PLACEMENT OF SITE SLABS AND PAVING.
- ALL CONNECTIONS TO BE BOLTED OR SHOP WELDED. NO FIELD WELDING TO GALVANIZED STEEL TO BE PERMITTED.
- ALL STRUCTURAL STEEL CONNECTIONS, BOLTS, BASE PLATES, ANCHOR RODS, ETC. SHALL BE HOT DIPPED GALVANIZED AND FACTORY COATED. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'CD' MID LANDING FRAMING PLAN**  
1/4" = 1'-0"

- TOP OF STAIR TO MATCH TOP OF EXISTING LANDING AT REFERENCE ELEVATION + 8'-6 3/4" +/- (VIF).
- SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

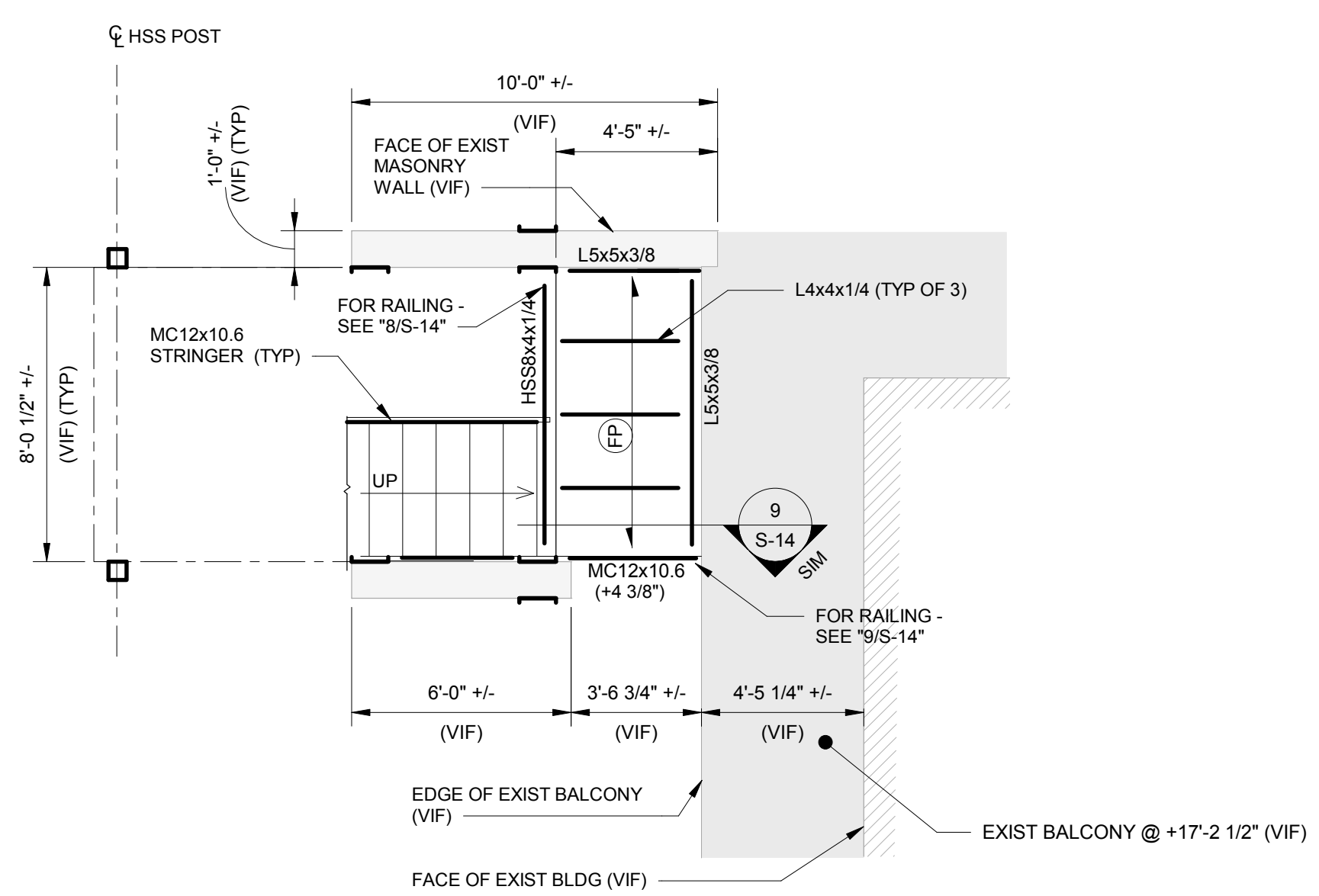


**STAIR 'CD' LANDING LEVEL FRAMING PLAN**  
1/4" = 1'-0"

- TOP OF STAIR MAIN LANDING TO BE AT REFERENCE ELEVATION +12'-10 1/4" +/- VERIFY IN FIELD.
- SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

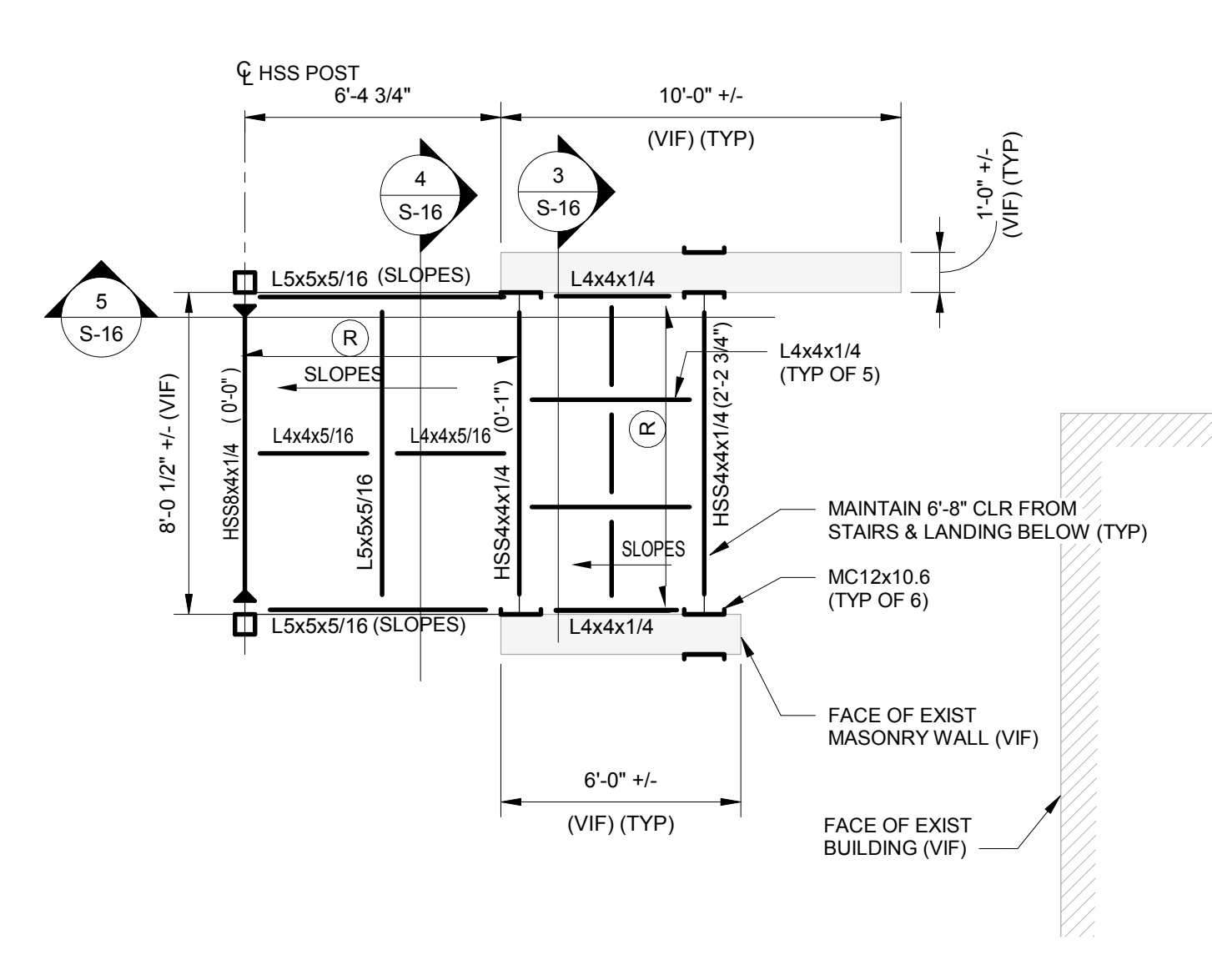
**FLOOR FRAMING PLAN SYMBOL LEGEND**

- \* INDICATES COORDINATE FINAL DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND EXISTING CONDITIONS.
- INDICATES MOMENT CONNECTION TO DEVELOP FULL BENDING AND SHEAR CAPACITY OF BEAM OR GIRDER, UNLESS OTHERWISE NOTED.
- FP INDICATES DIRECTION OF SPAN OF GALVANIZED 3/8" STEEL RAISED PATTERN FLOOR PLATE WITH 3/8" DIAMETER HOLES AT 12" O/C WITH FACTORY APPLIED FINISH COATING. FASTEN TO SUPPORTING STRUCTURAL STEEL WITH STAINLESS STEEL COUNTERSUNK ATTACHMENTS PER MANUFACTURER'S APPROVED CONNECTION. SEE SPECIFICATIONS AND ARCHITECTURAL DRAWINGS.
- R INDICATES DIRECTION OF SPAN OF 1 1/2" DEEP WIDE RIB, 18 GAGE GALVANIZED METAL ROOF DECK. PROVIDE G90 GALVANIZED FINISH. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



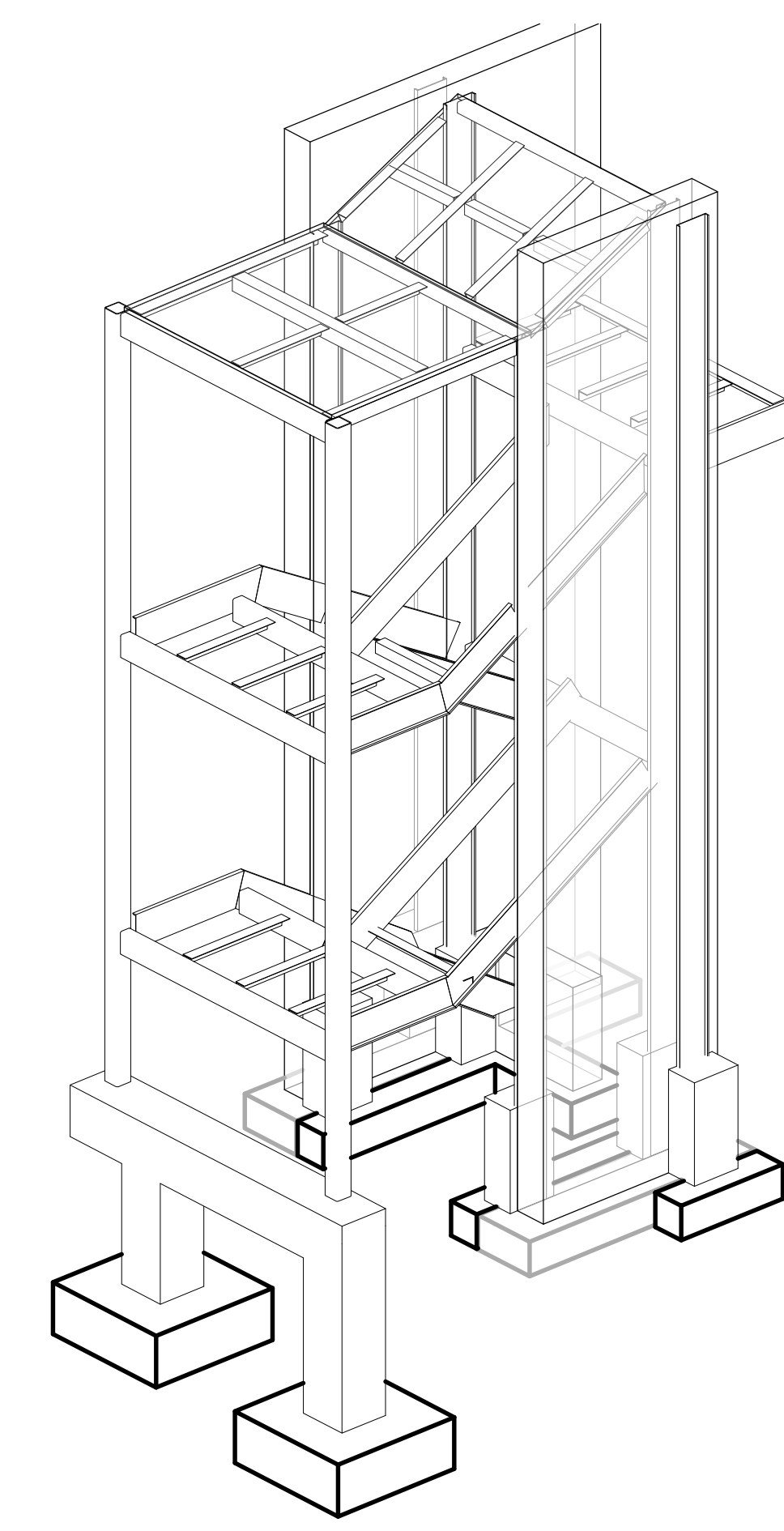
**STAIR 'CD' UPPER LEVEL FRAMING PLAN**  
1/4" = 1'-0"

- TOP OF STAIR TO MATCH TOP OF EXISTING LANDING AT REFERENCE ELEVATION +17'-2 1/2" +/- (VIF).
- SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

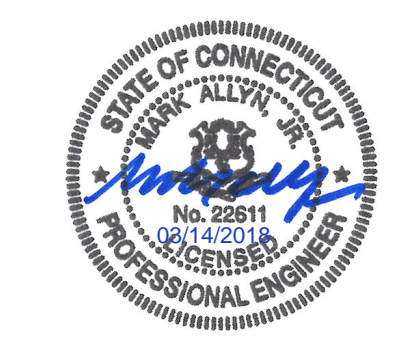
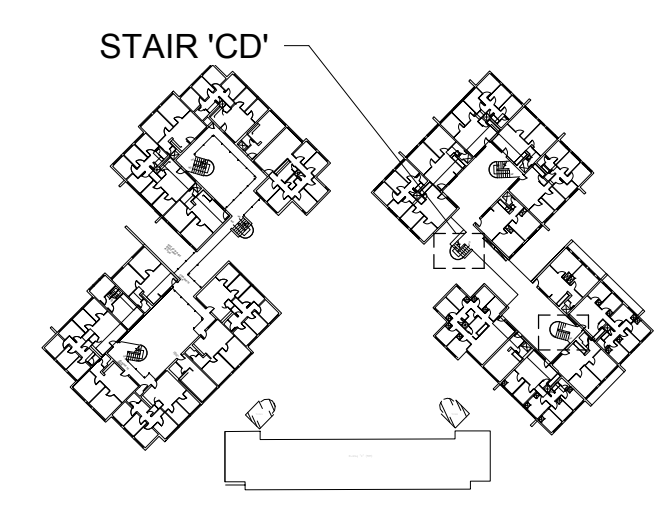


**STAIR 'CD' ROOF FRAMING PLAN**  
1/4" = 1'-0"

- TOP OF STEEL TO BE AT REFERENCE ELEVATION +22'-2" UNLESS OTHERWISE NOTED BY (+...) OR (-...) INDICATING THE DISTANCE ABOVE OR BELOW THE REFERENCE ELEVATION.
- SEE LOWER PLAN FRAMING NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.



**STAIR 'CD' ISOMETRIC**



**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

Bid Set	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue Date

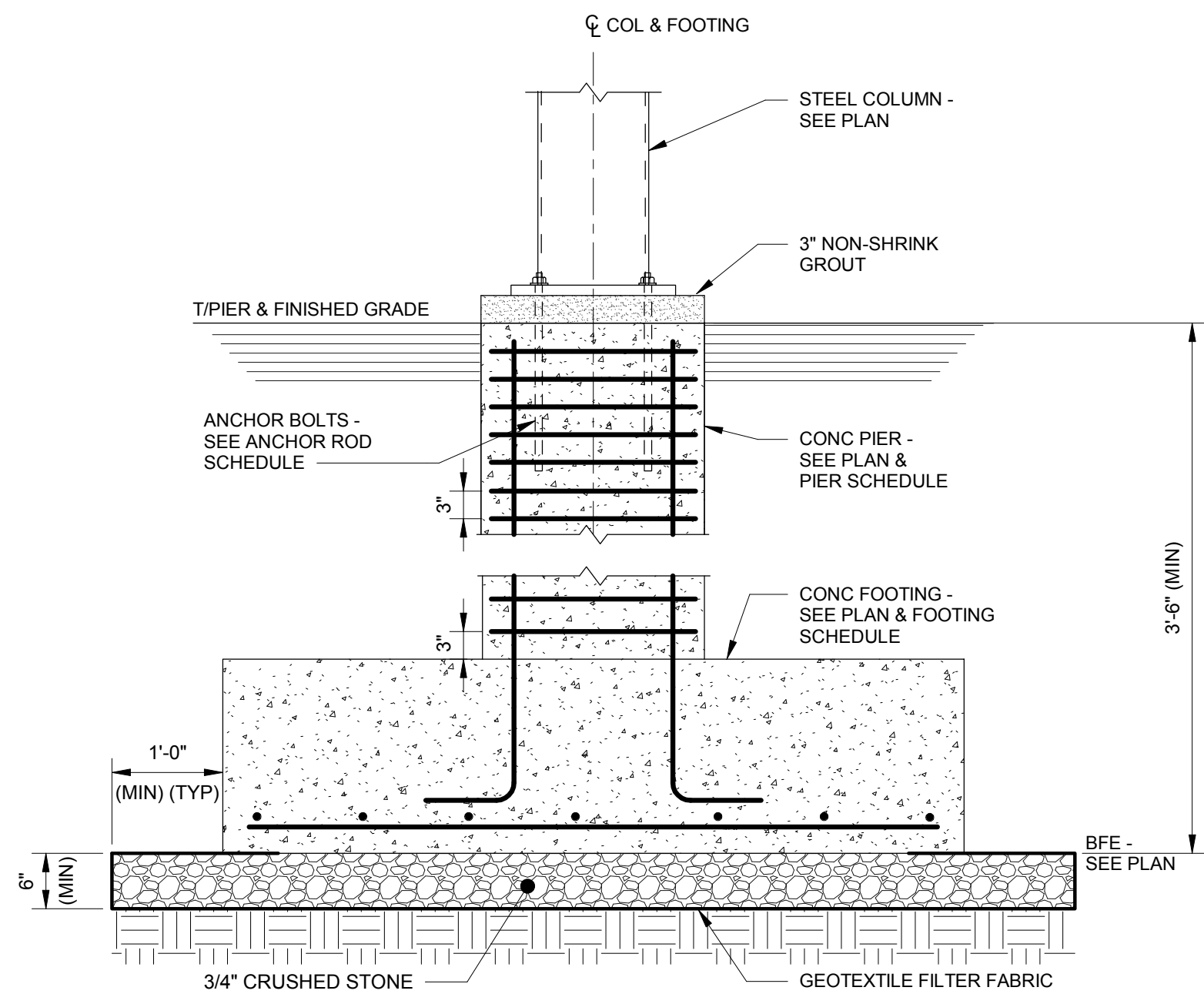
PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR 'CD' FOUNDATION AND FRAMING PLANS**

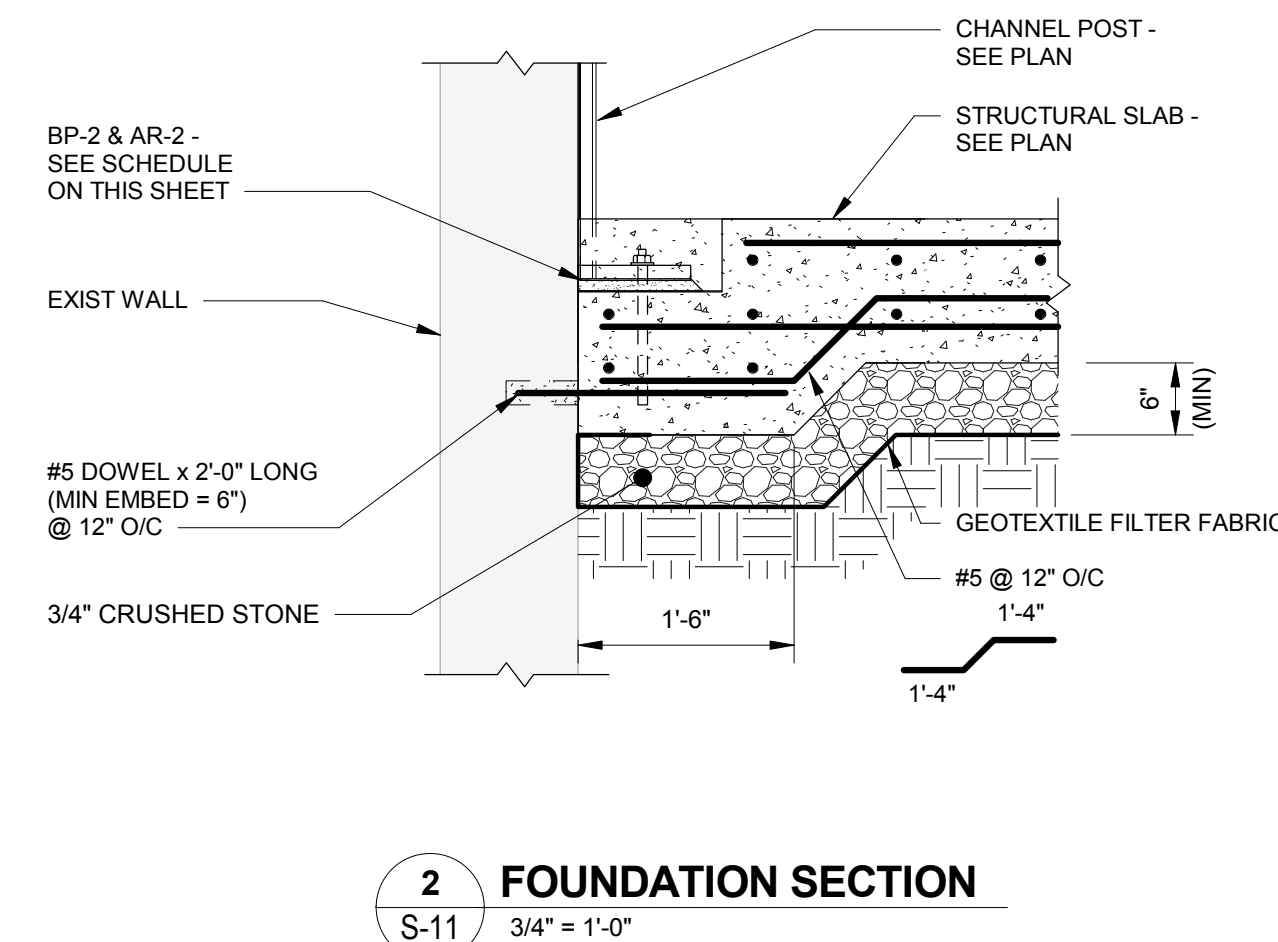
Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **S-10**  
Scale: **As indicated**  
Plot Size: **24 x 36**



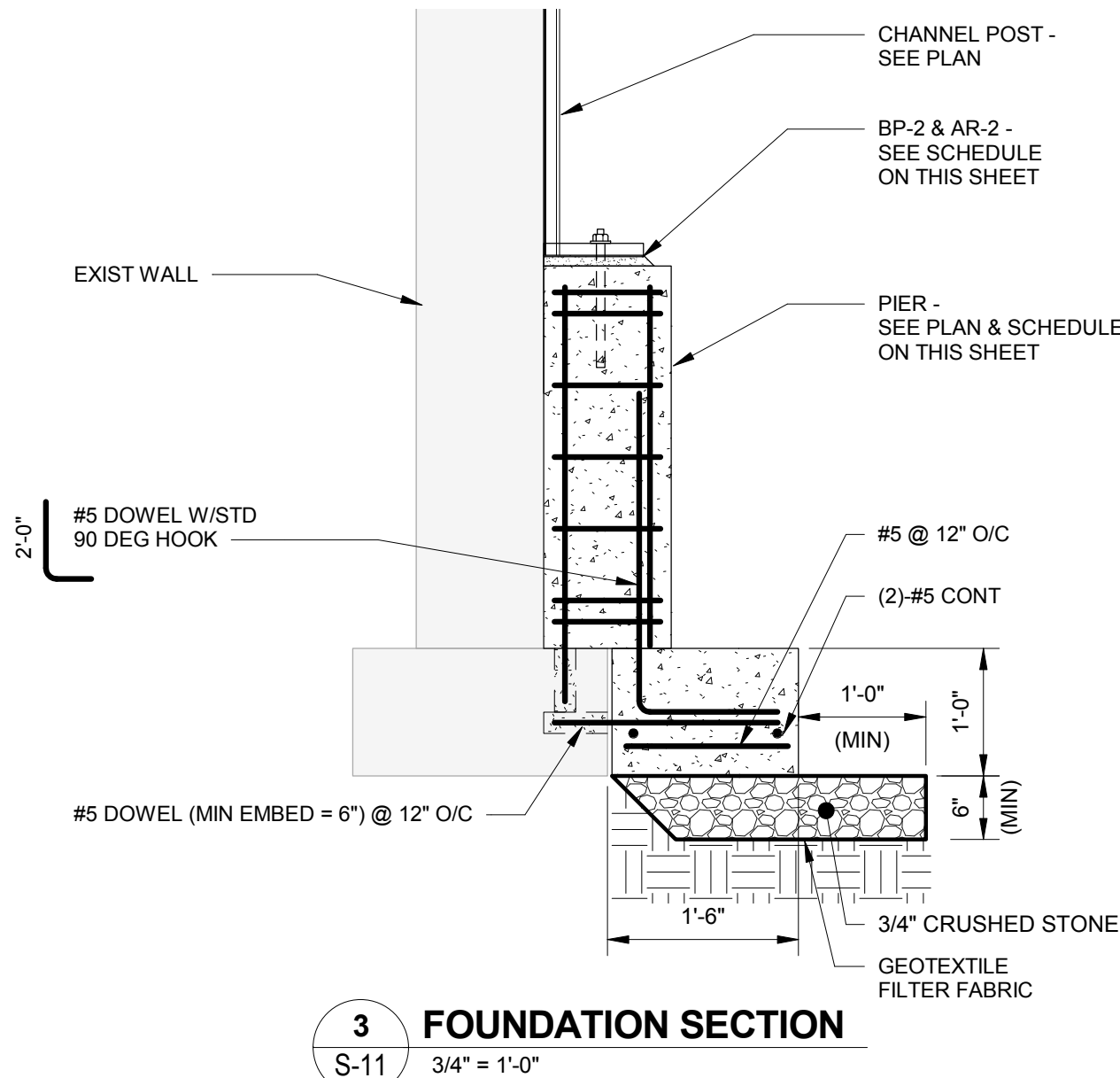
3/14/2018 10:35:15 AM E:\Revit\Local Files\Revit Structural\2017\ECSU Stairs (21-17-050) (17)\ECSU Low-Rise Stair STR (17) (JWM)\rvt



