

ADDENDUM #05
TO
INVITATION TO BID #01

March 26, 2018

WESTERN CONNECTICUT STATE UNIVERSITY
RENOVATIONS TO
HIGGINS HALL & HIGGINS ANNEX

STATE PROJECT NO: BI-RD-290-CMR

The Contract Documents are modified and/or supplemented as follows and should be included in the Subcontractor's lump sum bid as it relates to their Bid Package Scope of Work

1. **All bidders** should review and incorporate the attached TSKP Studio Supplement #02 dated March 26, 2018 and its contents as listed below:
 - 100% CD BID PACKAGE SUPPLEMENT NO. 03 NARRATIVE
 - 051200 – Structural Steel
 - 072713 – Modified Bituminous Sheet Air Barriers
 - 075323 – EPDM Roofing
 - 087100 – Door Hardware
 - 099600 – High Performance Coatings
 - 334100 – Storm Utility Drainage
 - A1.31A
 - A11.01
 - A11.02 – Door Frames Types and Details
 - C1.0
 - C2.0
 - C3.0
 - D1.21B
 - D1.31A
 - E0.10
 - E1.01A
 - E1.01BT
 - E1.11B
 - E1.21B
 - ITD1.01A
 - ITD1.01B
 - MEPD1.11B
 - MEPD1.21B

- 2. **All bidders** should review and incorporate the attached Higgins Hall Firestone Roofing Warranty.
- 3. **All bidders on Bid Package #2.1 – Demolition & Abatement** should make the following revisions to their bid package scope of work:
ADD the following item(s)

A. Add the following new item:

73. As clarification of scope, the **BP #2.1 – Demolition & Abatement** Contractor is responsible for all selective demolition on the exterior façade on the 1958 building as it is anticipated asbestos containing material (ACM) will be encountered behind the brick per HAZMAT Note #4 on Drawings HM1.01A, HM1-11A and HM1-21A. It should be assumed that the **BP #2.1** Contractor will salvage the brick leaving it in a stockpile on-site for final cleaning of motor and re-use by **BP #4.1**. This new direction supersedes Item 46 in the BP #2.1 scope of work and Addendum 4, RFI 5-Z as it relates to the 1958 Building ONLY.

- 4. **All bidders on Bid Package #4.1 – Masonry & Stone** should make the following revisions to their bid package scope of work:
INSERT the following items:

A. Under Item 2, insert the following additional Specification Sections:

Division 07 / Sections:	Thermal and Moisture Protection	
07 11 13	Bituminous Damproofing	

Bituminous Damproofing is reallocated to Bid Packages #4.1's responsibility.

ADD the following item(s)

B. Add the following new item:

70. As clarification of scope, the **BP #4.1 Masonry & Stone** Contractor should note that all selective demolition on the exterior façade on the 1958 building must be performed by the **BP #2.1 – Demolition & Abatement** Contractor as it is anticipated asbestos containing material (ACM) will be encountered behind the brick per HAZMAT Note #4 on Drawings HM1.01A, HM1-11A and HM1-21A. It should be assumed that the **BP #2.1** Contractor will salvage the brick leaving it in a stockpile on-site for final cleaning of motor and re-use by BP #4.1. This new direction supersedes Item 39 and 41 in the BP #4.1 scope of work and Addendum 4, RFI 5-Z as it relates to the 1958 Building ONLY.

- 5. **All bidders on Bid Package #3.1 – Concrete** should make the following revisions to their bid package scope of work:
DELETE the following items:

Under Item 2, delete the following Specification Sections:

Division 07 / Sections:	Thermal and Moisture Protection	
07 11 13	Bituminous Damproofing	

Bituminous Damproofing is reallocated to Bid Packages #4.1's responsibility.

- 6. **All bidders on Bid Package #2.1 – Demolition & Abatement** Add to scope of work, demolition and abatement of exterior wall at required locations on the 1958 portion of Higgins Hall.

7. **All bidders on Bid Package #5.1 – Structural Steel** should make the following revisions to their bid package scope of work:

ADD the following new item(s):

59. As clarification of scope, this Subcontractor is responsible for shop painting and final field touch-up of all structural steel at the exterior west canopy structural components.

8. **All bidders** should incorporate the following Bid RFI questions with answers as they relate to their bid package scope of work:

RFI A **Question** – Who is responsible for the “AVB”?

Answer – *The AVB as specified in 07 11 13 is by BP #4.1 – Masonry & Stone per this addendum.*

RFI B **Question** – The existing building drawings as part of Addendum #3 shows a 2011 re-roof of Higgins Hall. Is there any information about the roofing manufacturer and/or existing warranty on the roof?

Answer – *The roof is a Firestone Platinum Roofing System. Please see the Firestone Roofing Warranty included in this addendum. The warranty needs to be maintained and continued during and at the conclusion of the project.*

RFI C **Question** – Who is responsible for the “Mud Mat” detailed on S1.01?

Answer – *The Bid Package #31.1 Sitework as indicated in Item #1 of the BP #31.1 scope of work..*

RFI D **Question** – Which bid packages are responsible for the scopes of work outlined in the 019114 Envelope Commissioning General Requirements specification section? Spec section 019114.1.11.F calls for infrared scan of the walls and roof, furthermore 019114.3.4.A.1 states "All performance testing of the envelope systems (as specified in individual sections) is the responsibility of the division contractor, or the owner, unless otherwise specified. Testing procedures shall be per specified standard (ASTM, AAMA, etc.)" Who is responsible for these tests and reports?

Answer – *Infrared scanning mentioned in 07 91 14.1.11.F is the responsibility of the owner.*

RFI E **Question** – Please provide more information regarding the required 074213 Formed Metal Wall Panel and 074200 Perforated Metal Wall Panel mock-ups. Where will the mock-ups occur on the building? Sizes? Will these mock-ups be standalone assemblies or will they be installed on the building?

Answer - *Standalone 5x5 mock-up shall be provided for each division located within construction limits. Locations to be verified in field and determined with the CMR.*

RFI F **Question** – Specification sections 074200 & 074213 do not refer to any engineering requirements for the metal wall panel systems. Please provide load/wind requirements. Will the shop drawings require engineered stamps and calculations?

Answer - *Refer to updated specs section in TSKP Supplement #3.*

- RFI G** **Question** – Specification 075323.2.5 & 075323.2.6 call for a substrate board and vapor barrier, but none are shown throughout the drawings. Will a substrate board and vapor barrier be required?
Answer - *No substrate board and vapor barrier at roof. Cover board identified in revised specification 075323. Refer to TSKP Supplement #3.*
- RFI H** **Question** – 075323.3.10.B calls for flood testing the roof areas. This is not required for warranty, nor is it recommended by the roofing manufacturer's. Will flood testing be required?
Answer - *Remove testing requirement. See updated spec section in TSKP Supplement #3.*
- RFI I** **Question** – Architects remarks 1, 2, 3 - referencing details 1, 2, and 3. Please advise product numbers for the acoustical details. No product numbers are reference at the details nor in the hardware spec for this material.
Answer - *Refer to updated A11.01 and A11.02 attached to TSKP Supplement #3.*
- RFI J** **Question** – Opening ST01.0, ST02.0, ST02.1B, 301, 302 are indicated on the door schedule to be hardware set 33. These are all single doors and set 33 is for a pair of doors. Also set 33 does not indicate these openings occurring at this set. Please advise hardware sets for these openings.
Answer - *Please refer to revised door schedule A11.01 and specification 087100.*
- RFI K** **Question** – Drawing D1.31A calls for 3 curbs to be removed from what looks like a standing seam roof but it doesn't say to patch the roof. Does the roof need to be patched? What is the existing roof manufacturer and color?
Answer - *No detail is required. Existing unit curbs have been abandoned and capped. ETR. Disregard references to the contrary on Drawing A1.31A revised on March 20th per Addendum 4.*
- RFI L** **Question** – Please clarify the cleaning requirement for the existing exterior brick and stone as some existing exterior masonry will be covered with composite panels.
Answer – *All existing exposed brick to be cleaned as part of this project except wall surfaces covered with metal or stone wall panel.*
- RFI M** **Question** - Specification Section 09 30 00 Stone Tiling is included in the **Bid Package 4.1** Scope. Please advise regarding **Package 4.1** responsibility for this work.
Answer – *This Section is assigned to **BP #4.1 – Masonry & Stone** package as they are responsible for the new exterior entrance pavers, treads etc..*
- RFI N** **Question** – Will there be access for the crane and dump trailers at the Area B Roof behind the office trailers? Access will be needed for roof removal and replacement.
Answer - *Access to be coordinated with Downes.*
- RFI O** **Question** – Please clarify if there is any asbestos in any of the roofing.
Answer – *No acm roofing materials were identified in the annex roof*
- RFI P** **Question** - Please identify where details 3 & 4/AD1.41 are in reference too? There are no cut

marks on roof plans?

Answer – See revised demo drawing D1.21B showing typical details in TSKP Supplement #3.

- RFI Q** **Question** - On the power drawings there are switch receptacles that per detail on drawing E6.02 connect to a switched receptacle lighting room control please provide floor plan drawing that locate the room controllers and the switch receptacle room controllers
Answer – Per note 5 on details 1/E6.02 and 2/E6.02, room controllers shall be located above ceilings, directly above switches.
- RFI R** **Question** – In the classrooms there are sound adsorptive tack boards per plan keynote drawing A1.21A. Specification 10 11 00 does not include the sound adsorptive tack boards.
Answer – See Spec 098413. Refer to STB-1 (this should read STB). Widths are shown on plans. Height is 4'-0". See responses to #83 and #107 as well.
- RFI S** **Question** - Is there information available regarding the existing paver structure? Are the pavers set on sand bedding or are they glued to the asphalt base with mastic?
Answer – Refer to detail 5/L5.00. Although some conditions may vary, it can be assumed that existing pavers are set on a 1" sand setting bed, on top of 1-1/2" bituminous concrete base and 6" of crushed stone/gravel.
- RFI T** **Question** - Please confirm that the new ramp at the south end of the building as shown on A1.11A, detail 8/A6.03 is not included in the scope of work for BP31.1.
Answer – That is NOT correct. This ramp is by BP #31.1
- RFI U** **Question** - Specification section 32 13 13 Concrete Paving section 3.10 Field Quality Control, is the cost of the concrete testing to be included in our bid price?
Answer – Special testing is by the Owner.
- RFI V** **Question** - Who is responsible for the pavers which are to be installed on the Terrace and Ramps shown on A1.11A?
Answer – The **Bid Package #4.1 Masonry & Stone** contractor as indicated in Item #1 in the bid package scope of work.
- RFI W** **Question** - Addendum 3 added the Sound Absorptive Panels into our scope. I'm not really seeing a finish schedule in the drawings and the interior material list in Div 9 doesn't cover these items either. The only thing I can identify is in the TV Studio H214. Do we have any elevations to show joint locations and the extent of coverage and/or penetrations of the panels?
Answer – Locations are shown on throughout the plans as STB (see keynotes). As indicated on the plan keynotes, the number following "STB" indicates the width of the panel. Height is typically 4'-0" unless otherwise indicated. Mount top of boards to align with top of door frames, WBs and TBs. Joints and penetrations will need to be shown in shop drawings for review. Penetrations to be cut in the field. MEP drawings can be referred to for locations. "STB-1" should read "STB" in the spec.
- RFI X** **Question** - A1.31A shows parapet infills without any sections or details. Is this scope by the

mason? If not, please provide a section.

Answer – Yes. This Scope is by BP #4.1. Refer to details 6 / A4.31 and 5 /A4.21.

RFI Y **Question** - Detail 9, 13 & 15 on A1.41 shows covering an existing skylight. Is this scope by the roofer?

Answer – Yes. This scope is by BP #7.2 – Roofing.

RFI Z **Question** - Detail 3 on A2.31 shows a shaftwall vertical return. Please identify where this occurs.

Answer – Detail generic. VIF.

RFI AA **Question** - Detail 7 on A2.31 shows a double deflection neoprene/spring hanger. Please provide a basis of design since the specs do not cover this item.

Answer – Type 30NCC by Mason Industries or equal.

RFI BB **Question** - 09 29 00, 2.3 D indicates Abuse Resistant GWB. Please identify where this occurs?

Answer – 8' -0" AFF of walls at all public spaces including, but not limited to, corridors, vestibules, lobby, etc.

RFI CC **Question** - 09 29 00 3.6 D.4 indicates Level 5 at the skylight. Please identify where this occurs?

Answer – Not applicable to the project for skylight construction.

RFI DD **Question** - Detail 18 on A4.31 references a hinged door but elevation 8/A3.03 does not indicate a door location. Please advise where this detail takes place within the perforated metal panel system. Who is responsible for the 2 x 2 steel channels.

Answer – The detail 18 /A4.31 for wall panels located on east side of building. Refer to plan A1.01A and elevation 9 / A3.02. DCC to define scope.

RFI EE **Question** - Provide a ceiling tile specification for the 2x4 ceiling tile in rooms H001, H002 and H003. These are the rooms where the existing grid is to remain and only the tile is getting replaced.

Answer – Use ACT #2 specified.

RFI FF **Question** - For the acoustical ceiling perimeter molding do you want shadow molding or L-molding? Both are shown on the details.

Answer – L molding for new ceilings. However; there are existing ceiling grid to be replaced or repaired in the project where shadow molding is used.

RFI GG **Question** - In regards to the wood ceilings, the blade depth is shown as 2-3/4" in the details on A2.31 but is indicated to be 2" based on the item numbers in 095429. Which is correct?

Answer – Use as recommended by manufacturer.

RFI HH **Question** - Specification section 09 54 36 is incomplete. Please specify base shape, depth, material (aluminum or steel) and color.

Answer – 0.032 inch thick aluminum, nominal 8 inches deep by custom length (see drawings), with round base. Color Black.

- RFI II** **Question** - Which bid package owns the custom "Wood Edge Trim" shown in details 6, 10, 11 and 12 on A2.31.
Answer – BP #9.4 – Acoustical Ceilings.
- RFI JJ** **Question** - The toilet plans and elevations drawing A7.01, calls for Electric Hand Dryer, please provide model #
Answer – Please refer to Toilet Accessories Note on A7.01 "OWNER TO SUPPLY AND CONTRACTOR TO INSTALL SOAP DISPENSER, TOILET PAPER DISPENSER AND PAPER TOWEL DISPENSER"
- RFI KK** **Question** - The plans state TA-7 is a Sanitary Napkin Disposal, the specs call out (2) styles, (wall & partitions mounted) SND. Please provide location of the partitions mounted.
Answer – As per typical industry standards for SND in toilet partitions, assume a partition mounted SND in all locations where there is not a wall. Toilet elevations show SND wall locations. Toilet plans show all SNDs (wall mounted and partition mounted) in each women's stall. Mounting locations can be coordinated in shop drawings. See also general information sheet.
- RFI LL** **Question** - Please confirm patching of the existing deck responsibility
Answer – Patching of existing deck for MEP penetrations etc. is by **BP #5.2 – Misc. Metals** per Item #29 in the scope of work. Patching of existing deck for new penetrations for steel & misc. metals are by the contractor creating the penetration (either BP #5.1 or #5.2).
- RFI MM** **Question** - Please clarify if there is a fee for the background check compliance agreement in supplemental instructions
Answer – This is the subcontractor's responsibility to complete. Please see form per Downes Supplemental Instructions part CC. Downes is not performing background checks.
- RFI NN** **Question** - Is all exposed structural steel galvanized?
Answer - All exposed steel with the exception of the main west canopy structure is galvanized.
- Refer to updated spec 051200 for AESS Steel requirements.
 - The roof screen steel is NOT field painted (only galvanized).
 - 099600 should be followed for the painting of the west canopy and the exterior railings.
 - All exterior railings shall be primegalvald per section 055100 / 2.9 and painted per section 099600.
- RFI OO** **Question** - Per addendum #04 RFI I the aluminum break metal coping contiguous with the curtain wall that added to Bid Package #7.2 Roofing System, is this correct? The coping is integral with the curtain wall and get mulled into the frame, this may be a warranty issue down the road. Please confirm which bid package is responsible for the aluminum break metal coping shown on 3&7/A4.21
Answer – Please disregard the answer to RFI I in Addendum #04. The aluminum break metal coping referred to in details 3&7/4.21 is the responsibility of Bid Package #8.1 Aluminum Window System.

- RFI PP** **Question** - Regarding the concrete wall referenced in detail 5/S2.4 along column line C, please confirm the wall length.
Answer – *Approximately 25 feet long.*
- RFI QQ** **Question** - Regarding detail 5/S2.4, how can the existing beam be infilled with concrete monolithically when the existing beam flange is flush with the inside face of the wall? Can the inside of the wall be placed with concrete or grout either before or after the new concrete wall is placed? Does the existing beam in detail 5/S2.4 require welded studs to retain the concrete infill?
Answer – *Wall may be boxed out at beam to allow for additional clearance. No studs required.*
- RFI RR** **Question** - Please clarify whether or not concrete infills at the existing slab-on-grade are included in the allowance mentioned in **Bid Package #3.1**.
Answer – *The concrete infill allowance included in Bid Package #3.1 is for unforeseen conditions only. All infills of the existing SOG shown in the contract documents need to be included in the base bid by **BP #3.1**.*
- RFI SS** **Question** - A4.31 shows 1/2" Reveals at the returns to the glazing (Detail 7, 8 & 12) and GWB to CMU termination (Detail 11). Is this a typical detail throughout the project?
Answer – *Yes. Typical for GWB and Wood Veneer abutting to window frame. Use sealant for GWB / CMU transitions.*
- RFI TT** **Question** - Specification section 12 24 13 1.3 Submittals mention Motor-Operated Shades. Please confirm locations of Motorized Roller Shades. There are no motors designated on the Electrical Plans.
Answer – *No motorized shades in the project.*
- RFI UU** **Question** - Please confirm that the Double Manual Shades are only in Room H205. Please provide cuts for Double Manual Roller Shades.
Answer – *Refer to Specifications.*
- RFI VV** **Question** - Roller shade cuts show side channel, specs refer to sill channel. Do all single manual roller shades require side and sill channel?
Answer – *No side or sill channels (assuming sill channels meaning similar to side channel) are required for shades where sunlight filter fabric is used. U or H side channels with the exception of sill channel shall be used for black-out fabric. Color to be selected architect.*
- RFI WW** **Question** - Do CW1 and CW2 get Single Manual Roller Shades in the Lobby?
Answer – *No.*
- RFI XX** **Question** - The snow melt system and insulation referenced on drawings A6.03 and M1.11A is the responsibility of which bid package?
Answer – *The snow melt system and insulation referenced in the drawings and in specification section 23 83 13 Radiant Heating Electrical Panels is the responsibility of Bid Package #23.1 HVAC.*

RFI YY *Question* - Regarding specification section 03 33 00 Architectural Concrete sections 2.4 and 2.7 mentions "Regular Concrete Gray" for color pigment. Is an actual pigment required or is it the natural gray in the ready mix concrete and no pigment is required.

Answer – Actual Pigment is required.

RFI ZZ *Question* - Please confirm that 07 81 00 Applied Fireproofing is not part of the painting bid package

Answer – 07 81 00 Applied Fire proofing is part of Bid Package #9.2 per Addendum #02 dated 3/14/18.

END ADDENDUM #05 TO INVITATION TO BID #01

100% CD BID PACKAGE SUPPLEMENT NO. 03

Date: March 26, 2018

Project: WCSU Higgins Hall_BI-RD-290

Architect: TSKP Studio

Construction Manager: Downes Construction Company, LLC

The following changes take precedence over anything to the contrary in the Drawings and Specifications:

DRAWING CHANGES

Cover

N/A

Civil

1. C1.0:
- Replace drawing with revised C1.0.
2. C2.0:
- Replace drawing with revised C2.0.
3. C3.0:
- Replace drawing with revised C3.0.

Landscape

N/A

Architectural Demo

4. Change demo keynote #3B to “ REMOVE EXTRUDED WINDOW / WALL, SEE ELEVATIONS AND DETAIL NOTED ON DEMO DETAILS”
5. D1.21B:
- Replace drawing with revised D1.31B.
6. D1.31A:
- Replace drawing with revised D1.31A.

Architectural

7. Insert following note #5 to plan notes.
“PROVIDE AND INSTALL (90) COAT HOOKS IN OFFICES AND ADJUNCT AREAS. COORDINATE LOCATIONS WITH ARCHITECT / OWNER. BASIS OF DESIGN: PETER PEPPER PRODUCTS - MODEL 2077, POLISHED ANODIZED ALUM. OR EQUAL MANUFACTURER.”
8. A2.11:
- Change Math Emporium H122 and Office H1.22A ceiling to ACT-3.
9. A1.31A:
- Replace drawing with revised A1.31A.
10. A11.01:
- Replace drawing with revised A11.01.
11. A11.02:
- Replace drawing with revised A11.02.

MEP

12. MEPD1.11B:
- Replace drawing with revised MEPD1.11B.
13. MEPD1.21B:
- Replace drawing with revised MEPD1.21B.

Mechanical

N/A

Electrical

14. E0.10:
- Replace drawing with revised E0.10.
15. E1.01A:
- Replace drawing with revised E1.01A.
16. E1.01BT:
- Replace drawing with revised E1.01BT.
17. E1.11B:
- Replace drawing with revised E1.11B.
18. E1.21B:
- Replace drawing with revised E1.21B.

Plumbing

N/A

Fire Protection

N/A

Telecom

19. ITD1.01A:
- Replace drawing with revised ITD1.01A.

20. ITD1.01B:
- Replace drawing with revised ITD1.01B.

Security

N/A

AV

N/A

SPECIFICATION CHANGES:

21. Table of Content (TOC)
- Insert new section "072713 - Modified Bituminous Air Barriers".

22. Division 5 Specs:
- Insert "100% - CD Bid Package – 01/29/2018" info into the spec. footer.

23. Section 051200 – Structural Steel
- Replace entire section with revised one attached to this supplement.

24. Section 072713 – Modified Bituminous Air Barriers
- Insert new spec. section attached to this supplement.

25. Section 074200 – Form Metal Wall Panels
- Subsection 1.6: Insert paragraphs below.

E. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.

F. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of metal panels that are similar to those indicated for this Project in material, design, and extent.

26. Section 074213 – Form Metal Wall Panels
- Subsection 1.7: Insert paragraphs below.

E. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.

F. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of metal panels that are similar to those indicated for this Project in material, design, and extent.

27. Section 075323 – EPDM Roofing
- Replace entire section with revised one attached to this supplement.

28. Section 087100 – Door Hardware
- Replace entire section with revised one attached to this supplement.

29. Section 092900 – Gypsum Board
- Subsection 3.6 / D.4: Remove level 5 finish requirement for skylight construction.

30. Section 095113 – Acoustical Panel Ceiling
- Insert subsection 2.5 as follows;

2.5 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING – ACT 3

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong, Ultima, or a comparable product by one of the following:
1. BPB USA.
 2. USG
- B. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:
1. Type and Form: Type IV, Form 2
 2. Pattern: E
- C. Color: White.
- D. LR: Not less than 0.90
- E. NRC: Not less than 0.70
- F. Thickness: 3/4 inch.
- G. Modular Size: As indicated on Drawings.

H. Mount: In existing 9/16” superfine grid, replace and repair existing grid where required. (VIF)

31. Section 095436 – Acoustical Metal Ceiling

- Replace Subsection 2.2.B.1 as follows;

1. Baffle Panels:

a. Manufactured from 0.032 inch thick aluminum, nominal 8 inches deep by custom length (see drawings), with round base.

b. Coated with baked-on polyester enamel painted “Black” finish.

32. Section 099600 – High Performance Coating

- Replace entire section with revised one attached to this supplement

33. Section 124413 – Roller Window Shades

- Remove item #2 in subsection 1.3.B.

34. Section 334100– Storm Utility Drainage

- Replace entire section with revised one attached to this supplement.

LIST OF DRAWINGS ISSUED:

C1.0, C2.0, C3.0, D1.21B, D1.31A, A1.31A, A11.01, A11.02, MEPD1.11B, MEPD1.21B, E0.10, E1.01A, E1.01BT, E1.11B, E1.21B, ITD1.01A, ITD1.01B

SPECIFICATIONS ISSUED:

051200, 072713, 075323, 087100, 099600, 334100

SECTION 051200 – STRUCTURAL STEEL

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Provide all labor, materials, necessary equipment and services to complete the structural steel work and related work, called for in this Section of the Specifications, including but not necessarily limited to the following:
 - 1. Furnishing and erecting structural steel.
 - 2. Standard and special connections, including angles, plates, high-strength bolts, washers, and inserts.
 - 3. All steel support angles, plates, bolts, inserts for cast in place concrete, etc., which are attached to the structure.
 - 4. All welding where required.
 - 5. Delivery of bearing plates, anchor bolts and loose lintels to the site for installation by others.
 - 6. Grouting of base plates is specified in Division 033000.

1.2 QUALITY ASSURANCE

- A. All work of this Section shall be provided in accordance with the latest edition of the following:
 - 1. AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
 - 2. AISC Code of Standard Practice.
 - 3. 2016 Connecticut Building Code.

1.3 SUBMITTALS

- A. Submit for review, prior to fabrication, anchor bolt and erection plans and shop drawings for all structural steel showing the kind of material, steel certification, sizes of members, details of pieces, and methods of securing same together.
- B. Structural steel supplier is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to the fabrication processes or to techniques of construction and for coordination of the work of other trades. Erection plans shall be reviewed and all dimensions coordinated, before any piece detail drawings are begun.
- C. Submit for review, qualifications of welder performing shop and field welding.

- D. Substitution of sections or modifications of details shall be made only when approved by the Engineer in writing.
- E. No structural drawings shall be reproduced as shop drawings.
- F. All paint products shall be submitted for approval.
- G. HIGH PERFORMANCE CRITERIA:
 - 1. Submit documentation that products used are in compliance with volatile organic compounds (VOC) content limits required by state and local regulations.
 - 2. Submit documentation that all structural steel has a minimum post-consumer recycled content of sixteen percent (16%) basic oxygen furnace (BOF) or sixty seven percent (67%) electric arc furnace (EAF) produced steel.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All structural steel shall be new, clean, free from defects impairing strength, durability and appearance, and be of the best commercial quality for purpose specified.
- B. All primary steel framing including but not limited to beams and columns shall conform to the requirements of ASTM A572 grade 50, ASTM A500 grade B, or ASTM A992. Secondary members such as hangers, lintels, and plates shall conform to the minimum requirements of ASTM A36.
- C. High-strength bolts, including nuts and washers, shall comply with ASTM A325. Minimum dimensions for bolts, washer, beveling, etc., shall comply with the requirements of the "Specifications for Structural Joints using ASTM A325 Bolts". All bolts shall be bearing type.
- D. Welding electrodes shall be as approved for use with ASTM A36, A572 grade 50, ASTM A500 grade B, or ASTM A992 under the AISC Specification.
- E. Galvanized steel shall conform to ASTM 123.
- F. All anchor bolts to conform to the requirements of ASTM F1554. All anchor bolts for braced frames or moment frames shall conform to the requirements of ASTM A 449.