**1 TYPICAL PIER AND FOOTING DETAIL**  
S-11 NOT TO SCALE



**2 FOUNDATION SECTION**  
S-11 3/4" = 1'-0"



**3 FOUNDATION SECTION**  
S-11 3/4" = 1'-0"

FOOTING SCHEDULE					
MARK	LENGTH	WIDTH	THICKNESS	BOTTOM REINFORCING	TOP REINFORCING
F4.0	4'-0"	4'-0"	1'-6"	(5)-#5 EACH WAY	(5)-#5 EACH WAY
F12.5	12'-0"	5'-0"	2'-0"	#7 @ 8" O/C EA WAY	#7 @ 8" O/C EA WAY

PIER SCHEDULE					
MARK	SIZE		REINFORCING		PIER DETAIL
	LENGTH	WIDTH	VERTICAL	HORIZONTAL TIES	
P-1	40"	40"	(12)-#9	#4 @ 3" O/C	"C/S-11"
P-2	18"	18"	(8)-#8	#4 @ 12" O/C	"B/S-11"
P-3	12"	18"	(6)-#5	#4 @ 12" O/C	"A/S-11"

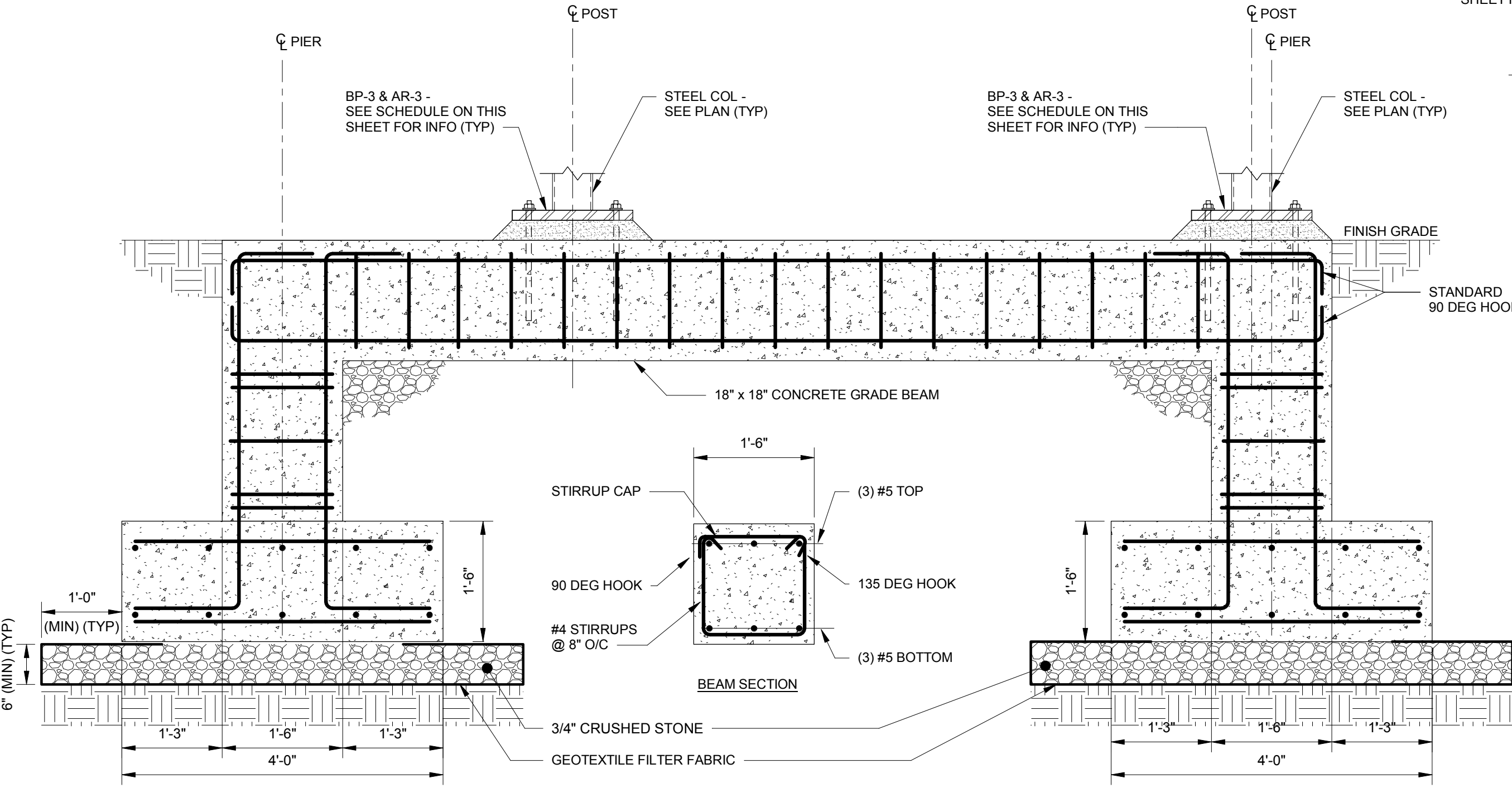
NOTES:

1. DOWEL ALL VERTICAL PIER REINFORCING INTO FOOTINGS.
2. SUFFIX "W" INDICATES THE PIER SHALL BE POURED INTEGRALLY WITH FOUNDATION WALL.
3. ALL PIER REINFORCING SHALL BE CENTERED ABOUT COLUMN CENTERLINES.
4. PIER SIZES SHOWN ARE EFFECTIVE PIER SIZES. ARCHITECTURAL DIMENSIONS MAY VARY.
5. COORDINATE TOP OF STEEL ELEVATIONS WITH COLUMN SCHEDULE.

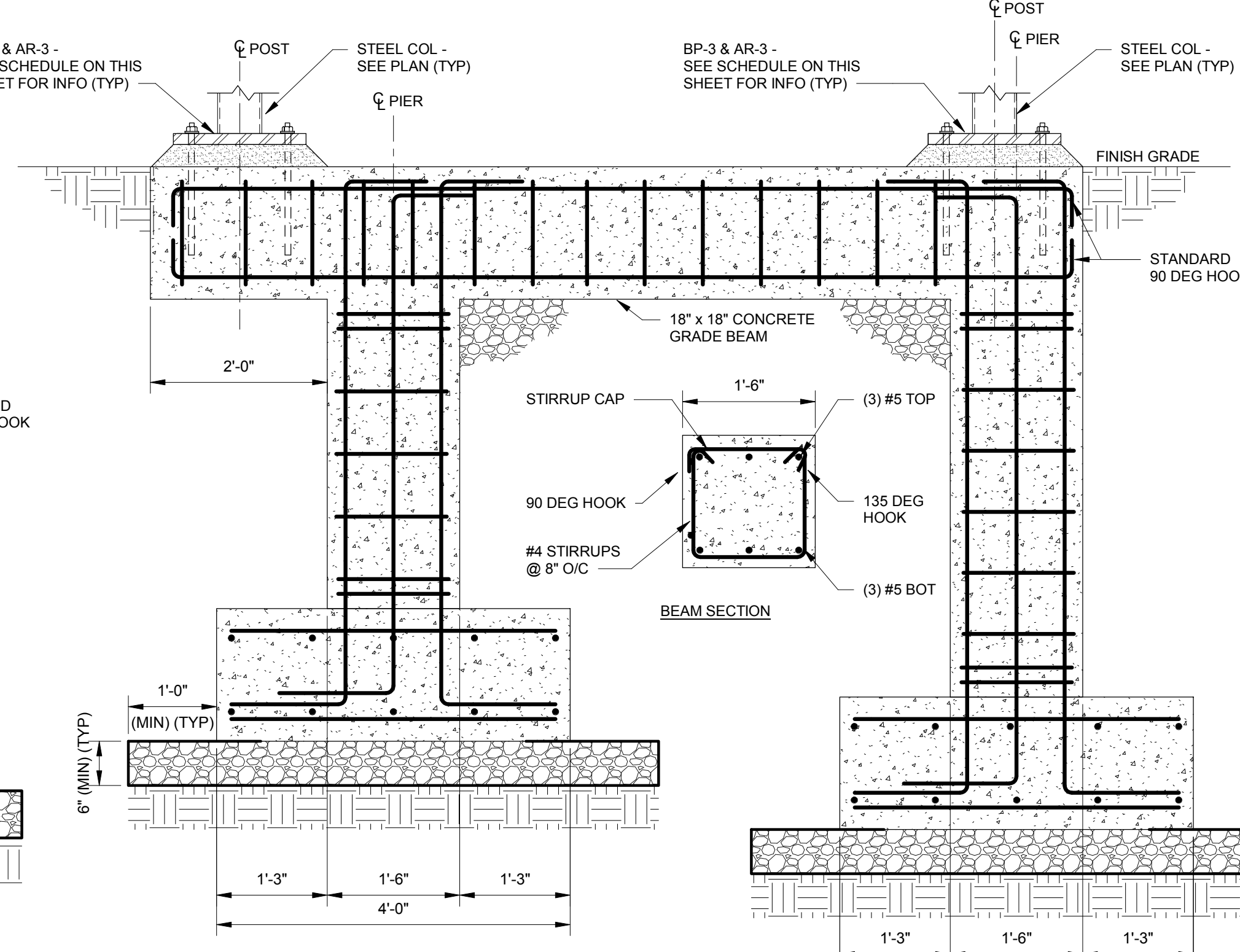
A PIER DETAIL S-11

B PIER DETAIL S-11

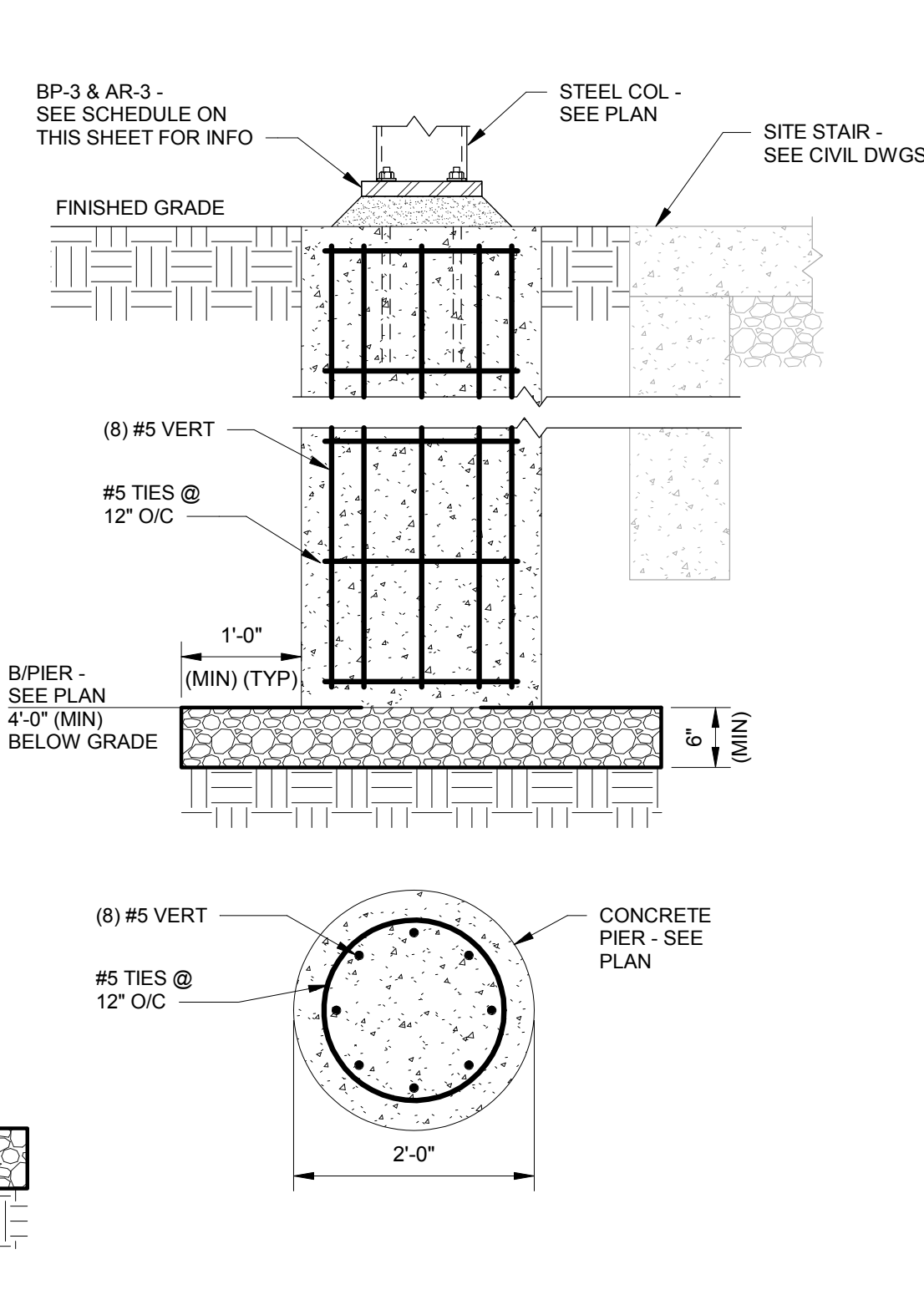
C PIER DETAIL S-11



**4 FOUNDATION SECTION**  
S-11 3/4" = 1'-0"



**5 FOUNDATION SECTION**  
S-11 3/4" = 1'-0"



**6 FOUNDATION SECTION**  
S-11 3/4" = 1'-0"

TYPICAL COLUMN ANCHOR ROD		
MARK	AR-1	AR-2
DETAIL		

NOTE:

1. USE ONLY GRADE OF ANCHOR RODS SPECIFIED. DO NOT SUBSTITUTE A DIFFERENT GRADE WITHOUT APPROVAL OF THE ENGINEER.
2. ALL STEEL TO BE HOT DIPPED GALVANIZED.

TYPICAL COLUMN BASE PLATE		
MARK	BP-1	BP-2
DETAIL		

**EASTERN CONNECTICUT STATE UNIVERSITY**  
Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

Bid Set	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

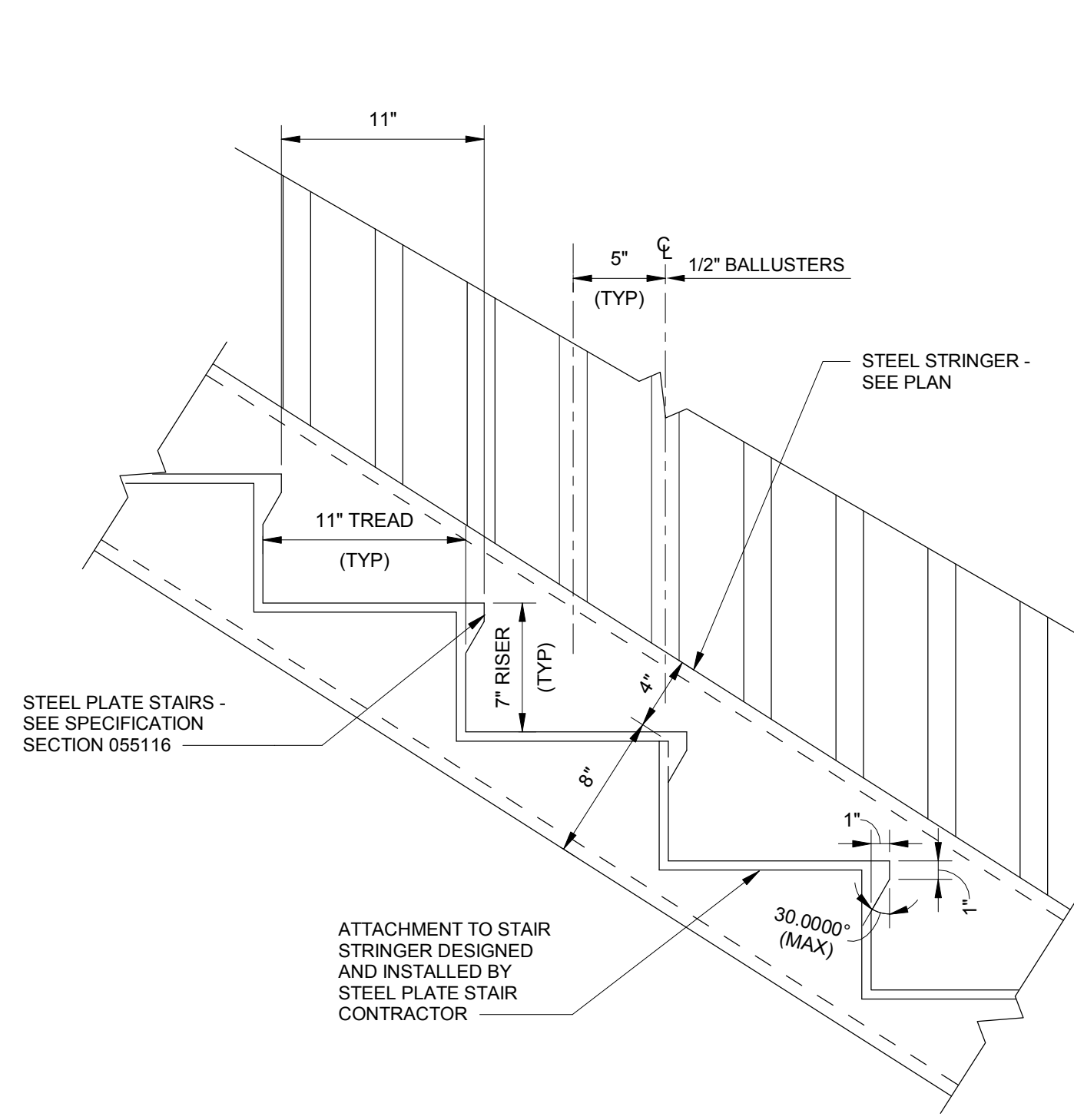
DRAWING NAME:  
**TYPICAL FOUNDATION DETAILS**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **S-11**  
Scale: **3/4" = 1'-0"**  
Plot Size: **24 x 36**

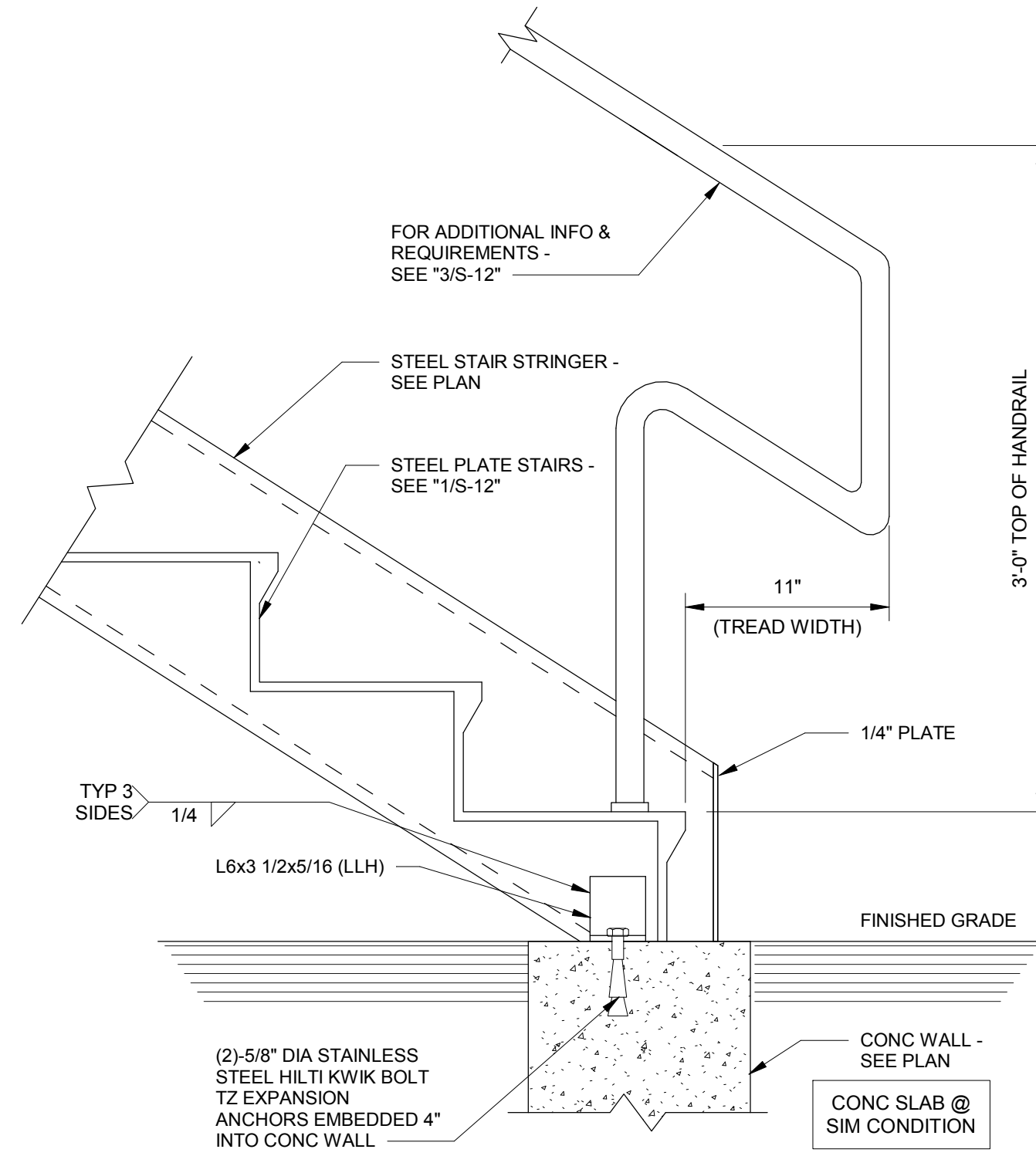




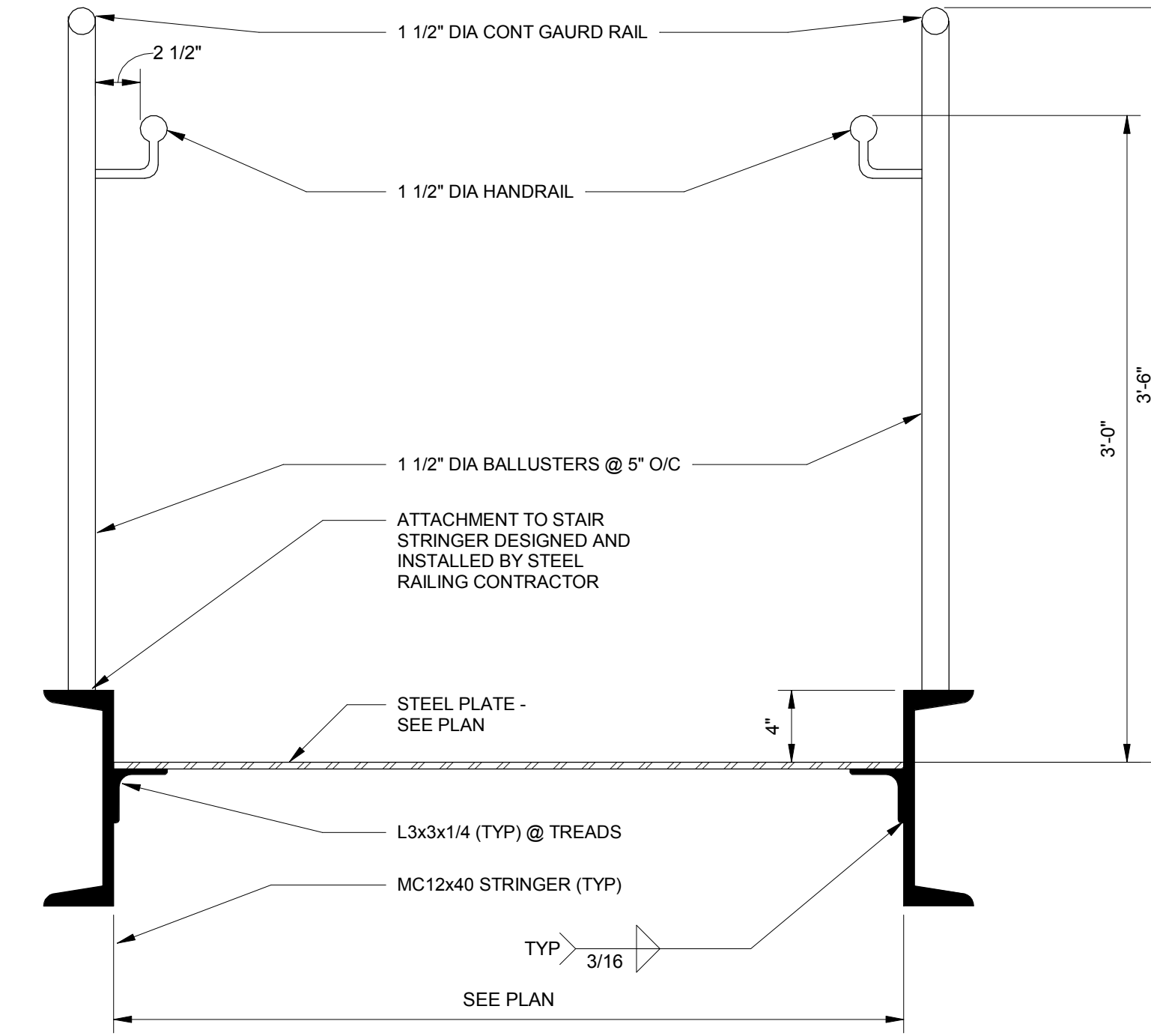
3/14/2018 10:39:17 AM E:\Revit\Local Files\Revit Structural\2017\ECSU Stairs (21-17-096) (17)\ECSU Low-Rise Stair STR (17) (JWM)\rvt



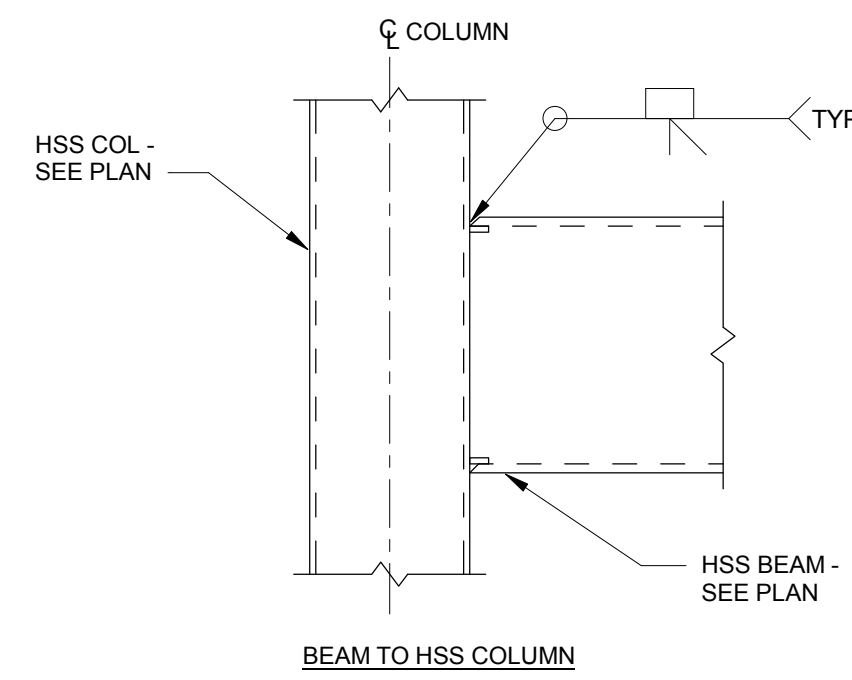
**1 TYPICAL FRAMING DETAIL**  
S-12 1 1/2" = 1'-0"



**2 TYPICAL FRAMING DETAIL**  
S-12 1 1/2" = 1'-0"

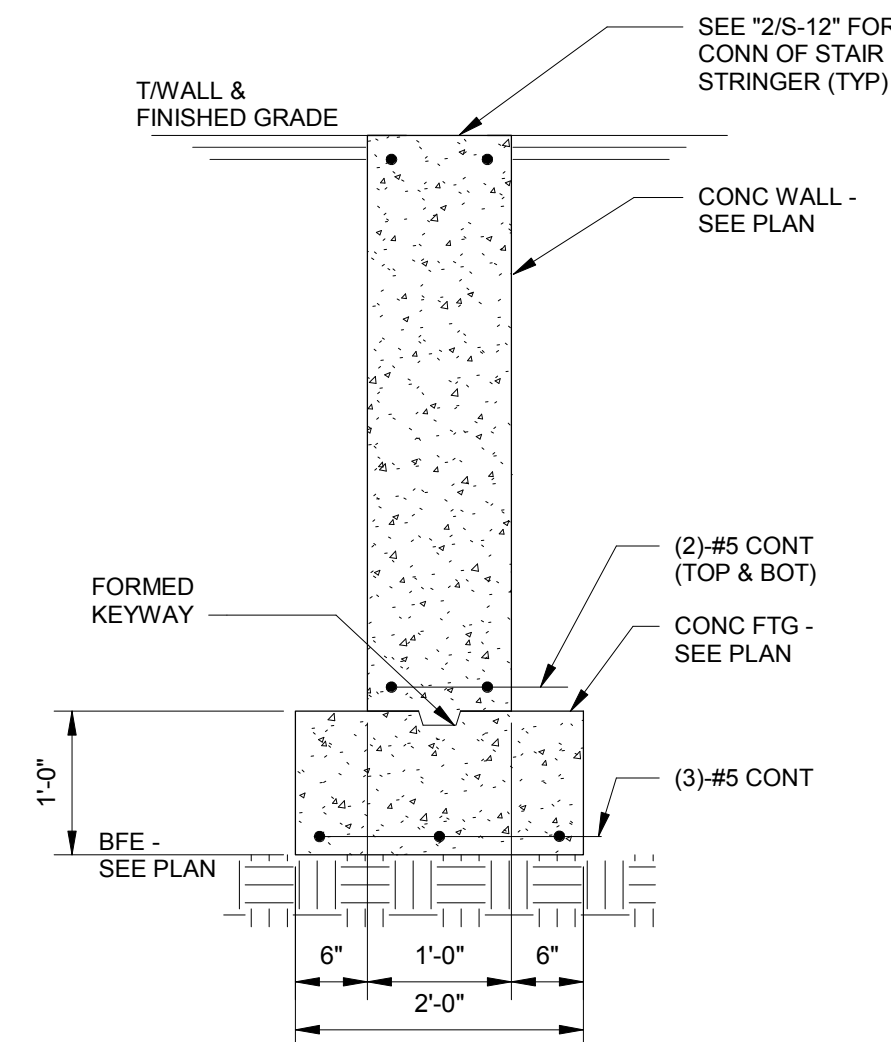


**3 TYPICAL FRAMING DETAIL**  
S-12 1 1/2" = 1'-0"



- NOTES:**
- MOMENT CONNECTIONS TO DEVELOP FULL BENDING AND SHEAR STRENGTH OF BEAM OR GIRDER AND DEVELOP ALL CONNECTION FORCES INDICATED, UNLESS OTHERWISE NOTED ON PLAN.

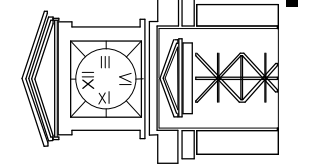
**4 TYPICAL BEAM-TO-COLUMN MOMENT CONNECTION DETAIL**  
S-12 NOT TO SCALE



**5 FOUNDATION SECTION**  
S-12 3/4" = 1'-0"

# EASTERN CONNECTICUT STATE UNIVERSITY

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226



	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

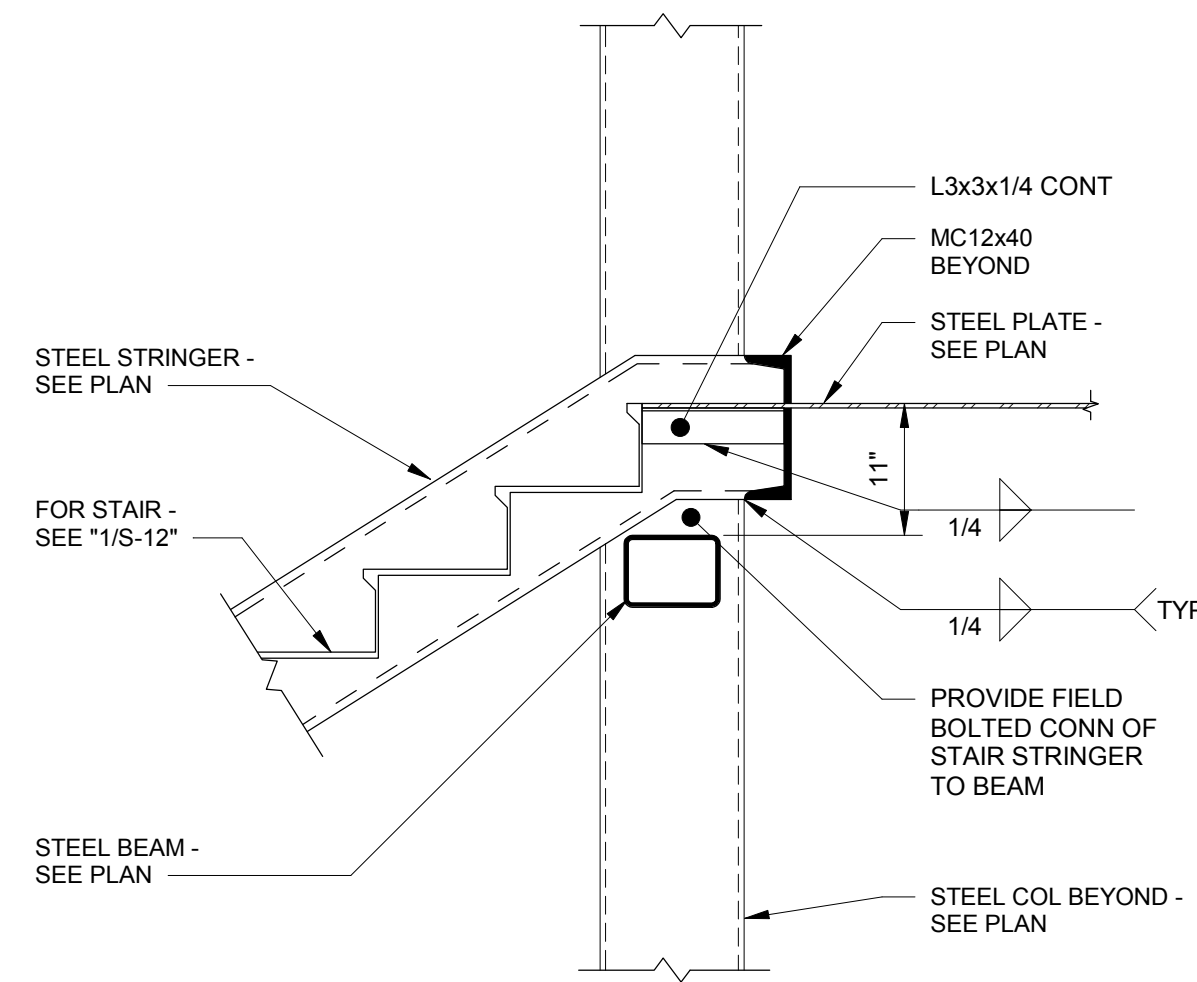
**PROJECT NAME:**  
Low Rise Stair Replacement & Courtyard Improvements

**DRAWING NAME:**  
TYPICAL FRAMING DETAILS

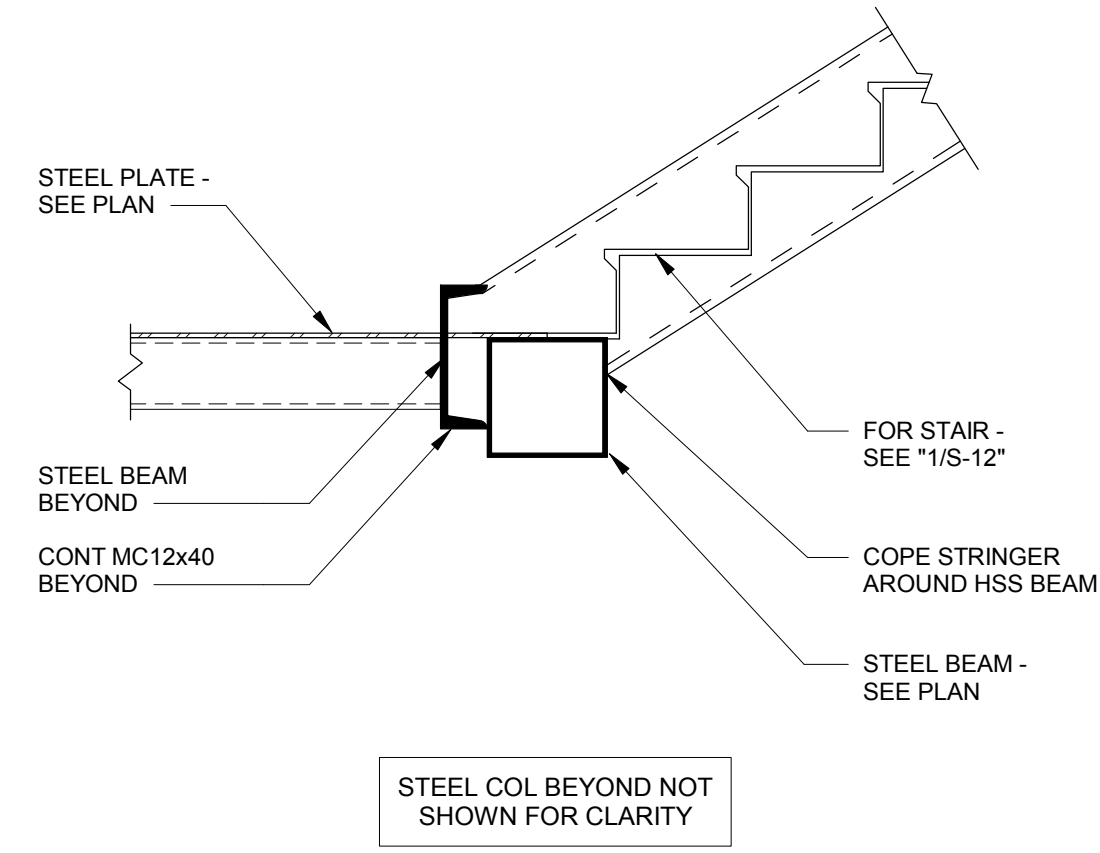
Project No.:	ECSU 2016-9 (Phase II)
Date:	12/6/2017
Scale:	As indicated
Plot Size:	24 x 36



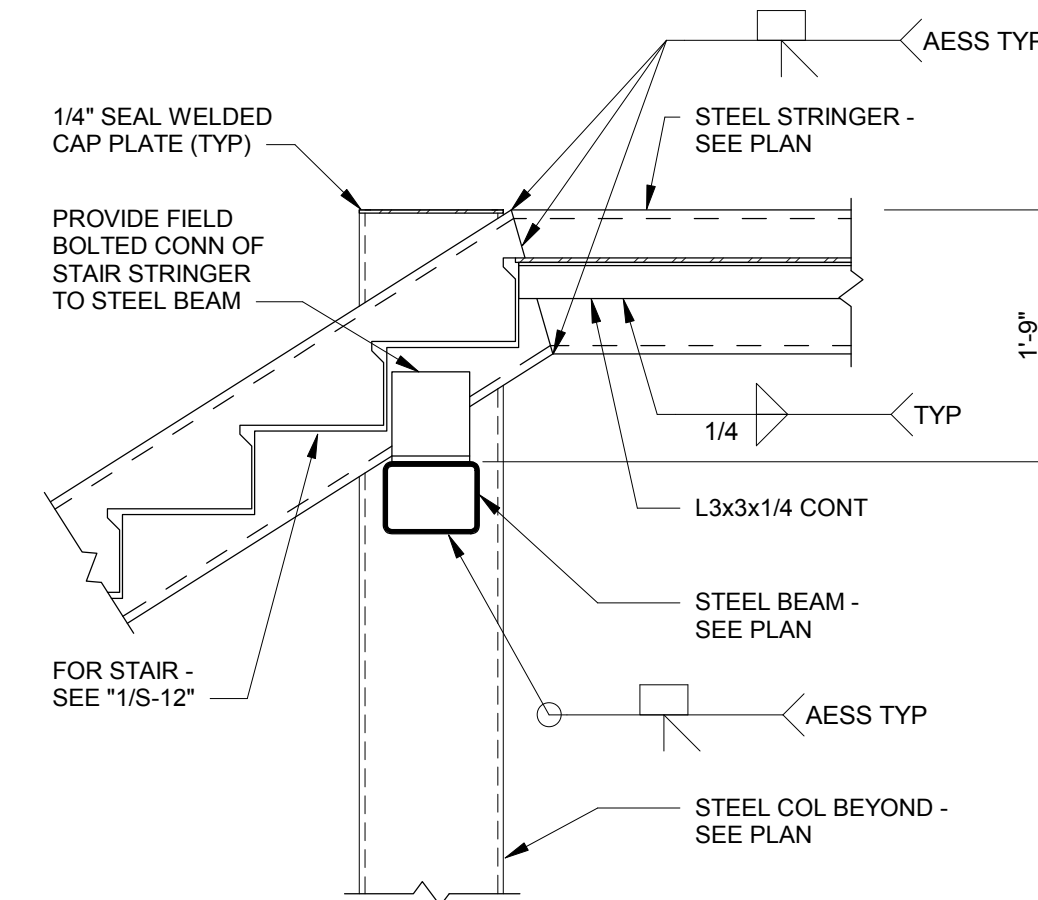
3/14/2018 10:39:20 AM E:\Revit\Local Files\Revit Structural\2017\ECSU Low-Rise Stair STR (17) (JMM).rvt



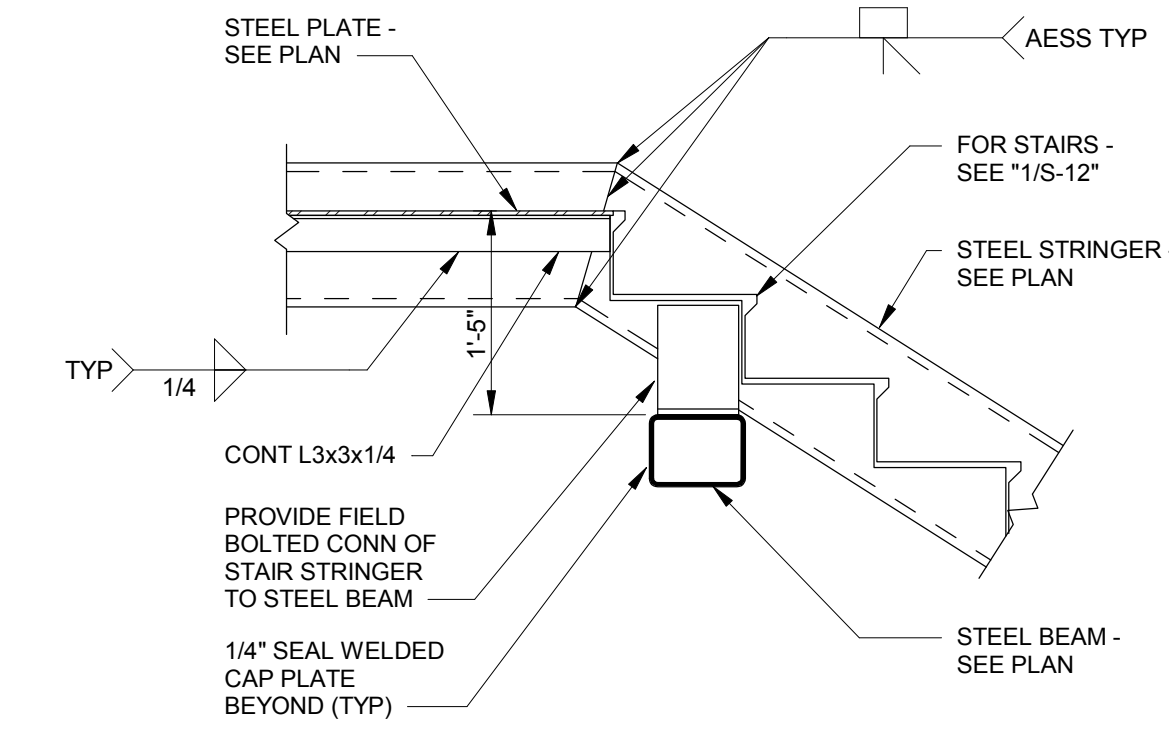
**1 FRAMING SECTION**  
S-13 3/4" = 1'-0"



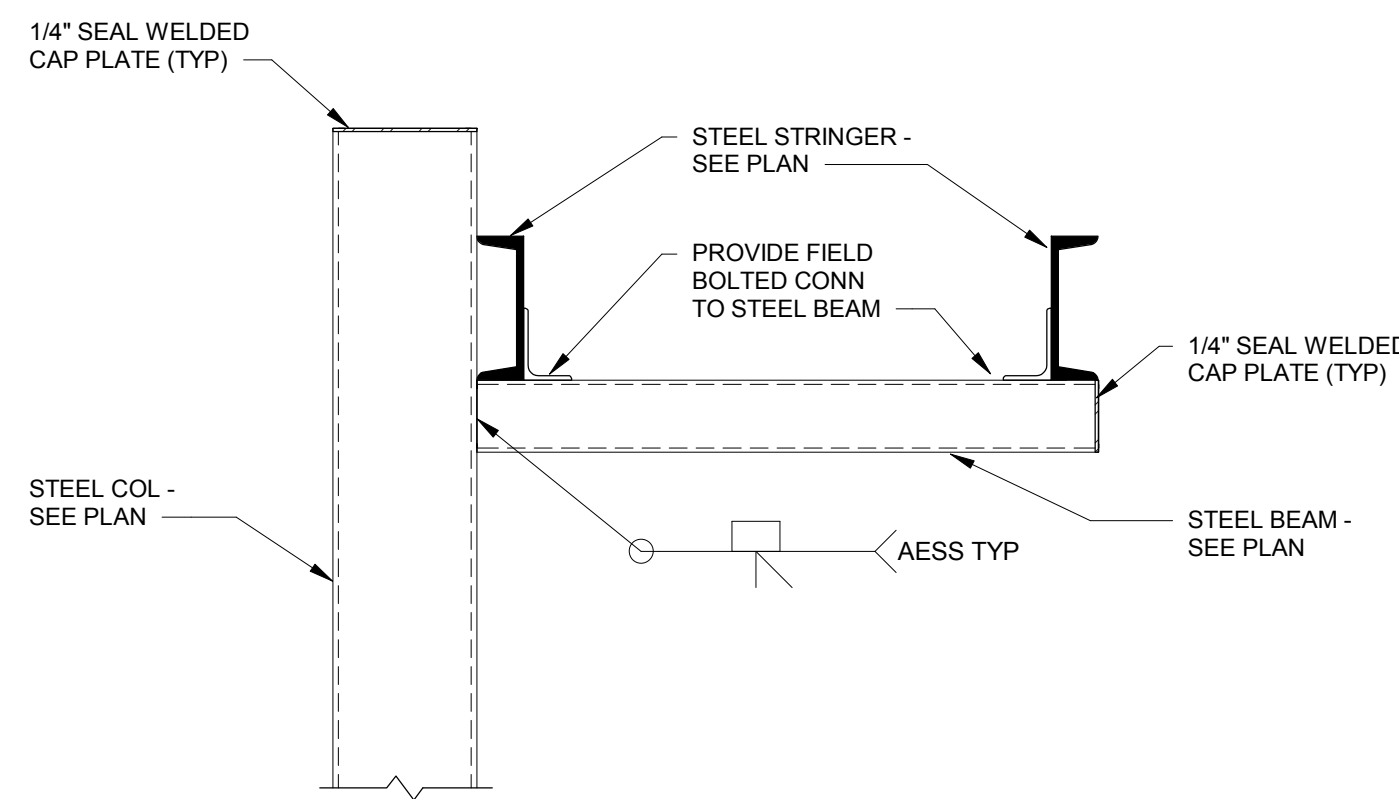
**2 FRAMING SECTION**  
S-13 3/4" = 1'-0"



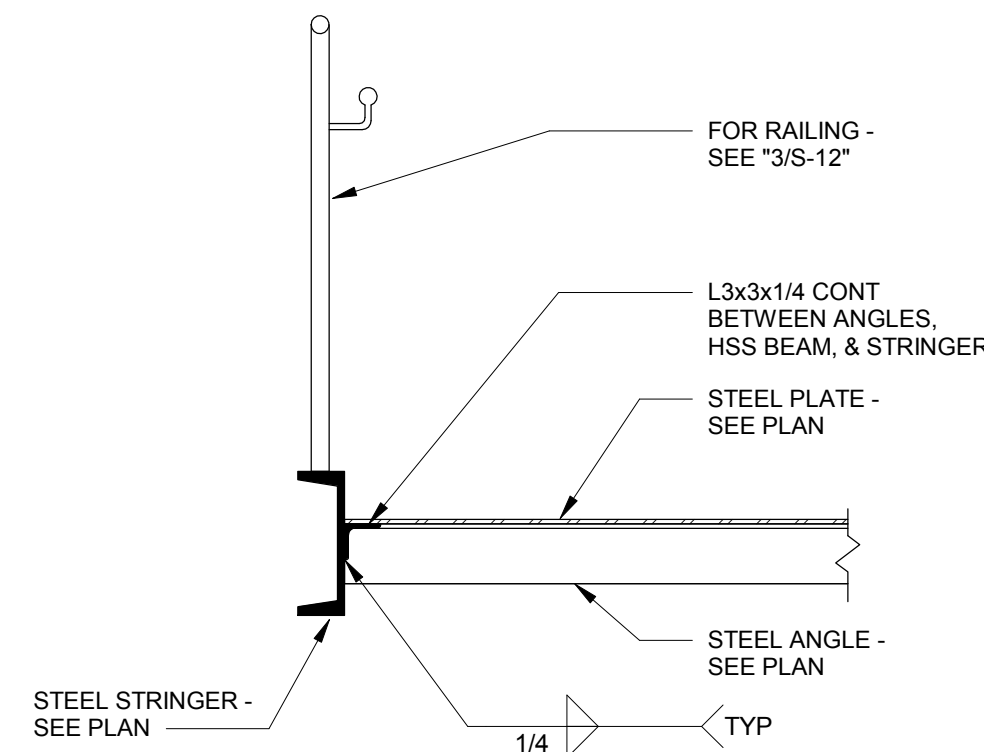
**3 FRAMING SECTION**  
S-13 3/4" = 1'-0"



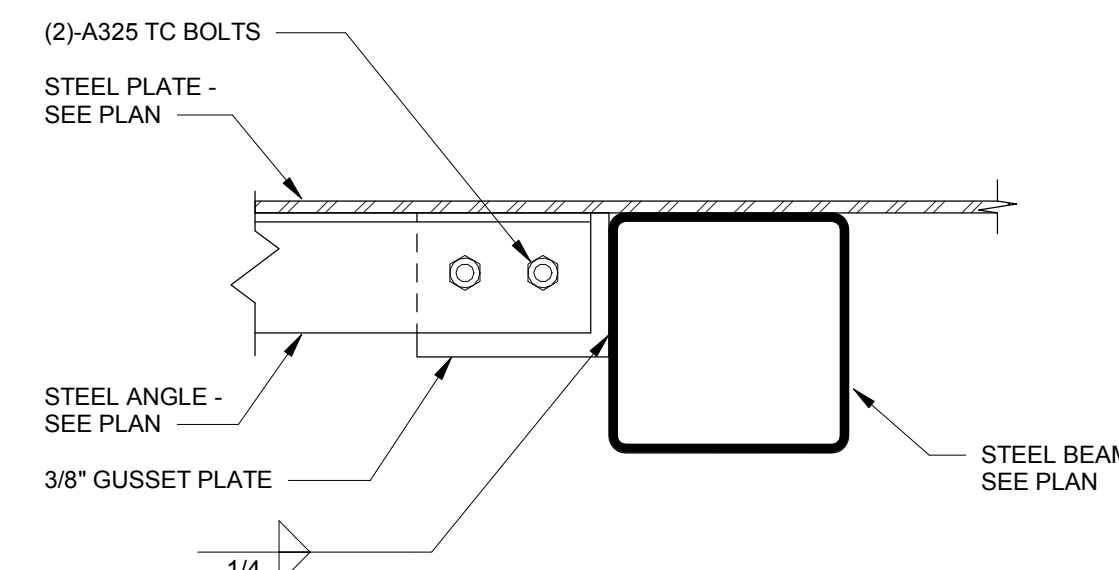
**4 FRAMING SECTION**  
S-13 3/4" = 1'-0"