PART 3 - EXECUTION

3.1 FABRICATION

- A. All shop fabrication shall conform to Section M2, AISC Specification. All members shall be free of twists, kinks, buckled or open joints. Shearing and punching shall be without ragged or torn edges. Holes shall be enlarged only by reaming. Burning of holes will not be permitted.

- B. Unless otherwise noted, make all connections in accordance with the AISC Manual of Steel Construction. All shop connections shall be welded using double angles, except where otherwise noted.
- C. All welding, shop and field, shall be performed only by procedures and welders qualified in accordance with standards for workmanship of the American Welding Society.
- E. All structural steel shall be given on coat of shop primer.
- F. **AESS - Exposed structural shall be fabricated in conformance with AESS Levels listed below:**
 - 1. **Category 1 – All exposed column base plates.**
 - 2. **Category 2 – All columns.**
 - 3. **Category 3 – All roof beam members.**

3.2 ERECTION

- A. Erection of steel shall be done in conformance with Section 7 of AISC "Code of Standard Practice."
 - 1. All structural framing shall be accurately set and secured in position.
 - 2. All structural steel work shall be maintained in its position with adequate bracing and guying until all permanent field connections are completed. Guying shall not be removed without written permission from Engineer.
 - 3. All steel required to be plumb and level within a tolerance of 1:500.
- B. All field connections shall be bolted with A325 type high strength bolts and washers or welded where required. All bolts shall be 3/4" minimum.
 - 1. High strength bolts shall be installed with hardened washers. Nuts shall be tightened by calibrated torque wrenches in conformity with minimum bolt tension values established in the "Specifications for Joints using ASTM A325 Bolts".
- C. Burned holes will not be permitted for any bolted connections. No field burning of base plates will be allowed. Prior to steel erection the steel fabricator shall review the results of the anchor bolt survey. Refabrication of base plates will be required at all locations where the anchor bolts are found to be out of tolerance more than 1/2".
- D. Temporary bracing for the steel frame shall be designed to support all loads to which the structure may be subjected, including wind, impact from erection equipment and its operation, and as required by applicable codes. Such bracing shall be left in place as long as required for safety.
- E. No field welding shall be done when the temperature is less than 15 degrees F.

- F. Hot-dip galvanize steel lintels and exterior railings after fabrication. Any surfaces damaged due to welding and/or erection shall be touched up with zinc rich paint. Lintel surfaces left exposed after installation and railings (interior and exterior) receive high performance coatings.

3.3 INSPECTION

- A. The material to be furnished under the section shall be subject to inspection and tests in the shop and field.
- B. The testing agency shall have access to all quality control data.
- C. High-strength bolts will be tested in accordance with Research Council Specification for A325 Bolts. All bolts in every connection will be tested. In the event that inspections reveal bolts to be undersized, loose or defective, the cost of re-bolting and re-testing shall be at the structural steel supplier's expense.

END OF SECTION 051200

MODIFIED BITUMINOUS SHEET AIR BARRIERS

SECTION 072713 - MODIFIED BITUMINOUS SHEET AIR BARRIERS

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. Sustainable Design Intent: Comply with project requirements intended to achieve sustainable design, measured and documented according to the CT High Performance Building Standard (CTHPS) Mandatory Requirements and minimum required sustainable strategies, as indicated on the Sustainable Matrix. Refer to Section 018113 - SUSTAINABLE DESIGN REQUIREMENTS for mandatory and targeted strategies.

1.2 SUMMARY

- A. This Section includes self-adhering, vapor-retarding, modified bituminous sheet air barriers.
- B. Related Sections include the following:
 - 1. Division 04 Section "Unit Masonry" for embedded flashings.
 - 2. Division 05 Section "Cold-Formed Metal Framing" for wall sheathing.
 - 3. Division 07 Section "Sheet Metal Flashing and Trim" for sheet metal flashings.
 - 4. Division 07 Section "Joint Sealants" for joint-sealant materials and installation.

1.3 DEFINITIONS

- A. ABAA: Air Barrier Association of America.
- B. Air Barrier Assembly: The collection of air barrier materials and auxiliary materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review air-barrier requirements and installation, special details, mockups, air-leakage and bond testing, air-barrier protection, and work scheduling that covers air barriers

MODIFIED BITUMINOUS SHEET AIR BARRIERS

1.5 PERFORMANCE REQUIREMENTS

- A. General: Air barrier shall be capable of performing as a continuous vapor-retarding air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
- B. Compatibility: Air barrier must be compatible with bituminous damproofing.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of products.
- B. CT High Performance Schools:
 - 1. Product data: For products having recycled content, documentation indicating percentages, by weight, of postconsumer and preconsumer recycled content.
 - 2. Product certification: For products and materials required to comply with requirements for Regional Materials including location and distance to Project from point of material manufacture and extraction, harvest or recovery for each raw material. Include statement indicating cost of reach regional materials and the fraction by weight that is considered regional.
- C. Shop Drawings: For air-barrier assemblies.
 - 1. Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
 - 2. Include details of interfaces with other materials that form part of air barrier.

1.7 INFORMATIONAL SUBMITTALS

- A. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with air barrier.
- B. Product Test Reports: For each air-barrier assembly, for tests performed by a qualified testing agency.

MODIFIED BITUMINOUS SHEET AIR BARRIERS

1.8 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm experienced in applying air barrier materials similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by air barrier manufacturer.
- B. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- C. Store rolls according to manufacturer's written instructions.
- D. Protect stored materials from direct sunlight.

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended by air barrier manufacturer. Protect substrates from environmental conditions that affect performance of air barrier. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 SELF-ADHERING SHEET AIR BARRIER

- A. Modified Bituminous Sheet: 40-mil- thick, self-adhering sheet consisting of 36 mils of rubberized asphalt laminated to a 4-mil- thick, polyethylene film with release liner on adhesive side and formulated for application with primer that complies with VOC limits of authorities having jurisdiction.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Carlisle Coatings & Waterproofing; CCW-705.
 - b. Grace, W. R. & Co.; Perm-A-Barrier.
 - c. Henry Company; Blueskin SA.
 - d. Meadows, W. R., Inc.; SealTight Air-Shield.
 - e. NEI; AC AirSeal.
 - f. Rubber Polymer Corporation; Rub-R-Wall SA.
 - g. Tremco, Incorporated; ExoAir 110

MODIFIED BITUMINOUS SHEET AIR BARRIERS

2. Physical and Performance Properties:
 - a. Membrane Air Permeance: Not to exceed 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E 2178.
 - b. Tensile Strength: 250 psi minimum; ASTM D 412, Die C, modified.
 - c. Ultimate Elongation: 200 percent minimum; ASTM D 412, Die C, modified.
 - d. Low-Temperature Flexibility: Pass at minus 20 deg F; ASTM D 1970.
 - e. Crack Cycling: Unaffected after 100 cycles of 1/8-inch movement; ASTM C 836.
 - f. Puncture Resistance: 40 lbf minimum; ASTM E 154.
 - g. Water Absorption: 0.15 percent weight-gain maximum after 48-hour immersion at 70 deg F; ASTM D 570.
 - h. Vapor Permeance: 0.05 perms; ASTM E 96, Water Method.

2.2 AUXILIARY MATERIALS

- A. General: Auxiliary materials recommended by air barrier manufacturer for intended use and compatible with air barrier. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
- B. Primer: Liquid primer recommended for substrate by manufacturer of air barrier material.
- C. Counterflashing Strip: Modified bituminous 40-mil- thick, self-adhering sheet consisting of 32 mils of rubberized asphalt laminated to an 8-mil- thick, crosslaminated polyethylene film with release liner backing.
- D. Butyl Strip: Vapor retarding, 30 to 40 mils thick, self-adhering; polyethylene-film-reinforced top surface laminated to layer of butyl adhesive, with release liner backing.
- E. Modified Bituminous Strip: Vapor-retarding, 40-mil- thick, smooth-surfaced, self-adhering; consisting of 36 mils of rubberized asphalt laminated to a 4-mil- thick polyethylene film with release liner backing.
- F. Termination Mastic: Cold fluid-applied elastomeric liquid; trowel grade.
- G. Substrate Patching Membrane: Manufacturer's standard trowel-grade substrate filler.
- H. Adhesive and Tape: Air barrier manufacturer's standard adhesive and pressure-sensitive adhesive tape.
- I. Sprayed Polyurethane Foam Sealant: 1- or 2-component, foamed-in-place, polyurethane foam sealant, 1.5 to 2.0 lb/cu. ft. density; flame spread index of 25 or less according to ASTM E 162; with primer and noncorrosive substrate cleaner recommended by foam sealant manufacturer.
- J. Modified Bituminous Transition Strip: Vapor-retarding, 40-mil- thick, smooth-surfaced, self-adhering; consisting of 36 mils of rubberized asphalt laminated to a 4-mil- thick polyethylene film with release liner backing.

MODIFIED BITUMINOUS SHEET AIR BARRIERS

- K. Joint Sealant: ASTM C 920, single-component, neutral-curing silicone; Class 100/50 (low-modulus), Grade NS, Use NT related to exposure, and, as applicable to joint substrates indicated, Use O. Comply with Division 07 Section "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Clean, prepare, and treat substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air barrier application.
- B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
- C. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- D. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258.
1. Install modified bituminous strips and center over treated construction and contraction joints and cracks exceeding a width of 1/16 inch.
- E. Bridge and cover discontinuous deck-to-wall and deck-to-deck joints with overlapping modified bituminous strips.
- F. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
- G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

MODIFIED BITUMINOUS SHEET AIR BARRIERS

3.3 INSTALLATION

- A. Install modified bituminous sheets according to air barrier manufacturer's written instructions and according to recommendations in ASTM D 6135.
 - 1. When ambient and substrate temperatures range between 25 and 40 deg F, install self-adhering, modified bituminous air barrier sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F.
- B. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.
 - 1. Install modified bituminous strips centered over vertical inside corners. Install 3/4-inch fillets of termination mastic on horizontal inside corners.
- C. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations with termination mastic and according to ASTM D 6135.
- D. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by air barrier sheet in same day. Reprime areas exposed for more than 24 hours.
- E. Apply and firmly adhere modified bituminous sheets horizontally over area to receive air barrier sheets. Accurately align sheets and maintain a uniform 2-1/2-inch- minimum lap widths and end laps. Overlap and seal seams and stagger end laps to ensure airtight installation.
 - 1. Apply sheets in a shingled manner to shed water without interception by any exposed sheet edges.
 - 2. Roll sheets firmly to enhance adhesion to substrate.
- F. Apply continuous modified bituminous sheets over modified bituminous strips bridging substrate cracks, construction, and contraction joints.
- G. Seal top of through-wall flashings to air barrier sheet with an additional 6-inch- wide, strip.
- H. Seal exposed edges of sheets at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.
- I. Install air barrier sheets and auxiliary materials to form a seal with adjacent construction and to maintain a continuous air barrier.
 - 1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
- J. Connect and seal exterior wall air barrier membrane continuously to roofing membrane air barrier, concrete below-grade structures, floor-to floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door

MODIFIED BITUMINOUS SHEET AIR BARRIERS

framing, and other construction used in exterior wall openings using accessory materials and according to manufacturer's tested assembly.

- K. Wall Openings: Prime concealed perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply modified bituminous transition strip so that a minimum of 3 inches of coverage is achieved over both substrates. Maintain 3 inches of full contact over firm bearing to perimeter frames with not less than 1 inch of full contact.
 - 1. Modified Bituminous Transition Strip: Roll firmly to enhance adhesion.
- L. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, doors, and miscellaneous penetrations of air barrier membrane with foam sealant.
- M. At end or each working day, seal top edge of membrane to substrate with termination mastic.
- N. Apply joint sealants forming part of air barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- O. Repair punctures, voids, and deficient lapped seams in air barrier. Slit and flatten fishmouths and blisters. Patch with air barrier sheet extending 6 inches beyond repaired areas in all directions.
- P. Do not cover air barrier until it has been tested and inspected by Owner's testing agency.
- Q. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air barrier components.

3.4 FIELD QUALITY CONTROL

- A. Inspections: Air barrier materials and installation are subject to inspection for compliance with requirements. Inspections may include the following:
 - 1. Continuity of air barrier system has been achieved throughout the building envelope with no gaps or holes.
 - 2. Continuous structural support of air barrier system has been provided.
 - 3. Site conditions for application temperature and dryness of substrates have been maintained.
 - 4. Maximum exposure time of materials to UV deterioration has not been exceeded.
 - 5. Surfaces have been primed.
 - 6. Laps in sheet materials have complied with the minimum requirements and have been shingled in the correct direction (or mastic applied on exposed edges), with no fishmouths.
 - 7. Termination mastic has been applied on cut edges.
 - 8. Air barrier has been firmly adhered to substrate.
 - 9. Compatible materials have been used.

MODIFIED BITUMINOUS SHEET AIR BARRIERS

10. Transitions at changes in direction and structural support at gaps have been provided.
11. Connections between assemblies (membrane and sealants) have complied with requirements for cleanliness, preparation and priming of surfaces, structural support, integrity, and continuity of seal.
12. All penetrations have been sealed.

3.5 CLEANING AND PROTECTION

- A. Protect air barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
 1. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer. Remove and replace air barrier exposed to these conditions for more than 30 days.
 2. Protect air barrier from contact with creosote, uncured coal-tar products, TPO, EPDM, flexible PVC membranes, and sealants not approved by air barrier manufacturer.
- B. Clean spills, stains, and soiling from adjacent construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 072713

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.
- B. Sustainable Design Intent: Comply with project requirements intended to achieve sustainable design, measured and documented according to the CT High Performance Building Standard (CTHPS) Mandatory Requirements and minimum required sustainable strategies, as indicated on the Sustainable Matrix. Refer to Section 018113 - SUSTAINABLE DESIGN REQUIREMENTS for mandatory and targeted strategies.

1.2 SUMMARY

- A. Section Includes:
 - 1. Adhered ethylene-propylene-diene-monomer (EPDM) roofing system.
 - 2. Vapor retarder.
 - 3. Roof insulation.
 - 4. Walkway pads
- B. Section includes the installation of insulation strips in ribs of roof deck. Insulation strips are furnished under Division 05 Section "Steel Decking."
- C. Related Requirements:
 - 1. Division 05 Section "Steel Decking" for furnishing acoustical deck rib insulation.
 - 2. Division 06 Section "Rough Carpentry" for wood nailers, curbs, and blocking.
 - 3. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
 - 4. Division 07 Section "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
 - 5. Division 22 Section "Storm Drainage Piping Specialties" for roof drains.

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.

- B. Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," before multiplication by a safety factor.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Roofing Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - 3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 - 5. Review structural loading limitations of roof deck during and after roofing.
 - 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
 - 7. Review governing regulations and requirements for insurance and certificates if applicable.
 - 8. Review temporary protection requirements for roofing system during and after installation.
 - 9. Review roof observation and repair procedures after roofing installation.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Sustainability Data: For each Sustainability Focus Material in Accordance with Section 018113 "Sustainable Design Requirements".
- C. CT High Performance Buildings Submittals:
 - 1. Product certification for Strategies 4(d)10 and 4(d)11: For products and materials required to comply with requirements for Regional Materials including location and distance to Project from point of material manufacture and extraction, harvest or recovery for each raw material. Include statement indicating cost of reach regional materials and the fraction by weight that is considered regional.
- D. 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.
4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

E. Samples for Verification: For the following products:

1. Sheet roofing, of color required.
2. Roof paver, in each color and texture required.
3. Walkway pads or rolls, of color required.

1.6 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. FM Global Assembly Information: Submit FM Global Form 2688, *Checklist for Roofing System*. Submit this form with the shop drawings. After submittal approvals, and before installation, the contractor of record must submit this form directly to FM Global Boston Operations.
- F. Field quality-control reports.
- G. Sample Warranties: For manufacturer's special warranties.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing system to include in maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is 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.

1.9 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.

1.10 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.

1.11 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, cover boards, substrate board, roofing accessories, roof pavers, and other components of roofing system.
 - 2. Warranty Period: 30 thirty years from date of Substantial Completion.
 - 3. General Contractor's warranty for installation: 24 months

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Sustainability Focus Materials; Sustainability Characteristics in Accordance with Section 018113 Appendix A and Appendix B.

Source Limitations: Obtain components including roof insulation 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 design criteria specified on the structural drawings and the following uplift pressures:
1. Ground Roughness : C
 2. Corner Uplift Pressure: 165 lbf/sq. ft. (kPa/sq. m)>.
 3. Perimeter Uplift Pressure: 120 lbf/sq. ft. (kPa/sq. m)>.
 4. Field-of-Roof Uplift Pressure: 75 lbf/sq. ft. (kPa/sq. m)>.
- D. FM Global Listing: Per FM Global Data Sheet 1-28. 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: Class 1A-90.
 2. Hail-Resistance Rating: MH.

- E. Solar Reflectance Index: Aged values not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency. See requirements for specific elements.
- F. Energy Star Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.
- G. 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:
 - a. Carlisle SynTec Incorporated.
 - b. Firestone Building Products.
 - c. GAF Materials Corporation.
 - d. GenFlex Roofing Systems.
 - e. Johns Manville International, Inc.
 - 2. Thickness: 90 mils, nominal.
 - 3. Exposed Face Color: White on Black at all locations.
 - 4. Solar Reflectance Index: 94 or higher where exposed.

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.
 - 2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Plastic Foam Adhesives: 50 g/L.
 - b. Gypsum Board and Panel Adhesives: 50 g/L.
 - c. Multipurpose Construction Adhesives: 70 g/L.
 - d. Fiberglass Adhesives: 80 g/L.
 - e. Single-Ply Roof Membrane Adhesives: 250 g/L.
 - f. Single-Ply Roof Membrane Sealants: 450 g/L.
 - g. Nonmembrane Roof Sealants: 300 g/L.
 - h. Sealant Primers for Nonporous Substrates: 250 g/L.

- i. Sealant Primers for Porous Substrates: 775 g/L.
 - j. Other Adhesives and Sealants: 250 g/L.
 3. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Sheet Flashing: 60-mil- (1.5-mm-) thick EPDM, partially cured or cured, according to application.
- C. Protection Sheet: Epichlorohydrin or neoprene nonreinforced flexible sheet, 55- to 60-mil- (1.4- to 1.5-mm-) thick, recommended by EPDM manufacturer for resistance to hydrocarbons, non-aromatic solvents, grease, and oil.
- D. Bonding Adhesive: Manufacturer's standard, water based.
- E. Seaming Material: Single-component, butyl splicing adhesive and splice cleaner.
- F. Lap Sealant: Manufacturer's standard, single-component sealant, colored to match membrane roofing.
- G. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- H. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.
- I. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick (25 mm wide by 1.3 mm thick), prepunched.
- J. 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.
- K. 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.
 1. Provide white flashing accessories for white EPDM membrane roofing.
- L. Liquid Coating: Product specifically formulated for coating EPDM membrane roofing, as follows:
 1. Type: Acrylic emulsion complying with ASTM D 6083.
 2. Type: Chlorosulfonated polyethylene complying with ASTM D 3468.
 3. Color: White.

~~2.5~~ SUBSTRATE BOARDS

- ~~A. Substrate Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch (13 mm) thick.~~
- ~~B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening substrate panel to roof deck.~~

~~2.6~~ VAPOR RETARDER

- ~~A. Self-Adhering Sheet Vapor Retarder: ASTM D 1970, polyethylene film laminated to layer of rubberized asphalt adhesive, minimum 40-mil (1.0 mm) total thickness; maximum permeance rating of 0.1 perm (6 ng/Pa x s x sq. m); cold applied, with slip-resisting surface and release paper backing. Provide primer when recommended by vapor-retarder manufacturer and part of FM Global approved system.~~

2.7 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by EPDM roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Global-approved roof insulation.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces. R-30 min (total roof assembly)
- C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) unless otherwise indicated. Minimum thickness of tapered insulation: 1/2". This is in addition to minimum required roof insulation thickness.
- D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.8 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer. Spacing and type to meet specified warranty wind speed as well as requirements of FM-Global.
- C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:

1. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
- D. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric, water permeable and resistant to UV degradation, type and weight as recommended by roofing system manufacturer for application.
- E. **Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch (13 mm) thick.**
 1. **Manufacturers: Subject to compliance with requirements, provide products by one of the following:**
 - a. **CertainTeed Corporation.**
 - b. **Georgia-Pacific Building Products.**
 - c. **Carlisle Syntec**

2.9 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch (5 mm) thick and acceptable to roofing system manufacturer. See roof plan for extent.

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 roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."
 4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
 5. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
 6. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.
- 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.
- C. Install insulation strips according to acoustical roof deck manufacturer's written instructions.

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.
- C. Install roofing systems according to recommendations in FM Global's "RoofNav" and FM Global Loss Prevention Data Sheet 1-2.
 - 1. At the perimeter area, install a 20 ft. strip along the edge of the roof
 - 2. At the corner area, install a 20 x 20 ft. areas where the perimeter strips intersect at the outside corners of the roof edge.
- D. Install roofing and auxiliary materials to tie in to existing roofing to maintain weather tightness of transition.

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 1-28 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 VAPOR-RETARDER INSTALLATION

- A. Self-Adhering-Sheet Vapor Retarder: Prime substrate if required by manufacturer. Install self-adhering-sheet vapor retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 inches (90 mm) and 6 inches (150 mm), respectively. Seal laps by rolling.

- B. Completely seal vapor retarder at wall/roof junctions, terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.6 INSULATION INSTALLATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches (68 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
 - 1. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
- E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- G. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:
 - 1. Prime surface of concrete deck with asphalt primer at rate of 3/4 gal./100 sq. ft. (0.3 L/sq. m), and allow primer to dry.
 - 2. Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place. Spacing of beads shall meet FM requirements and warranty wind speeds. In no case shall bead spacing exceed 6”.
- H. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
 - 1. Fasten insulation according to requirements in FM Global's "RoofNav" for specified Windstorm Resistance Classification and specified warranty wind speeds.
 - 2. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.

- I. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction. Loosely butt cover boards together and fasten to roof deck.
 - 1. Fasten cover boards according to requirements in FM Global's "RoofNav" for specified Windstorm Resistance Classification.
 - 2. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.

3.7 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Adhere roofing over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll membrane roofing and allow to relax before installing.
- B. Start installation of roofing in presence of roofing system manufacturer's technical personnel.
- C. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Bonding Adhesive: Apply to substrate and underside of roofing at rate required by manufacturer, and allow to partially dry before installing roofing. Do not apply to splice area of roofing.
- E. In addition to adhering, mechanically fasten roofing securely at terminations, penetrations, and perimeters.
- F. Apply roofing with side laps shingled with slope of roof deck where possible.
- G. 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.
- H. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape, 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.
- I. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.
- J. Spread sealant or mastic bed over deck-drain flange at roof drains, and securely seal membrane roofing in place with clamping ring.
- K. Adhere protection sheet over membrane roofing at locations indicated.

3.8 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.

3.9 WALKWAY INSTALLATION

- A. Flexible Walkways: Install walkway products in locations indicated and wherever required to provide continuous path to accessible sides of all units requiring regular maintenance. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components, and to furnish reports to Architect.
- B. 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 (65 mm) with a minimum depth of 1 inch (25 mm) and not exceeding a depth of 4 inches (100 mm). Maintain 2 inches (50 mm) of clearance from top of base flashing.
 - 2. Flood each area for 48 hours.
 - 3. After flood testing, repair leaks, repeat flood tests, and make further repairs until roofing and flashing installations are watertight.
- C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

1. Per FM Global requirements, final acceptance of roof covering installation shall be conditional on successful uplift testing in accordance with *FM-Global Data Sheet 1-52 Field Verification of Roof Wind Uplift Resistance*, and requiring witnessing by Owner's Representative.
- D. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.11 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.

3.12 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: State of Connecticut, Department of Administrative Services, Construction Services
 2. Address: 450 Columbus Boulevard, Suite 1302, Hartford, CT 06103
 3. Building Name/Type: Higgins Hall and Higgins Annex
 4. Address: 181 White Street, Danbury, CT.
 5. Area of Work: Roof
 6. Acceptance Date: _____.
 7. Warranty Period: 30 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.
- 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 100 mph (m/sec)>;
 - 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.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

END OF SECTION 075323

SECTION 087100 – DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware.
- C. Related Sections:
 - 1. Division 08 Section “Hollow Metal Doors and Frames”.
 - 2. Division 08 Section “Flush Wood Doors”.
 - 3. Division 28 Section “Access Control”.
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series
 - 2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
 - 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

- a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
 - b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - c. Wiring instructions for each electronic component scheduled herein.
2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- E. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
1. Function of building, purpose of each area and degree of security required.
 2. Plans for existing and future key system expansion.
 3. Requirements for key control storage and software.
 4. Installation of permanent keys, cylinder cores and software.
 5. Address and requirements for delivery of keys.
- G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 3. Review sequence of operation narratives for each unique access controlled opening.
 4. Review and finalize construction schedule and verify availability of materials.
 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
- C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Seven years for heavy duty cylindrical (bored) locks and latches.
 - 2. Five years for exit hardware.
 - 3. Twenty five years for manual surface door closer bodies.
 - 4. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

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

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
- C. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- D. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.
 - 1. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.

Acceptable Manufacturers:

- a. Bommer Industries (BO).
- b. Hager Companies (HA).
- c. McKinney Products (MK).

- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Acceptable Manufacturers:
 - a. Bommer Industries (BO).
 - b. McKinney Products (MK).
 - c. Pemko Manufacturing (PE).

2.3 POWER TRANSFER DEVICES

- A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Acceptable Manufacturers:
 - a. Securitron (SU) - EL-CEPT Series.
 - b. Basis of Design

- B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:
 - a. McKinney Products (MK) - Electrical Connecting Kit: QC-R001.
 - b. McKinney Products (MK) - Connector Hand Tool: QC-R003.

2. Acceptable Manufacturers:
 - a. McKinney Products (MK) – QC-C Series.
 - b. Basis of Design.

2.4 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
1. Manual flush bolts to be furnished with top rod of sufficient length to allow bolt location approximately six feet from the floor.
 2. Furnish dust proof strikes for bottom bolts.
 3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
 4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
 5. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Rockwood Manufacturing (RO).
 - c. Trimco (TC).
- B. Door Push Plates and Pulls: ANS/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
 3. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
 4. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Rockwood Manufacturing (RO).
 - c. Trimco (TC).

2.5 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
- C. Cylinders: Original manufacturer cylinders complying with the following:
1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.

2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
 4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 5. Keyway: Match Facility Restricted Keyway.
- D. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
1. Removable Cores: Core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware. Provide removable core (small or large format) as specified in Hardware Sets.
- E. Security Cylinders: ANSI/BHMA A156.5, Grade 1, patented security cylinders and keys able to be used together under the same facility master or grandmaster key system. Cylinders are to be factory keyed.
1. Acceptable Manufacturers:
 - a. Corbin Russwin (RU) - Pyramid PS Series.
 - b. No Substitution – Facility Standard.
- F. Keying System: Each type of lock and cylinders to be factory keyed.
1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 3. Existing System: Key locks to Owner's existing system.
- G. Key Quantity: Provide the following minimum number of keys:
1. Change Keys per Cylinder: Four (4)
 2. Master Keys (per Master Key Level/Group): Five (5).
 3. Construction Keys: Ten (10).
 4. Construction Control Keys: Two (2).
 5. Permanent Control Keys: Two (2).
- H. Construction Keying: Provide temporary keyed construction cores.
- I. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.
1. Acceptable Manufacturers:

- a. Lund Equipment (LU).
- b. MMF Industries (MM).
- c. Telkee (TK).

- J. Key Bitting List: Provide a key bitting list in both hard copy and soft copy format. Soft copy to be either a CD or USB device with electronic copy of bitting list capable of being imported into Key Wizard Software

2.6 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Grade 1 certified cylindrical (bored) locksets furnished in the functions as specified in the Hardware Sets. Lock chassis fabricated of heavy gauge steel, zinc dichromate plated, with through-bolted application. Furnish with solid cast levers, standard 2 3/4" backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless steel latchbolt. Locks are to be non-handed and fully field reversible.

1. Acceptable Manufacturers:

- a. Corbin Russwin Hardware (RU) – CL3300 Series.
- b. Basis of Design.

2.7 ELECTROMECHANICAL LOCKING DEVICES

- A. Electromechanical Cylindrical Locksets, Grade 1 (Heavy Duty): Subject to same compliance standards and requirements as mechanical cylindrical locksets, electrified locksets to be of type and design as specified below.

- 1. Electrified Lock Options: Where indicated in the Hardware Sets, provide electrified options including: outside door lock/unlock trim control, latchbolt and lock/unlock status monitoring, and request-to-exit signaling. Unless otherwise indicated, provide electrified locksets standard as fail secure.
- 2. Acceptable Manufacturers:

- a. Corbin Russwin Hardware (RU) - CL33900 Series.
- b. Basis of Design.

2.8 LOCK AND LATCH STRIKES

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

- 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.

2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.

B. Standards: Comply with the following:

1. Strikes for Bored Locks and Latches: BHMA A156.2.
2. Dustproof Strikes: BHMA A156.16.

2.9 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
3. Except on fire rated doors, provide exit devices with keyed cylinder dogging.
4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is not acceptable except in any case where the door light extends behind the device as in a full glass configuration.
5. Rail Sizing: Provide exit device rails factory sized for proper door width application.
6. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Mounting rails to be formed from smooth stainless steel, brass or bronze architectural materials no less than 0.072" thick, with push rails a minimum of 0.062" thickness. Painted or aluminum metal rails are not acceptable. Exit device latch to be investment cast stainless steel, pullman type, with deadlock feature.

1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ED5000 Series.
 - b. Basis of Design.

- C. Tube Steel Removable Mullions: ANSI/BHMA A156.3 removable steel mullions with malleable-iron top and bottom retainers and a primed paint finish. Provide keyed removable feature, stabilizers, and mounting brackets as specified in the Hardware Sets. At openings designed for severe wind load conditions due to hurricanes or tornadoes, provide manufacturers approved mullion and accessories to meet applicable state and local windstorm codes.

1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) - 900 Series.
 - b. Basis of design.

2.10 ELECTROMECHANICAL CONVENTIONAL EXIT DEVICES

- A. Electrified Conventional Push Rail Devices (Heavy Duty): Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified below. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.

1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ED5000 Series.
 - b. Basis of Design.

- B. Electrified Options: As indicated in hardware sets, provide electrified exit device options including: electric latch retraction , electric dogging, outside door trim control, exit alarm, latchbolt monitoring, lock/unlock status monitoring, touchbar monitoring and request-to-exit signaling. Unless otherwise indicated, provide electrified exit devices standard as fail secure.

2.11 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
 2. Standards: Closers to comply with UL-10C and UBC 7-2 for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
 4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use.

Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.

5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 - a. Where closers are indicated to have mechanical dead-stop, provide heavy duty arms and brackets with an integral positive stop.
 - b. Where closers are indicated to have mechanical hold open, provide heavy duty units with an additional built-in mechanical holder assembly designed to hold open against normal wind and traffic conditions. Holder to be manually selectable to on-off position.
 - c. Where closers are indicated to have a cushion-type stop, provide heavy duty arms and brackets with spring stop mechanism to cushion door when opened to maximum degree.
 - d. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics. Provide drop plates or other accessories as required for proper mounting.
 6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt or security type fasteners as specified in the door Hardware Sets.
- B. Door Closers, Surface Mounted (Commercial Duty): ANSI/BHMA 156.4, Grade 1 certified surface mounted, institutional grade door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck, closing sweep, and latch speed control valves. Provide non-handed units standard.
1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) - DC6000 Series.
 - b. Basis of Design.

2.12 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width

and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.

3. Metal Protection Plates: ANSI/BHMA A156.6 certified metal protection plates (kick, armor, or mop), beveled on four edges (B4E), fabricated from the following:
 - a. Stainless Steel: 300 series, 050-inch thick, with countersunk screw holes (CSK).
4. Fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets.
5. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Rockwood Manufacturing (RO).
 - c. Trimco (TC).

2.13 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 1. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Rockwood Manufacturing (RO).
 - c. Trimco (TC).

2.14 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and UBC 7-2, Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated, based on testing according to ASTM E 1408.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Acceptable Manufacturers:
1. National Guard Products (NG).
 2. Pemko Manufacturing (PE).
 3. Reese Enterprises, Inc. (RS).

2.15 ELECTRONIC ACCESSORIES

- A. Switching Power Supplies: Provide UL listed or recognized filtered and regulated power supplies. Provide single, dual, or multi-voltage units as shown in the hardware sets. Units must be expandable up to eight Class 2 power limited outputs. Units must include the capability to incorporate a battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.
1. Acceptable Manufacturers:
 - a. Securitron (SU) - AQ Series.
 - b. Basis of Design.

2.16 FABRICATION

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

2.17 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

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

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.

- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

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

3.8 DOOR HARDWARE SCHEDULE

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

- 1. PE - Pemko
- 2. MK - McKinney
- 3. SU - Securitron
- 4. RO - Rockwood
- 5. RU - Corbin Russwin
- 6. RF - Rixson
- 7. NO – Norton

Set: 1.0

Doors: V002, V102

2 Continuous Hinge	CFMSLF-HD1 PT		PE
2 Electric Power Transfer	EL-CEPT		SU
2 Frame Wiring Harness	QC-C1500P		MK
2 Door Wiring Harness	QC-As Required		MK
1 KR Mullion	907BKM CT7R		RU
1 ELR Rim Exit (dummy trim)	ED5200 N950 M92 MELR M54 M52 CT7R	630	RU
1 ELR Elec Rim Exit (fail secure)	ED5200 N9905 M92 MELR M99 M54 M52 CT7R	630	
			RU
1 LFRC Permanent Core	8027 CKC2	626	RU
2 Concealed Overhead Stop	6-X36	630	RF
1 Surface Closer	DC6210 A3 M54	689	RU
1 Auto Operator	6060	689	NO

1 Wall Dual Operator Switch	504	NO
1 Wall Operator Switch	505	NO
1 Thermal Break Threshold	273x3AFG FHSL14 (6 1/8" width)	PE
1 Mullion Gasket	5110BL	PE
1 Perimeter Gasket	Section 08 41 13	
2 Door Bottom	Section 08 41 13	
1 Astragal	Section 08 41 13	
1 ED/Lock Power Supply	AQD6-8F8R	SU
1 Card Reader	Division 28	
2 Concealed Door Contact	Division 28	
1 Wiring Diagram		

Notes: Doors normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Both doors can be electrically dogged open for extended periods of time. Free egress at all times. Doors fail locked.

When doors are electrically dogged open pressing either operator switch activates auto operator.

When doors are locked. Pressing inside operator switch retracts ELR device and activates auto door operator. Valid card read must precede pressing outside switch to activate auto door operator.

Set: 2.0

Doors: C004, ST01.1A, ST02.1A, ST03.1A, V103

2 Continuous Hinge	CFMSLF-HD1 PT	PE
2 Electric Power Transfer	EL-CEPT	SU
2 Frame Wiring Harness	QC-C1500P	MK
2 Door Wiring Harness	QC-As Required	MK
1 KR Mullion	907BKM CT7R	RU
1 ELR Rim Exit (dummy trim)	ED5200 N950 M92 MELR M54 M52 CT7R	630 RU
1 ELR Elec Rim Exit (fail secure)	ED5200 N9905 M92 MELR M99 M54 M52 CT7R	630
	RU	
1 LFRC Permanent Core	8027 CKC2	626 RU
2 Concealed Overhead Stop	6-X36	630 RF
2 Surface Closer	DC6210 A3 M54	689 RU
1 Thermal Break Threshold	273x3AFG FHSL14 (6 1/8" width)	PE
1 Mullion Gasket	5110BL	PE
1 Perimeter Gasket	Section 08 41 13	
2 Door Bottom	Section 08 41 13	
1 Astragal	Section 08 41 13	
1 ED/Lock Power Supply	AQD6-8F8R	SU
1 Card Reader	Division 28	
2 Concealed Door Contact	Division 28	
1 Wiring Diagram		

Notes: Doors normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Both doors can be electrically dogged open for extended periods of time. Free egress at all times. Doors fail locked.

Set: 3.0

Doors: C101

1 Continuous Hinge	CFMSLF-HD1 PT		PE
1 Electric Power Transfer	EL-CEPT		SU
1 Frame Wiring Harness	QC-C1500P		MK
1 Door Wiring Harness	QC-As Required		MK
1 ELR Elec Rim Exit (fail secure)	ED5200 N9905 M92 MELR M99 M54 M52 CT7R	630	
RU			
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Concealed Overhead Stop	6-X36	630	RF
1 Auto Operator	6060	689	NO
2 Wall Operator Switch	505		NO
1 Thermal Break Threshold	273x3AFG FHSL14 (6 1/8" width)		PE
1 Perimeter Gasket	Section 08 41 13		
1 Door Bottom	Section 08 41 13		
1 ED/Lock Power Supply	AQD6-8F8R		SU
1 Card Reader	Division 28		
1 Concealed Door Contact	Division 28		
1 Wiring Diagram			

Notes: Door normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Free egress at all times. Doors fail locked.

Pressing inside operator switch retracts ELR device and activates auto door operator. Valid card read must precede pressing outside switch to activate auto door operator.

Set: 4.0

Not Used

Set: 5.0

Doors: V001, V101

2 Continuous Hinge	CFMSLF-HD1 PT		PE
2 Electric Power Transfer	EL-CEPT		SU
2 Frame Wiring Harness	QC-C1500P		MK
2 Door Wiring Harness	QC-As Required		MK
1 KR Mullion	907BKM CT7R		RU
1 ELR Rim Exit (dummy trim)	ED5200 N950 M92 MELR M54 M52 CT7R	630	RU
1 ELR Elec Rim Exit (fail secure)	ED5200 N9905 M92 MELR M99 M54 M52 CT7R	630	
RU			
1 LFRC Permanent Core	8027 CKC2	626	RU

2 Concealed Overhead Stop	6-X36	630	RF
2 Surface Closer	DC6210 A3 M54	689	RU
1 Thermal Break Threshold	273x3AFG FHSL14 (6 1/8" width)		PE
1 Mullion Gasket	5110BL		PE
1 Perimeter Gasket	Section 08 41 13		
2 Door Bottom	Section 08 41 13		
1 Astragal	Section 08 41 13		
1 ED/Lock Power Supply	AQD6-8F8R		SU
1 Card Reader	Division 28		
2 Concealed Door Contact	Division 28		
1 Wiring Diagram			

Notes: Doors normally closed and locked. Mechanical key allows access. Door relocks upon closing. Both doors can be electrically dogged open for extended periods of time. Free egress at all times. Doors fail locked.

Set: 6.0

Doors: ST03.0

2 Continuous Hinge	CFMSLF-HD1		PE
1 KR Mullion	907BKM CT7R		RU
1 Rim Exit (exit only)	ED5200 M51	630	RU
2 Concealed Overhead Stop	6-X36	630	RF
2 Surface Closer	DC6210 A3 M54	689	RU
1 Thermal Break Threshold	273x3AFG FHSL14 (6 1/8" width)		PE
1 Mullion Gasket	5110BL		PE
1 Perimeter Gasket	Section 08 41 13		
2 Door Bottom	Section 08 41 13		
1 Astragal	Section 08 41 13		
2 Concealed Door Contact	Division 28		

Set: 7.0

Doors: ST05.0A

1 Continuous Hinge	CFMSLF-HD1		PE
1 Rim Exit (exit only)	ED5200 M51	630	RU
1 Concealed Overhead Stop	6-X36	630	RF
1 Surface Closer	DC6200 A10 M54	689	RU
1 Thermal Break Threshold	273x3AFG FHSL14 (6 1/8" width)		PE
1 Perimeter Gasket	Section 08 41 13		
1 Door Bottom	Section 08 41 13		
1 Concealed Door Contact	Division 28		

Set: 8.0

Doors: V102A

2 Continuous Hinge	CFMSLF-HD1 PT		PE
2 Electric Power Transfer	EL-CEPT		SU
2 Frame Wiring Harness	QC-C1500P		MK
2 Door Wiring Harness	QC-As Required		MK
1 ELR Rim Exit (dummy trim)	ED5200 N950 M92 MELR M54 M52 CT7R	630	RU
1 ELR Elec Rim Exit (fail secure)	ED5200 N9905 M92 MELR M99 M54 M52 CT7R		630
	RU		
4 LFRC Permanent Core	8027 CKC2	626	RU
2 Concealed Overhead Stop	6-X36	630	RF
1 Surface Closer	DC6210 A3 M54	689	RU
1 Auto Operator	6060	689	NO
1 Wall Operator Switch	505		NO
1 Card Reader	Division 28		
1 Wiring Diagram			

Notes: Doors normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Both doors can be electrically dogged open for extended periods of time. Free egress at all times. Doors fail locked.

When doors are electrically dogged open pressing either operator switch activates auto operator.

When doors are locked. Pressing inside operator switch retracts ELR device and activates auto door operator. Valid card read must precede pressing outside vestibule switch to activate auto door operator.

Set: 9.0

Doors: V002A

1 Continuous Hinge	CFMSLF-HD1		PE
1 Continuous Hinge	CFMSLF-HD1 PT		PE
1 Electric Power Transfer	EL-CEPT		SU
1 Frame Wiring Harness	QC-C1500P		MK
1 Door Wiring Harness	QC-As Required		MK
1 Rim Exit (exit only)	ED5200 M51	630	RU
1 ELR Elec Rim Exit (fail secure)	ED5200 N9905 M92 MELR M99 M54 M52 CT7R		630
	RU		
1 LFRC Permanent Core	8027 CKC2	626	RU
2 Concealed Overhead Stop	6-X36	630	RF
2 Surface Closer	DC6210 A3 M54	689	RU
1 Auto Operator	6060	689	NO
2 Operator Switch	Reuse Existing		OT
1 Mullion Gasket	5110BL		PE
1 ED/Lock Power Supply	AQD6-8F8R		SU
1 Card Reader	Division 28		

1 Wiring Diagram

Notes: Doors normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Free egress at all times. Doors fail locked.

Pressing inside operator switch retracts ELR device and activates auto door operator. Valid card read must precede pressing outside vestibule switch to activate auto door operator.

Set: 10.0

Doors: V001A, V101A, V103A

2 Continuous Hinge	CFMSLF-HD1		PE
2 Push Bar & Pull	11147 T1HD	US32D	RO
2 Concealed Overhead Stop	6-X36	630	RF
2 Surface Closer	DC6210 A3 M54	689	RU

Set: 11.0

Doors: 112, 113

1 Continuous Hinge	CFMSLF-HD1		PE
1 Cylindrical Lock (classroom)	CL3355 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6200 A10 M54	689	RU
1 Wall Stop	401/404	US26D	RO

Set: 12.0

Doors: ST04.0, ST04.1, ST04.2, ST05.0, ST05.1, ST05.2

2 Continuous Hinge	CFMHD1		PE
2 SVR Exit (passage)	ED5470B N910 M54 M55	630	RU
2 Surface Closer	DC6210 A3 M54	689	RU
2 Kick Plate	K1050 8" BEV CSK	US32D	RO
2 Wall Stop	401/404	US26D	RO
1 Perimeter Gasket	S88BL		PE
1 Astragal	S77C		PE

Set: 13.0

Doors: V103B

1 Continuous Hinge	CFMHD1		PE
1 Rim Exit (passage)	ED5200A N910 M54	630	RU
1 Surface Closer (stop)	DC6210 A11 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Perimeter Gasket	S88BL		PE

Set: 14.0

Doors: 009

6 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 KR Mullion	907BKM CT7R		RU
1 Rim Exit (exit only)	ED5200A EO M54	630	RU
1 Rim Exit (storeroom)	ED5200A N959 M54 CT7R	630	RU
2 LFRC Permanent Core	8027 CKC2	626	RU
2 Surface Closer (stop)	DC6210 A11 M54	689	RU
2 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Perimeter Gasket	S88BL		PE
1 Mullion Gasket	5110BL		PE

Set: 15.0

Doors: 008

6 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 KR Mullion	907BKM CT7R		RU
1 Rim Exit (exit only)	ED5200 M51	630	RU
1 Rim Exit (storeroom)	ED5200 N959 M51 M54 CT7R	630	RU
2 LFRC Permanent Core	8027 CKC2	626	RU
2 Surface Closer (stop)	DC6210 A11 M54	689	RU
2 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Mullion Gasket	5110BL		PE

Set: 16.0

Doors: 020A, 040A, 040B, 040C, 108, 211, 214, 219, C101A

2 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Transfer Hinge (heavy weight)	T4A3786-QC12 4-1/2" x 4-1/2"	US26D	MK
1 Frame Wiring Harness	QC-C1500P		MK
1 Door Wiring Harness	QC-As Required		MK
1 Elec Cylindrical Lock (fail secure)	CL33905 NZD M92 CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6200 A10 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO
1 ED/Lock Power Supply	AQD6-8F8R		SU
1 Card Reader	Division 28		
1 Wiring Diagram			

Notes: Door normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Free egress at all times. Door fails locked.

Set: 17.0

Doors: 029, 031, 033, 039, 040, 041, 042, 109, 110, 116, 117, 118, 124, 125, 201, 201L, 205, 212, 215, 218, 226, 230, **032**

2 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Transfer Hinge (heavy weight)	T4A3786-QC12 4-1/2" x 4-1/2"	US26D	MK
1 Frame Wiring Harness	QC-C1500P		MK
1 Door Wiring Harness	QC-As Required		MK
1 Elec Cylindrical Lock (fail secure)	CL33905 NZD M92 CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Overhead Stop	10-X36	652	RF
1 Surface Closer	DC6200 A10 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 ED/Lock Power Supply	AQD6-8F8R		SU
1 Card Reader	Division 28		
1 Wiring Diagram			

Notes: Door normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Free egress at all times. Door fails locked.

Set: 18.0

Doors: 036A

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
3 Transfer Hinge (heavy weight)	T4A3786-QC12 4-1/2" x 4-1/2"	US26D	MK
1 Frame Wiring Harness	QC-C1500P		MK
1 Door Wiring Harness	QC-As Required		MK
1 Elec Cylindrical Lock (fail secure)	CL33905 NZD M92 CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6210 A3 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO
1 ED/Lock Power Supply	AQD6-8F8R		SU
1 Wiring Diagram			

Notes: Door normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Free egress at all times. Door fails locked.

Set: 19.0

Doors: 110A, 110B, 207, C101B

6 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
2 Flush Bolt	555	US26D	RO
1 Dust Proof Strike	570	US26D	RO
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Overhead Stop	10-X36	652	RF
1 Surface Closer (stop)	DC6210 A11 M54	689	RU
2 Kick Plate	K1050 8" BEV CSK	US32D	RO

1 Wall Stop	401/404	US26D	RO
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Notes: Door normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Free egress at all times. Door fails locked.

Set: 20.0

Doors: 011, 017, 214E, **024**

6 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
2 Flush Bolt	555	US26D	RO
1 Dust Proof Strike	570	US26D	RO
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6210 A3 M54	689	RU
2 Kick Plate	K1050 8" BEV CSK	US32D	RO
2 Wall Stop	401/404	US26D	RO

Set: 21.0

Doors: 012

6 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
2 Flush Bolt	555	US26D	RO
1 Dust Proof Strike	570	US26D	RO
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
2 Surface Closer	DC6200 A10 M54	689	RU
2 Kick Plate	K1050 8" BEV CSK	US32D	RO
2 Wall Stop	401/404	US26D	RO

Set: 22.0

Doors: ~~024~~, 026, ~~032~~, 102, 115

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6200 A10 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Set: 23.0

Doors: 020B

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6200 A10 M54	689	RU

1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO
1 Perimeter Gasket	S88BL		PE

Set: 24.0

Doors: 027, 115A

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 Surface Closer	DC6210 A3 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Set: 25.0

Doors: 033A, 039A, 039B, 039C, 039D, 039E, 039F, 039G, 101A, 101B, 101C, 101D, 101E, 101F, 101G, 101I, 101J, 101K, 101L, 101M, 101N, 108A, 108B, 108C, 109A, 109B, 109C, 201A, 201B, 201C, 201D, 201E, 201F, 201G, 201H, 201I, 201J, 201K, 201M, 206A, 206B, 206C, 218A, 218B, 218C, 219A, 219B, 219C, 219D, 219E, 219F, 219G, 219H, 219I, 230A, 230B, 230C

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (classroom)	CL3351 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Wall Stop	401/404	US26D	RO

Set: 26.0

Doors: 008A, 008B, 214C

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer (stop)	DC6210 A11 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO

Set: 27.0

Doors: 216

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (classroom)	CL3355 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Overhead Stop	10-X36	652	RF
1 Surface Closer	DC6200 A10 M54	689	RU
2 Kick Plate	K1050 8" BEV CSK	US32D	RO

Set: 28.0

Doors: 213, 214A, 214D

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (classroom)	CL3355 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6200 A10 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO
1 Perimeter Gasket	S88BL		PE
1 Auto Door Bottom (concealed)	434ARL		PE

Set: 29.0

Doors: 214B

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (privacy)	CL3320 NZD	626	RU
1 Surface Closer (stop)	DC6210 A11 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Set: 30.0

Doors: 105, 106, 208

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Mortise Deadlock (classroom)	DL4117 CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Push Pull	111x73C/73CL CFC/CFTT	US32D	RO
1 Surface Closer	DC6200 A10 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Set: 31.0

Doors: 030, 034, 209, 222, 223

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Mortise Deadlock (classroom)	DL4117 CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Push Pull	111x73C/73CL CFC/CFTT	US32D	RO
1 Surface Closer	DC6200 A10 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 32.0

Doors: C002

1 Continuous Hinge	CFMSLF-HD1		PE
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1 Continuous Hinge	CFMSLF-HD1 PT		PE
1 Electric Power Transfer	EL-CEPT		SU
1 Frame Wiring Harness	QC-C1500P		MK
1 Door Wiring Harness	QC-As Required		MK
1 SVR Exit (exit only)	ED5470 EO M54 M51	630	RU
1 Elec SVR Exit (fail secure)	ED5470 N9905 M92 M54 M51 CT7R	630	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
2 Surface Closer	DC6210 A3 M54	689	RU
2 Kick Plate	K1050 8" BEV CSK	US32D	RO
2 Wall Stop	401/404	US26D	RO
1 ED/Lock Power Supply	AQD6-8F8R		SU
1 Card Reader	Division 28		
1 Wiring Diagram			

Notes: Doors normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Free egress at all times. Doors fail locked.

Set: 33.0

Doors: ST01.1, ST01.2, ST02.1, ST02.2

2 Continuous Hinge	CFMHD1		PE
2 SVR Exit (passage)	ED5470B N910 M54 M55	630	RU
2 Surface Closer	DC6200 A10 M54	689	RU
2 Kick Plate	K1050 8" BEV CSK	US32D	RO
2 Wall Stop	401/404	US26D	RO
1 Perimeter Gasket	S88BL		PE
1 Astragal	S77C		PE

Set: 34.0

Doors: ST06.2

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (classroom)	CL3355 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Overhead Stop	10-X36	652	RF
1 Surface Closer	DC6200 A10 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 35.0

Doors: 007, 021, 122C

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
3 Transfer Hinge (heavy weight)	T4A3786-QC12 4-1/2" x 4-1/2"	US26D	MK

1 Frame Wiring Harness	QC-C1500P		MK
1 Door Wiring Harness	QC-As Required		MK
1 Elec Cylindrical Lock (fail secure)	CL33905 NZD M92 CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer (stop)	DC6210 A11 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 ED/Lock Power Supply	AQD6-8F8R		SU
1 Card Reader	Division 28		
1 Wiring Diagram			

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Door normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Free egress at all times. Door fails locked.

Set: 36.0

Doors: 035, 035A, 035B

2 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Transfer Hinge (heavy weight)	T4A3786-QC12 4-1/2" x 4-1/2"	US26D	MK
1 Frame Wiring Harness	QC-C1500P		MK
1 Door Wiring Harness	QC-As Required		MK
1 Elec Cylindrical Lock (fail secure)	CL33905 NZD M92 CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6200 A10 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO
1 ED/Lock Power Supply	AQD6-8F8R		SU
1 Card Reader	Division 28		
1 Wiring Diagram			

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Door normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Free egress at all times. Door fails locked.