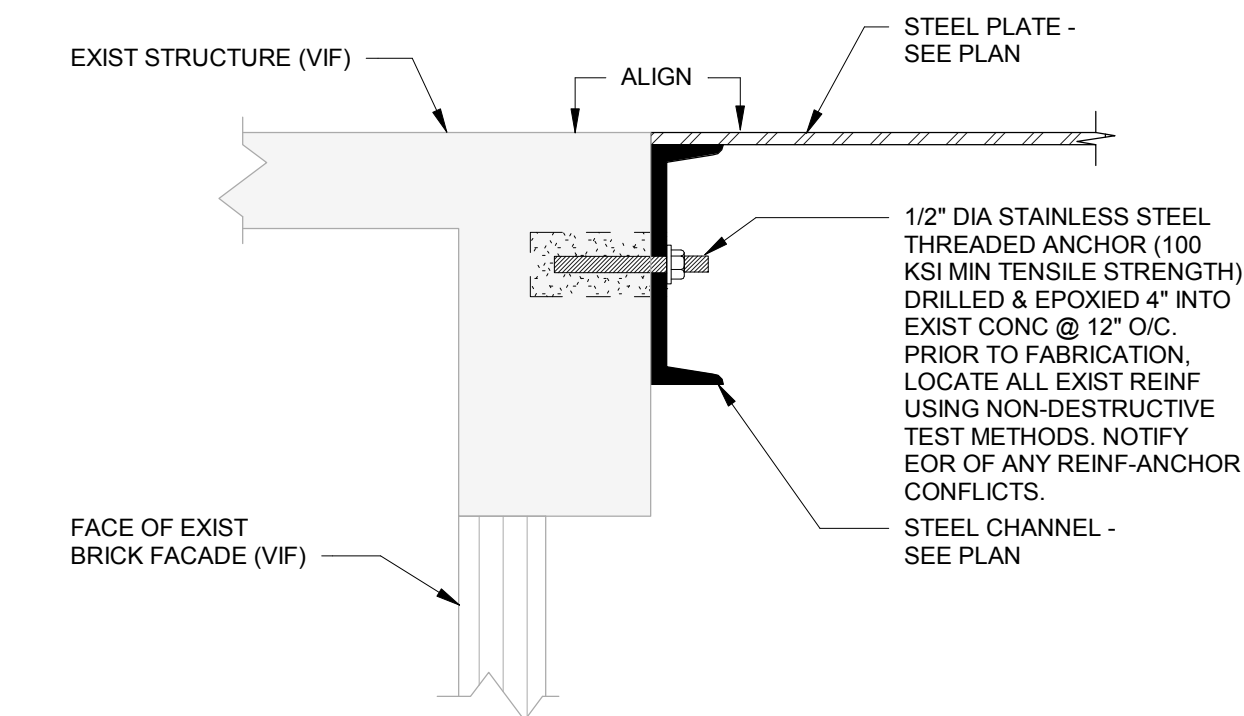
**5 FRAMING SECTION**  
S-13 3/4" = 1'-0"



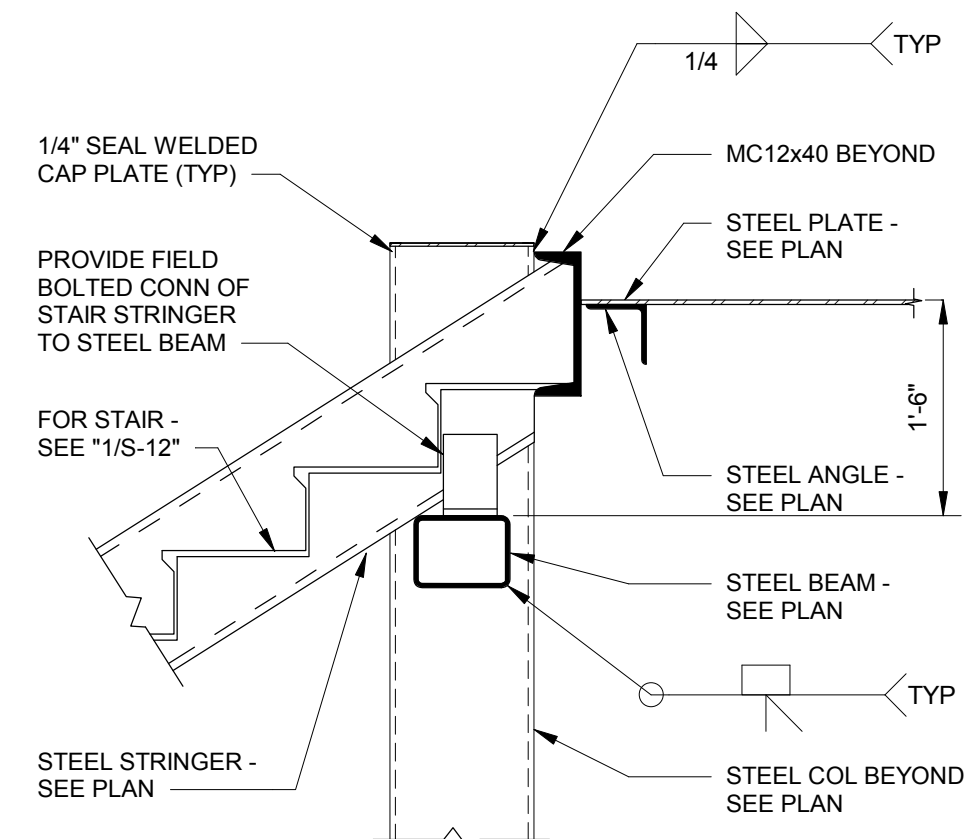
**6 FRAMING SECTION**  
S-13 3/4" = 1'-0"



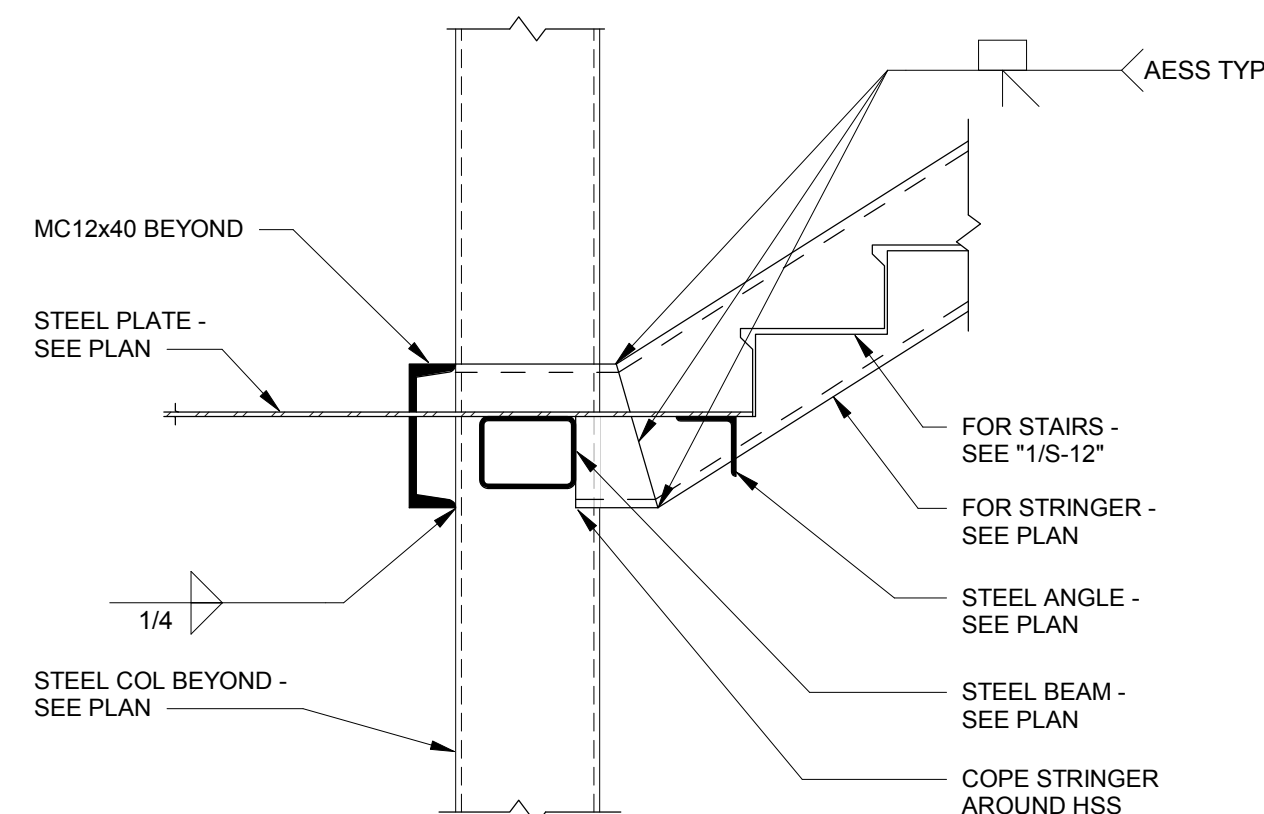
**7 FRAMING DETAIL**  
S-13 1 1/2" = 1'-0"



**8 FRAMING DETAIL**  
S-13 1 1/2" = 1'-0"

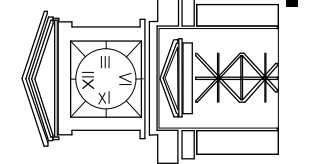


**9 FRAMING SECTION**  
S-13 3/4" = 1'-0"



**10 FRAMING SECTION**  
S-13 3/4" = 1'-0"

**EASTERN CONNECTICUT STATE UNIVERSITY**  
Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226



	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

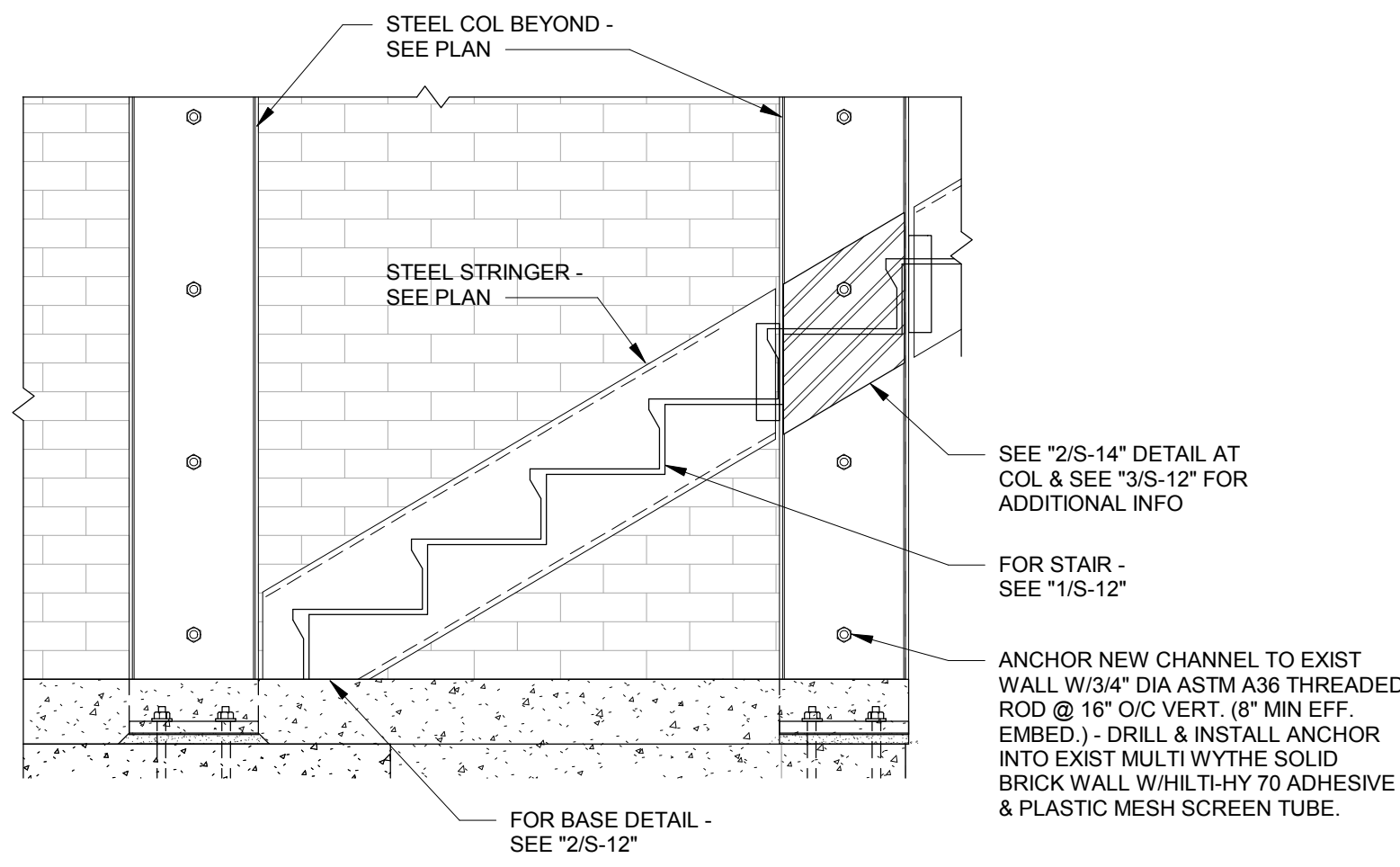
DRAWING NAME:  
**FRAMING DETAILS - STAIR "A, B, C, D"**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **S-13**  
Scale: **As indicated**  
Plot Size: **24 x 36**

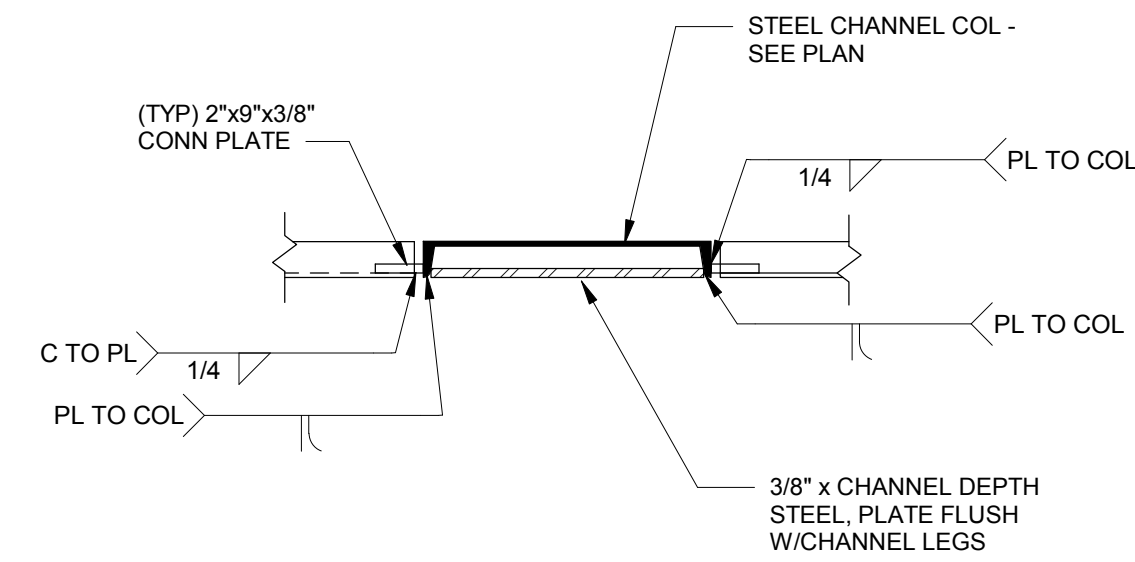




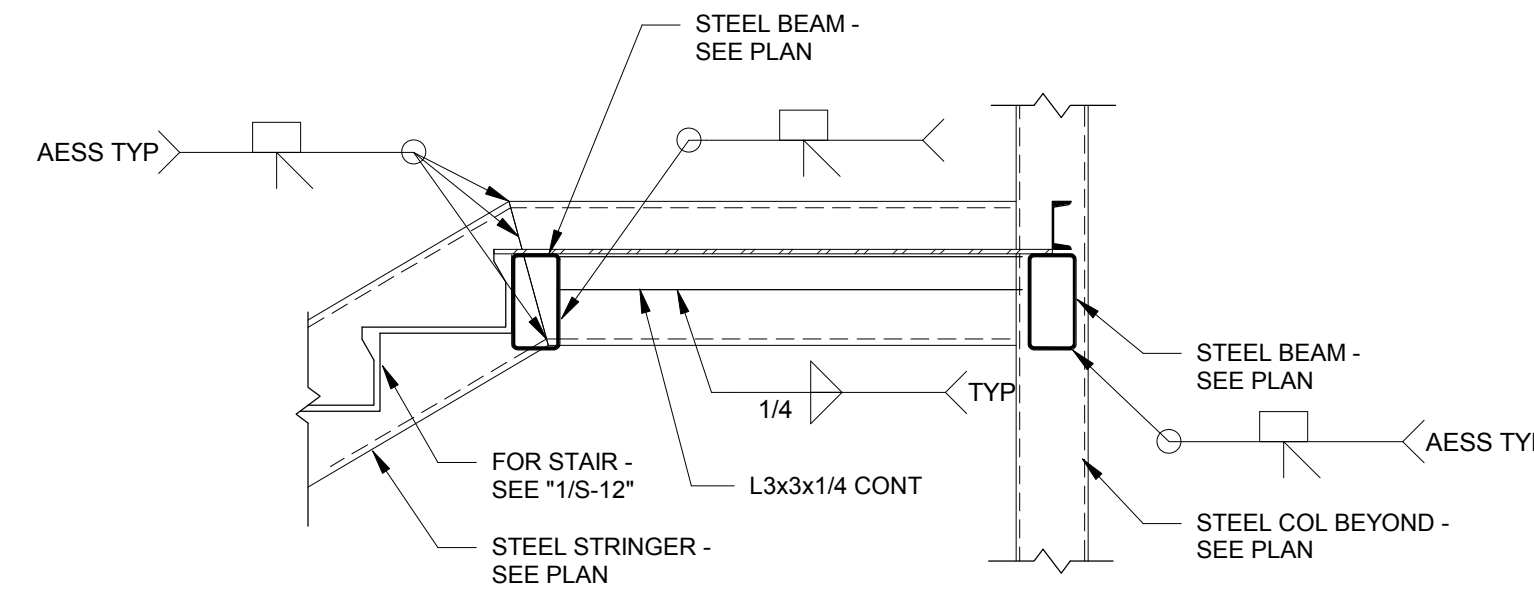
3/14/2018 10:39:24 AM E:\Revit\Local Files\Revit Structural\2017\ECSU Low-Rise Stair STR (17) (JWM).rvt



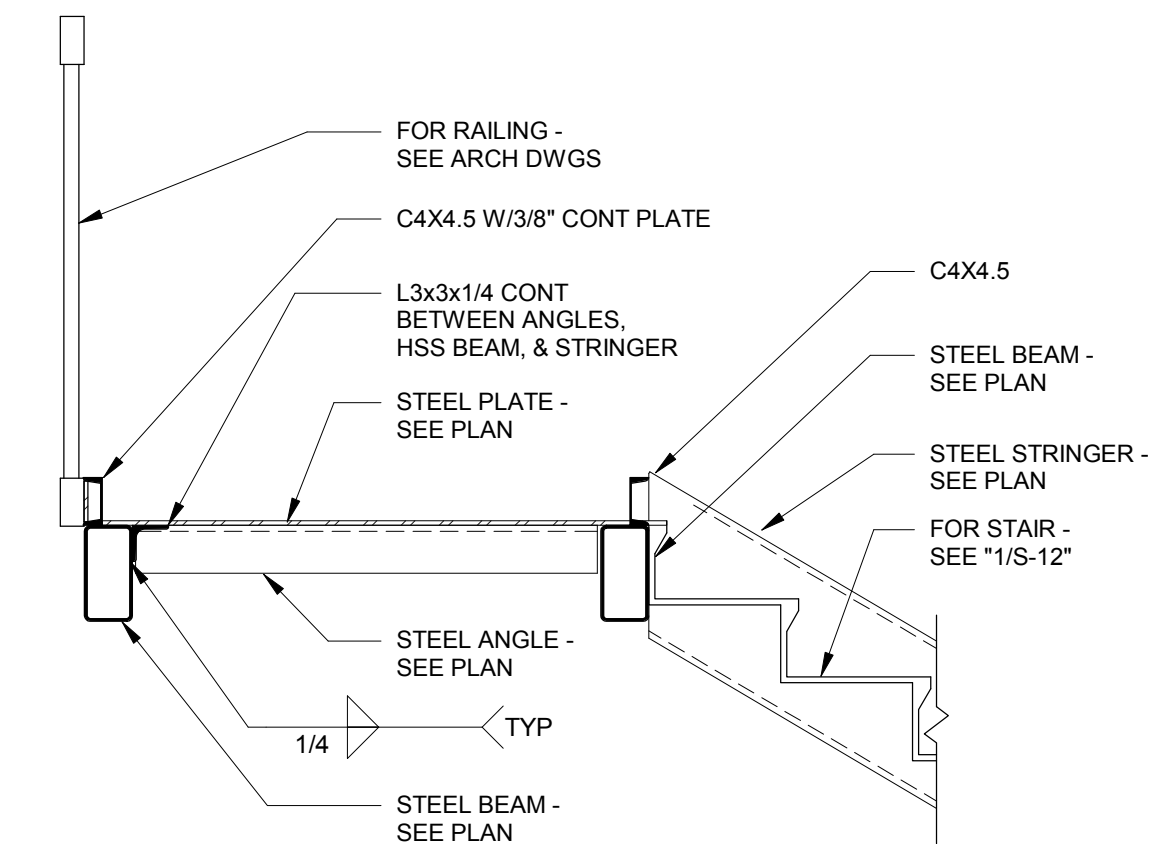
**1 FRAMING SECTION**  
S-14 3/4" = 1'-0"



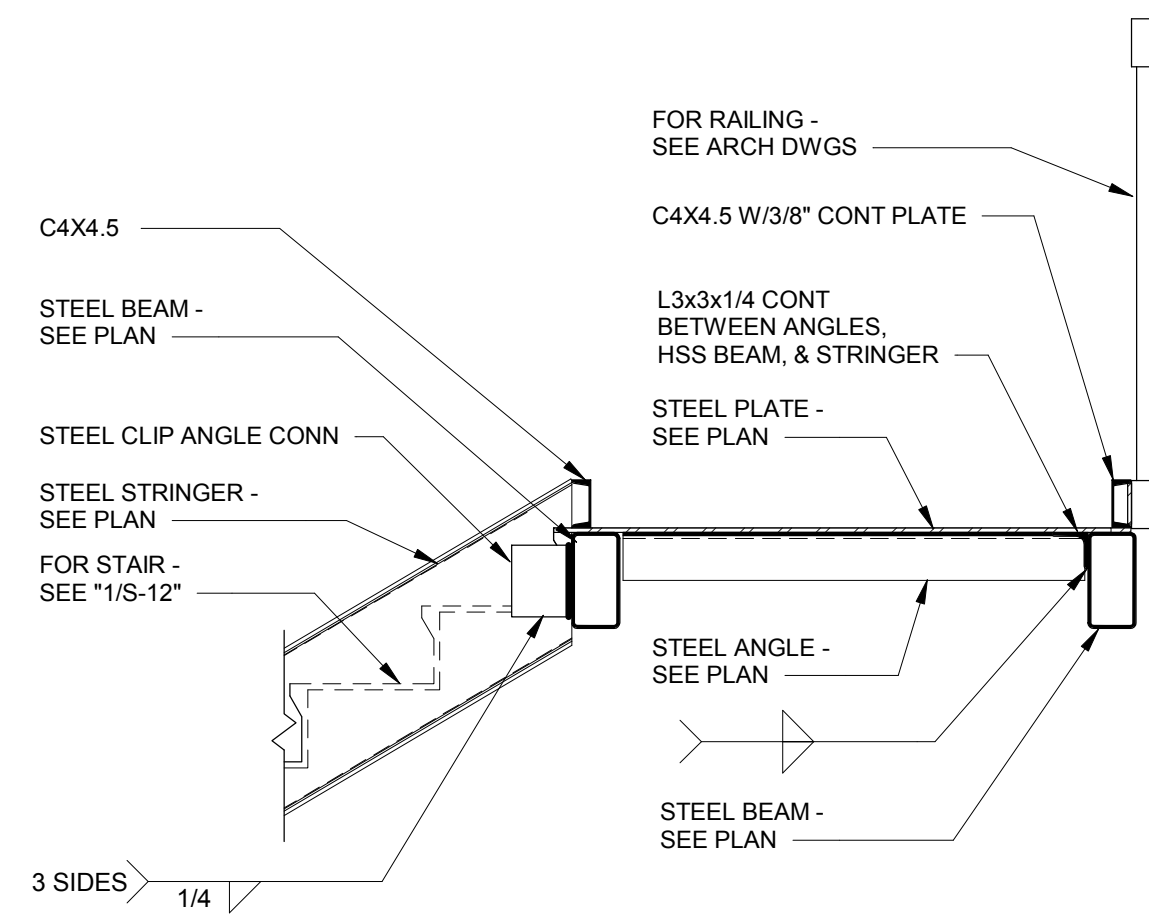
**2 FRAMING DETAIL**  
S-14 1 1/2" = 1'-0"



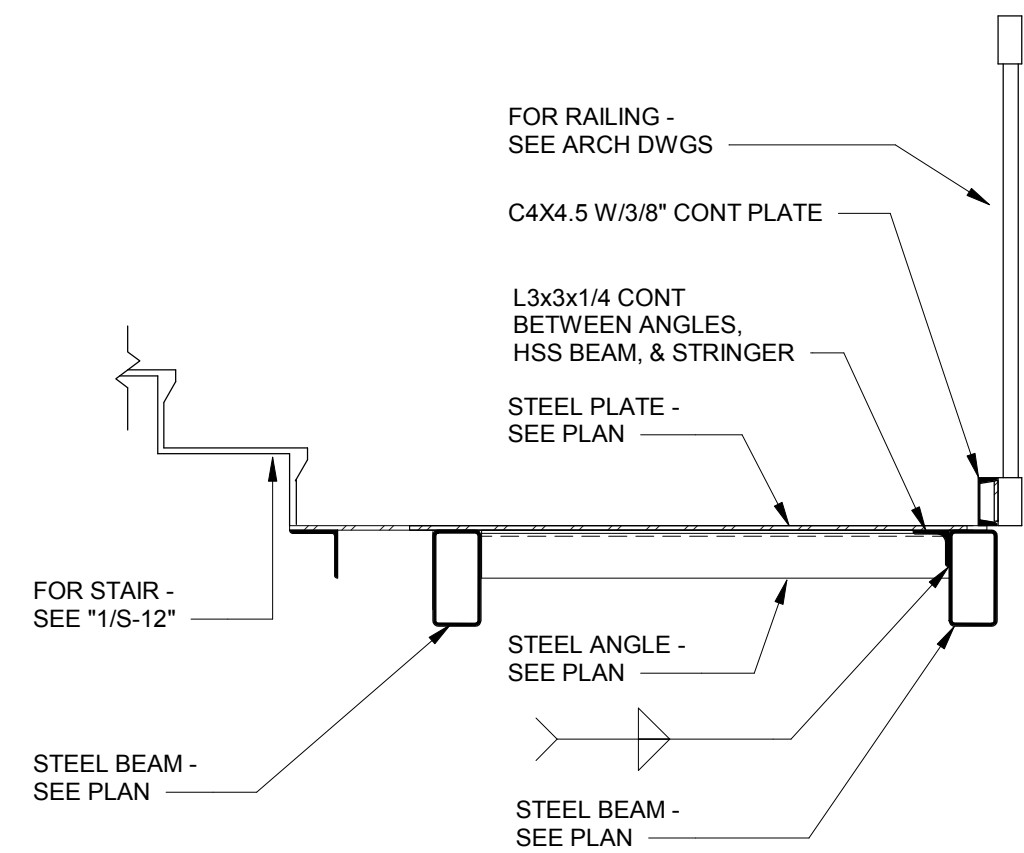
**3 FRAMING SECTION**  
S-14 3/4" = 1'-0"