Set: 37.0

Doors: 101, 103, 104A, 122, 122D, 210, 227, 227A, 228A, 229, **ST01.1B, ST02.1B**

2 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Transfer Hinge (heavy weight)	T4A3786-QC12 4-1/2" x 4-1/2"	US26D	MK
1 Frame Wiring Harness	QC-C1500P		MK
1 Door Wiring Harness	QC-As Required		MK
1 Elec Cylindrical Lock (fail secure)	CL33905 NZD M92 CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6210 A3 M54	689	RU

1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO
1 ED/Lock Power Supply	AQD6-8F8R		SU
1 Card Reader	Division 28		
1 Wiring Diagram			

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Template door closer to allow 180 degree swing as required.

Door normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Free egress at all times. Door fails locked.

Set: 38.0

Doors: 036, 102B, 107, 202, 228, 229A

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6210 A3 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Template door closer to allow 180 degree swing as required.

Set: 39.0

Doors: 206

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (classroom)	CL3355 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer (stop)	DC6210 A11 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 40.0

Doors: 010

6 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 KR Mullion	907BKM CT7R		RU
1 Rim Exit (exit only)	ED5200 M51	630	RU
1 Rim Exit (storeroom)	ED5200 N959 M51 M54 CT7R	630	RU
2 LFRC Permanent Core	8027 CKC2	626	RU

2 Surface Closer	DC6210 A3 M54	689	RU
2 Kick Plate	K1050 8" BEV CSK	US32D	RO
2 Wall Stop	401/404	US26D	RO
1 Mullion Gasket	5110BL		PE

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Template door closers to allow 180 degree swing as required.

Set: 41.0

Doors: 019, 022A, 037, 038, 123, 123A, 217, 225

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6200 A10 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 42.0

Doors: 025

6 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
2 Flush Bolt	555	US26D	RO
1 Dust Proof Strike	570	US26D	RO
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6200 A10 M54	689	RU
2 Kick Plate	K1050 8" BEV CSK	US32D	RO
2 Wall Stop	401/404	US26D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 43.0

Doors: 028, 213A

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer (stop)	DC6210 A11 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 44.0
Not used

Set: 45.0

Doors: 119, 221

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 46.0

Doors: 120, 124A

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (classroom)	CL3355 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6200 A10 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 47.0

Doors: 121

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (privacy)	CL3320 NZD	626	RU
1 Surface Closer	DC6200 A10 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 48.0

Doors: 220

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (privacy)	CL3320 NZD	626	RU
1 Surface Closer	DC6210 A3 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Template door closer to allow 180 degree swing as required.

Set: 49.0

Doors: 122A, 122B, 224

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (classroom)	CL3355 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Wall Stop	401/404	US26D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 50.0

Doors: 203

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (classroom)	CL3355 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Overhead Stop	10-X36	652	RF

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 51.0

Doors: 204

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (classroom)	CL3355 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer (holder)	DC6210 A2 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Template door closer to allow 180 degree swing as required.

Set: 52.0

Doors: 210A

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (classroom)	CL3355 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Overhead Stop	10-X36	652	RF

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 53.0

Doors: 037

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (storeroom)	CL3357 NZD CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer	DC6200 A10 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO
1 Perimeter Gasket	S88BL		PE

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Set: 54.0

Doors: ST01.0, ST02.0

1 Continuous Hinge	CFMHD1		PE
1 Rim Exit (passage)	ED5200A N910 M54	630	RU
1 Surface Closer (stop)	DC6200 A3 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO
1 Perimeter Gasket	S88BL		PE

Set: 55.0

Doors: 104A, 124B

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Cylindrical Lock (exit only)	CL3380 NZD	626	RU
1 Surface Closer	DC6210 A3 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Wall Stop	401/404	US26D	RO

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Template door closer to allow 180 degree swing as required.

Set: 56.0

Doors: 301

2 Hinge (heavy weight)	T4A3386 4-1/2" x 4-1/2"	US32D	MK
1 Transfer Hinge (heavy weight)	T4A3386-QC12 4-1/2" x 4-1/2"	US32D	MK
1 Frame Wiring Harness	QC-C1500P		MK

1 Door Wiring Harness	QC-As Required		MK
1 Elec Cylindrical Lock (fail secure)	CL33905 NZD M92 CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer (stop)	DC6210 A11 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Thermal Break Threshold	273x3AFG FHSL14 (6 1/8" width)		PE
1 Perimeter Gasket	S88BL		PE
1 ED/Lock Power Supply	AQD6-8F8R		SU
1 Card Reader	Division 28		
1 Wiring Diagram			

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Cylinder and card reader on inside of door.

Door normally closed and locked. Valid card read or mechanical key allows access onto roof. Door relocks upon closing. Free egress from roof at all times. Door fails locked.

Set: 57.0

Doors: 302

2 Hinge (heavy weight)	T4A3386 4-1/2" x 4-1/2"	US32D	MK
1 Transfer Hinge (heavy weight)	T4A3386-QC12 4-1/2" x 4-1/2"	US32D	MK
1 Frame Wiring Harness	QC-C1500P		MK
1 Door Wiring Harness	QC-As Required		MK
1 Elec Cylindrical Lock (fail secure)	CL33905 NZD M92 CT7R	626	RU
1 LFRC Permanent Core	8027 CKC2	626	RU
1 Surface Closer (stop)	DC6210 A11 M54	689	RU
1 Kick Plate	K1050 8" BEV CSK	US32D	RO
1 Thermal Break Threshold	273x3AFG FHSL14 (6 1/8" width)		PE
1 Perimeter Gasket	S88BL		PE
1 ED/Lock Power Supply	AQD6-8F8R		SU
1 Card Reader	Division 28		
1 Wiring Diagram			

Notes: Verify all existing frame preps before scheduling or ordering any hardware and match as required.

Door normally closed and locked. Valid card read or mechanical key allows access. Door relocks upon closing. Free egress at all times. Door fails locked.

END OF SECTION 087100

SECTION 099600 - HIGH-PERFORMANCE COATINGS

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. Sustainable Design Intent: Comply with project requirements intended to achieve sustainable design, measured and documented according to the CT High Performance Building Standard (CTHPS) Mandatory Requirements and minimum required sustainable strategies, as indicated on the Sustainable Matrix. Refer to Section 018113 - SUSTAINABLE DESIGN REQUIREMENTS for mandatory and targeted strategies.

1.2 SUMMARY

- A. Section includes surface preparation and the application of high-performance coating systems on the following substrates:
 - 1. **Exterior Substrates: At all exterior steel including railings, except roof screen wall supports which are identified to be galvanized on structural drawings.**
- B. Related Requirements:
 - 1. Division 05 Section "Structural Steel Framing" for shop priming of structural steel with primers specified in this Section.
 - 2. Division 05 Section "Metal Stairs and Railings" for shop priming and painting pipe and tube railings with coatings specified in this Section.
 - 3. Section 099120 "Painting" for general field painting.

1.3 DEFINITIONS

- A. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- B. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- C. 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. CT High Performance Schools Submittals:

1. Product data for Strategies 4(d)8 and 4(d)9: For products having recycled content, documentation indicating percentages, by weight, of postconsumer and reconsider recycled content.
2. Product certification for Strategies 4(d)10 and 4(d)11: For products and materials required to comply with requirements for Regional Materials including location and distance to Project from point of material manufacture and extraction, harvest or recovery for each raw material. Include statement indicating cost of reach regional materials and the fraction by weight that is considered regional.
3. Product Data for adhesives and sealants used on the interior of the building indicating VOC content of each product used. List each product including manufacturer's name, product name, specific actual VOC data and corresponding allowable VOC from requirements referenced in 018113.

C. Samples for Initial Selection: For each type of topcoat product indicated.

D. Samples for Verification: For each type of coating system and each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches (200 mm) 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.

E. Product List: Cross-reference to coating system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 QUALITY ASSURANCE

A. Mockups: Apply mockups of each coating system indicated 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 coating system.
 - a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
 - 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.

1.6 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 (7 deg C).
 1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
- C. Do not apply exterior coatings in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Sustainability Focus Materials: Sustainability Characteristics in Accordance with Section 018113 Appendix A and Appendix B.

Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. PPG Industries, Inc. (Pittsburgh Paints).
2. Sherwin Williams; Industrial and Marine Coatings (S-W).
3. Tnemec Company, Inc. (Tnemec).

- B. Products: Products listed in other Part 2 Articles are manufactured by Sherwin-Williams Co. Subject to compliance with requirements, provide the listed product or equal product by one of the named manufacturers.
1. Dry Film Thickness: Paints and coatings proposed as equal to the listed products must meet the specified minimum dry film thicknesses. If the proposed products do not meet the specified minimum dry film thicknesses in a single coat, the contractor may propose additional coats to meet the requirements. Coordinate the number of coats required with the material specifications, and the schedules listed at the end of this Section.

2.2 HIGH-PERFORMANCE COATINGS, 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.
 3. Products shall be of same manufacturer for each coat in a coating system.
- C. Colors: Match Architect's samples

2.3 EXTERIOR HIGH-PERFORMANCE COATING SYSTEMS

- A. **Ferrous Metal: Provide the following finish systems over exterior exposed structural steel surfaces:**
1. **Moderate Environment (Semigloss Finish): One finish coat over an intermediate coat and a primer.**
 - a. **Primer: Epoxy primer applied at spreading rate recommended by manufacturer.**
 - 1) **Sherwin-Williams: Macropoxy 646 Fast Cure Epoxy - B58 Series**
 - b. **Intermediate Coat: Epoxy applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 3.0 to 6.0 mils.**
 - 1) **Sherwin-Williams: Acrolon 218 HS Polyurethane – B65 Series**

- c. **Topcoat: Aliphatic polyurethane enamel applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 3.0 to 6.0 mils.**

1) **Sherwin-Williams: Acrolon 218 HS Polyurethane – B65 Series**

2.4 SOURCE QUALITY CONTROL

- A. Testing of Coating Materials: Owner reserves the right to invoke the following procedure:
1. Owner will engage the services of a qualified testing agency to sample coating materials. Contractor will be notified in advance and may be present when samples are taken. If coating 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 coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings 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. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Concrete: 12 percent.
 2. Fiber-Cement Board: 12 percent.
 3. Masonry (Clay and CMUs): 12 percent.
 4. Wood: 15 percent.
 5. Gypsum Board: 12 percent.
 6. Plaster: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Plaster Substrates: Verify that plaster is fully cured.
- E. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

- F. 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 coating 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 if any.
- C. Clean substrates of substances that could impair bond of coatings, 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 coating systems indicated.
- D. Surface Preparation: Clean and prepare surfaces to be coated according to manufacturer's written instructions for each substrate condition and as specified.
 - 1. Provide barrier coats over incompatible primers or remove primers and reprime substrate.
 - 2. Ferrous-Metal Substrates: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC recommendations.
 - a. Blast-clean steel surfaces as recommended by coating manufacturer and according to SSPC-SP 10/NACE No. 2. All blasted steel shall be primed the same day it is blasted and prior to the formation of rust bloom.
 - b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
 - c. The fabricator shall use a sling psychrometer and surface thermometer to verify ambient and dew point temperatures prior to and during the application of primer.
 - d. All welds shall be cleaned of rust, slag and mill scale and weld splatter shall be removed by hand tool and power tool methods per SSPC-SP-2 and SSPC-SP-3.
 - e. Touch up bare areas and shop-applied prime coats that have been damaged. Wire brush, solvent clean, and touch up with same primer as the shop coat.
- E. Material Preparation: Carefully mix and prepare coating materials according to manufacturer's written instructions.
 - 1. Maintain containers used in mixing and applying coatings in a clean condition, free of foreign materials and residue.

2. Stir materials before applying to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into the material. Remove film and, if necessary, strain coating material before using.
 3. Use only the type of thinners approved by manufacturer and only within recommended limits.
- F. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- G. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.
- H. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.3 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.
1. Contractor shall touch up and restore coated surfaces damaged by testing.
 2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating manufacturer's written recommendations.

3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from coating operation. Correct damage to work of other trades by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.

END OF SECTION 099600

SECTION 334100 6 STORM UTILITY DRAINAGE

PART 1 6 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Provide all labor, materials, necessary equipment and services to complete the work called for in this Section or as shown on the plans, including but not necessarily limited to the following:
 - 1. Storm drainage system.
 - 2. Cleaning of all existing and proposed storm pipes and structures within the project limits and any downstream structures as directed upon the completion of the construction activities.
 - 3. Connection to existing structures.

- B. Related Work: The following work contains requirements that may refer to this section:

A.	31 12 50	EROSION AND SEDIMENT CONTROL
B.	31 23 33	TRENCHING AND BACKFILLING
C.	31 23 19	DEWATERING
D.	31 41 00	EXCAVATION SUPPORT

1.3 SUBMITTALS

- A. Submit manufacturer's descriptive literature for all items proposed to be furnished and installed under this Section.
- B. Submit manufacturer's specifications and other data required to demonstrate compliance with the specified requirements.

- C. Manufacturer's recommended installation procedures which, when accepted by the Engineer, shall become the basis for inspecting and accepting (or rejecting) the actual installation procedures used on this work.
- D. Submit as-built drawings to the Owner and the Town of City of Danbury. The as-built shall be certified by a land surveyor licensed to practice in the State of Connecticut. Record final and actual sizes, materials, locations and elevations of all components on as-builts. Contractor shall submit paper prints for review. Upon acceptance of the as-built, final format shall include paper copies and electronic files in both PDF and AutoCAD 2018 formats.

PART 2 6 MATERIALS

2.1 CATCH BASINS (CB) and YARD DRAINS (YD)

- A. Catch basins and yard drains shall be 6C-L6 or 6C6 State DOT standard with a sump of 4606 minimum below outlet, as shown on drawings unless otherwise specified.
- B. Structural steel for grates shall conform to the requirements of ASTM A-36 or A-283, Grade B or better.
- C. Frames and grates shall be painted immediately before installation with a shop coat of primer and painted in the field, with a coat of RC2 Asphalt or SS-1 Emulsion.
- D. Catch basins shall be constructed in accordance with the drawings. Materials used shall conform to section M.08.02 of State DOT Specification Form 817.
- E. Mortar shall conform to Article M.11.04 of the DOT Specification, Form 817.
- F. Catch basins and yard drains shall have frame and grates as identified on the drawings. Contractor shall provide proper risers and tops to the structures as required to accept the identified frame and grates.

2.2 STORM DRAINAGE PIPING

- A. Storm drainage pipe shall be PVC, RCP or HDPE as shown on the plans and as follows:
 - 1. Reinforced concrete pipe & flared end sections: AASHTO-M-170. Class IV with flexible, water-tight, rubber-type gaskets conforming to AASHTO M-198.
 - 2. Polyvinyl chloride plastic pipe to be installed in the storm drainage system shall conform to Section M.08.01-27 State of Connecticut Department of Transportation (DOT) Specification Form 817, and ASTM D-1785.
 - 3. Polyvinyl chloride (PVC) pipe-perforated: conform to ASTM F-758 and D-1784.

4. PVC pipe shall have factory installed integral bell gasket joints and conform to ASTM F477. Connection to manholes shall be by use of manhole coupling adapters or flexible rubber connections.
5. Corrugated high density polyethylene pipe (CHDPE) to be installed in the storm drainage system shall conform to Section M.08.01-25 State of Connecticut Department of Transportation (DOT) Specification Form 817, and AASHTO M252 and M294.

2.3 MANHOLE MATERIALS

- A. Precast Concrete Manhole Sections: Precast Concrete manhole sections or units shall conform to ASTM C-478 as referenced herein before. Joints for such manholes shall conform to ASTM-C443 as previously referenced.
- B. Precast manhole walls shall have a minimum of 18 inches of concrete above and below any opening.
- C. Monolithic base slab and wall sections shall have a minimum of 8 inches of concrete wall above the base slab.
- D. All precast units shall be designed for H20 Traffic loading.
- E. Manhole steps, as shown on the Drawings, shall be built into manhole walls as indicated. The top step shall be 4 inches below the manhole cover frame.
- F. Manhole Castings:
 1. Manholes are to be fitted with the City of Danbury Standard Frame and Cover, as shown on the drawings. E.L. LeBaron (Pat. No. LJ-105) cast iron frame, and 23-7/8-inch cover having one center 1-1/4-inch pick hole (Pat. No. L24C-21) or City approved equal.
 2. All covers shall be appropriately marked "STORM" in a manner similar to the sewer manhole cover shown on City standard drawings.
 3. Castings shall conform to ASTM Specification A-48, Class 30 and shall be thoroughly cleaned, heated, and dipped in black asphaltum paint.
- G. Bank run gravel refill shall conform to the requirements of Section 312323 Site Backfill.
- H. In order to prevent covers rocking or rattling under traffic and to insure proper fit and interchangeability between different frames and covers, the lower surface of the cover and the corresponding upper surface of the frame shall be machine-finished in a lathe to provide a round, smooth, flat contact with the dimensions and clearances called for on the District's standard drawings.
- I. All non-U.S. manufactured manhole frames and covers submitted for Engineer's approval and use must be clearly and conspicuously marked on the top surface of each in English letters

designating the manufacturing country of origin. Such marking shall be either by means of die stamping, cast in molding, etching or engraving. No other type of marking is acceptable.

- J. Frames and covers that are to have a bolted locking device are so indicated on the Contract Drawings and shall be as City standard drawings. Each cover shall be drilled and counter bored to a depth of ½-inch in two places 180° apart to accommodate a ½-inch diameter Type 304 stainless steel socket head cap screw. Each frame shall be drilled and tapped to accept the cap screw. The socket head cap screw shall be 1½-inches long having 13 threads to the inch. Each frame and cover shall be marked for identification to insure that the proper cover is installed with its drilled and tapped frame.
- K. Brick:
 - 1. Brick used for inverts, water - tables and under frames and covers shall conform to ASTM C32, GRADE SM.
- L. Mortar for Brickwork:
 - 1. Mortar shall conform to Article M11.04, CONN DOT FORM 814 A -MORTAR.
- M. Precast Concrete Masonry Units:
 - 1. Precast concrete masonry units shall be machine-made solid segments, conforming to ASTM Standard Specifications for Concrete Masonry Units for Construction of Catch Basins and Manholes, Designation C139-73 (1989), with the following exceptions and additional requirements:
 - a. Type II cement shall be used except as otherwise permitted.
 - b. The width of the units shall be as indicated on the drawings.
 - c. The inside and outside surfaces of the units shall be curved to the necessary radius and so designed that the interior surfaces of the structures shall be cylindrical, except the top batter courses shall be designed to reduce uniformly the inside section of the structure to the required size and shape at the top.
 - d. Units shall be designed such that only full-length units are required to lay any one course.
 - e. Acceptance of the units will be on the basis of material tests and inspection of the completed product.
 - f. The Contractor shall submit 6 sets of manufacturer's information to the Engineer for approval prior to delivery of any units to the project site.
 - g. The manufacturer's name and the date of manufacture shall be clearly marked on the units.

N. Mortar for Masonry Units

1. The mortar shall be composed of one part portland cement and two parts of sand by volume with sufficient water to form a workable mixture. Cement and sand shall be as specified for mortar for brickwork.

2.4 PATIO DRAIN MATERIALS

- A. Frame and cover shall be 10-5/8 Square Top Prom-Deck drain, Dura-Coated cast iron body with rotatable light duty square promenade frame with seepage openings, frame clamps and decorative light duty polished nickel bronze heel-proof grate with 3/16 wide slots. Drain shall have bottom outlet able to accommodate 4ø dia. PVC outlet pipe.
- B. Frame and cover shall be 6ø x 12ø Rectangular Square Top Prom-Deck drain, Dura-Coated cast iron body with rotatable light duty square promenade frame with seepage openings, frame clamps and decorative light duty stainless steel veneer frame and heel-proof grate with 3/16 wide slots. Drain shall have bottom outlet able to accommodate 4ø dia. PVC outlet pipe.
- C. Manufacturers:
 1. Zurn Industries, LLC
 2. Smith, Jay R. Mfg. Co.
 3. Watts Water Technologies, Inc.

2.5 TRENCH DRAIN MATERIALS

- A. **Preformed Trench Drain:**
 1. **Interconnecting constructed from polymer concrete with integral galvanized wearing rail.**
 2. **Built in 0.6% slope.**
 3. **Load class E.**
- B. **Grate Materials:**
 1. **Longitudinal ductile Iron ADA compliant and heel proof.**
 2. **Bolt and bar locking system.**
- C. **Manufactures:**
 1. **Aco Polymer Products, Inc.**
 2. **ABT, Inc.**
 3. **McNichols**

2.6 MANHOLE FALL PREVENTION SYSTEMS

- A. Where manholes exceed 20 vertical feet from the proposed rim elevation to the invert, manholes shall be provided with a fall prevention system. Fall prevention systems shall be in accordance

with OSHA requirement 29 CFR 1910.27 and as described herein and as indicated on the contract drawings.

- B. Carrier rail assembly shall be 1-5/16-inch O.D. by 1-inch ID Type 6061-T6 aluminum notched .875-inches by .875-inches by 5/32-inches at 6-inch centers; tapped 3/8-inches at 9-inch centers opposite notches.
- C. Manhole rung clamp assembly shall be constructed from 6061-T6 aluminum 11-inches long by 1.25-inches wide with 2 slots 7/16-inches by 1.25-inches at 9-inch centers and serrated on one side.
- D. Safety locking mechanism shall be cast of manganese bronze with stainless steel springs, and drop forged links and snap-locking pawl shall be minimum tensile strength of 110,000 psi. Roller bearing shall be killian type. Stainless steel springs shall comply with Military Specification QQ-W-423B.
- E. Safety harness shall be adjustable to fit waists 30-inch to 48-inch. Belt shall be nylon web equipped with 3 stainless steel 'D' rings.
- F. Fall preventions systems shall be manufactured by DBI/SALA, Safe Approach or approved equal.

2.6 UNDERGROUND MARKING TAPE

- A. All storm piping installed under this project shall be marked and identified by use of a 4" wide marking detection tape. The marking detection tape shall consist of a minimum 0.35 mil thickness solid aluminum foil core running the full length and width that is impervious to all known alkalis, acids, chemical reagents and solvents likely to be encountered in the soil.
- B. The tape shall have imprinted the words "CAUTION BURIED STORM LINE BELOW" continuously over its entire length in permanent black ink for identification. Material shall be a vivid opaque color (safety green for storm) for maximum contrast with soil. Minimum weight shall be 5 pounds per 1000' unit and 3" width. Minimum tensile modulus shall be 27,000 psi and minimum tensile strength of 5,000 psi. The minimum overall thickness shall be 5.5 mils. The tape shall be as manufactured by Allen Systems, Inc. or equal.

PART 3 - EXECUTION

3.1 STORM DRAINAGE SYSTEMS

- A. Excavation:
 - 1. Excavate all pits and trenches to the proper depths and elevations.

2. The bottom of all trenches shall be graded to a uniform firm bearing for the pipe throughout its entire length.
3. All required shoring shall comply with OSHA regulations.

B. Base Materials:

1. Place level and true, and compact base materials for catch basins, yard drains and manholes.

C. Piping:

1. Control of Alignment and Grade
 - a. Lay pipes to proper elevations as indicated on drawings
 - b. The Contractor may use laser equipment to assist in setting the pipe provided he can demonstrate satisfactory skill in its use.
 - c. The use of string levels, hand levels, carpenter's levels or other curved devices for transferring grade or setting pipe are not permitted.
 - d. During construction, the Contractor shall provide the Engineer, at his request, all reasonable and necessary materials, opportunities, and assistance for setting stakes and making measurements, including the furnishing of one or two rodmen or chainmen as needed at intermittent times. He shall not proceed until he has made timely request of the Engineer for, and has received from him, such controls and instructions as may be necessary for the work to progress. The work shall then be done in strict conformity with such controls and instructions.
 - e. The Contractor shall carefully preserve benchmarks, reference points and stakes, and in case of willful or careless destruction by his own men, he will be charged with the resulting expense and shall be responsible for any mistakes or delay that may be caused by their unnecessary loss or disturbance.
2. Lay pipe by proceeding upgrade with the spigot ends of bell-and-spigot pipe. Lay the tongue ends of tongue-and-groove pipe pointing in the direction of flow.
3. Jointing Pipe
 - a. PVC pipe shall use Bell-and-Spigot with lock-in rubber gaskets. Ends of pipe are to be pushed home and the inner surfaces to be flush and even. PVC pipe shall have glued joints.
 - b. RCP shall be jointed as required by CONN DOT Form 817.
 - c. CPE pipe shall be jointed per the manufacturer and as required by CONN DOT Form 817.

4. Provide bedding material in accordance with the details and Section 312333.
- D. Construct CBø in accordance with requirements of Article 5.07.03 of the DOT Specification, Form 817.
- E. Backfill and compact all trenches and CBs, YDs and MHs as specified in Section 312333.
- F. Contractor will insure that at all times, the safety ribbons or barricades are erected around the outside of all open trenches when an excavation is left open overnight. Flashing lights will be at 15 foot intervals along the barrier to insure the safe visibility of nearby individuals. The contractor will be required to return to the site after hours, should an unsafe condition be indicted by the Owner, and will immediately provide whatever safety barriers are necessary to protect the public.
- G. At the completion of the project the Contractor shall clean the existing and proposed storm pipes and structures within the Contract Limit Line (CLL) as well as any sediment build-up outside the limits of construction resulting from construction activities. Pipes shall be flushed as necessary and the sumps of all basins shall be vacuumed in accordance with local procedures. All material removed from the system shall be disposed of in accordance with these specifications.

3.2 PRECAST CONCRETE MANHOLES

- A. Precast bases shall be placed on a layer of compacted bedding material as specified in Section 312333 and as shown on the Drawings. The excavation shall be properly dewatered while placing bedding material and setting the base.
- B. Inlet and outlet stubs shall be connected and sealed in accordance with the manufacturer's recommended procedure, and as shown on the Drawings.
- C. Barrel sections and cones of the appropriate combination of heights shall be placed, using manufacturer's recommended procedure for sealing the horizontal joints. Joint sealant shall be bitumastic sealant unless otherwise approved by the Engineer.
- D. The exterior asphaltic waterproofing shall be touched up after installation and shall be applied to the exterior of all joints in accordance with manufacturer's recommendations.
- E. The inverts and the shelf shall be constructed of brick. "Puddling" of steps in the invert shall be basis for rejection.
- F. The frame and cover shall be placed on the top of the manhole or some other approved means shall be provided to prevent accidental entry by unauthorized persons, children, animals, etc., until the Contractor is ready to make final adjustment to grade.

3.3 MANHOLE FRAMES AND COVERS

- A. Frames shall be set with the tops conforming accurately to the grade of the pavement or finished ground surface.