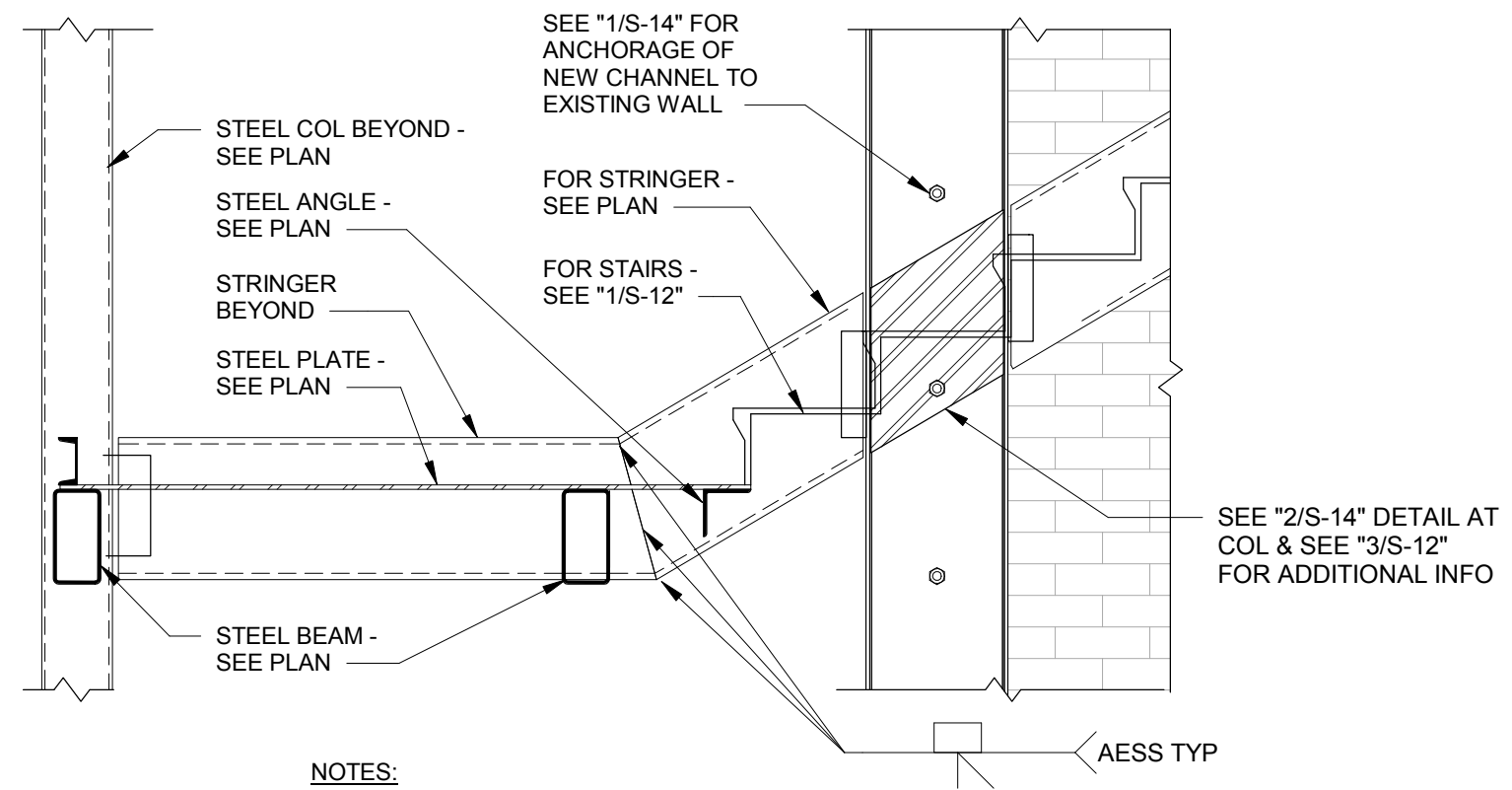
**4 FRAMING SECTION**  
S-14 3/4" = 1'-0"



**5 FRAMING SECTION**  
S-14 3/4" = 1'-0"

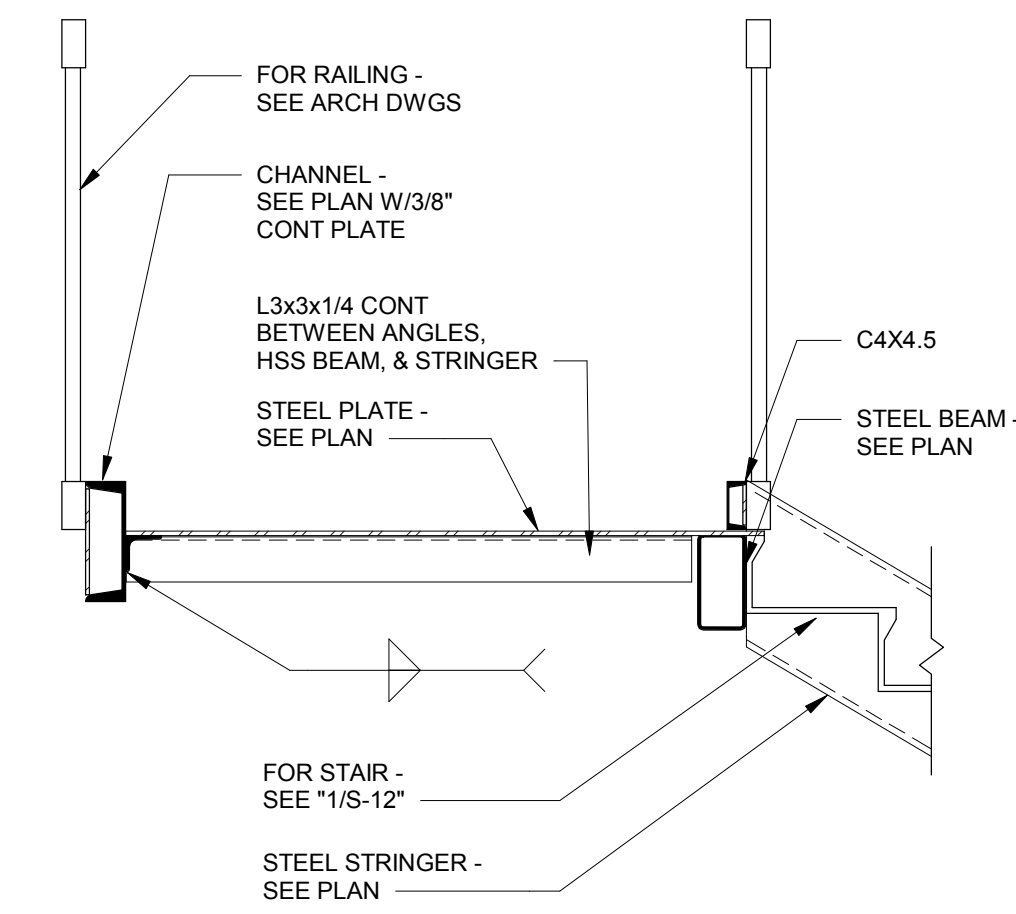


**6 FRAMING SECTION**  
S-14 3/4" = 1'-0"

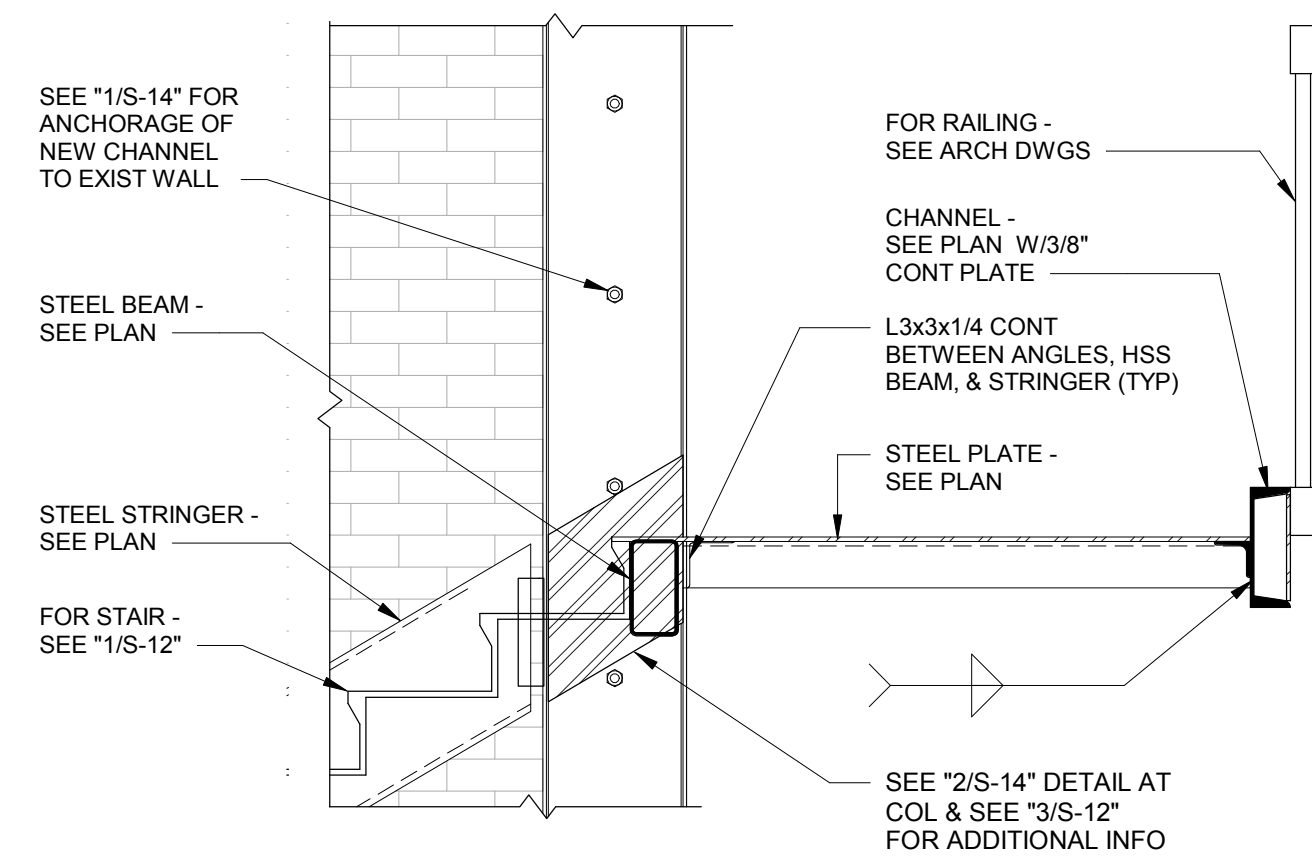


NOTES:  
1. RAILINGS NOT SHOWN FOR CLARITY.

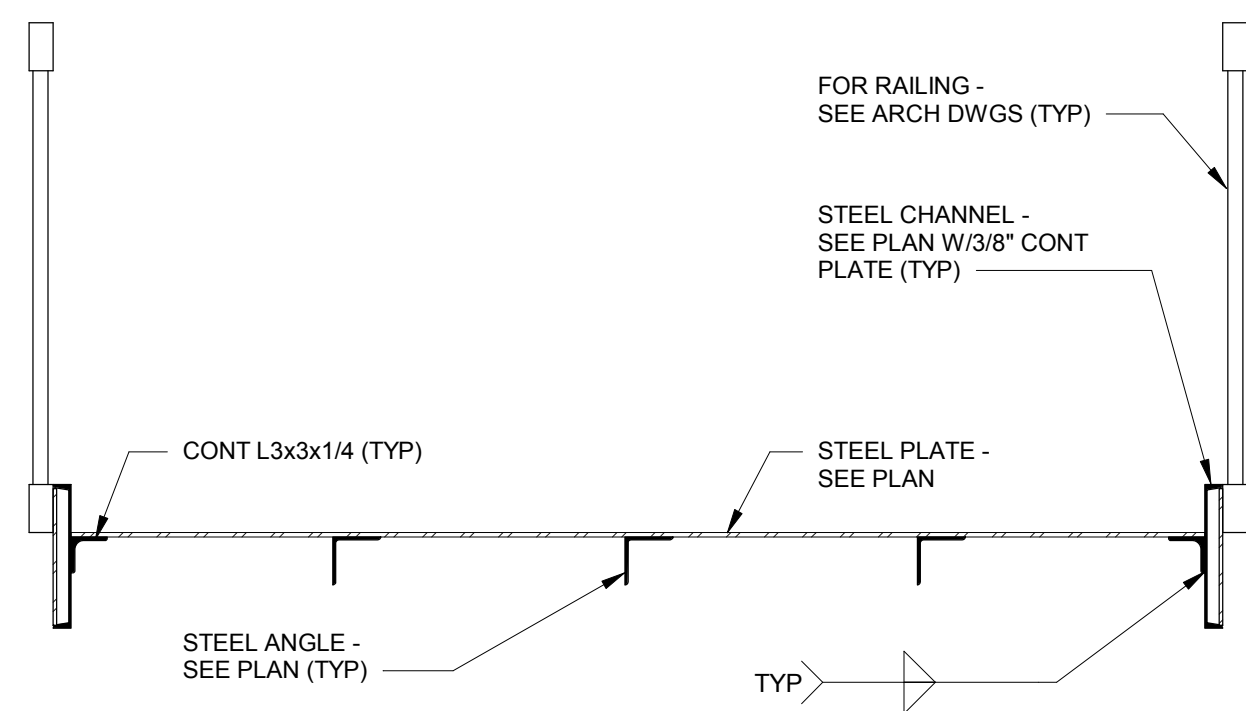
**7 FRAMING SECTION**  
S-14 3/4" = 1'-0"



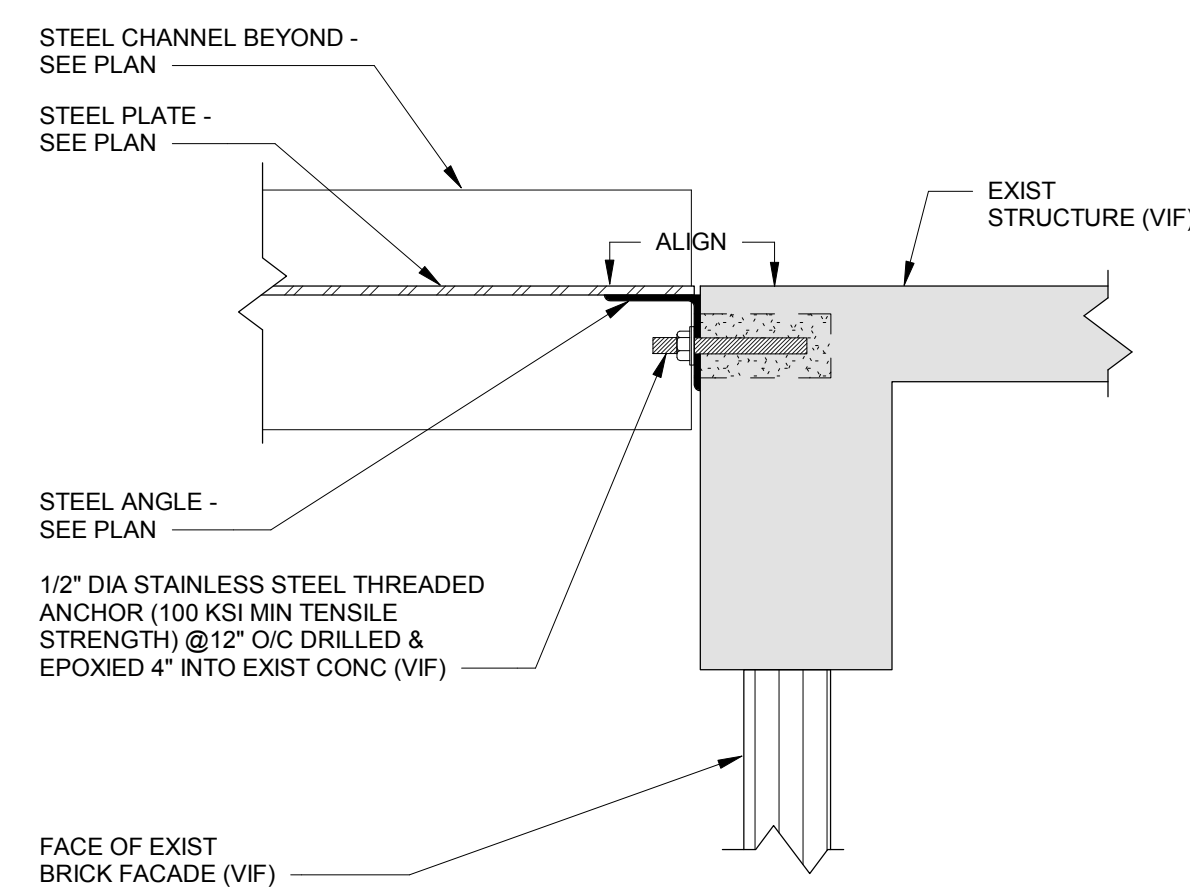
**8 FRAMING SECTION**  
S-14 3/4" = 1'-0"



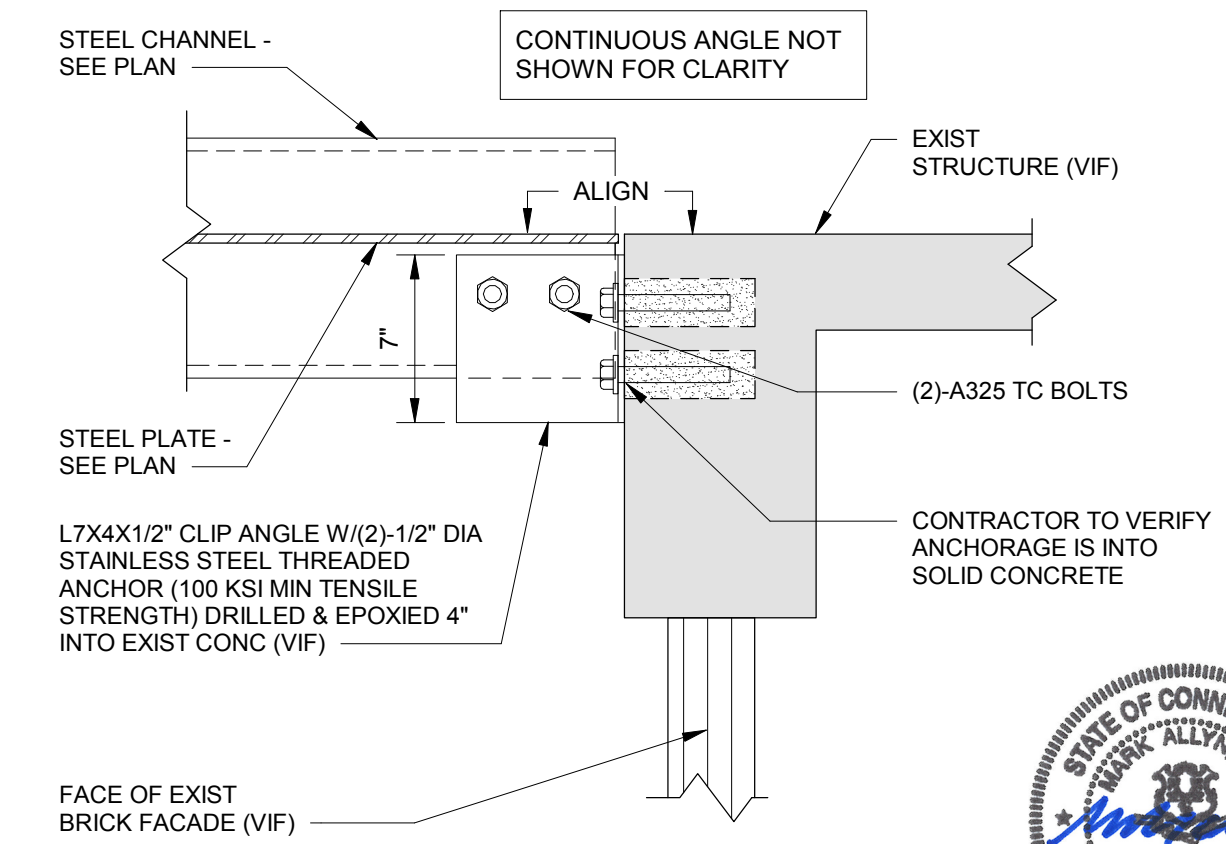
**9 FRAMING SECTION**  
S-14 3/4" = 1'-0"



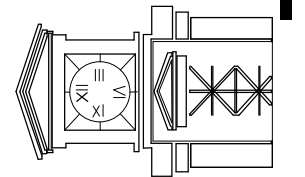
**10 FRAMING SECTION**  
S-14 3/4" = 1'-0"



**11 FRAMING SECTION**  
S-14 1 1/2" = 1'-0"



**12 FRAMING SECTION**  
S-14 1 1/2" = 1'-0"

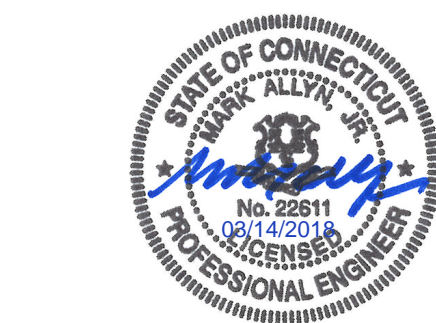


Bid Set	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue
	Date

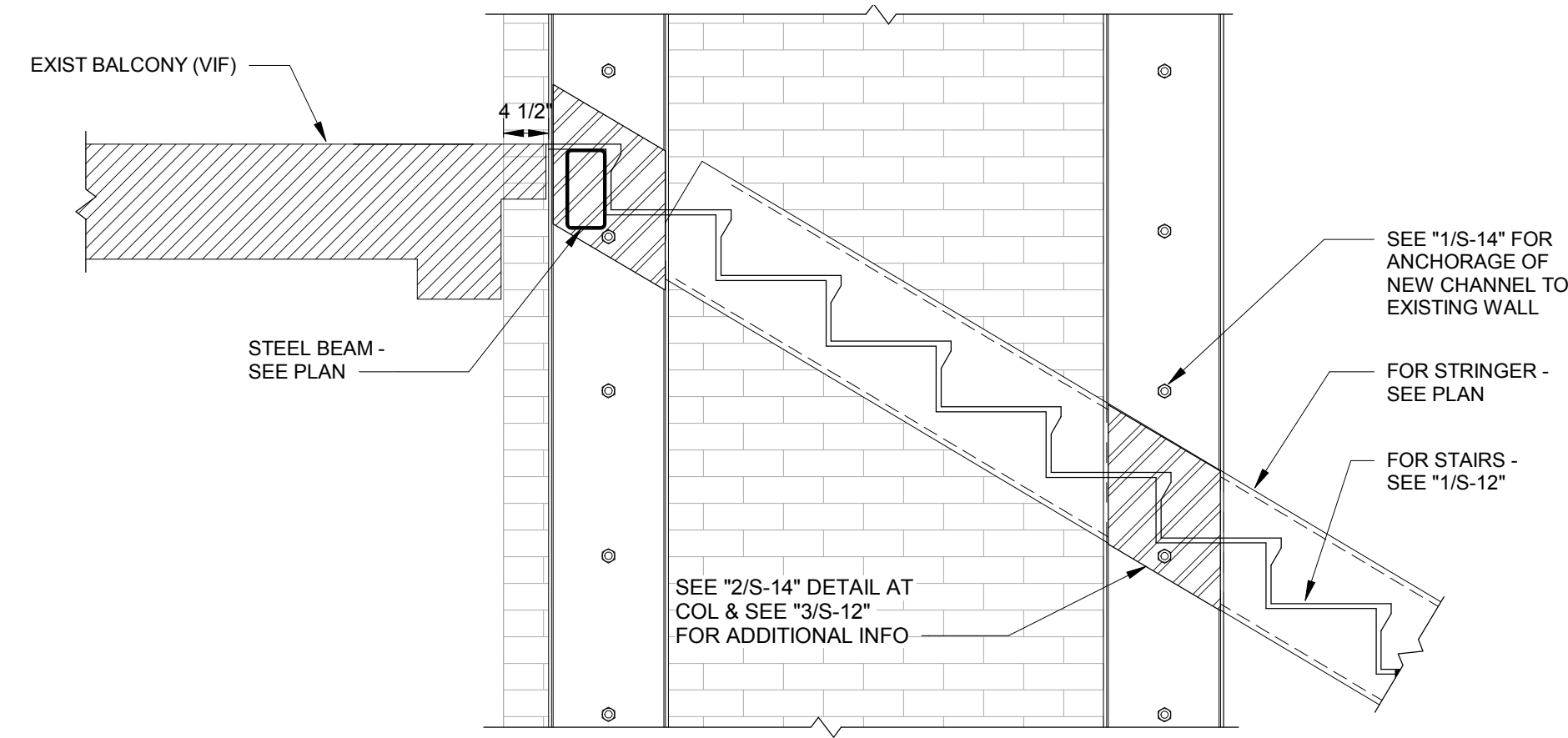
PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**FRAMING DETAILS - STAIR 'E-WEST & E-EAST'**

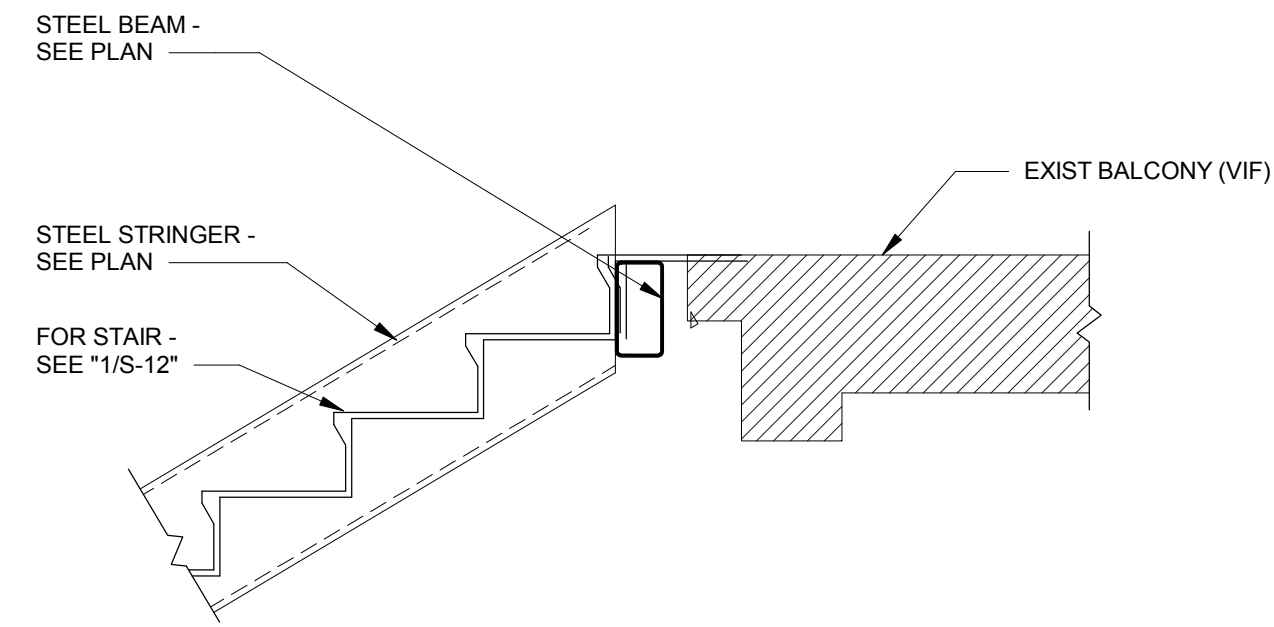
Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **S-14**  
Scale: **As indicated**  
Plot Size: **24 x 36**



E:\Revit\Local Files\Revit Structural\2017\ECSU Stairs (21-17-050) (17)\ECSU Low-Rise Stair STR (17) (JWM).rvt  
 3/14/2018 10:39:26 AM



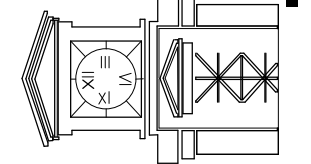
**1 FRAMING SECTION**  
 S-15 3/4" = 1'-0"



**2 FRAMING SECTION**  
 S-15 3/4" = 1'-0"

**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
 83 Windham Street, Willimantic CT 06226



	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

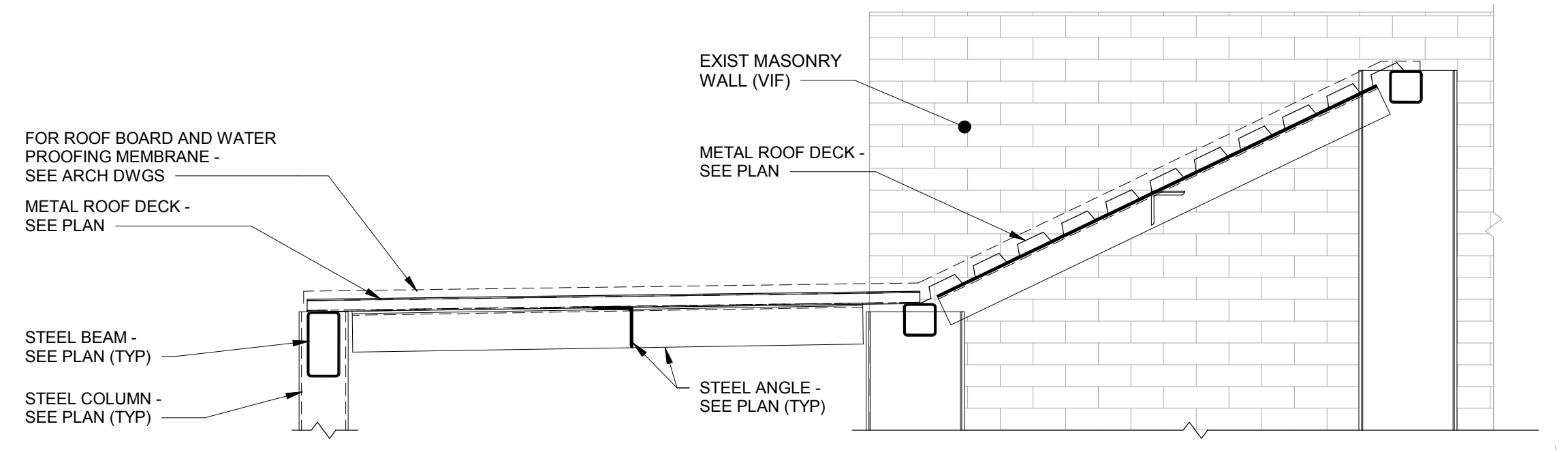
DRAWING NAME:  
 FRAMING DETAILS - STAIR 'AB & CD'

Project No.: **ECSU 2016-9 (Phase II)**  
 Date: **12/6/2017** Drawing No.: **S-15**  
 Scale: **3/4" = 1'-0"**  
 Plot Size: **24 x 36**

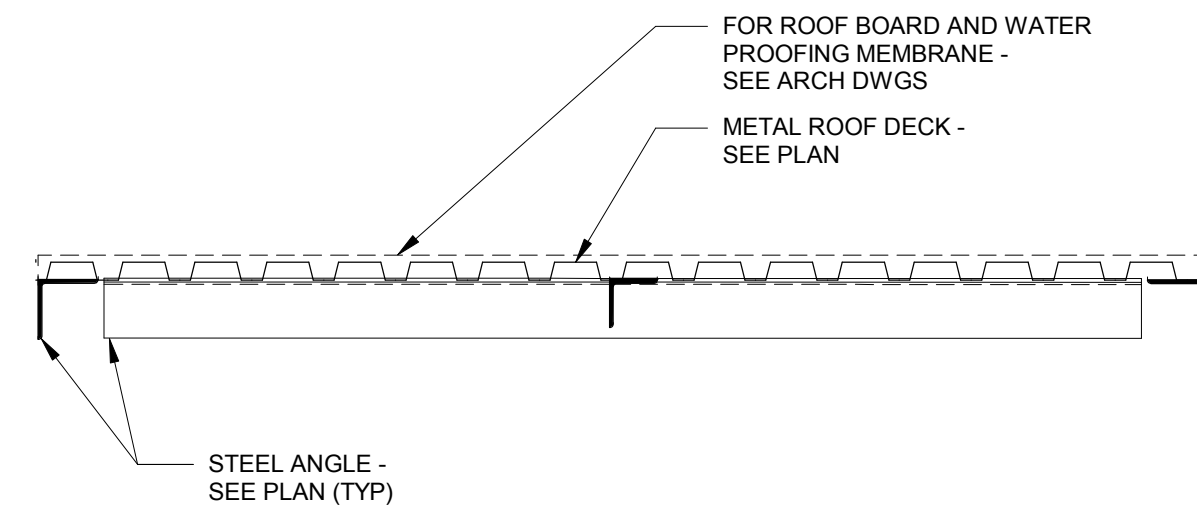




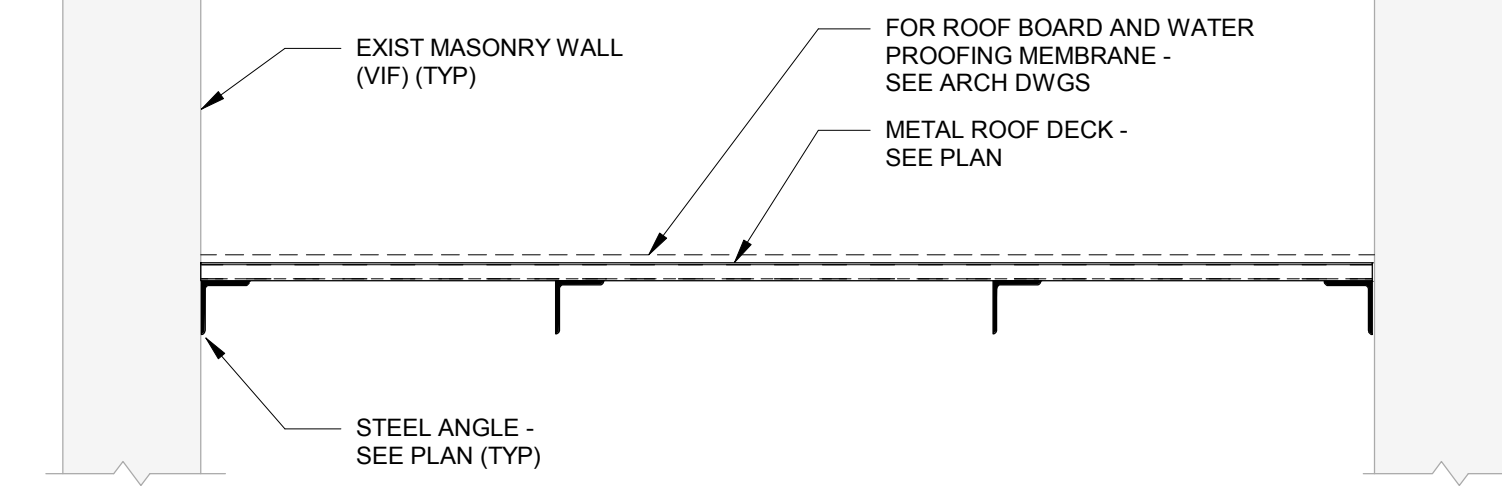
3/14/2018 10:39:29 AM E:\Revit\Local Files\Revit Structural\2017\ECSU Stairs (21-17-050) (17)\ECSU Low-Rise Stair STR (17) (JMM).rvt



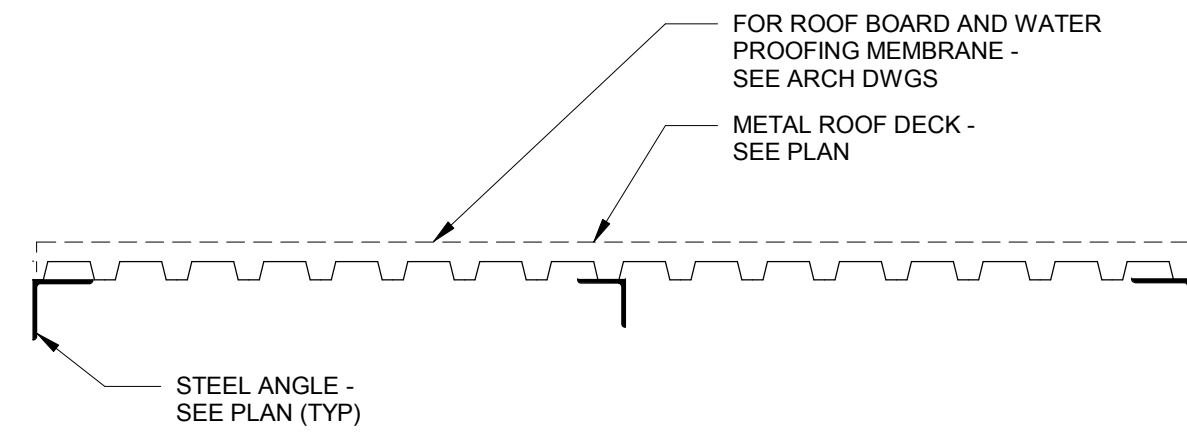
**1 FRAMING SECTION**  
S-16 3/4" = 1'-0"



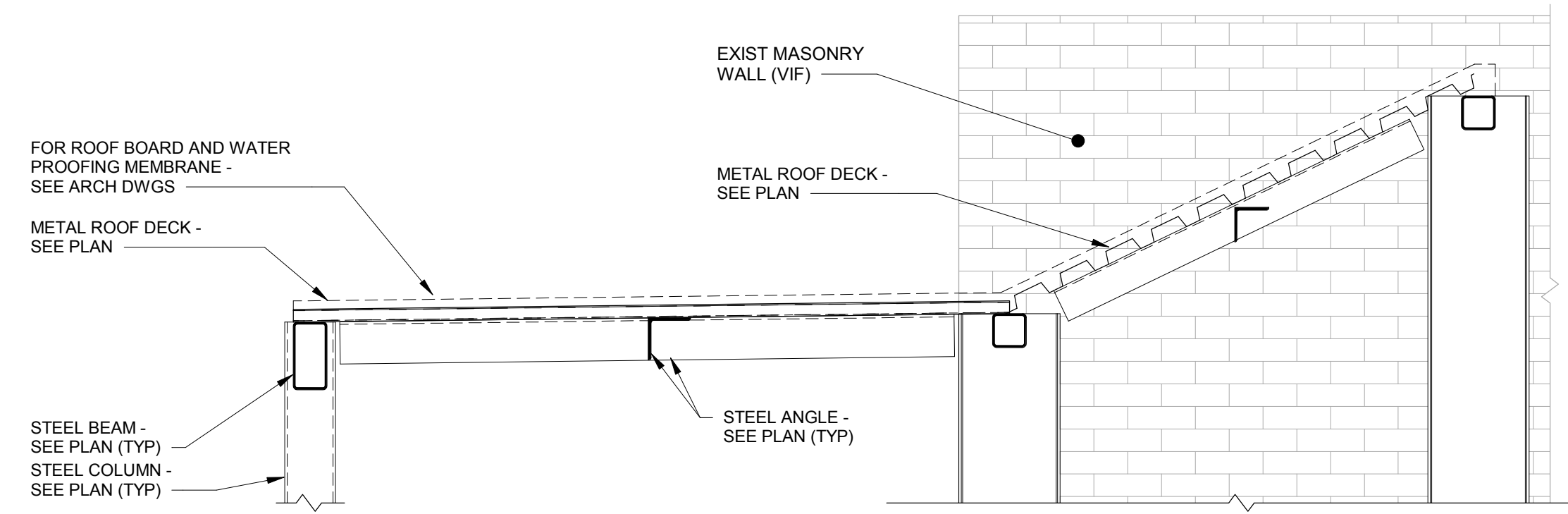
**2 FRAMING SECTION**  
S-16 3/4" = 1'-0"



**3 FRAMING SECTION**  
S-16 3/4" = 1'-0"



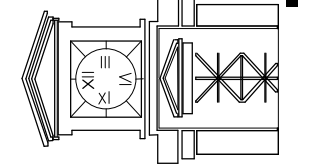
**4 FRAMING SECTION**  
S-16 3/4" = 1'-0"



**5 FRAMING SECTION**  
S-16 3/4" = 1'-0"

**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226



	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**ROOF FRAMING DETAILS**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **S-16**  
Scale: **3/4" = 1'-0"**  
Plot Size: **24 x 36**

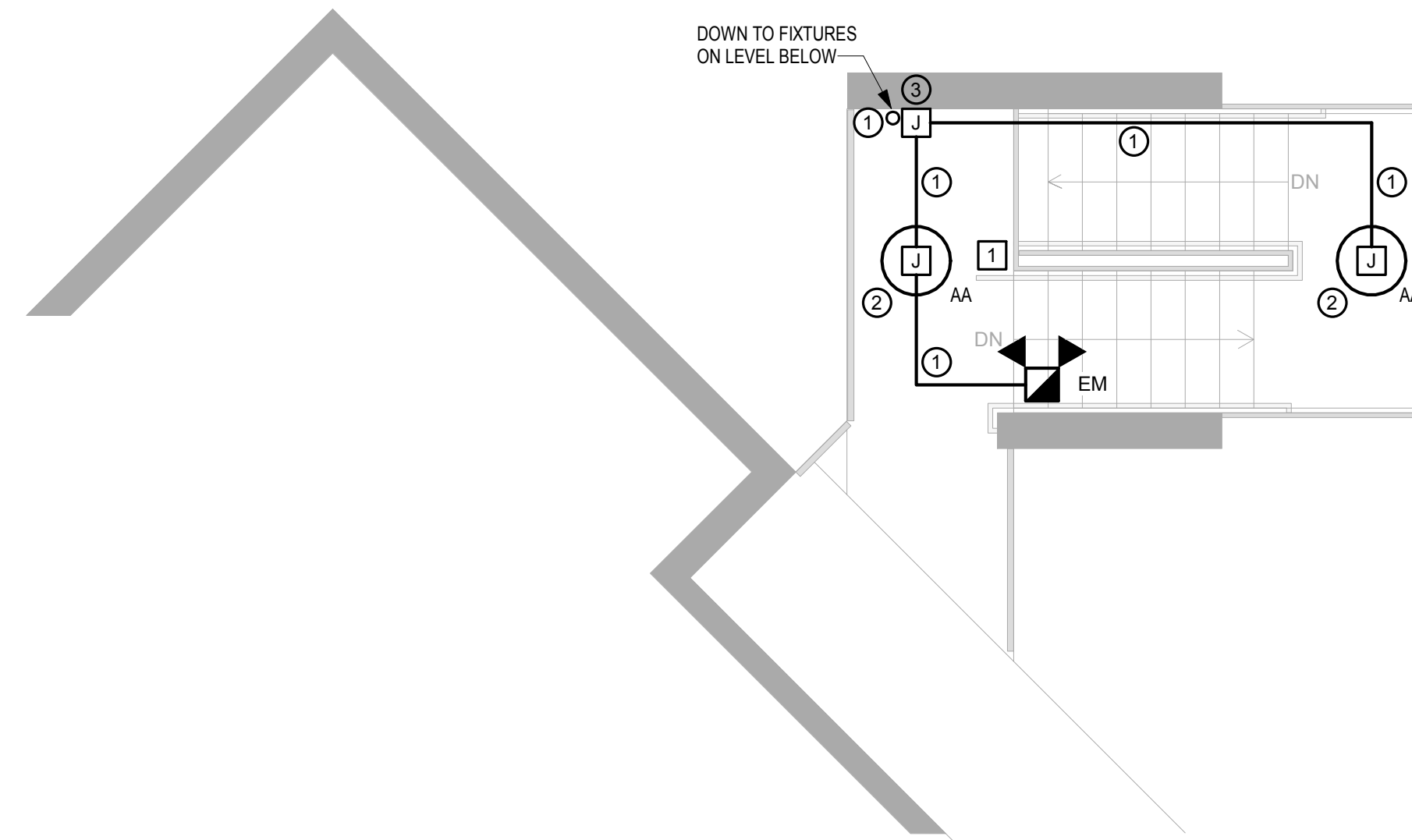


3/14/2018 11:03:50 AM W:\2017\2117050 - ECSU Low Rise Dorm Stairs\DWGS\Revit Model\2117050 - ECSU Low-Rise Stair (17) - Roofed Stairs.rvt

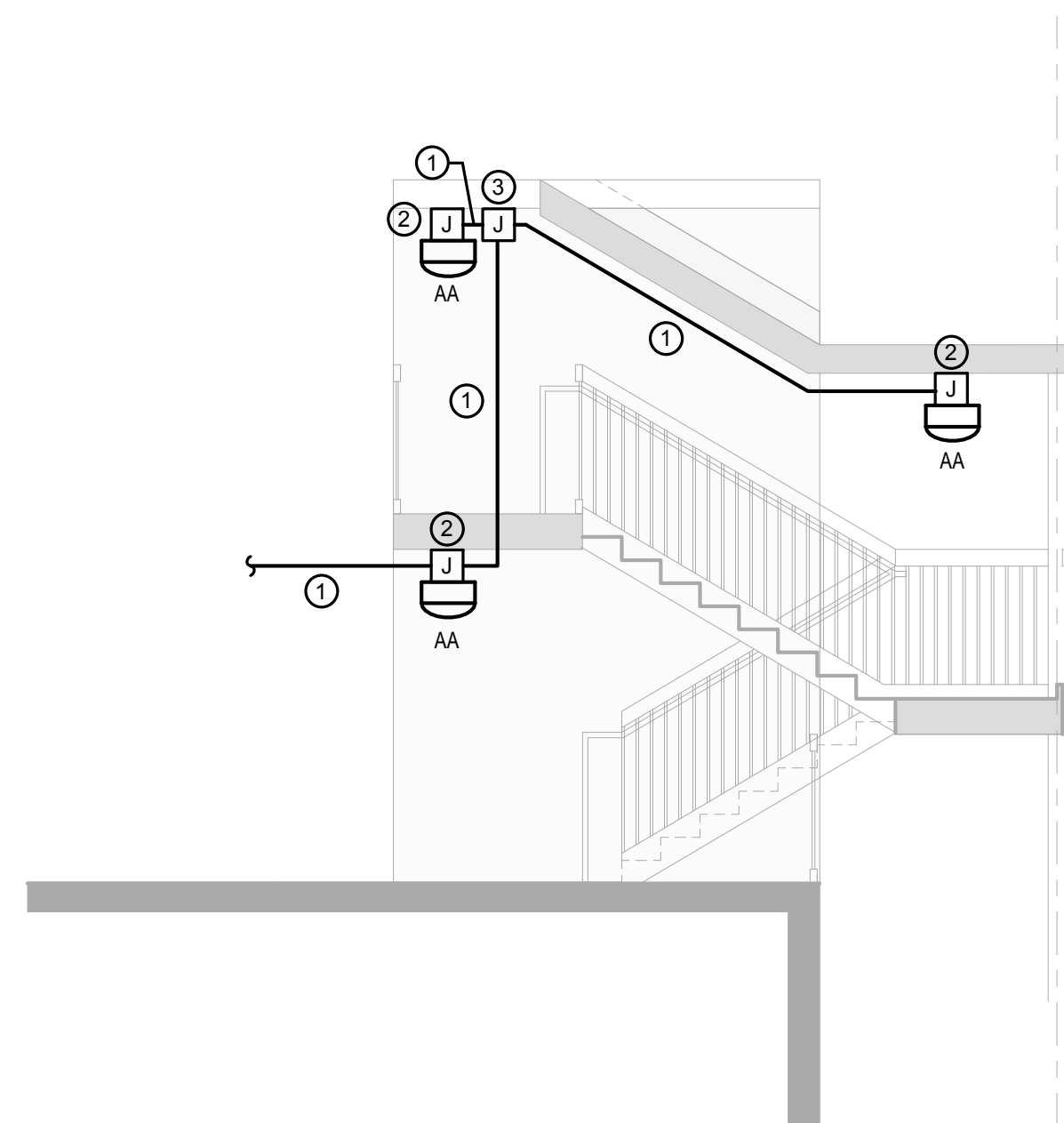
### LUMINAIRE SCHEDULE

NOTE:  
1. BIDS SHALL BE BASED ON THE LUMINAIRE SCHEDULE BELOW AND THE SPECIFICATIONS. REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL GENERAL REQUIREMENTS.

TYPE	MANUFACTURER	FIXTURE DESCRIPTION	VOLTS	LAMPS
AA	KENALL #MR13FD-PP-MB-20L35K-120 SERIES OR ACCEPTABLE EQUIVALENT	SURFACE, CEILING/DECK MOUNTED, EXTERIOR RATED, 13" ROUND LED LUMINAIRE WITH MARINE GRADE DIE-CAST ALUMINUM HOUSING, UV STABILIZED, HIGH IMPACT RESISTANT INJECTION MOLDED POLYCARBONATE LENS, GASKETING AND LED DRIVER. FIXTURE SHALL BE UL LISTED FOR WET LOCATION IN SURFACE, CEILING/DECK MOUNTED CONFIGURATION.	120V	20 WATT 2250 LM 3500K LED
EM	KENALL #METELHC-24N-MB-2- 6.5L-120-CEL SERIES OR ACCEPTABLE EQUIVALENT	SURFACE, WALL MOUNTED, EXTERIOR RATED EMERGENCY LIGHTING UNIT WITH HIGH IMPACT INJECTION MOLDED POLYCARBONATE HOUSING, UV STABILIZED SHIELD, TWO (2) INTEGRAL 6.5 WATT LED HEADS, BLACK FINISH, 90-MINUTE COLD WEATHER EMERGENCY BATTERY PACK, INTEGRAL TEST SWITCH, CHARGER AND LOW VOLTAGE DISCONNECT. FIXTURE SHALL BE UL LISTED FOR WET LOCATION IN SURFACE, WALL MOUNTED CONFIGURATION.	120V	FURNISHED WITH UNIT



3 STAIR E-WEST - UPPER LEVEL - ELECTRICAL  
1/4" = 1'-0"



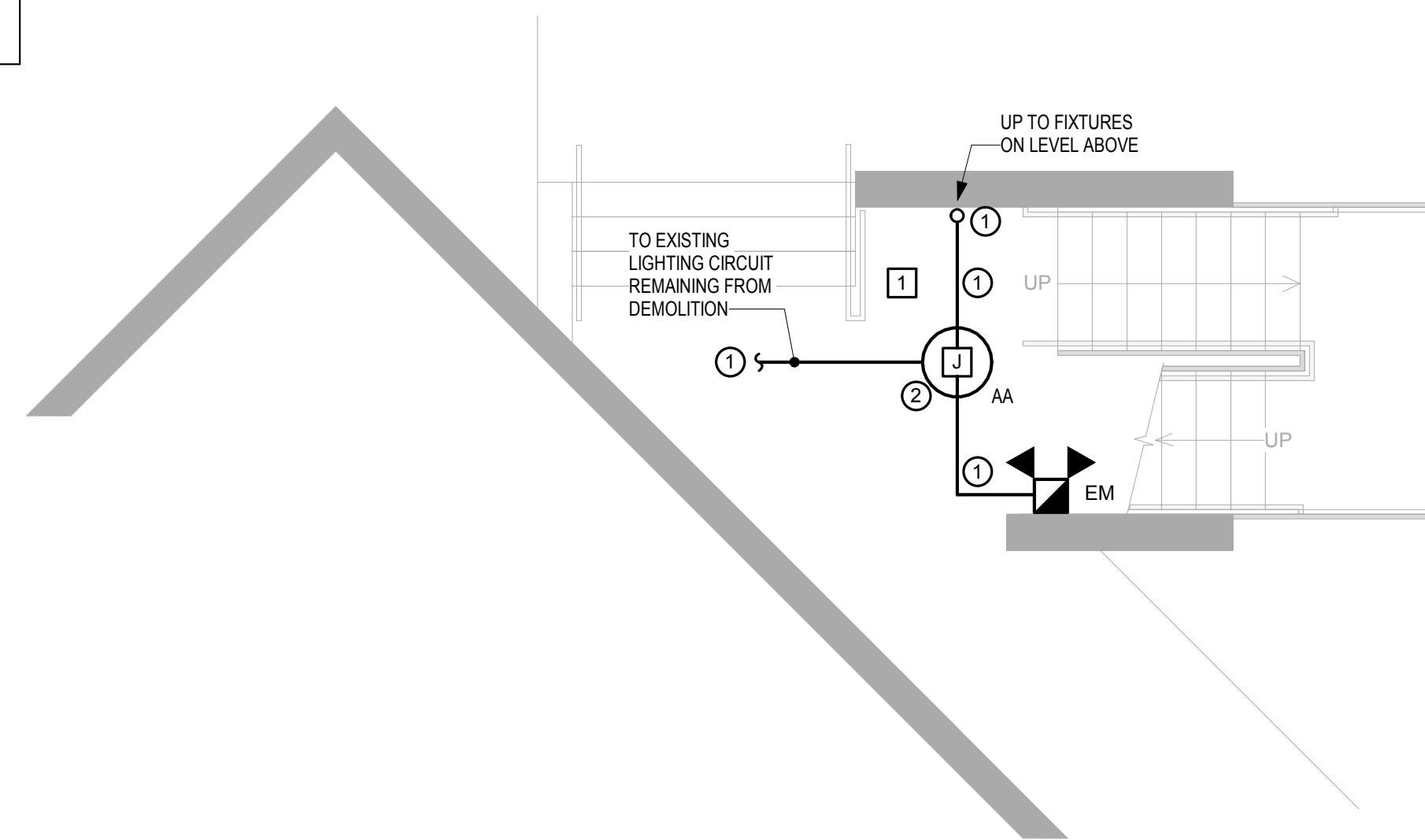
2 STAIR E-WEST - SECTION - ELECTRICAL  
1/4" = 1'-0"

#### DEMOLITION NOTE

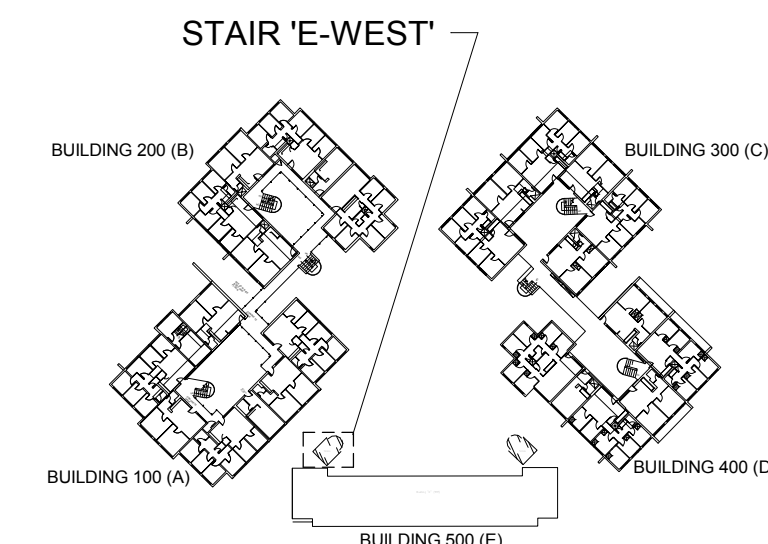
- 1 REMOVE EXISTING STAIR LIGHTING. EXISTING CIRCUIT TO BE EXTENDED TO NEW LIGHT FIXTURE LOCATION.