Frames shall be set concentric with the top of the masonry and in a full bed of mortar so that the space between the top of the manhole masonry and the bottom flange of the frame shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the masonry shall be placed all around and on the top of the bottom flange. The mortar shall be smoothly finished and have a slight slope to shed water away from the frame.

- B. Manhole covers shall be left in place in the frames on completion of other work at the manholes.

- C. Mixing Mortar:

1. ASTM C 270.

- D. Brick Masonry:

1. Only clean bricks shall be used in brickwork for grade adjustment and manhole inverts. The brick shall be moistened by suitable means, until they are in a surface dry, saturated condition.
2. Each brick shall be laid in full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and shall be thoroughly bonded.
3. Brick masonry shall be protected from too rapid drying by the use of burlap kept moist, or by other approved means, and shall be protected from the weather and frost, all as required.
4. All masonry joints, which are exposed to view, shall be examined to locate cracks, pointed up and filled with mortar. Where necessary, in the opinion of the Engineer, the joints shall be cut out and repointed with setting mortar of the same color as that of the original and adjoining work.
5. All brick masonry inverts will allow unimpeded flow. Steps or puddles will be basis for rejection.

3.4 MODIFY EXISTING STRUCTURES

- A. Manholes to be core drilled at the specified locations and elevations as noted on the Contract Drawings or as directed by the Owner. Jack hammering or hand work necessary for creating or enlarging the hole for the proposed pipe will not be allowed unless approved by the Owner in advance of the work.
- B. Existing manhole flowline/channels to be chipped out to accommodate proposed sewer pipe and redirect flow. Surface of flowline/channel to be worked to provide smooth surface. When the condition of the manhole is such that core drilling will cause damage to the manhole, the contractor may, upon approval of the owner, alter the manhole modification construction methods

to include hand methods or light jack hammering to create or enlarge the hole in the existing manhole wall, reblock or grout with non-shrink grout around the proposed pipe after installation or other construction methods as the Contractor may propose and are approved by the Owner to complete the work. This may include knocking down and rebuilding the existing manhole if approved by the Owner.

- C. The Contractor shall check condition and depth of existing structures which the proposed pipe is to be connected in the field prior to bidding to ensure he understands the nature and extent of the work.
- D. Work also includes converting structures from manholes to catch basins and from catch basins to manholes. Provide frame and covers as shown on the Contract Drawings. This work includes removal/lowering of top sections of structures and installing clay brick as necessary to install the proposed top at the proper grade. Concrete brick will not be allowed.
- E. This work also includes modifying existing structures to meet proposed grades. This work includes the removal of top sections of structures and installing clay brick and/or precast riser sections as necessary to install the proposed top at the proper grade. Concrete brick will not be allowed.

3.5 MAINTAINING EXISTING FLOW

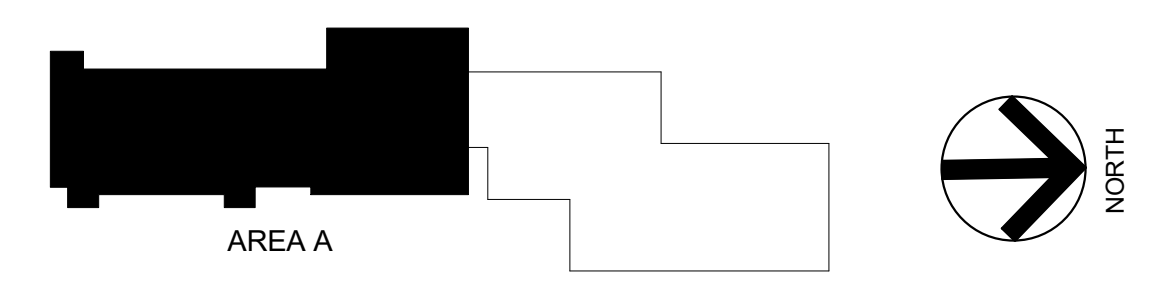
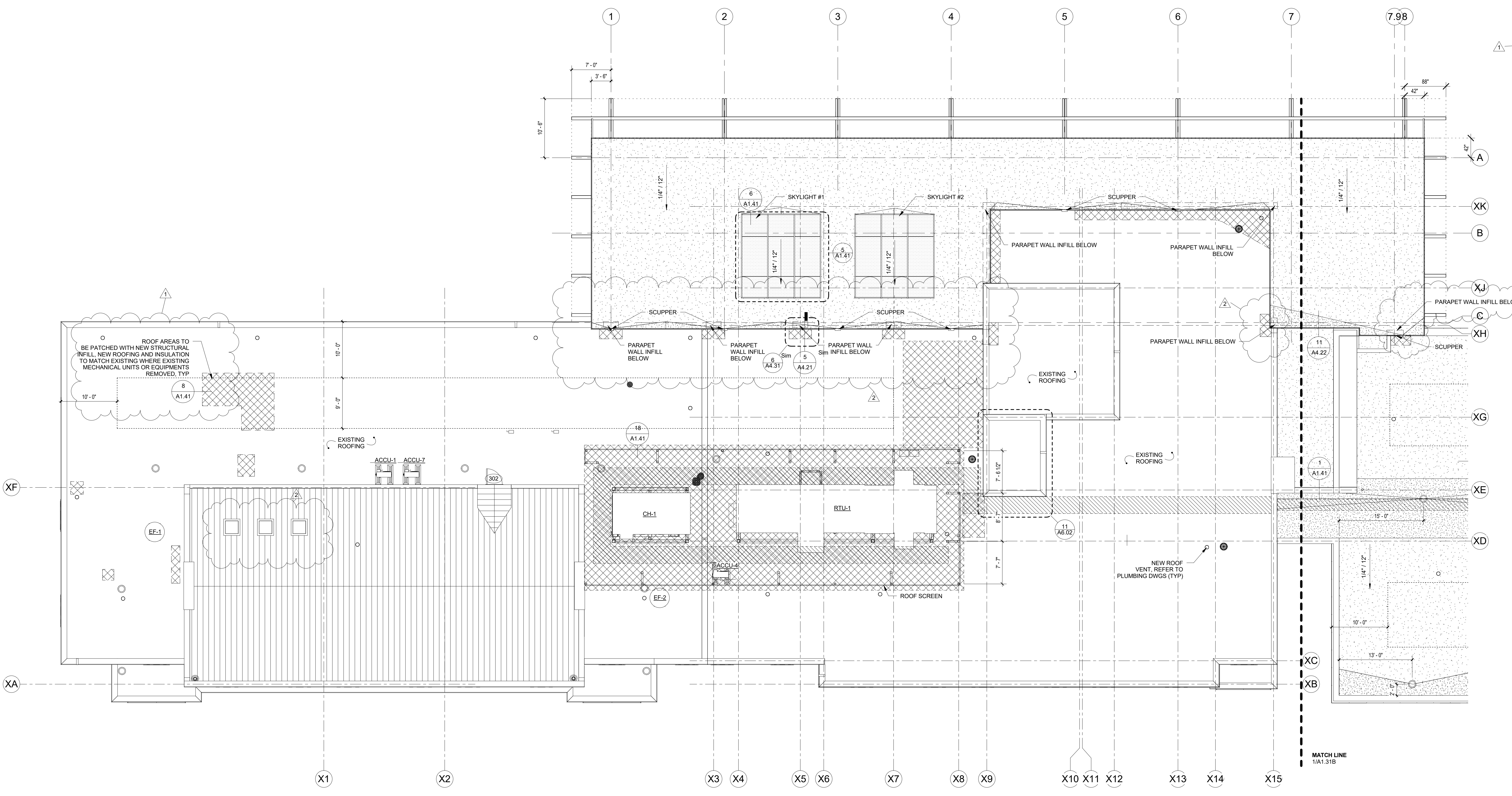
- A. In the course of performing this work, it may be necessary to intercept flows in existing storm drainage systems, as well as their associated service laterals or other miscellaneous connections. Included in the scope of this item shall be the temporary rerouting and maintenance of these flows so as not to interfere with the proposed work and without interruption of service. The method shall be the responsibility of the contractor, but shall be approved by the Owner in advance of the starting of the work. In order to receive approval of methods for temporary diversion or maintenance of existing storm drainage systems, the Contractor shall submit a written procedure, including any necessary sketches, plans and details, to the Owner at least two (2) weeks prior to starting construction.
- B. Submersible pumps shall be placed in the catch basin or manhole immediately upstream from work area. Outlet hoses or temporary diversion piping are to be placed along the gutter, or in other areas that do not interrupt or interfere with traffic. When hoses cross traffic lanes, hoses to be stabilized to prevent movement caused by crossing vehicles. Outlets are to be installed in the catch basin or manhole immediately downstream of work area.
- C. Open structures are to be properly barricaded and protected from passing vehicles. Structures are not to be left open overnight. Outlet pipes are to be temporarily plugged at upstream end and plugs are to be removed at end of each day.
- D. All storm drainage systems are to be restored to operating condition at the end of each working day.

END OF SECTION 334100

1 ROOF PLAN - AREA A
1/8" = 1'-0"

ROOF LEGEND	
[Pattern]	EXISTING METAL ROOF
[Pattern]	NEW EPDM WITH RIGID INSULATION
[Pattern]	NEW EPDM WITH TAPERED INSULATION
[Pattern]	NEW EPDM TO MATCH EXISTING (NEW ROOF INFILL)
[Symbol]	ROOF DUCT
[Symbol]	EXISTING ROOF DRAIN
[Symbol]	NEW ROOF DRAIN
[Symbol]	NEW ROOF DRAIN AT EXISTING DRAIN LOCATION
[Symbol]	FUTURE PV LOCATION
[Symbol]	WALKWAY/PAD

- ROOFING NOTES**
1. REMOVE AND REINSTALL EXISTING ROOF DRAINS ON AREAS WHERE NEW ROOF INFILL/PATCHING IS REQUIRED. ADD NEW BLOCKING, INSULATION, SUMP ETC. AS REQUIRED. SEE PLUMBING DWGS.
 2. LOCATION OF ALL ROOF DRAINS (EXISTING OR NEW) SHALL BE FIELD VERIFIED.
 3. PROVIDE CONT. WOOD BLOCKING AT ROOF DECK FLUTES AND ON ROOF DECK TO SUPPORT INSULATION, ROOF PARAPET FRAMING, MECHANICAL UNIT CURBS WHERE REQUIRED. (VIF)

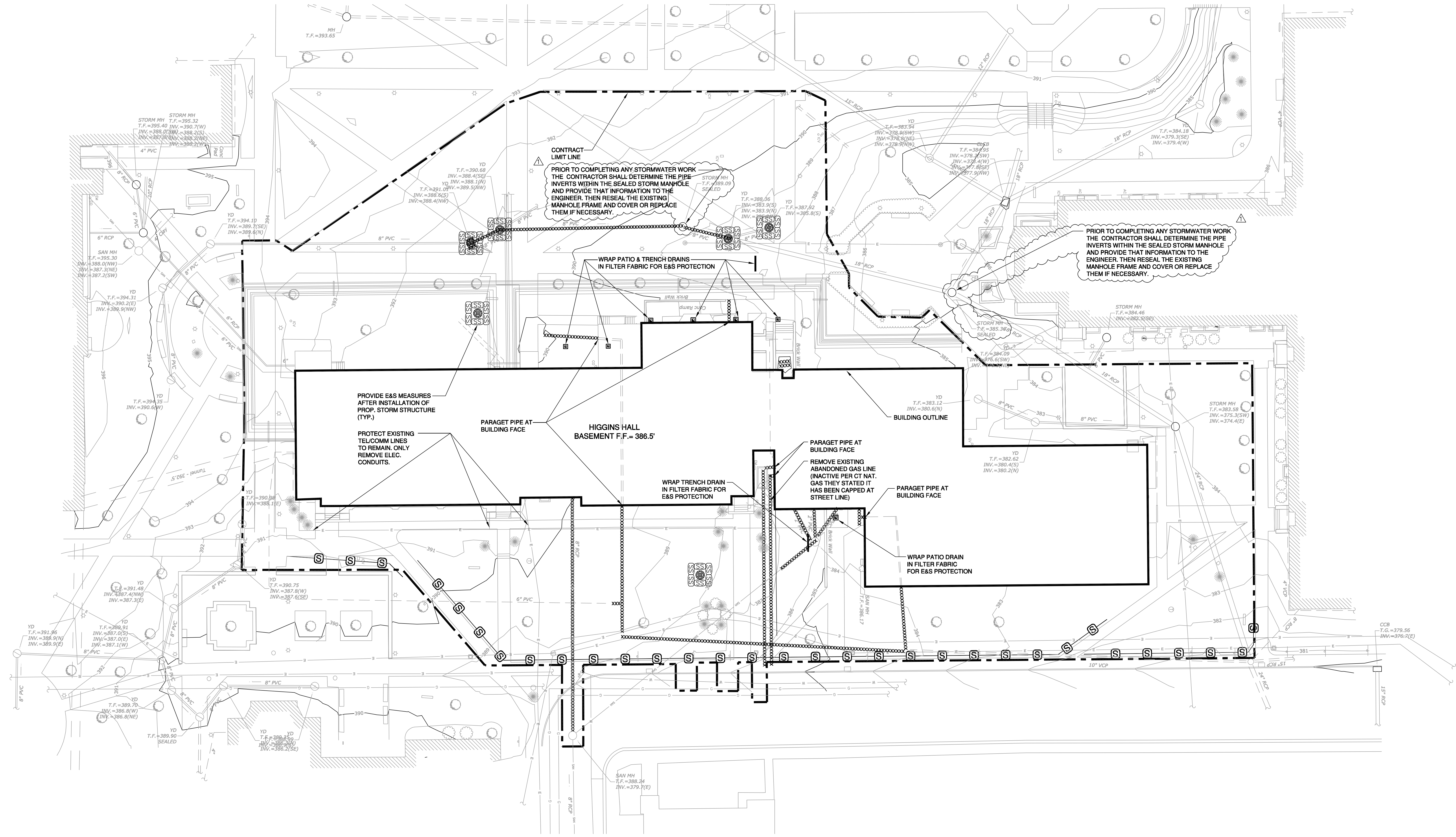


Drawing title ROOF PLAN - AREA A		STATE OF CONNECTICUT DEPARTMENT OF ADMINISTRATIVE SERVICES DIVISION OF CONSTRUCTION SERVICES	
SUBMISSIONS		drawing prepared by TSKP STUDIO	
mark	date	description	date
1	01/29/2018	100% CD BID PACKAGE	
REVISIONS		project WCSU RENOVATIONS TO HIGGINS HALL AND ANNEX	
mark	date	description	scale
1	03/14/2018	100% CD BID PKG Suppl. #1	As indicated
2	03/26/2018	100% CD BID PKG Suppl. #3	
approved by		drawing no. A1.31A	
DANBURY, CT		state project no. BI-RD-290	
		office project no. 150501	

3/26/2018 4:43:25 PM C:\Users\mahm\Documents\150501 WCSU Higgins Hall-Central-2018_mahm\tskpc.com.rvt

DOOR AND FRAME SCHEDULE																
NUMBER	DETAIL DRAWING SHEET #	DOOR				FRAME				FIRE RATING (MINS)	SIGNAGE REQUIRED	TEXT	INTER. SYMBOL OF ACCESSIBILITY	HARDWARE SET NUMBER	REMARKS	
		SIZE		TYPE / MATERIAL	TYPE / MATERIAL	HEAD DETAIL	JAMB DETAIL	SADDLE DETAIL	FIRE RATING (MINS)							
		WIDTH	HEIGHT	MATERIAL	TYPE											
007	1	3'-0"	7'-0"	HM	D1	HM	EXIST	H7	J7			Y	MDF	-	35	
008	2	6'-0"	7'-0"	HM	D1	HM	F1	H4	J4			Y	ELECTRICAL	-	15	
008A	1	3'-6"	7'-0"	HM	D1	HM	F1	H3	J3			-	-	-	26	
008B	1	3'-0"	7'-0"	HM	D1	HM	F1	H3	J3			-	-	-	26	
010	2	6'-0"	6'-8"	HM	D1	HM	EXIST	-	-			Y	MECHANICAL	-	40	
011	2	6'-0"	7'-0"	WD	D3	HM	F1	H4 SIM	J4 SIM			Y	MECHANICAL	-	20	
017	2	6'-0"	7'-0"	WD	D1	HM	F1	H2	J2			Y	MEDIA STORAGE	-	20	
019	1	3'-6"	7'-0"	WD	D1	HM	EXIST	-	-			Y	MECHANICAL	-	41	
020A	1	3'-0"	7'-0"	WD	D1	HM	F1	H1	J1			Y	IDF	-	16	
020B	1	3'-0"	7'-0"	WD	D1	HM	F1	H1	J1		60 Min	Y	MECHANICAL	-	23	
021	1	3'-0"	7'-0"	WD	D1	HM	EXIST	H7	J7			Y	STORAGE	-	35	
022	-	3'-0"	7'-0"	-	-	HM	F1	H10	J10			-	-	-	6	
022A	1	3'-0"	7'-0"	WD	D1	HM	EXIST	-	-			Y	STORAGE	-	41	
024	2	6'-0"	7'-0"	WD	D1	HM	EXIST	-	-			Y	RECYCLING	-	20	
025	2	6'-0"	7'-0"	WD	D1	HM	EXIST	-	-		60	Y	STORAGE	-	42	
026	1	3'-0"	7'-0"	WD	D1	HM	EXIST	-	-		T4	Y	STORAGE	-	41	
027	1	2'-6"	7'-0"	WD	D1	HM	F1	H1	J1	T4		Y	STORAGE	-	24	
028	1	3'-0"	7'-0"	WD	D1	HM	F1	H8	J8	T3		Y	MECHANICAL	-	43	3
029	1	3'-0"	7'-0"	WD	D3	HM	F1	H6	J6	T1		Y	COMPUTER LAB	-	17	
030	1	3'-0"	7'-0"	WD	D1	HM	EXIST	-	-	T2		Y	MEN'S	-	31	
031	1	3'-0"	7'-0"	WD	D3	HM	F1	H6	J6	T1		Y	COMPUTER LAB	-	17	
032	1	3'-0"	7'-0"	WD	D3	HM	EXIST	-	-	T3		Y	SERVER TEACHING	-	17	
033	1	3'-0"	7'-0"	WD	D3	HM	F1	H6	J6	T1		Y	ADJUNCT SUITE	-	17	
033A	1	3'-0"	7'-0"	WD	D4	HM	F1	H1	J1			Y	MEETING	-	25	
034	1	3'-0"	7'-0"	WD	D1	HM	EXIST	-	-	T2		Y	WOMEN'S	-	31	
035	1	3'-0"	7'-0"	WD	D3	HM	F3	H6	J6			Y	IT	-	36	
035A	1	3'-0"	7'-0"	WD	D1	HM	EXIST	-	-			Y	IT	-	36	
035B	1	3'-0"	7'-0"	WD	D1	HM	EXIST	-	-			Y	IT	-	36	
036	1	3'-0"	7'-0"	WD	D3	HM	EXIST	-	-	T1	60 Min	Y	WORK ROOM	-	38	2
037	1	3'-0"	7'-0"	WD	D1	HM	EXIST	-	-	T3	60 Min	Y	ELEVATOR MACHINE ROOM	-	53	9
038	1	3'-0"	7'-0"	WD	D1	HM	EXIST	-	-	T2		Y	CUSTODIAL	-	41	
039	1	3'-0"	7'-0"	WD	D3	HM	F1	H6	J6	T1		Y	COMPUTER SCIENCES OFFICE SUITE	-	17	
039A	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
039B	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
039C	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
039D	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
039E	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
039F	1	3'-0"	7'-0"	WD	D4	HM	F1	H1	J1			Y	CONFERENCE	-	25	2
040	1	3'-0"	7'-0"	WD	D3	HM	F1	H6	J6			Y	3D PRINTER	-	17	
040A	1	3'-0"	7'-0"	WD	D3	HM	F1	H1	J1	T1		Y	GRAPHICS RESEARCH LAB	-	16	
040B	1	3'-0"	7'-0"	WD	D3	HM	F1	H1	J1	T1		Y	MULTI DEPARTMENT RESOURCE	-	16	
040C	1	3'-0"	7'-0"	WD	D3	HM	F1	H1	J1	T1		Y	STUDENT RESEARCH LAB	-	16	
041	1	3'-0"	7'-0"	WD	D3	HM	F1	H6	J6	T1		Y	COMPUTER LAB	-	17	
042	1	3'-0"	7'-0"	WD	D3	HM	F1	H6	J6	T1		Y	SEMINAR	-	17	2
101	1	3'-0"	7'-0"	WD	D3	HM	EXIST	H7	J7	T1		Y	MATH DEPARTMENT OFFICE SUITE	-	37	
101A	1	3'-0"	7'-0"	WD	D4	HM	F1	H1	J1			Y	OFFICE	-	25	1
101B	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
101C	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
101D	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
101E	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
101F	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
101G	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
101H	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
101J	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
101K	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
101L	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
101M	1	3'-0"	7'-0"	WD	D3	HM	F1	H1	J1			Y	WORK ROOM	-	25	
101N	1	3'-0"	7'-0"	WD	D4	HM	F1	H1	J1			Y	OFFICE	-	25	1
102	1	3'-0"	7'-0"	WD	D1	HM	F1	H6	J6	T2		Y	STORAGE	-	22	
102B	1	2'-6"	7'-0"	WD	D1	HM	EXIST	-	-	T2		Y	CUSTODIAL	-	38	
103	1	3'-0"	7'-0"	WD	D3	HM	EXIST	H7	J7	T2		Y	SEMINAR	-	37	2
104	1	3'-0"	7'-0"	WD	D3	HM	EXIST	H7	J7	T1		Y	COMPUTER LAB	-	37	
104A	1	3'-0"	7'-0"	WD	D3	HM	F1	H9	J9	T1		-	-	-	55	10
105	1	3'-0"	7'-0"	WD	D1	HM	F1	H6	J6	T2		Y	MEN'S	-	30	
106	1	3'-0"	7'-0"	WD	D1	HM	F1	H6	J6	T2		Y	WOMEN'S	-	30	
107	1	3'-0"	7'-0"	WD	D3	HM	EXIST	-	-	T1		Y	CONFERENCE	-	38	2
108	1	3'-0"	7'-0"	WD	D3	HM	F1	H9	J9	T1		Y	MATH CLINIC	-	16	2
108A	1	3'-0"	7'-0"	WD	D4	HM	F1	H1	J1			Y	BREAKOUT	-	25	2
108B	1	3'-0"	7'-0"	WD	D4	HM	F1	H1	J1			Y	BREAKOUT	-	25	2
108C	1	3'-0"	7'-0"	WD	D4	HM	F1	H1	J1			Y	BREAKOUT	-	25	2
109	1	3'-0"	7'-0"	WD	D3	HM	F2	H9	J9			Y	ADMIN SUITE	-	17	
109A	1	3'-0"	7'-0"	WD	D3	HM	F1	H1	J1			Y	COPY	-	25	
109B	1	3'-0"	7'-0"	WD	D2	HM	F3	H1	J1			Y	DEAN'S SUITE	-	25	2
109C	1	3'-0"	7'-0"	WD	D2	HM	F3	H1	J1			Y	OFFICE	-	25	
110	1	3'-0"	7'-0"	WD	D3	HM	F1	H9	J9	T1		Y	CLASSROOM	-	17	2
110A	2	6'-0"	7'-0"	WD	D1	HM	F1	H1	J1			Y	STORAGE	-	19	
110B	2	6'-0"	7'-0"	WD	D1	HM	F1	H1	J1			Y	MECHANICAL	-	19	3
112	1	3'-0"	6'-10"	AL	D4	AL	-	1/A5.01	2/A5.01	T5		Y	STUDY	-	11	2
113	1	3'-0"	6'-10"	AL	D4	AL	-	1/A5.01	2/A5.01	T5		Y	STUDY	-	11	2
115	1	3'-0"	7'-0"	WD	D1	HM	F1	H2	J2	T2		Y	CUSTODIAL	-	22	
115A	1	3'-0"	7'-0"	WD	D1	HM	F1	H1	J1			-	-	-	24	
116	1	3'-0"	7'-0"	WD	D3	HM	F1	H6	J6	T1		Y	CLASSROOM	-	17	2
117	1	3'-0"	7'-0"	WD	D3	HM	F1	H6	J6	T1		Y	CLASSROOM	-	17	2
118	1	3'-0"	7'-0"	WD	D3	HM	F1	H6	J6	T1		Y	CLASSROOM	-	17	2
119	1	1'-6"	7'-0"	WD	D1	HM	EXIST	-	-			-	-	-	45	
120	1	3'-0"	7'-0"	WD	D3	HM	EXIST	H7	J7			Y	STAFF LOUNGE	-	46	
121	1	3'-0"	7'-0"	WD	D1	HM	EXIST	H7	J7	T2		Y	TOILET	-	47	
122	1	3'-0"	7'-0"	WD	D3	HM	EXIST	-	-	T4		Y	MATH EMPORIUM	-	37	
122A	1	3'-0"	7'-0"	WD	D4	HM	EXIST	-	-			-	-	-	49	
122B	1	3'-0"	7'-0"	WD	D4	HM	EXIST	-	-			-	-	-	49	
122C	1	3'-0"	7'-0"	WD	D3	HM	EXIST	-	-	T4		-	-	-	35	
122D	1	3'-0"	7'-0"	WD	D3	HM	EXIST	-	-	T4		-	-	-	37	
123	1	3'-0"	7'-0"	WD	D1	HM	EXIST	-	-			Y	STORAGE	-	41	
123A	1	3'-0"	7'-0"	WD	D1	HM	EXIST	H7	J7	T1		Y	STORAGE	-	41	
124	1	3'-0"	7'-0"	WD	D3	HM	F1	H7	J7	T1		Y	COMPUTER LAB	-	37	
124A	1	3'-0"	7'-0"	WD	D3	HM	EXIST	-	-			Y	COPY	-	46	
124B	1	3'-0"	7'-0"	WD	D3	HM	F1	H9	J9	T1		-	-	-	55	
125	1	3'-0"	7'-0"	WD	D3	HM	F1	H6	J6	T1		Y	COMPUTER LAB	-	17	
201	1	3'-0"	7'-0"	WD	D3	HM	F1	H6	J6	T1		Y	COMM/MEDIA ARTS OFFICE SUITE	-	17	
201A	1	3'-0"	7'-0"	WD	D2	HM	F1	H1	J1			Y	OFFICE	-	25	1
201B	1	3'-0"	7'-0"	WD	D2	HM	F1	H1	J1			Y	OFFICE	-	25	1
201C	1	3'-0"	7'-0"	WD	D3	HM	F1	H1	J1			Y	WORK ROOM	-	25	
201D	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
201E	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
201F	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
201G	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1
201H	1	3'-0"	7'-0"	WD	D2	HM	F4	H1	J1			Y	OFFICE	-	25	1

DOOR AND FRAME SCHEDULE															
NUMBER	DETAIL DRAWING SHEET #	DOOR				FRAME				FIRE RATING (MINS)	SIGNAGE REQUIRED	TEXT	INTER. SYMBOL OF ACCESSIBILITY	HARDWARE SET NUMBER	REMARKS
		SIZE		TYPE / MATERIAL	TYPE / MATERIAL	HEAD DETAIL</									



CONTRACT LIMIT LINE
 PRIOR TO COMPLETING ANY STORMWATER WORK THE CONTRACTOR SHALL DETERMINE THE PIPE INVERTS WITHIN THE SEALED STORM MANHOLE AND PROVIDE THAT INFORMATION TO THE ENGINEER. THEN RESEAL THE EXISTING MANHOLE FRAME AND COVER OR REPLACE THEM IF NECESSARY.