#### DRAWING NOTE

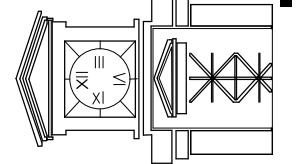
- 1 3/4" RGS - 2 #12 & 1 #12 GND
- 2 4x4 BACKBOX FOR FIXTURE MOUNTING
- 3 4x4 GASKETED JUNCTION BOX WITH COVER PLATE.



1 STAIR E-WEST - MIDDLE LEVEL - ELECTRICAL  
1/4" = 1'-0"



**BVH**  
integrated  
services  
206 West Newberry Road  
Bloomfield, CT 06002  
Tel: (860) 286-9171 www.bvhis.com



Bid Set	3/7/18
OSBI REVIEW	12/14/17
No.	Revision/Issue Date

PROJECT NAME:

**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:

STAIR E-WEST

Project No.:  
**ECSU 2016-9 (Phase II)**

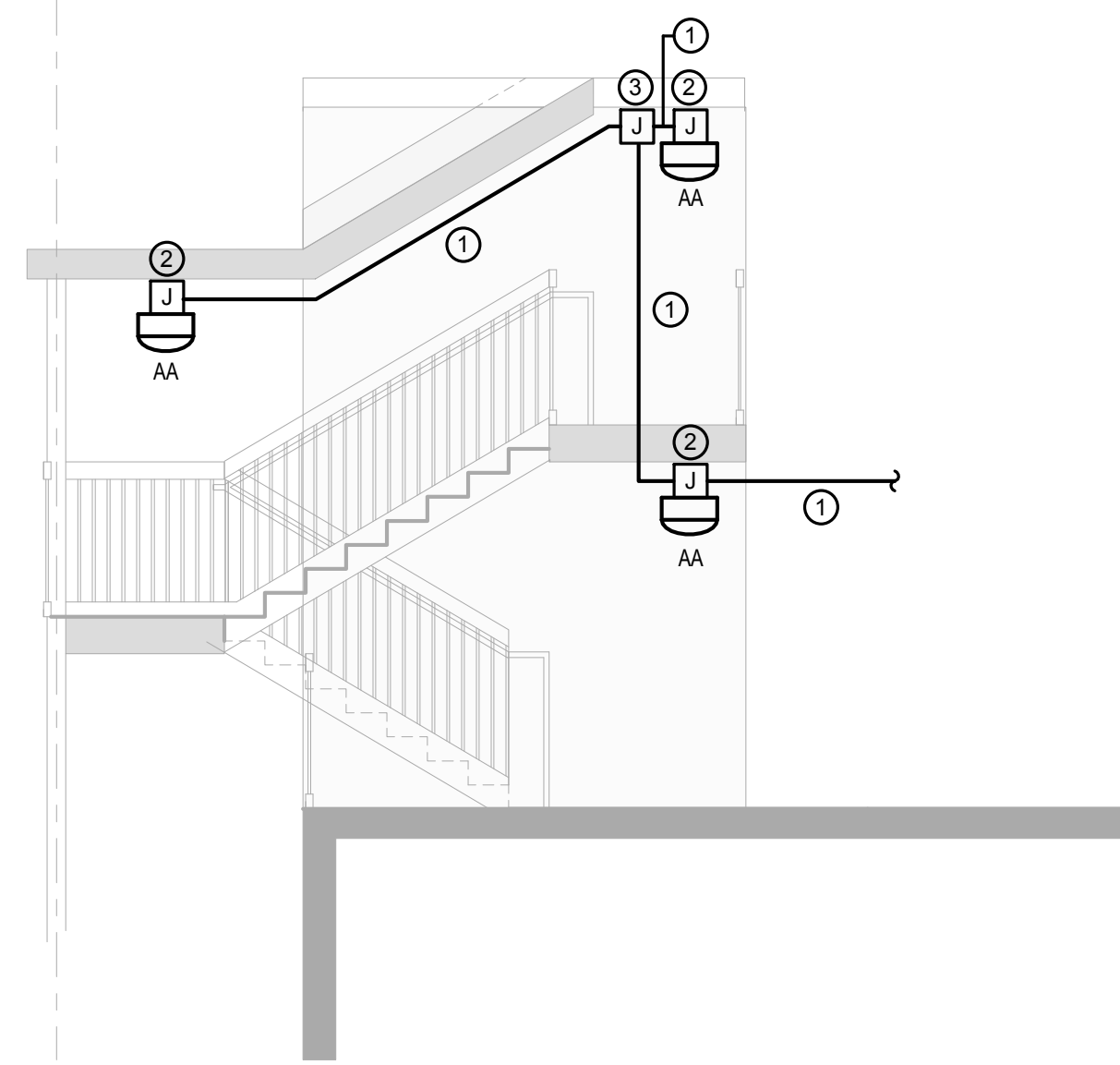
Date: 12/6/2017 Drawing No.:  
Scale: 1/4" = 1'-0" **E-1**  
Plot Size: 24 x 36

**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

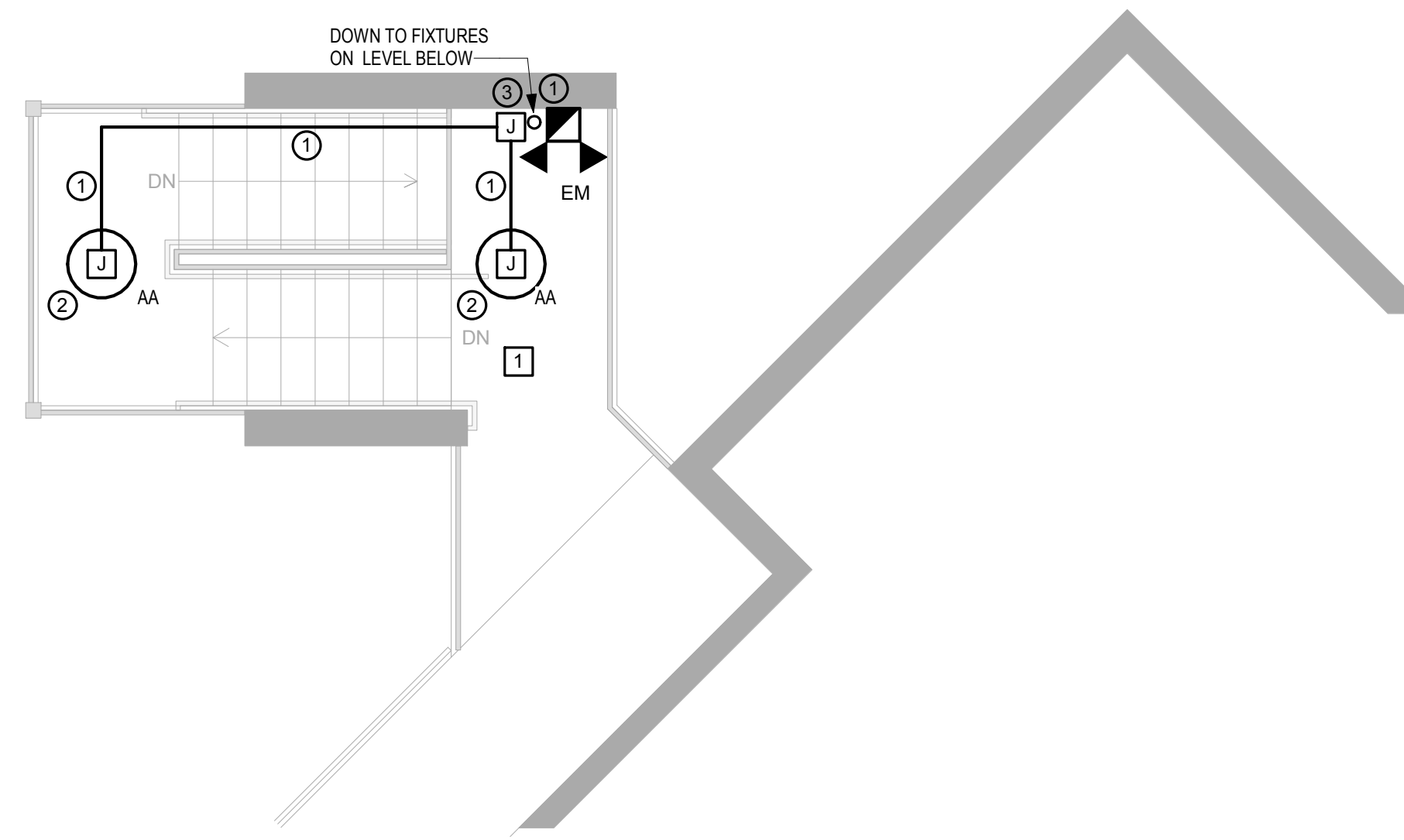


3/14/2018 11:03:51 AM W:\2017\2117050 - ECSU Low Rise Dorm Stairs\DWGS\Revit Model\2117050 - ECSU Low-Rise Stair (17) - Roofed Stairs.rvt

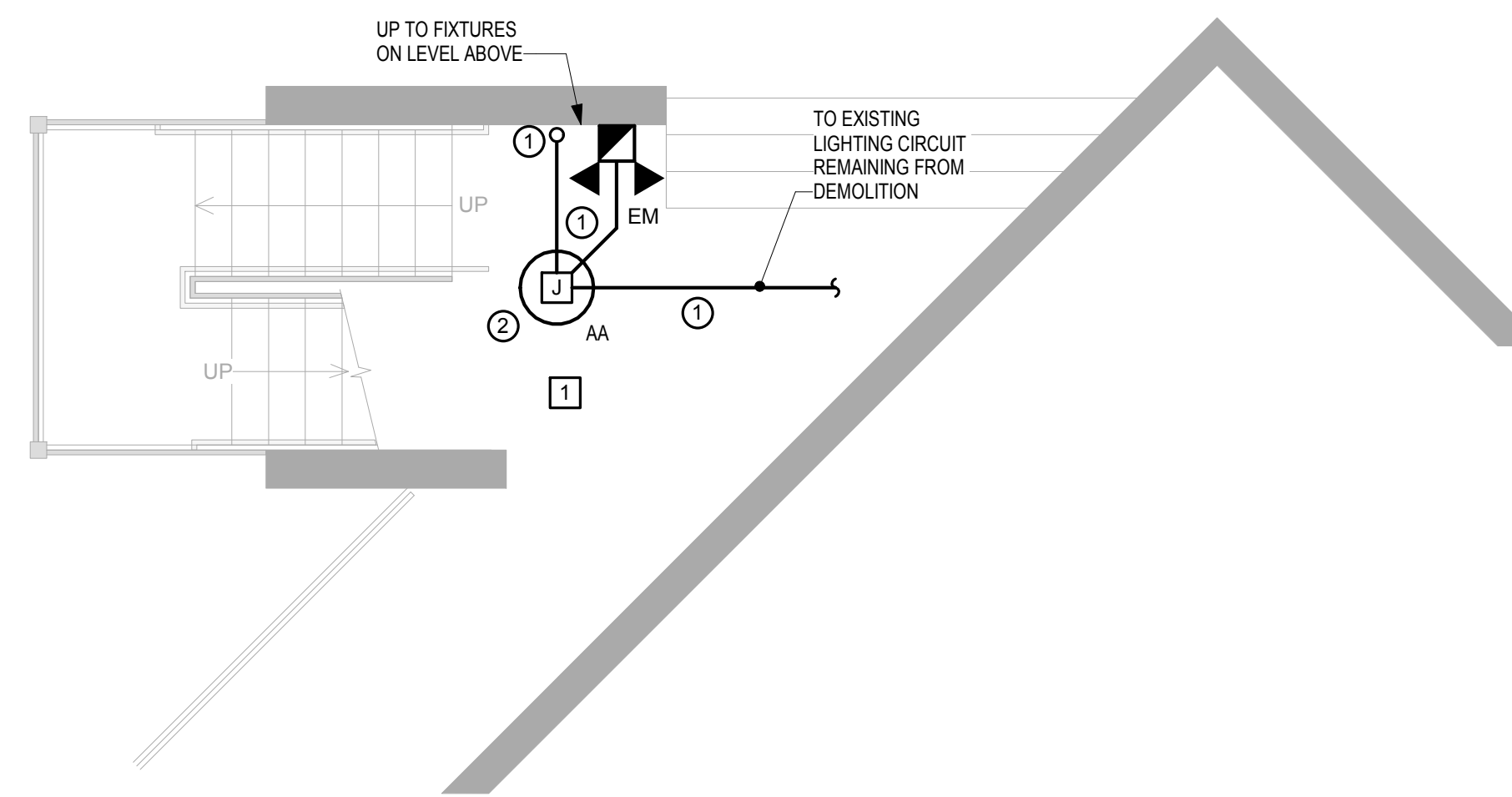


2 STAIR E-EAST - SECTION - ELECTRICAL  
1/4" = 1'-0"

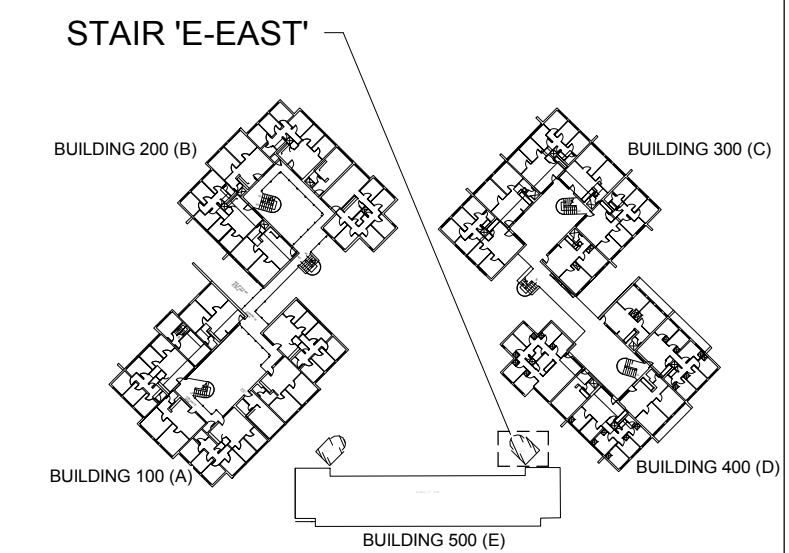
- DEMOLITION NOTE**
- 1 REMOVE EXISTING STAIR LIGHTING. EXISTING CIRCUIT TO BE EXTENDED TO NEW LIGHT FIXTURE LOCATION.
- DRAWING NOTE**
- 1 3/4" RGS - 2 #12 & 1 #12 GND
  - 2 4x4 BACKBOX FOR FIXTURE MOUNTING
  - 3 4x4 GASKETED JUNCTION BOX WITH COVER PLATE.



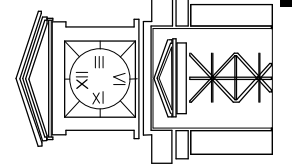
3 STAIR E-EAST - UPPER LEVEL - ELECTRICAL  
1/4" = 1'-0"



1 STAIR E-EAST - MIDDLE LEVEL - ELECTRICAL  
1/4" = 1'-0"



**BVH**  
integrated  
services  
206 West Newberry Road  
Bloomfield, CT 06002  
Tel: (860) 286-9171 www.bvhis.com



	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

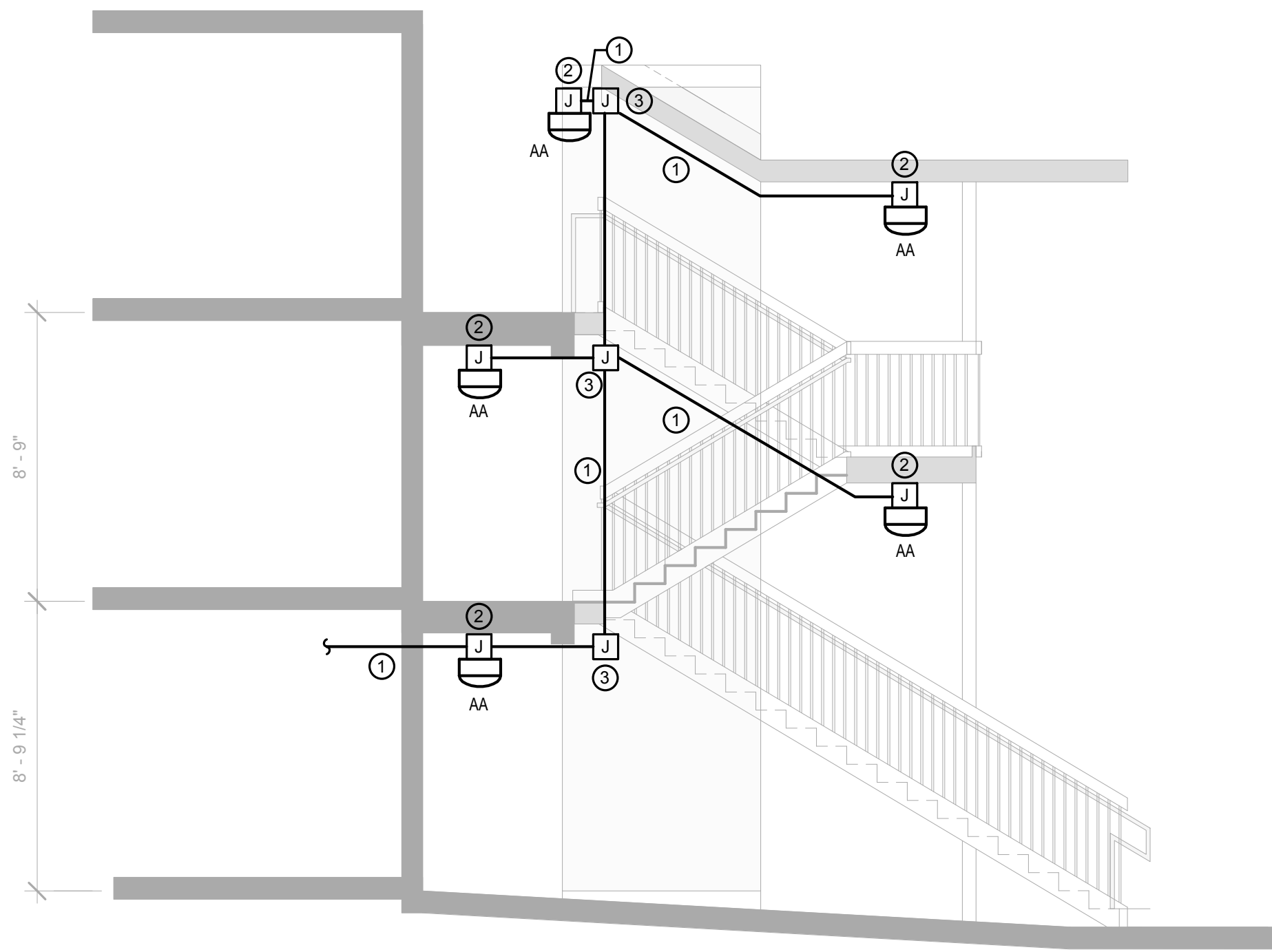
PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR E-EAST**

Project No.:  
**ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.:  
Scale: **1/4" = 1'-0"** **E-2**  
Plot Size: **24 x 36**

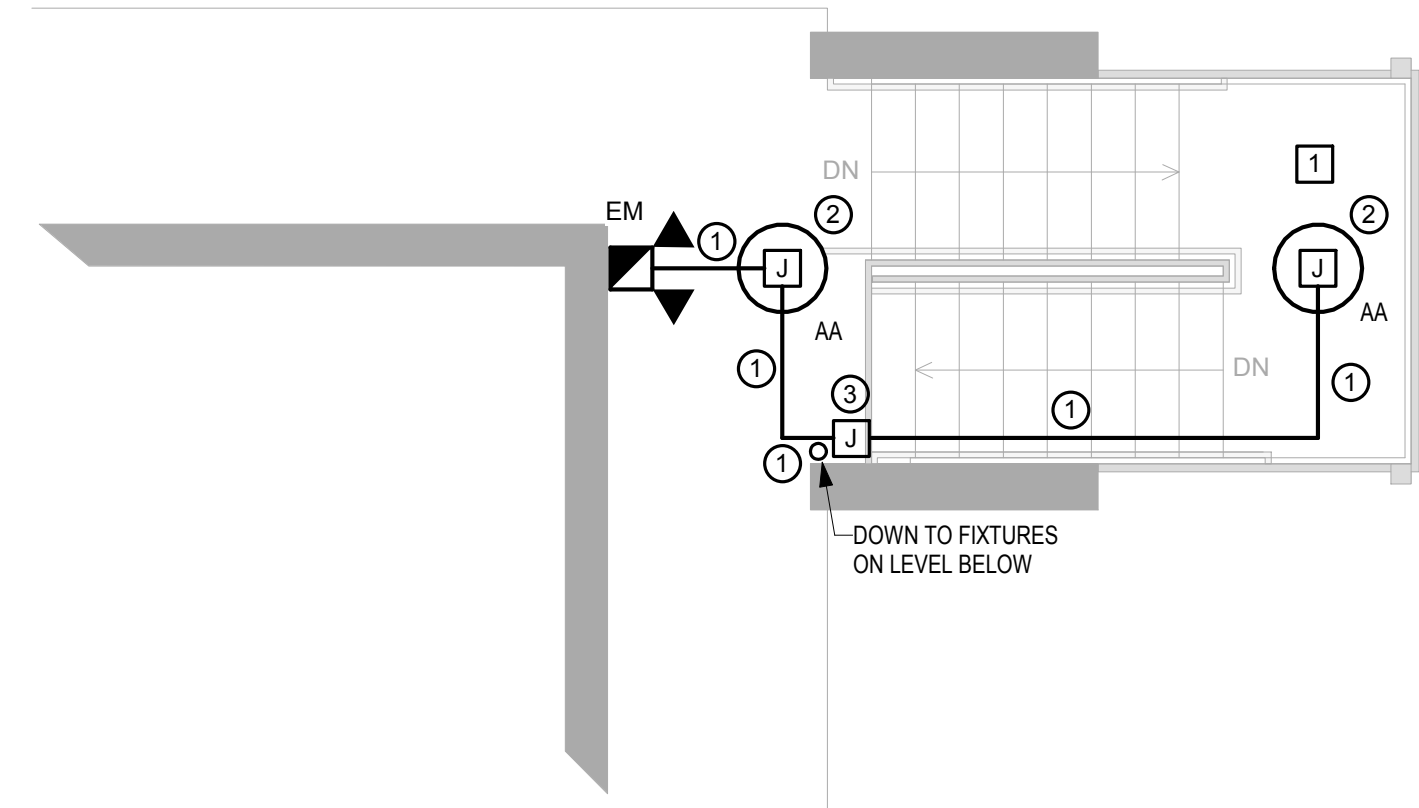
**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