PRIOR TO COMPLETING ANY STORMWATER WORK THE CONTRACTOR SHALL DETERMINE THE PIPE INVERTS WITHIN THE SEALED STORM MANHOLE AND PROVIDE THAT INFORMATION TO THE ENGINEER. THEN RESEAL THE EXISTING MANHOLE FRAME AND COVER OR REPLACE THEM IF NECESSARY.

PROVIDE E&S MEASURES AFTER INSTALLATION OF PROP. STORM STRUCTURE (TYP.)
 PROTECT EXISTING TELECOM LINES TO REMAIN. ONLY REMOVE ELEC. CONDUITS.

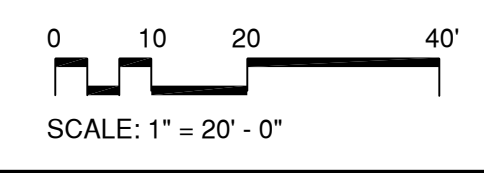
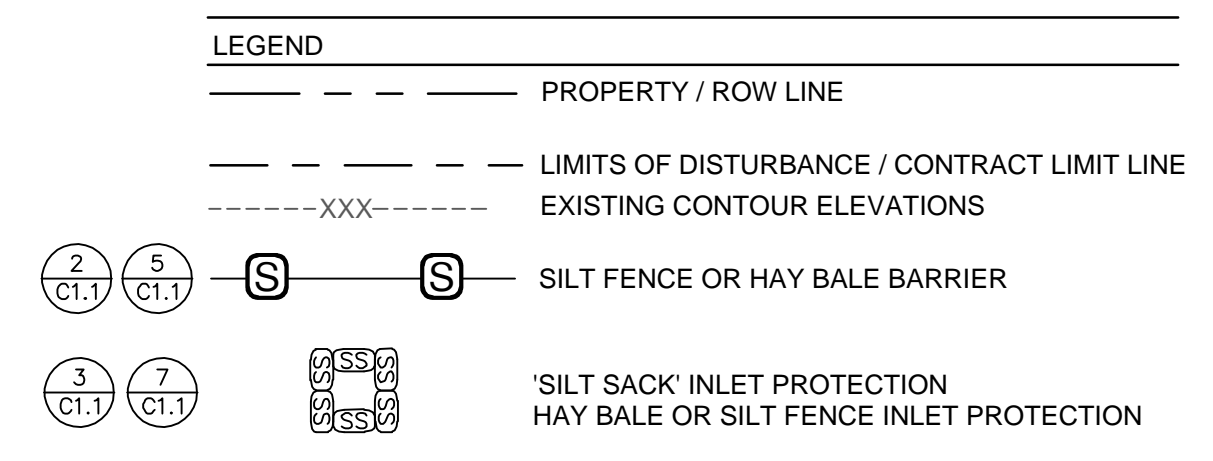
PARAGET PIPE AT BUILDING FACE
HIGGINS HALL BASEMENT F.F. = 386.5'

WRAP TRENCH DRAIN IN FILTER FABRIC FOR E&S PROTECTION
 REMOVE EXISTING ABANDONED GAS LINE (INACTIVE PER CT NAT. GAS THEY STATED IT HAS BEEN CAPPED AT STREET LINE)

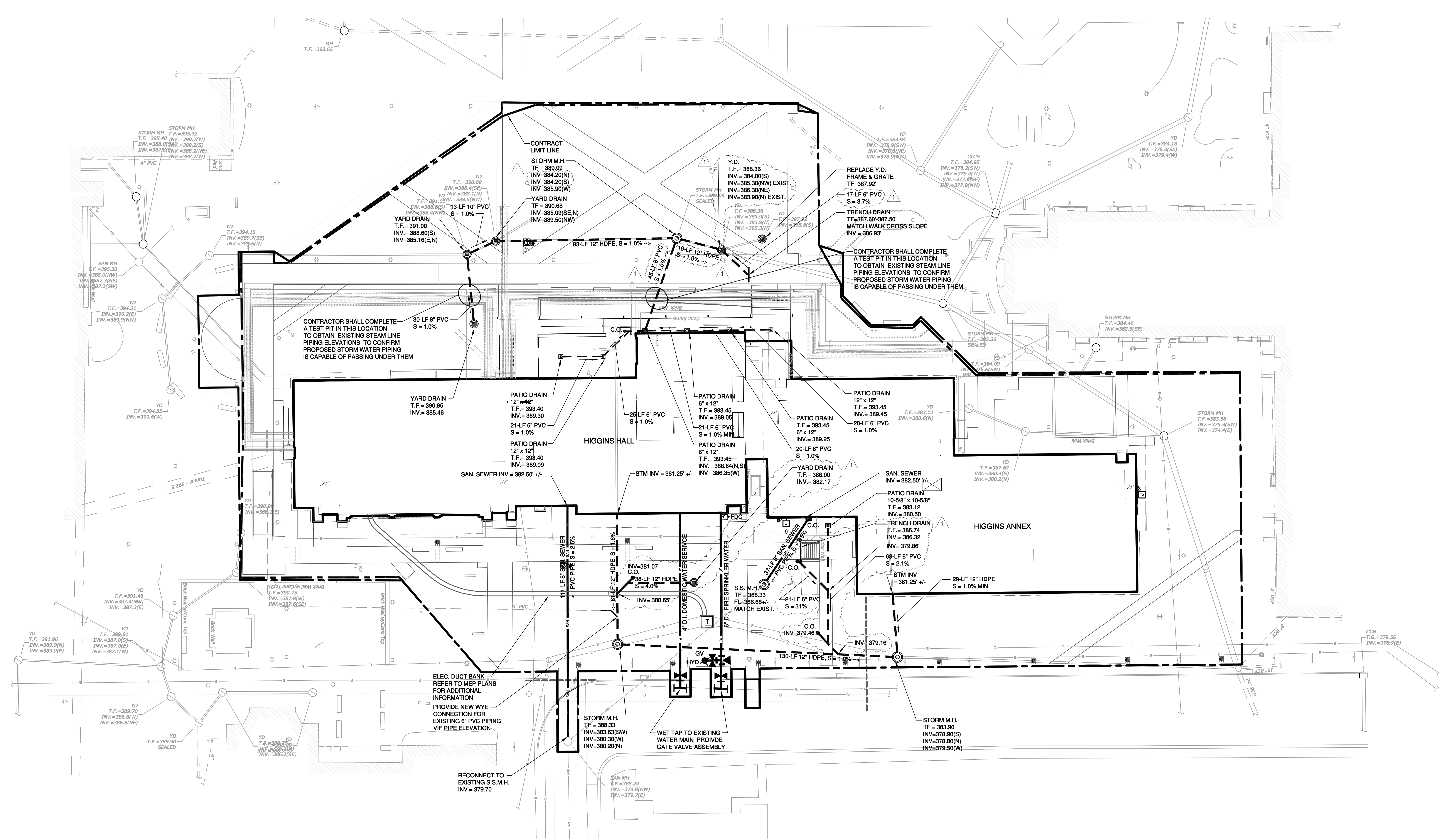
WRAP PATIO DRAIN IN FILTER FABRIC FOR E&S PROTECTION

GENERAL CONSTRUCTION NOTES:

1. VERIFY ALL UTILITY LOCATIONS - CALL BEFORE YOU DIG (CBYD) 811. IN THE EVENT CBYD IS UNABLE TO LOCATE THE EXISTING UTILITIES IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AN UNDERGROUND UTILITY MARKING COMPANY TO LOCATE THEM AT NO ADDITIONAL COST TO THE OWNER.
2. UTILITY INFORMATION SHOWN IS TAKEN FROM UTILITY MAPS AND LIMITED FIELD INFORMATION. CONTRACTOR IS RESPONSIBLE FOR FINAL VERIFICATION OF UTILITY LOCATIONS AFFECTING THE PROPOSED WORK AND ANY ASSOCIATED FIELD MODIFICATIONS. ANY MODIFICATION TO THE WORK OUTLINED IN THESE PLANS OR THE PROJECT SPECIFICATIONS SHALL BE TO THE SATISFACTION OF THE ENGINEER.
3. EXISTING CONDITIONS SHOWN ON THESE DRAWINGS ARE AS PER BOUNDARY AND TOPOGRAPHIC SURVEY PREPARED BY MILONE & MACBROOM INC. ANY DISCREPANCY BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. ALL PROPOSED CONSTRUCTION IS TO BE COMPLETED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS. NO CHANGES TO THE PROPOSED CONSTRUCTION SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL FROM THE DEPARTMENT OF ADMINISTRATIVE SERVICES.
4. ALL ITEMS TO BE REMOVED SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH ALL FEDERAL AND STATE REGULATIONS AND THE SPECIFICATIONS.
5. ALL EXISTING UTILITIES PROVIDING SERVICE TO THE BUILDING SHALL REMAIN IN OPERATION UNTIL NEW UTILITIES ARE INSTALLED AND OPERATIONAL. THE CONTRACTOR SHALL PROVIDED ANY TEMPORARY UTILITIES TO ENSURE THAT ALL SERVICES PROVIDED TO THE BUILDING REMAIN OPERATIONAL.
6. ~~XXXXXXXX~~ INDICATES REMOVAL OF EXISTING UTILITY.
7. ALL OF THE EXISTING CABLE TV, FIBER OPTICS, TELEPHONE, FIRE ALARM, SITE LIGHTING INCLUDING WIRING AND/OR CONDUITS IS INTENDED TO BE REMOVED AND/OR REROUTED. REFER TO THE ELECTRICAL PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
8. THE CONTRACTOR SHALL BE RESPONSIBILITY FOR ALL UTILITY CONNECTION AND INSPECTION FEES.

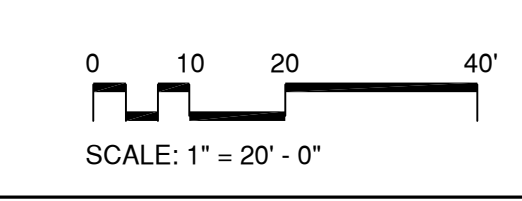


drawing title E&S CONTROL AND UTILITY DEMOLITION PLAN		STATE OF CONNECTICUT DEPARTMENT OF ADMINISTRATIVE SERVICES DIVISION OF CONSTRUCTION SERVICES	
SUBMISSIONS		drawing prepared by: MACCHI ENGINEERS, LLC 44 GILLET STREET HARTFORD, CONNECTICUT	
mark	date	description	scale
01.1	01.1	100% CD BID PACKAGE	
REVISIONS		project WESTERN CONNECTICUT STATE UNIVERSITY, RENOVATIONS TO HIGGINS HALL AND HIGGINS ANNEX	
mark	date	description	drawn by
1	03/26/2016	100% CD BID PKG Suppl. #3	
		approved by	DATE
state project no. BI-RO-290		office project no.	C1.0



UTILITY NOTES:

- ALL UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH EACH UTILITY COMPANY'S REGULATIONS. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE RESPECTIVE UTILITY COMPANY (CITY OF DANBURY, EVERSOURCE, FRONTIER, ETC.)
- UTILITY INFORMATION SHOWN IS TAKEN FROM UTILITY MAPS AND LIMITED FIELD INFORMATION. CONTRACTOR IS RESPONSIBLE FOR FINAL VERIFICATION OF UTILITY LOCATIONS AFFECTING THE PROPOSED WORK AND ANY ASSOCIATED FIELD MODIFICATIONS. TEST PITS ARE REQUIRED AND SHALL BE INCLUDED. ANY MODIFICATION TO THE WORK OUTLINED IN THESE PLANS OR THE PROJECT SPECIFICATIONS SHALL BE TO THE SATISFACTION OF THE ENGINEER.
- THE SITE CONTRACTOR SHALL PROVIDE ALL PLUMBING CONNECTION APPURTENANCES, (FITTINGS, REDUCERS, ENLARGERS, WYES, TEES, ETC.) AS REQUIRED TO MAKE THE NECESSARY CONNECTIONS. REFER TO BUILDING PLUMBING PLANS FOR ADDITIONAL UTILITY INFORMATION.
- SITE ELECTRICAL AND LIGHTING IS SHOWN FOR REFERENCE ONLY. REFER TO ELECTRICAL PLANS, DETAILS, AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- CONTACT CALL BEFORE YOU DIG (811) AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION AND AS EACH UTILITY IS TO BE INSTALLED, IN THE EVENT CALL BEFORE YOU DIG IS UNABLE TO LOCATE THE UTILITIES IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HIRE A PRIVATE UTILITY LOCATING COMPANY AT NO ADDITIONAL COST TO THE OWNER.
- ALL EXISTING MANHOLE FRAMES AND COVERS, UTILITY BOXES AND VALVE COVERS SHALL BE ADJUSTED TO FINAL GRADE AS REQUIRED.
- ALL EXISTING UTILITIES SYSTEMS SHALL REMAIN IN OPERATION UNTIL NEW STORM DRAINAGE SYSTEM HAS BEEN INSTALLED.
- THE SITE CONTRACTOR SHALL PROVIDE TRENCHING/BACK FILLING, PAVEMENT CUTTING/RESTORATION AND TURF RESTORATION AS REQUIRED FOR THE GAS COMPANY'S PIPING. THE CONTRACTOR SHALL COORDINATE WITH THE GAS COMPANY'S SCHEDULE AS REQUIRED TO COMPLETE THIS WORK. ALL WORK SHALL MEET OR EXCEED THE GAS COMPANY REQUIREMENTS.
- THE CONTRACTOR SHALL PROVIDE THE CITY UTILITY DEPT. A MINIMUM OF 48-HOURS NOTICE PRIOR TO COMPLETING ANY OF THE CITY'S UTILITY WORK.
- ALL EXISTING TRENCH DRAINS WITHIN THE PROJECT AREA SHALL BE CLEANED OUT AND OUTLET PIPES CLEANED TO THEIR PERSPECTIVE OUTLET.

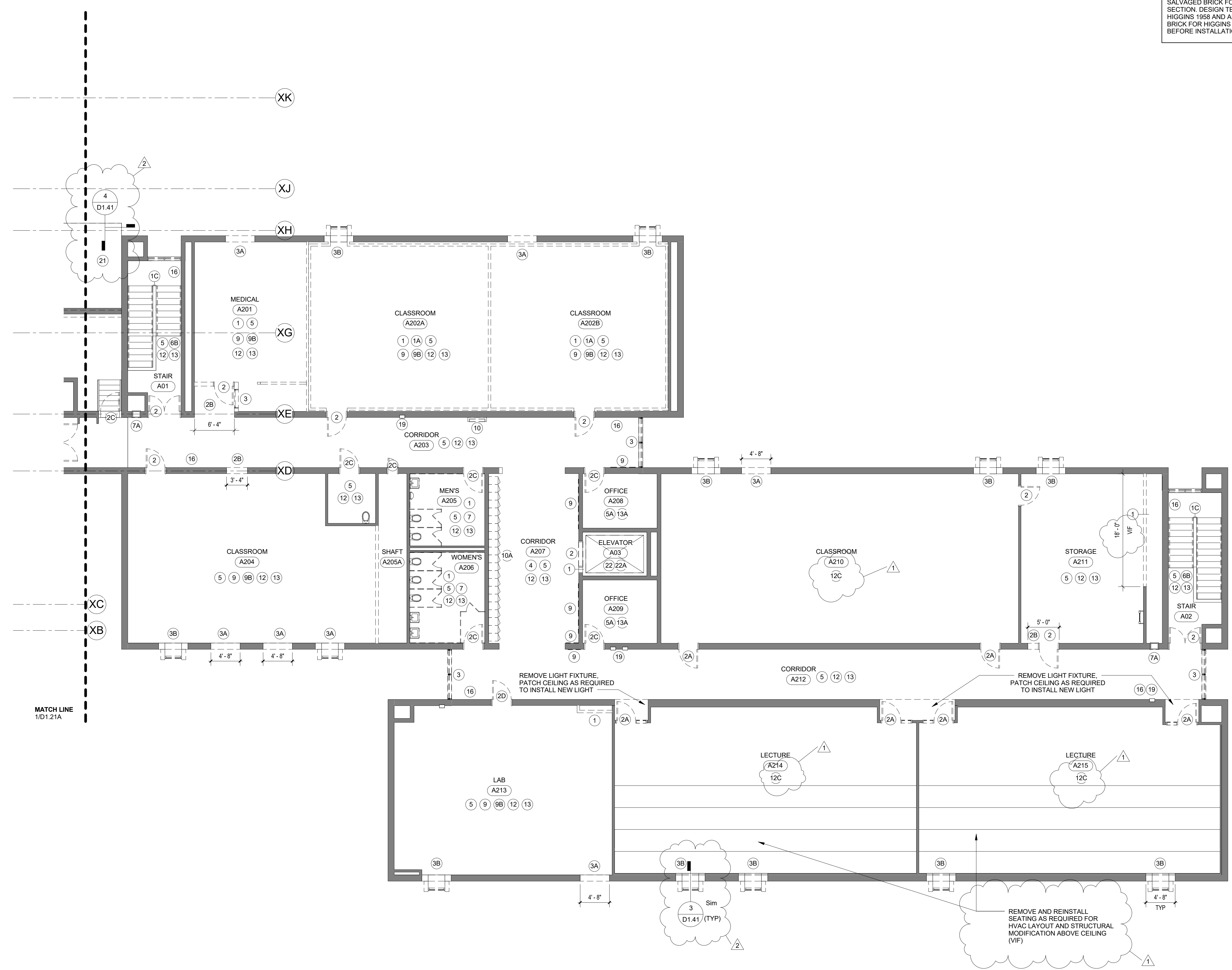


SITE UTILITY PLAN		STATE OF CONNECTICUT DEPARTMENT OF ADMINISTRATIVE SERVICES DIVISION OF CONSTRUCTION SERVICES	
SUBMISSIONS		drawing prepared by:	
mark	date	description	date
	01/29/2018	100% CD BID PACKAGE	
REVISIONS		drawing prepared by:	
mark	date	description	date
1	03/26/2018	100% CD BID PKG Suppl. #3	
		project:	
		MACCHI ENGINEERS, LLC 44 GILLET STREET HARTFORD, CONNECTICUT	
		project:	
		WESTERN CONNECTICUT STATE UNIVERSITY, RENOVATIONS TO HIGGINS HALL AND HIGGINS ANNEX	
		approved by:	
		state project no. BI-RO-290	
		office project no.	
		drawing no. C2.0	

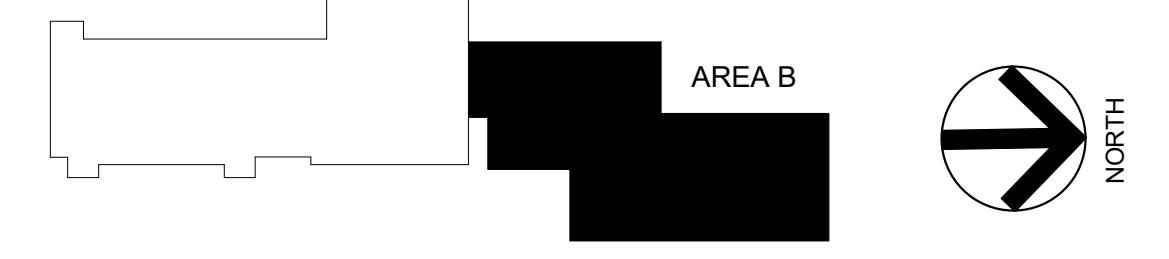
- GENERAL NOTES**
- CUT OUT AND REMOVE EXISTING EXPANSION JOINT SEALANT AND BACKER ROD FULL HEIGHT OF WALL, RESEAL WITH NEW SEALANT AND BACKER ROD PER SPECIFICATION. SEE 5/44.41.
 - COORDINATE REPOINTING AND EXTERIOR BRICK WORK WITH EXTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION.
 - CLEAN ALL MASONRY UNITS TO BE REMOVED AND REINSTALLED FREE FROM ALL ORGANIC GROWTH, MORTAR ETC. - ALL UNIT SURFACES.
 - REMOVE ALL EXISTING EXTERIOR LIGHT FIXTURES.
 - REFER TO MEP DRAWINGS FOR AREAS WHERE SLAB DEMOLITION REQUIRED TO INSTALL NEW PIPING OR REMOVE EXISTING, AND COORDINATE IN FIELD.
 - REMOVE FLOORING TO CONCRETE SLAB ON ENTIRE AREA OF ROOM OR CORRIDOR WHERE FLOORING IS DEMOLISHED DUE TO NEW MEP PIPING INSTALLATION ON LOWER LEVEL AREA A.
 - SEE ABATEMENT DRAWINGS FOR ADDITIONAL REMOVAL INFORMATION.
 - COORDINATE WITH MEP DRAWINGS FOR VENT REMOVAL AND ADDITIONAL REMOVAL INFORMATION.
 - REFER TO MEP AND STRUCTURAL DRAWINGS FOR ADDITIONAL DEMO SCOPE.
 - EXISTING SALVAGED BRICK ON EXISTING BUILDING SHALL BE SORTED BASED ON DIFFERENT BUILDING SECTIONS BUILT IN DIFFERENT YEARS. NOTE THAT EACH SECTION HAS DIFFERENT COLOR AND TYPE OF BRICK. CONTRACTOR IS RESPONSIBLE TO PROVIDE ENOUGH SALVAGED BRICK FOR INFILLS OR NEW WALLS REQUIRING SALVAGED BRICK PER EACH SECTION. DESIGN TEAM ANTICIPATE THAT THERE SHOULD BE ENOUGH SALVAGED BRICK FOR HIGGINS 1958 AND ANNEX 1987. NEW BRICK CAN BE PROVIDED IN ADDITION TO SALVAGED BRICK FOR HIGGINS 1948. A MOCK-UP SHALL BE PROVIDED FOR REVIEW OF ARCHITECT BEFORE INSTALLATION OF NEW AND EXISTING BRICK. MORTAR COLORS TO MATCH EXISTING.