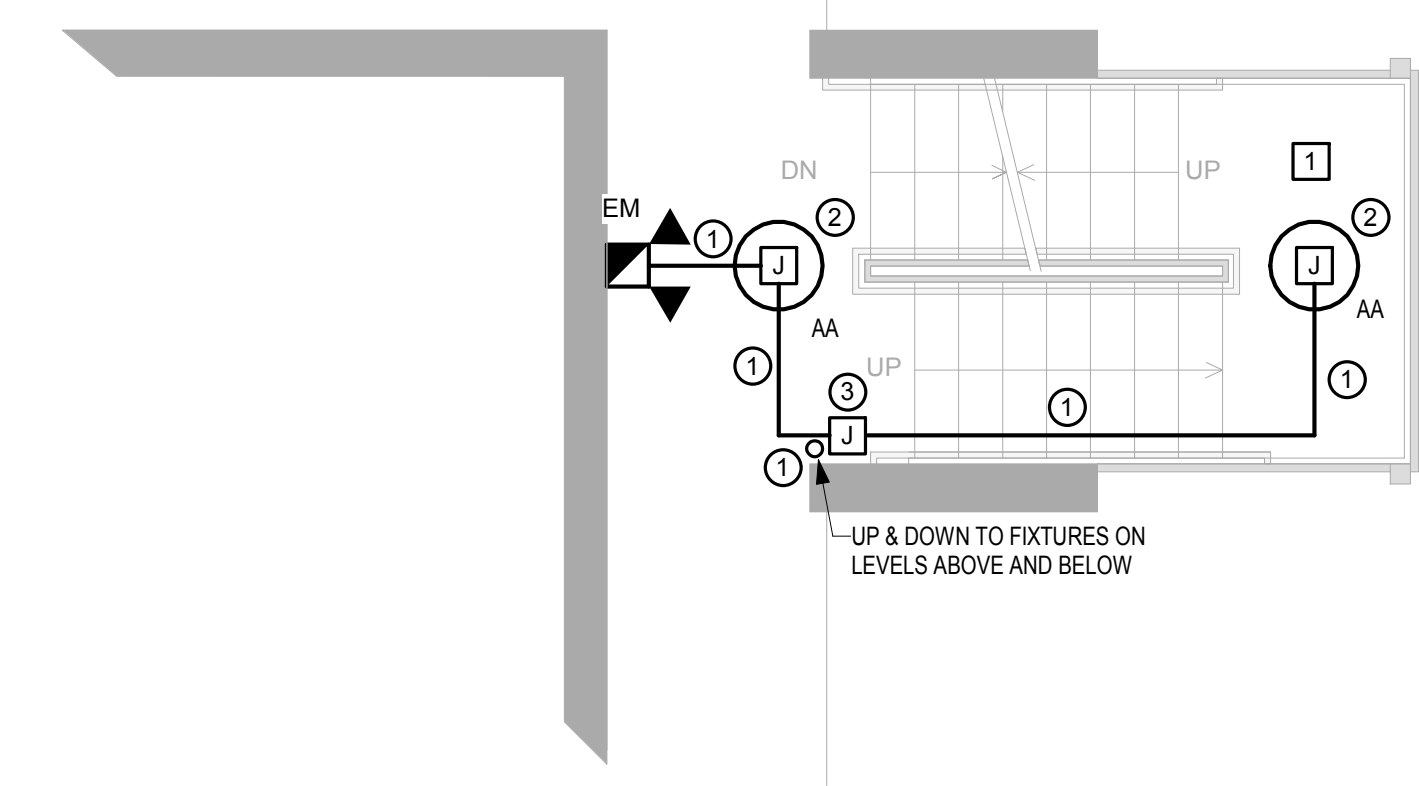


4 STAIR AB - SECTION - ELECTRICAL  
1/4" = 1'-0"

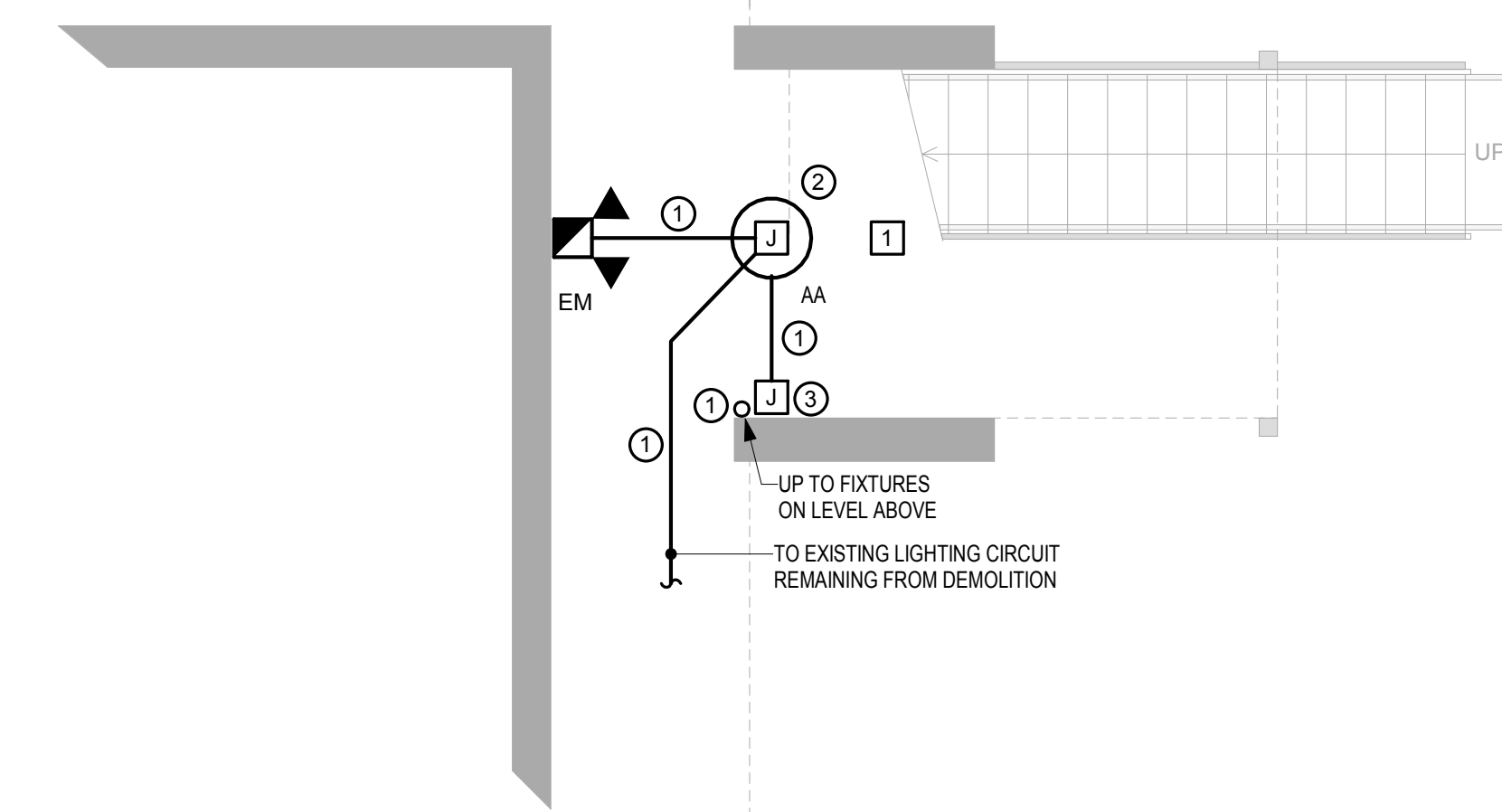
- DEMOLITION NOTE**
- 1 REMOVE EXISTING STAIR LIGHTING. EXISTING CIRCUIT TO BE EXTENDED TO NEW LIGHT FIXTURE LOCATION.
- DRAWING NOTE**
- 1 3/4" RGS - 2 #12 & 1 #12 GND
  - 2 4x4 BACKBOX FOR FIXTURE MOUNTING
  - 3 4x4 GASKETED JUNCTION BOX WITH COVER PLATE.



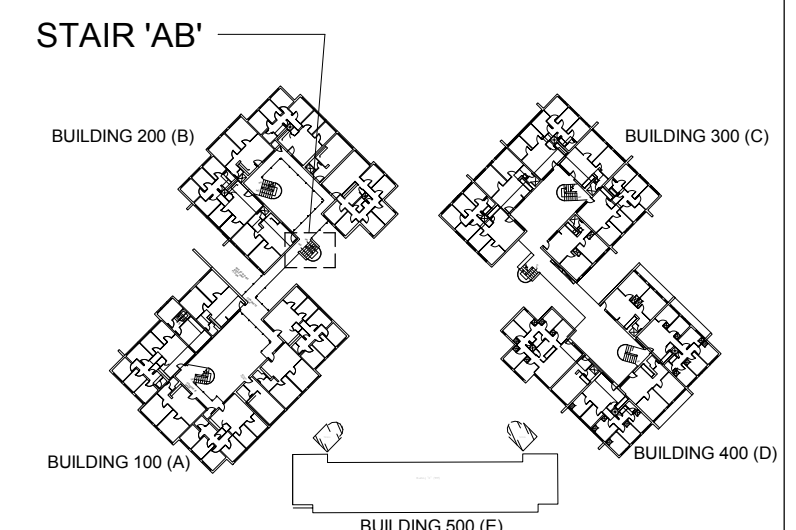
3 STAIR AB - UPPER LEVEL - ELECTRICAL  
1/4" = 1'-0"



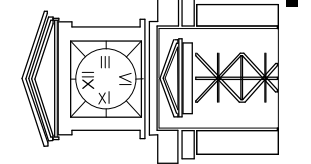
2 STAIR AB - MIDDLE LEVEL - ELECTRICAL  
1/4" = 1'-0"



1 STAIR AB - LOWER LEVEL - ELECTRICAL  
1/4" = 1'-0"



**BVH**  
integrated services  
206 West Newberry Road  
Bloomfield, CT 06002  
Tel: (860) 286-9171 www.bvhis.com



	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

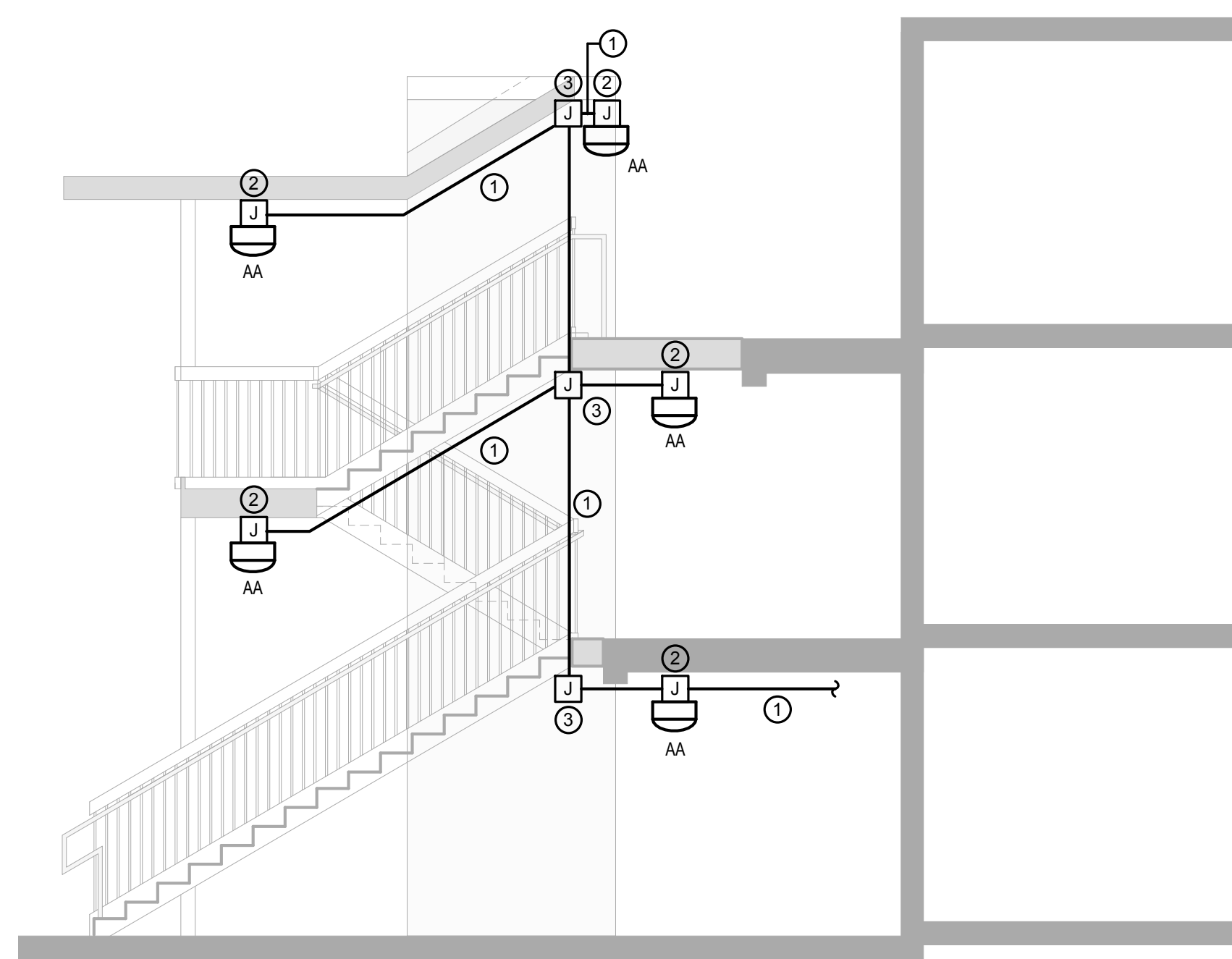
PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR AB**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **E-3**  
Scale: **1/4" = 1'-0"**  
Plot Size: **24 x 36**

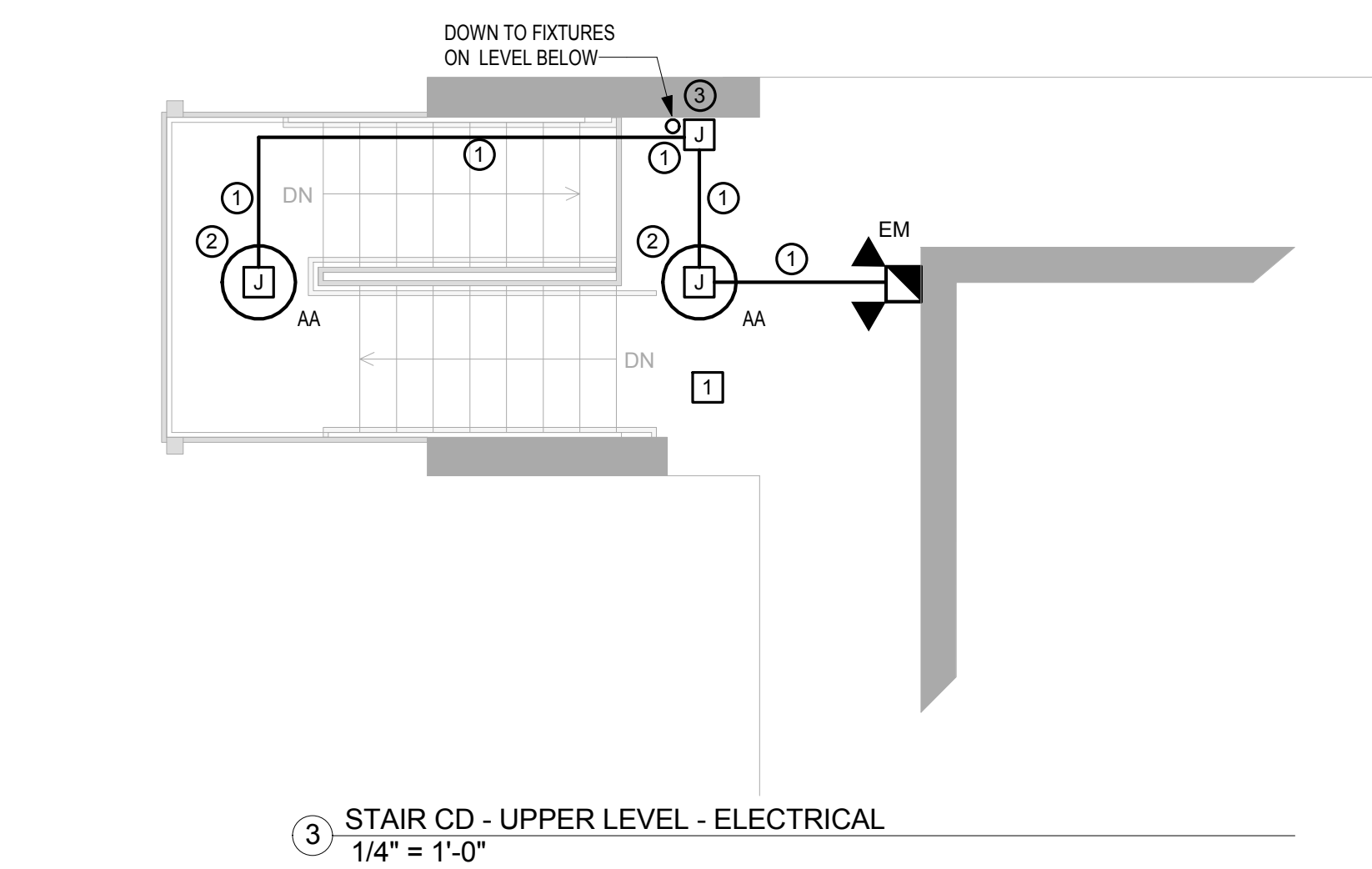
**EASTERN CONNECTICUT STATE UNIVERSITY**

Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

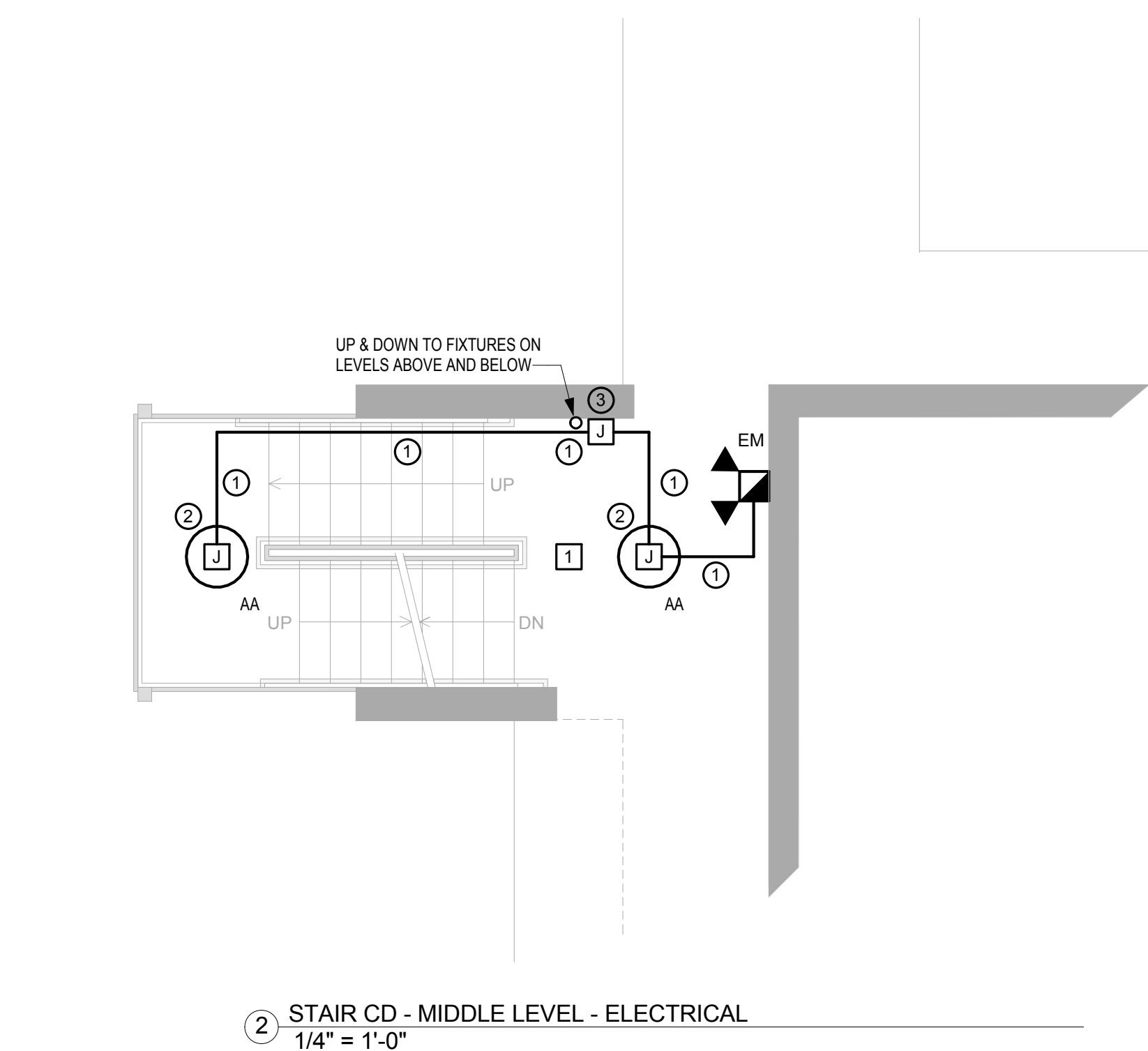


4 STAIR CD - SECTION - ELECTRICAL  
1/4" = 1'-0"

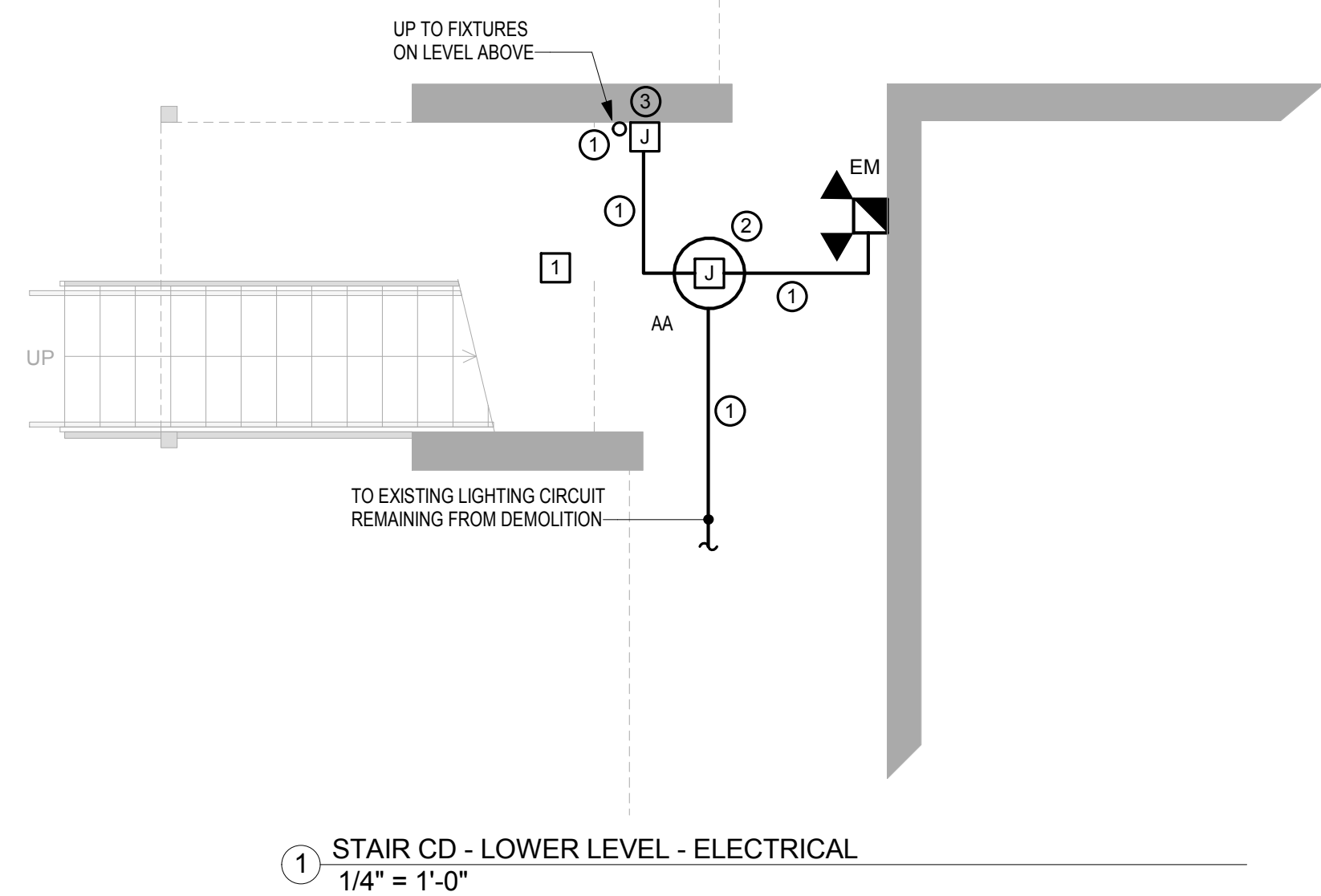
- DEMOLITION NOTE**
- 1 REMOVE EXISTING STAIR LIGHTING. EXISTING CIRCUIT TO BE EXTENDED TO NEW LIGHT FIXTURE LOCATION.
- DRAWING NOTE**
- 1 3/4" RGS - 2 #12 & 1 #12 GND
  - 2 4x4 BACKBOX FOR FIXTURE MOUNTING
  - 3 4x4 GASKETED JUNCTION BOX WITH COVER PLATE.



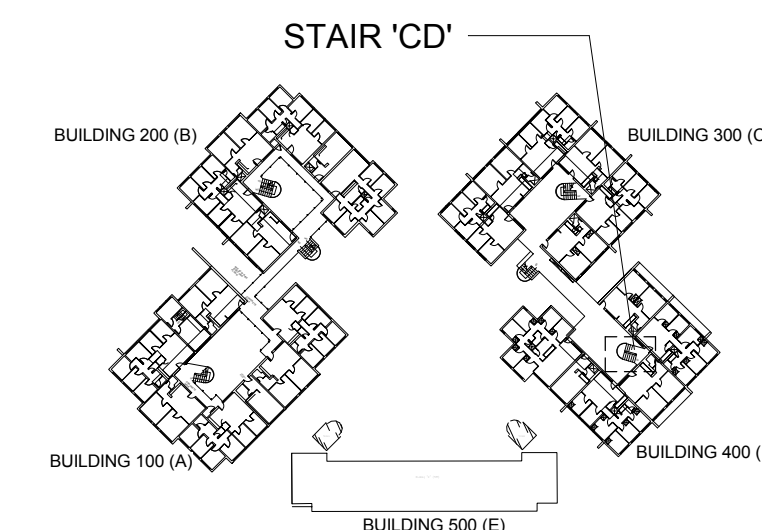
3 STAIR CD - UPPER LEVEL - ELECTRICAL  
1/4" = 1'-0"



2 STAIR CD - MIDDLE LEVEL - ELECTRICAL  
1/4" = 1'-0"



1 STAIR CD - LOWER LEVEL - ELECTRICAL  
1/4" = 1'-0"



**BVH**  
integrated  
services  
206 West Newberry Road  
Bloomfield, CT 06002  
Tel: (860) 286-9171 www.bvhis.com

**EASTERN CONNECTICUT STATE UNIVERSITY**  
Facilities Management and Planning  
83 Windham Street, Willimantic CT 06226

	Bid Set	3/7/18
---	OSBI REVIEW	12/14/17
No.	Revision/Issue	Date

PROJECT NAME:  
**Low Rise Stair Replacement & Courtyard Improvements**

DRAWING NAME:  
**STAIR CD**

Project No.: **ECSU 2016-9 (Phase II)**  
Date: **12/6/2017** Drawing No.: **E-4**  
Scale: **1/4" = 1'-0"**  
Plot Size: **24 x 36**