- DEMOLITION KEYNOTES**
- REMOVE WALL/PARTITION AS INDICATED
 - REMOVE FURRING WALL
 - REMOVE TILE AND GROUT FROM WALL, GRIND AND SMOOTH SURFACE
 - REMOVE PORTION OF STAIR WALL TO MEET CODE REQUIRED LANDING DIMENSIONS
 - REMOVE DOOR AND FRAME
 - REMOVE DOOR PANEL AND HARDWARE, SALVAGE AND TURN OVER TO OWNER, FRAME TO REMAIN
 - REMOVE PORTION OF WALL TO ACCOMMODATE NEW DOOR
 - REMOVE DOOR PANEL AND DOOR HARDWARE, EXISTING FRAME TO REMAIN
 - REMOVE DOOR AND FRAME, LINTEL AND OPENING SUPPORT TO REMAIN FOR NEW DOOR AND FRAME
 - REMOVE DOOR AND FRAME, LINTEL AND OPENING SUPPORT TO REMAIN FOR NEW FRAME
 - REMOVE WINDOW WALL AND ASSOCIATED BLOCKING (VF), EXISTING LINTEL TO REMAIN
 - REMOVE PORTION OF WALL TO ACCOMMODATE FOR NEW WINDOW
 - REMOVE EXTRUDED WINDOW WALL, SEE ELEVATIONS & DETAIL NOTED ON DEMO DETAILS
 - REMOVE CASEWORK
 - REMOVE FLOORING DOWN TO CONCRETE SLAB, REMOVE BASE
 - FLOORING DEMOLISHED IN ABATEMENT PHASE, REMOVE ANY REMAINING FLOORING DOWN TO CONCRETE BASE.
 - REMOVE STAIR
 - REMOVE EXTERIOR STAIR
 - REMOVE EXISTING HANDRAIL
 - REMOVE PLUMBING FIXTURE, SEE PLUMBING DEMO DWGS
 - REMOVE DRINKING FOUNTAIN
 - REMOVE SLAB WHERE REQUIRED FOR PLUMBING WORK OR OTHER UNDERSLAB WORK, COORDINATE WITH PLUMBING AND STRUCTURAL DRAWINGS, REFER TO MEP DWGS FOR ADDITIONAL SCOPE OF WORK.
 - REMOVE MARKER CHALK/ TACK BOARD
 - REMOVE PROJECTOR AND TURN OVER TO OWNER
 - REMOVE TV AND MOUNT, TURN OVER TO OWNER
 - REMOVE DISPLAY CASE
 - REMOVE LOCKERS AND CONCRETE BASE
 - REMOVE CONCRETE BASE
 - REMOVE EQUIPMENT
 - REMOVE CEILING AND SUPPORTING CONSTRUCTION, DEMO TO EXPOSE BOTTOM OF FLOOR SLAB AND EXISTING STRUCTURE.
 - REMOVE EXISTING CEILING TILES, EXISTING GRID TO REMAIN, SALVAGE LIGHT FIXTURES TO BE REPLACED IN SAME LOCATION.
 - REMOVE TWO LAYERS OF CEILING AND SUPPORTING CONSTRUCTION, DEMO TO EXPOSE BOTTOM OF FLOOR SLAB AND EXISTING STRUCTURE.
 - REMOVE CEILING AND SUPPORTING STRUCTURE, PROTECT GWS SOFFITS, SALVAGE / PROTECT EXISTING LIGHT FIXTURES, PROJECTION SCREEN, SPEAKERS, DIFFUSERS ETC. AND REINSTALL.
 - REMOVE LIGHT FIXTURES (ALL EXTERIOR FIXTURES TO BE SALVAGED AND RETURNED TO THE OWNER)
 - CEILING DEMOLISHED IN ABATEMENT PHASE, REMOVE ANY REMAINING SUPPORTING CONSTRUCTION AND LIGHT FIXTURES.
 - DOUBLE CEILING DEMOLISHED IN ABATEMENT PHASE, REMOVE ANY REMAINING SUPPORT CONSTRUCTION AND LIGHT FIXTURES.
 - REMOVE ROOF UNIT, UNIT CURBS AND ALL ASSOCIATED FLASHING, BLOCKING, ETC.
 - REMOVE ROOF DRAIN
 - REMOVE EXISTING HEATER
 - NOT USED
 - REMOVE FLOOR ACCESS PANEL SLAB TO BE FILLED AT THAT LOCATION.
 - REMOVE FIRE EXTINGUISHER/ ELECTRICAL CABINET
 - SALVAGE ELECTRICAL KEY CASE
 - REMOVE EXISTING METAL ROOF
 - REMOVE ELEVATOR CAB LEVELS, AND EQUIPMENT, CLEAN OUT RESIDUE AT BOTTOM OF SHAFT
 - REMOVE 8" CHU UNITS IN ELEVATOR FOR RAIL MOUNT BRACKETS PER MANUFACTURER'S RECOMMENDATIONS. TO BE REPLACED WITH REINFORCED BOND BEAM UNITS
 - REMOVE EXISTING WALL PORTION TO PREPARE FOR NEW STRUCTURAL COLUMNS, SEE DETAIL 2/44.21 AND STRUCTURAL DWGS
 - REMOVE PORTION OF WALL TO ACCOMMODATE FOR NEW LOUVER
 - REMOVE EXISTING LOUVER

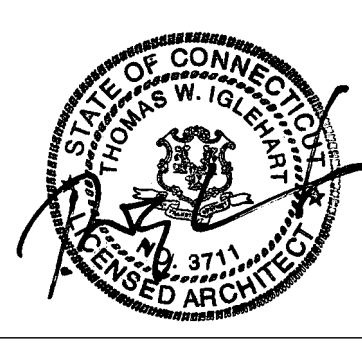
- DEMOLITION PLAN LEGEND**
- KEYED DEMOLITION NOTE SYMBOL
 - EXISTING CONSTRUCTION TO BE REMOVED
 - EXISTING CONSTRUCTION TO REMAIN (ETR)
 - EXISTING ROOFING & INSULATION TO BE REMOVED
 - EXISTING WALL PORTION TO BE REMOVED, SEE 2/44.21 AND STRUCTURAL DWGS



1 SECOND FLOOR DEMO PLAN- AREA B
1/8" = 1'-0"

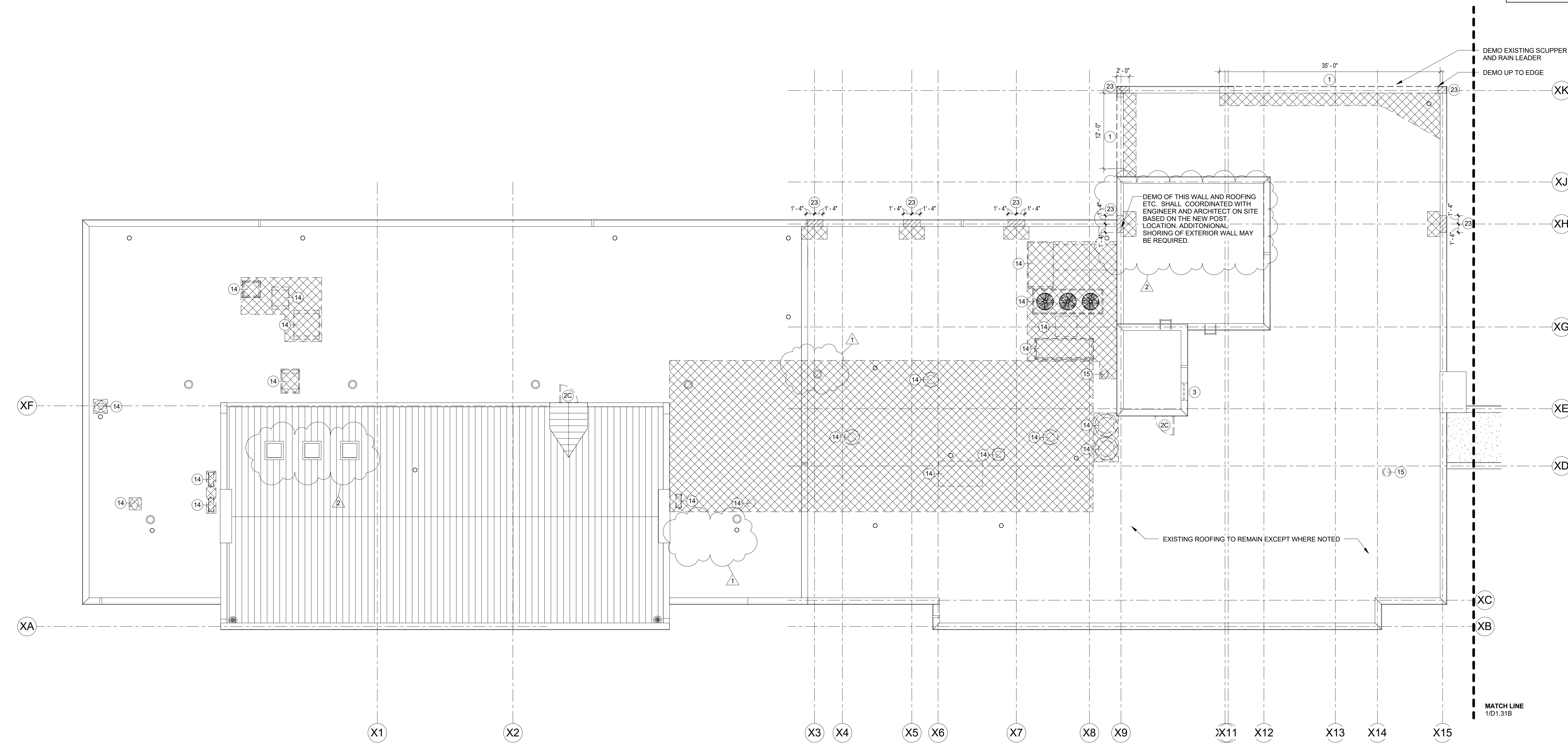
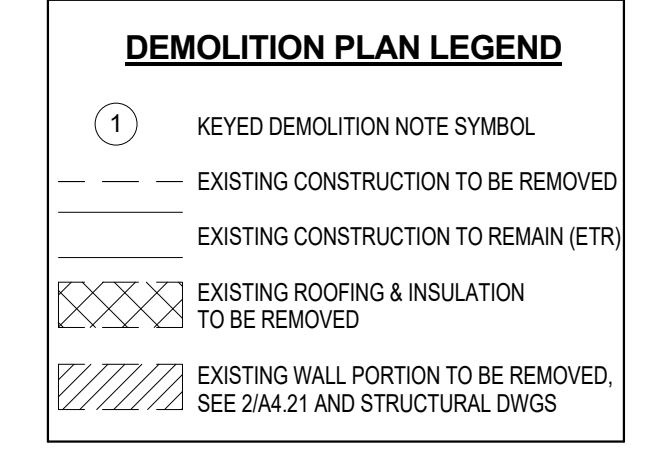


drawing title		STATE OF CONNECTICUT DEPARTMENT OF ADMINISTRATIVE SERVICES DIVISION OF CONSTRUCTION SERVICES	
SECOND FLOOR DEMOLITION PLAN- AREA B		drawing prepared by: TSKP STUDIO	
SUBMISSIONS		ARCHITECTURE / PLANNING / INTERIORS	
mark	date	description	date
1	01/29/2016	100% CD BID PACKAGE	
REVISIONS		project	
mark	date	description	date
1	03/14/2016	100% CD BID PKG Suppl. #1	
2	03/26/2016	100% CD BID PKG Suppl. #3	
project		WCSU RENOVATIONS TO HIGGINS HALL AND ANNEX	
DANBURY, CT		office project no. 150501	
state project no. BI-RD-290		drawing no. D1.21B	

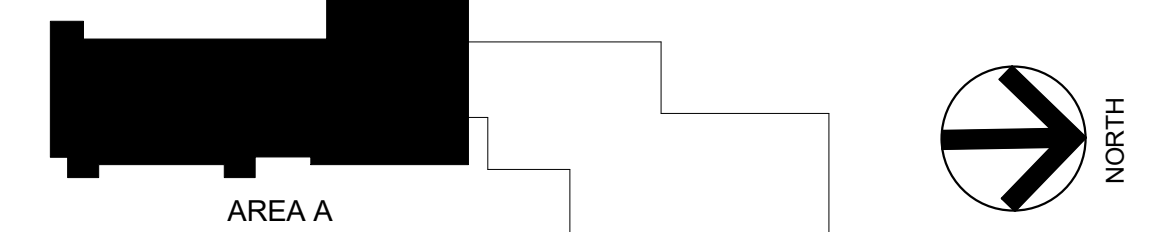


- GENERAL NOTES**
- CUT OUT AND REMOVE EXISTING EXPANSION JOINT SEALANT AND BACKER ROD FULL HEIGHT OF WALL. RESEAL WITH NEW SEALANT AND BACKER ROD PER SPECIFICATION. SEE 5/A4.4.1.
 - COORDINATE REPOINTING AND EXTERIOR BRICK WORK WITH EXTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION.
 - CLEAN ALL MASONRY UNITS TO BE REMOVED AND REINSTALLED FREE FROM ALL ORGANIC GROWTH, MORTAR ETC. - ALL UNIT SURFACES.
 - REMOVE ALL EXISTING EXTERIOR LIGHT FIXTURES.
 - REFER TO MEP DRAWINGS FOR AREAS WHERE SLAB DEMOLITION REQUIRED TO INSTALL NEW PIPING OR REMOVE EXISTING. AND COORDINATE IN FIELD.
 - REMOVE FLOORING TO CONCRETE SLAB ON ENTIRE AREA OF ROOM OR CORRIDOR WHERE FLOORING IS DEMOLISHED DUE TO NEW MEP PIPING INSTALLATION ON LOWER LEVEL AREA A.
 - SEE ABATEMENT DRAWINGS FOR ADDITIONAL REMOVAL INFORMATION.
 - COORDINATE WITH MEP DRAWINGS FOR VENT REMOVAL AND ADDITIONAL REMOVAL INFORMATION.
 - REFER TO MEP AND STRUCTURAL DRAWINGS FOR ADDITIONAL DEMO SCOPE.
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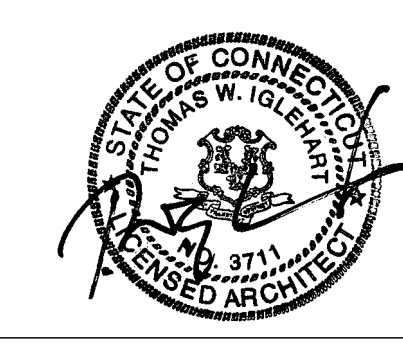
- DEMOLITION KEYNOTES**
- REMOVE WALL/PARTITION AS INDICATED
 - REMOVE FURRING WALL
 - REMOVE TILE AND GROUT FROM WALL. GRIND AND SMOOTH SURFACE
 - REMOVE PORTION OF STAIR WALL TO MEET CODE REQUIRED LANDING DIMENSIONS
 - REMOVE DOOR AND FRAME
 - REMOVE DOOR PANEL AND HARDWARE. SALVAGE AND TURN OVER TO OWNER. FRAME TO REMAIN
 - REMOVE PORTION OF WALL TO ACCOMMODATE NEW DOOR
 - REMOVE DOOR PANEL AND DOOR HARDWARE. EXISTING FRAME TO REMAIN
 - REMOVE DOOR AND FRAME. LINTEL AND OPENING SUPPORT TO REMAIN FOR NEW DOOR AND FRAME.
 - REMOVE DOOR AND FRAME. LINTEL AND OPENING SUPPORT TO REMAIN FOR NEW FRAME.
 - REMOVE WINDOW WALL AND ASSOCIATED BLOCKING (WF). EXISTING LINTEL TO REMAIN
 - REMOVE PORTION OF WALL TO ACCOMMODATE FOR NEW WINDOW
 - REMOVE EXTRUDED WINDOW WALL. SEE ELEVATIONS & DETAIL NOTED ON DEMO DETAILS
 - REMOVE CASEWORK
 - REMOVE FLOORING DOWN TO CONCRETE SLAB. REMOVE BASE
 - FLOORING DEMOLISHED IN ABATEMENT PHASE. REMOVE ANY REMAINING FLOORING DOWN TO CONCRETE BASE.
 - REMOVE STAIR
 - REMOVE EXTERIOR STAIR
 - REMOVE EXISTING HANDRAIL
 - REMOVE PLUMBING FIXTURE. SEE PLUMBING DEMO DWGS
 - REMOVE DRINKING FOUNTAIN
 - REMOVE SLAB WHERE REQUIRED FOR PLUMBING WORK OR OTHER UNDERSLAB WORK. COORDINATE WITH PLUMBING AND STRUCTURAL DRAWINGS. REFER TO MEP DWGS FOR ADDITIONAL SCOPE OF WORK
 - REMOVE MARKER/ CHALK/ TACK BOARD
 - REMOVE PROJECTOR AND TURN OVER TO OWNER
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 - REMOVE CONCRETE BASE
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 - REMOVE CEILING AND SUPPORTING CONSTRUCTION. DEMO TO EXPOSE BOTTOM OF FLOOR SLAB AND EXISTING STRUCTURE.
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 - REMOVE CEILING AND SUPPORTING STRUCTURE. PROTECT GWB SOFFITS. SALVAGE / PROTECT EXISTING LIGHT FIXTURES, PROJECTION SCREEN, SPEAKERS, DIFFUSERS ETC. AND REINSTALL.
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 - CEILING DEMOLISHED IN ABATEMENT PHASE. REMOVE ANY REMAINING SUPPORTING CONSTRUCTION AND LIGHT FIXTURES.
 - DOUBLE CEILING DEMOLISHED IN ABATEMENT PHASE. REMOVE ANY REMAINING SUPPORT CONSTRUCTION AND LIGHT FIXTURES.
 - REMOVE ROOF UNIT. UNIT CURB AND ALL ASSOCIATED FLASHING, BLOCKING, ETC.
 - REMOVE ROOF DRAIN
 - REMOVE EXISTING HEATER
 - NOT USED
 - REMOVE FLOOR ACCESS PANEL. SLAB TO BE FILLED AT THAT LOCATION
 - REMOVE FIRE EXTINGUISHER/ ELECTRICAL CABINET
 - SALVAGE ELECTRICAL KEY CASE
 - REMOVE EXISTING METAL ROOF
 - REMOVE ELEVATOR CAB, LEVELS, AND EQUIPMENT. CLEAN OUT RESIDUE AT BOTTOM OF SHAFT
 - REMOVE # 8 CMB UNITS IN ELEVATOR FOR RAIL MOUNT BRACKETS PER MANUFACTURERS RECOMMENDATIONS. TO BE REPLACED WITH REINFORCED BOND BEAM UNITS
 - REMOVE EXISTING WALL PORTION TO PREPARE FOR NEW STRUCTURAL COLUMNS. SEE DETAIL 21A.21 AND STRUCTURAL DWGS
 - REMOVE PORTION OF WALL TO ACCOMMODATE FOR NEW LOUVER
 - REMOVE EXISTING LOUVER



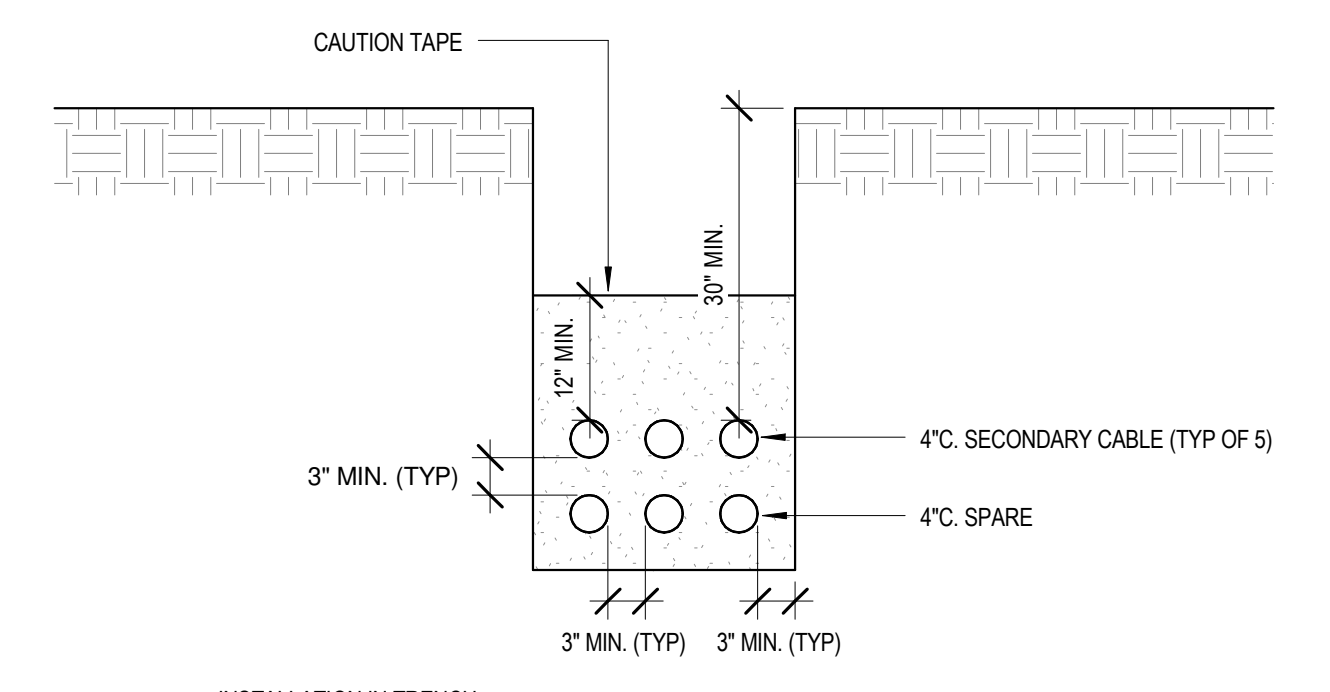
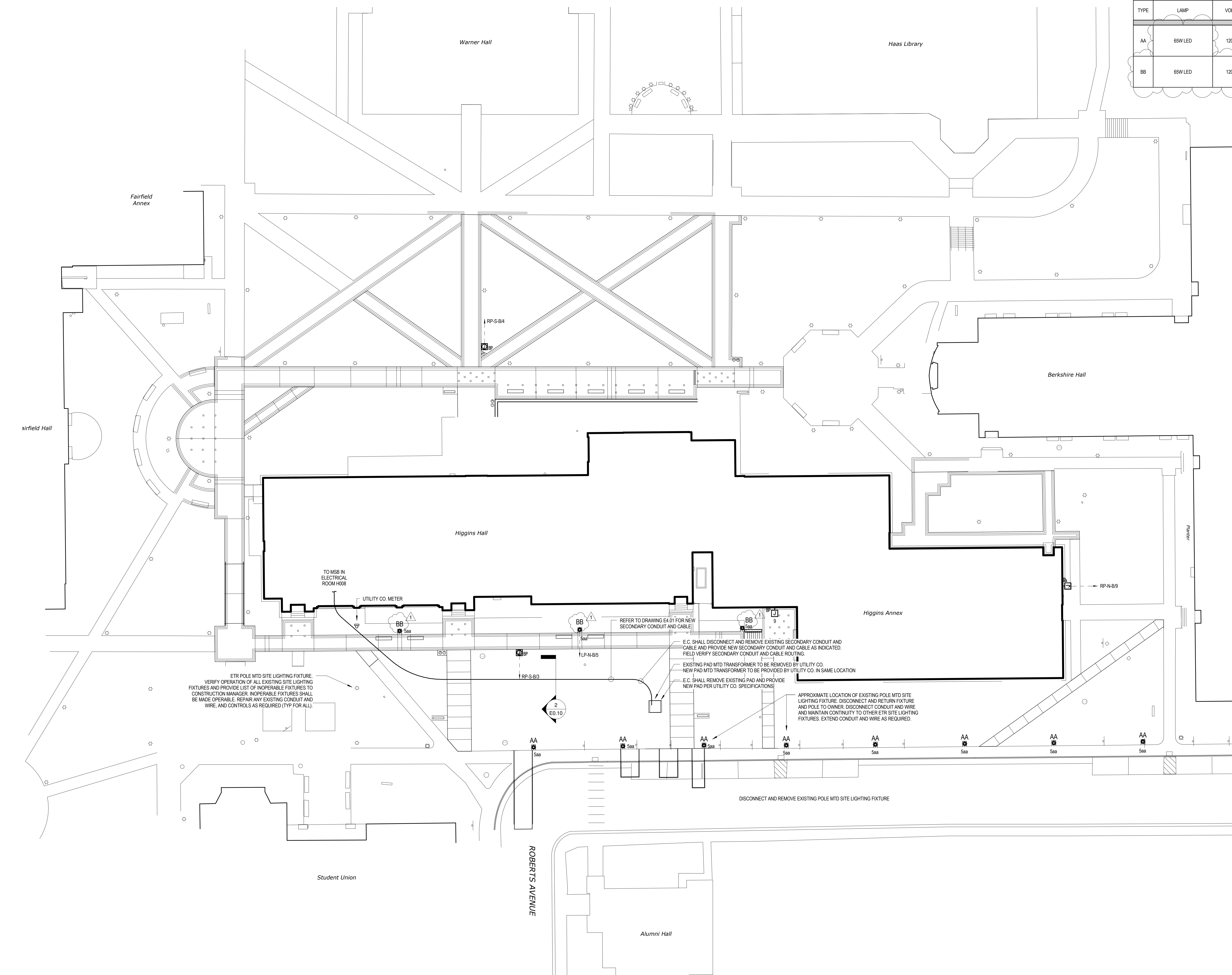
1 ROOF DEMO PLAN- AREA A
1/8" = 1'-0"



drawing title		STATE OF CONNECTICUT DEPARTMENT OF ADMINISTRATIVE SERVICES DIVISION OF CONSTRUCTION SERVICES	
ROOF DEMOLITION PLAN- AREA A		drawing prepared by: TSKP STUDIO	
SUBMISSIONS		ARCHITECTURE (PLANNING) / INTERIORS	
mark	date	description	date
	01/29/2018	100% CD BID PACKAGE	
REVISIONS		project	
mark	date	description	approved by
1	03/14/2018	100% CD BID PKG Suppl. #1	
2	03/26/2018	100% CD BID PKG Suppl. #3	
project		WCSU RENOVATIONS TO HIGGINS HALL AND ANNEX	
state project no.		office project no.	
81-RD-290		150501	
drawing no.		D1.31A	



SITE LIGHTING FIXTURE SCHEDULE					
TYPE	LAMP	VOLTAGE	LUMENS	MOUNTING	DESCRIPTION
AA	65W LED	120/277V	6128 LM	SITE POLE	12" ALUMINUM POLE, 4" DIAMETER FLUTED SHAFT, BLACK FINISH, 20 LED FIXTURE, TYPE 5 DISTRIBUTION, 1050 MILLIAMPER DRIVER, 4000K, BLACK COLOR, POST TOP OVER 3 OD MOUNTING, CLEAR SIDE LENS, ANTIQUE STREET LIGHTING CHICAGO SERIES #PX CH12, NLS LIGHTING CLASSIC #CLA-1-TS-20L-1-40K-UNV-BLK-CSL
BB	65W LED	120/277V	5888 LM	SITE POLE	12" ALUMINUM POLE, 4" DIAMETER FLUTED SHAFT, BLACK FINISH, 20 LED FIXTURE, TYPE 3 DISTRIBUTION, 1050 MILLIAMPER DRIVER, 4000K, BLACK COLOR, POST TOP OVER 3 OD MOUNTING, CLEAR SIDE LENS, ANTIQUE STREET LIGHTING CHICAGO SERIES #PX CH12, NLS LIGHTING CLASSIC #CLA-1-TS-20L-1-40K-UNV-BLK-CSL



- INSTALLATION IN TRENCH**
- ALL CONDUIT SHALL BE INSTALLED AT A DEPTH OF AT LEAST 30" IN THE FOLLOWING ORDER:
 - 1. ENSURE THAT THE BOTTOM OF THE TRENCH IS WELL-TAMPED AND FREE OF ROCKS.
 - 2. INSTALL THE CONDUIT AND SUPPORTS.
 - 3. INSTALL OTHER UTILITY CABLES OR CONDUITS IN THE TRENCH.
 - 4. BACKFILL WITH 12 INCHES OF SAND.
 - 5. INSTALL CABLE WARNING TAPE 12 INCHES OVER THE CONDUIT.
 - 6. FILL IN THE REMAINDER OF THE TRENCH WITH NATIVE BACKFILL.

2 SECONDARY CONDUIT TRENCH DETAIL
SCALE: NONE

1 SITE PLAN - ELECTRICAL
SCALE: 1" = 20'-0"



SUBMISSIONS		REVISIONS	
mark	date description	mark	date description
	01/29/2018 100% CD BID PACKAGE	1	03/26/2018 100% CD BID PKG Suppl. 03

STATE OF CONNECTICUT DEPARTMENT OF ADMINISTRATIVE SERVICES DIVISION OF CONSTRUCTION SERVICES		drawing prepared by: date: 02/16/2018 scale: As indicated drawn by: JDC approved by: JDC drawing no.: E0.10
drawing title: SITE PLAN - ELECTRICAL		project: WESTERN CONNECTICUT STATE UNIVERSITY, RENOVATIONS TO HIGGINS HALL AND HIGGINS ANNEX DANBURY, CT state project no.: 81-RD-290 office project no.: 16092



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ALL EXISTING POWER AND FIRE ALARM DEVICES IN SHADED AREAS ARE ETR, U.O.N. ALL EXISTING POWER BRANCH CIRCUITS SHALL BE EXTENDED TO NEW PANELBOARD RP-S-B AND ALL EXISTING FIRE ALARM BRANCH CIRCUITS SHALL BE EXTENDED TO NEW FIRE ALARM SYSTEM (TYP FOR ALL SHADED AREAS).

1 LOWER LEVEL FLOOR PLAN-AREA A
SCALE: 1/8" = 1'-0"

2 NEW IDF H020A PART PLAN
SCALE: 1/4" = 1'-0"

3 MDF H007 PART PLAN
SCALE: 1/4" = 1'-0"

4 MECHANICAL ROOM H011 PART PLAN
SCALE: 1/4" = 1'-0"

NOTES:
1. EXISTING BRANCH CIRCUITS ENERGIZING EXISTING RELOCATED DEVICES SHALL BE EXTENDED TO NEW PANELBOARD AS INDICATED ON THE FLOOR PLAN.

Drawing Title
LOWER LEVEL FLOOR PLAN
- AREA A - ELECTRICAL

STATE OF CONNECTICUT
DEPARTMENT OF ADMINISTRATIVE SERVICES
DIVISION OF CONSTRUCTION SERVICES

SUBMISSIONS		
mark	date	description
	01/29/2018	100% CD BID PACKAGE

drawing prepared by: 

REVISIONS		
mark	date	description
1	03/26/2018	100% CD BID PKG Suppl. #3

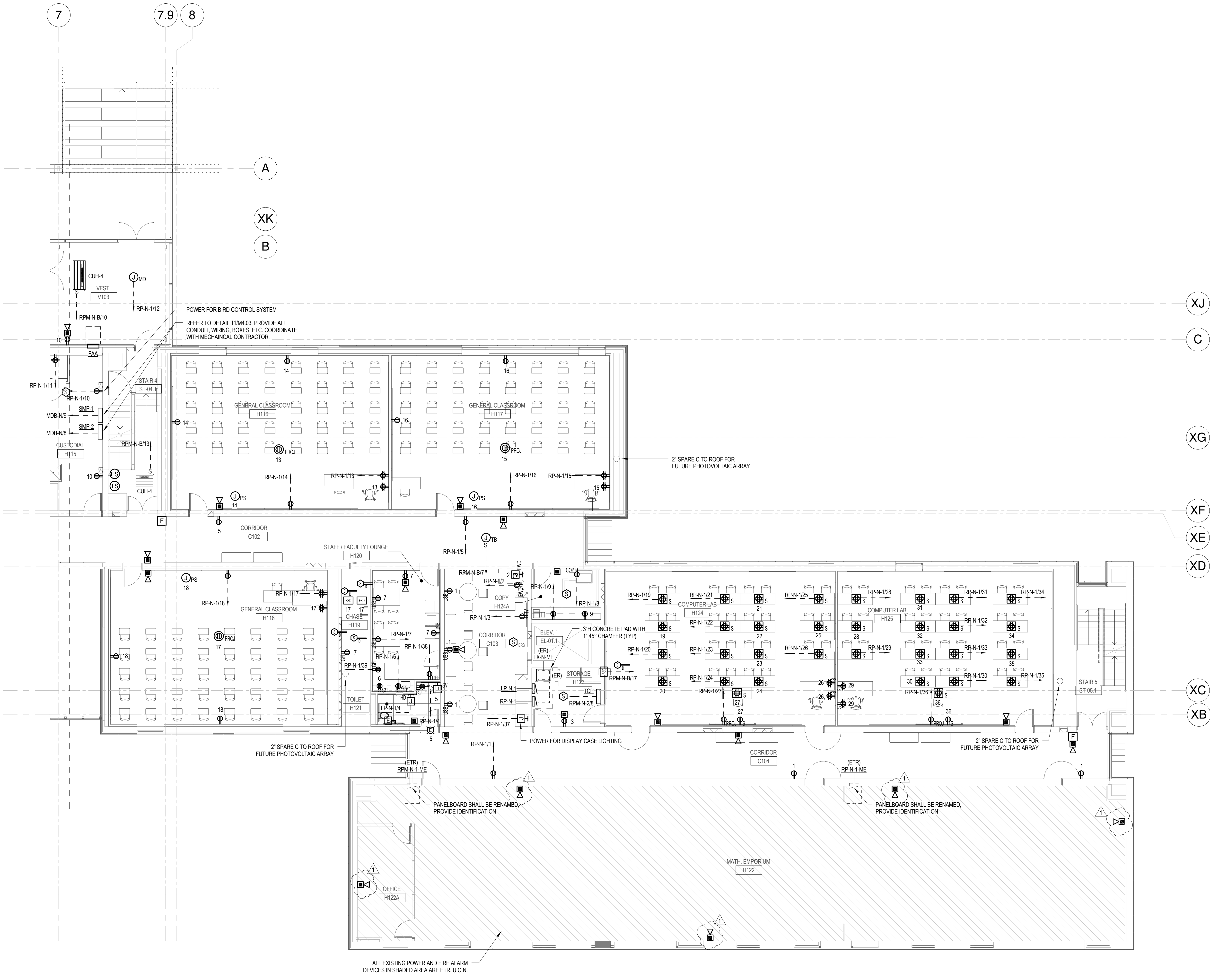
project:
WESTERN CONNECTICUT STATE
UNIVERSITY, RENOVATIONS TO HIGGINS
HALL AND HIGGINS ANNEX
DANBURY, CT

state project no. BI-HD-290 office project no. 16092

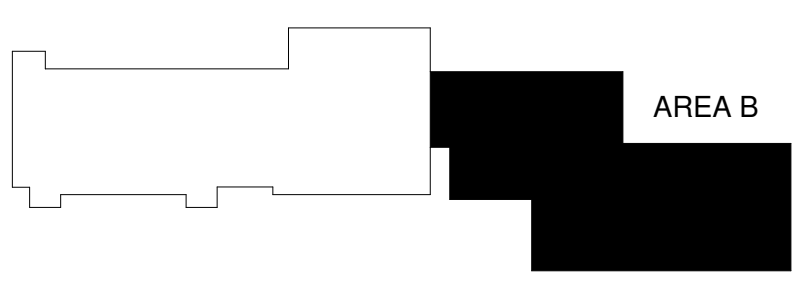
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scale: As Indicated
drawn by: MW
approved by: JDC
drawing no. E1.01A



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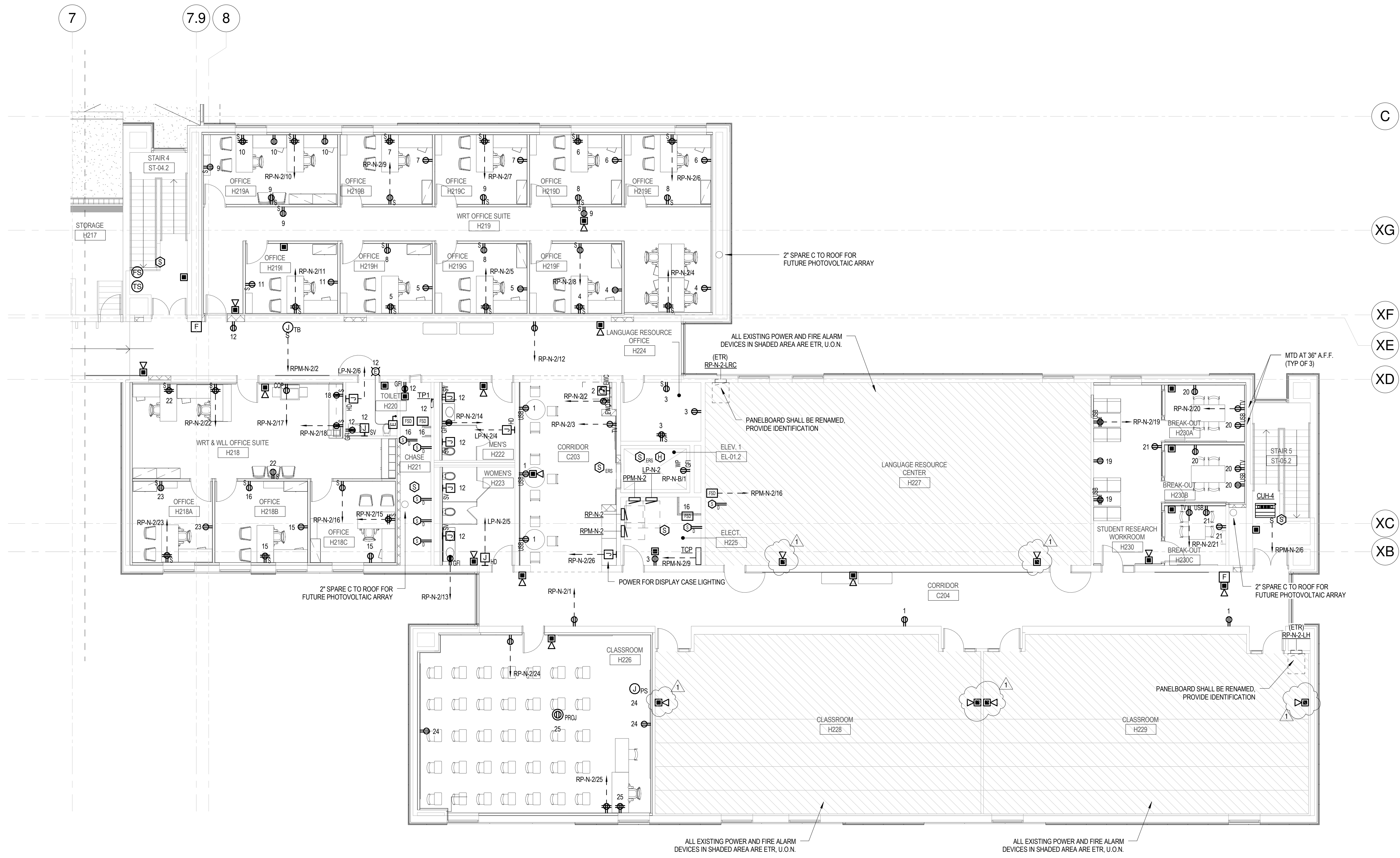
1 FIRST FLOOR PLAN-AREA B
 E1.11B SCALE: 1/8" = 1'-0"



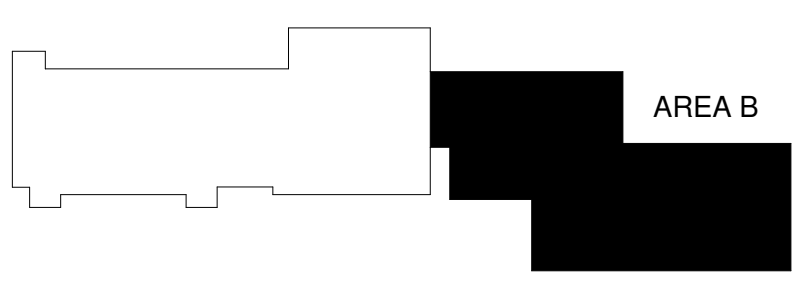
STATE OF CONNECTICUT DEPARTMENT OF ADMINISTRATIVE SERVICES DIVISION OF CONSTRUCTION SERVICES		drawing prepared by: K <small>Kevin J. K... 100 Main Street Danbury, CT 06810 (203) 755-1234</small>	date: 02/16/2018 scale: 1/8" = 1'-0" drawn by: JDC approved by: JDC drawing no.: E1.11B
WESTERN CONNECTICUT STATE UNIVERSITY, RENOVATIONS TO HIGGINS HALL AND HIGGINS ANNEX DANBURY, CT state project no. BI-RD-290 office project no. 16092		drawing title: FIRST FLOOR PLAN - AREA B - ELECTRICAL	
REVISIONS			
mark	date	description	
1	03-26-2018	100% CD BID PKG Suppl. #3	
SUBMISSIONS			
mark	date	description	
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1 SECOND FLOOR PLAN-AREA B
E1.21B SCALE: 1/8" = 1'-0"



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			1	03/26/2018	100% CD BID PKG Suppl. #3

STATE OF CONNECTICUT
DEPARTMENT OF ADMINISTRATIVE SERVICES
DIVISION OF CONSTRUCTION SERVICES

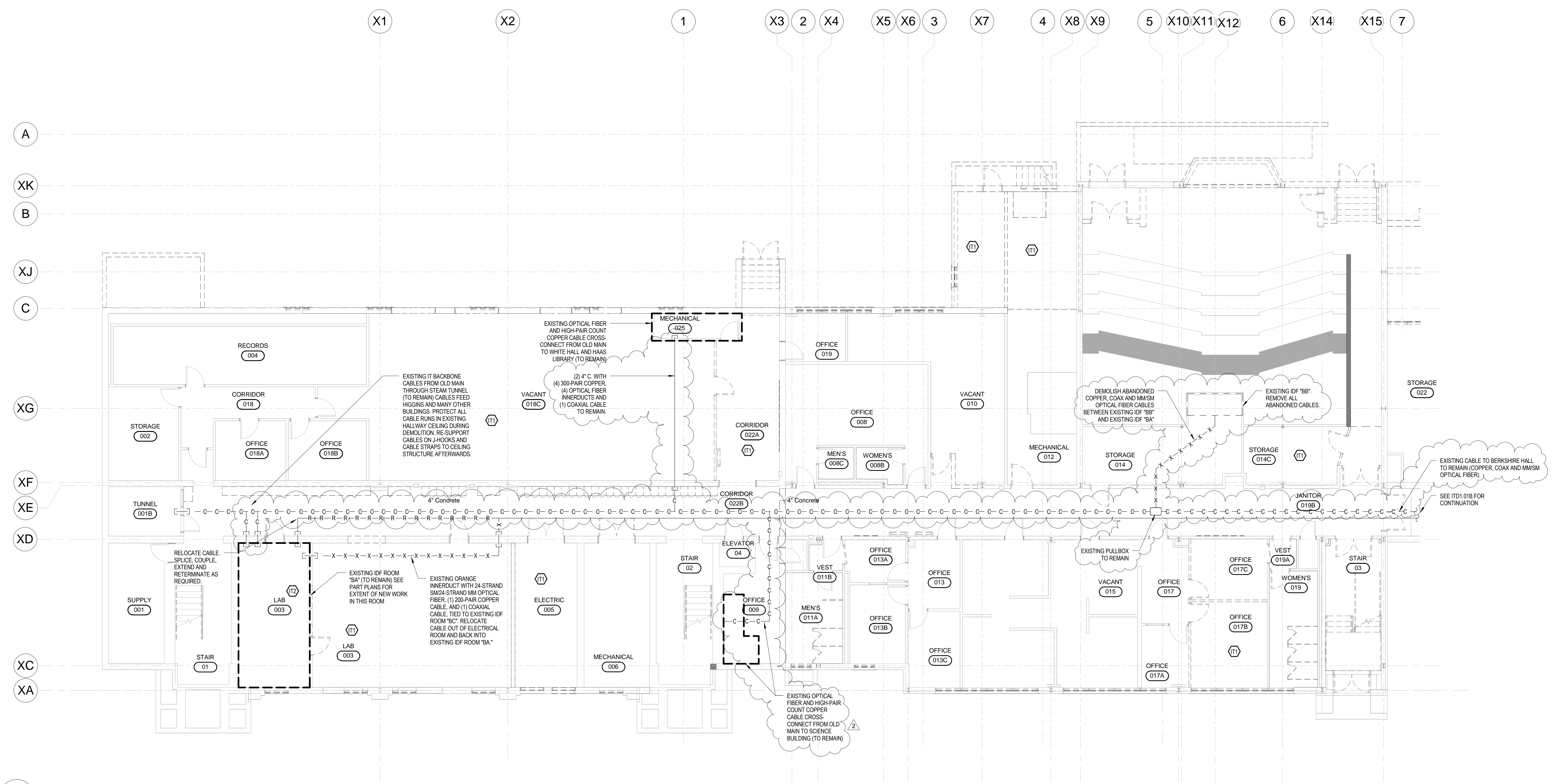
drawing prepared by: **K** [Logo]
date: 02/16/2018
scale: 1/8" = 1'-0"

project: WESTERN CONNECTICUT STATE UNIVERSITY, RENOVATIONS TO HIGGINS HALL AND HIGGINS ANNEX
approved by: JDC
drawing no. E1.21B

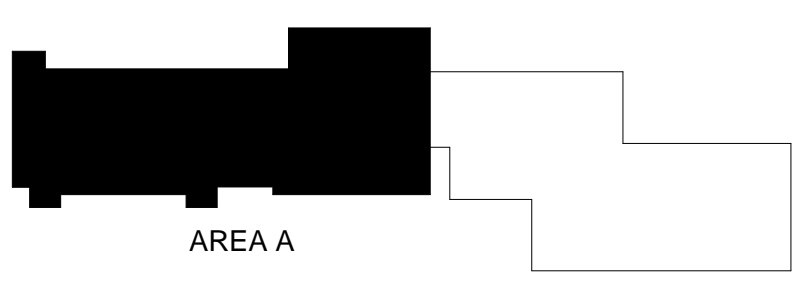
state project no. BI-RD-290 office project no. 16092



BASEMENT FLOOR A IT DEMOLITION KEYNOTES	
IT1	ALL EXISTING DATA OUTLETS WITHIN ROOM SHALL BE REMOVED. REMOVE ALL ASSOCIATED CABLES AND ALL TERMINATION HARDWARE INCLUDING JACKS, FACEPLATES AND BACKBOXES BETWEEN OUTLET AND PATCH PANEL WITHIN EXISTING TELECOM ROOM.
IT2	SEE DETAIL PLAN 1173.00 FOR DEMOLITION SCOPE WITHIN EXISTING IDF ROOM.



1 BASEMENT DEMOLITION PLAN AREA A
 ITD1.01A SCALE: 1/8" = 1'-0"



SUBMISSIONS		REVISIONS	
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	01/29/2018 100% CD BID PACKAGE	1	03/14/2018 100% CD BID PKG Suppl #1
		2	03/26/2018 100% CD BID PKG Suppl #3

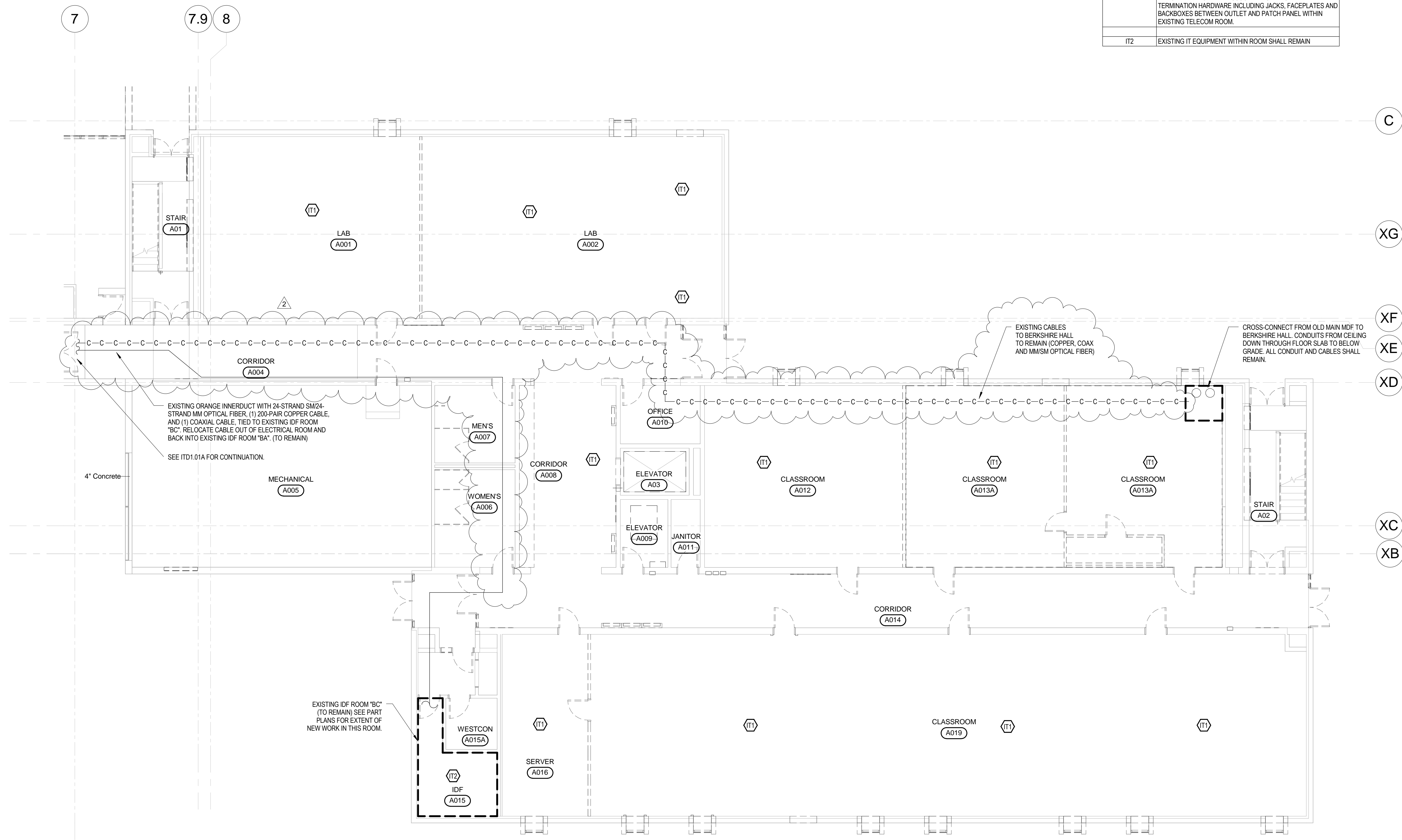
STATE OF CONNECTICUT
 DEPARTMENT OF ADMINISTRATIVE SERVICES
 DIVISION OF CONSTRUCTION SERVICES



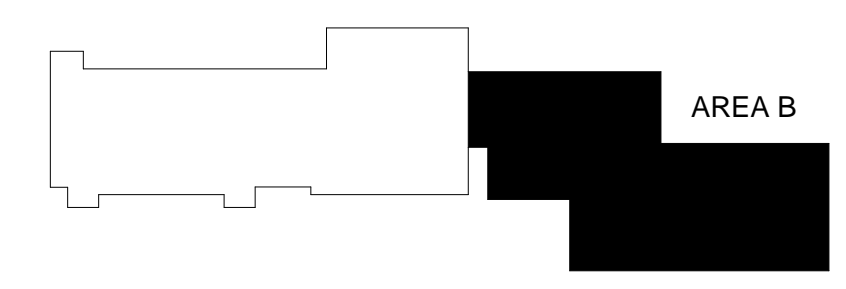
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 date: 02/16/2018
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 drawn by: [Redacted]
 approved by: [Redacted]
 drawing no. ITD1.01A

project: WESTERN CONNECTICUT STATE UNIVERSITY, RENOVATIONS TO HIGGINS HALL AND HIGGINS ANNEX DANBURY, CT
 state project no. BI-RD-290 office project no. 16092

BASEMENT FLOOR B IT DEMOLITION KEY NOTES	
IT1	ALL EXISTING DATA OUTLETS WITHIN ROOM SHALL BE REMOVED. REMOVE ALL ASSOCIATED CABLES AND ALL TERMINATION HARDWARE INCLUDING JACKS, FACEPLATES AND BACKBOXES BETWEEN OUTLET AND PATCH PANEL WITHIN EXISTING TELECOM ROOM.
IT2	EXISTING IT EQUIPMENT WITHIN ROOM SHALL REMAIN.



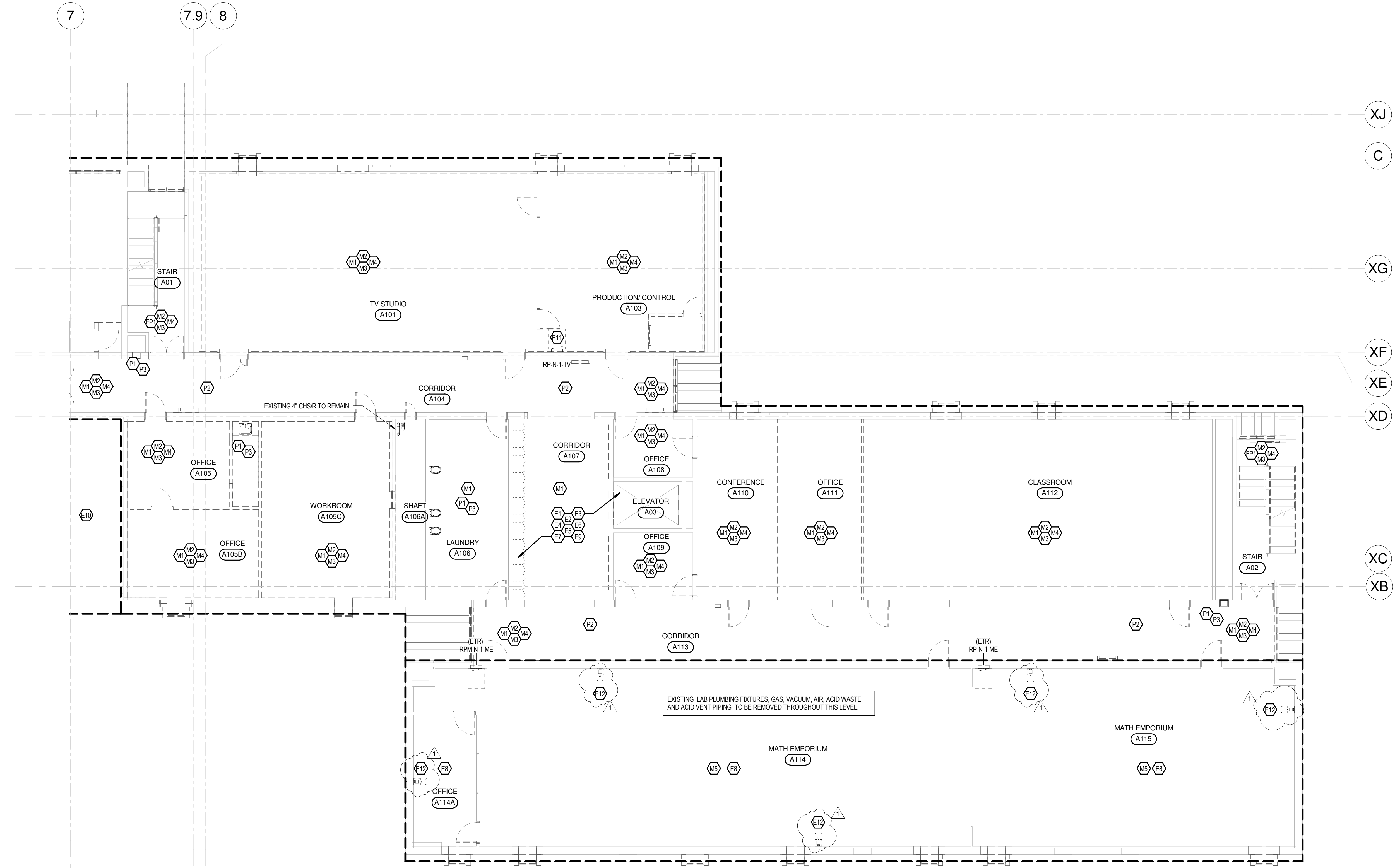
1 BASEMENT DEMOLITION PLAN AREA B
ITD1.01B SCALE: 1/8" = 1'-0"



Drawing Title LOWER LEVEL DEMOLITION PLAN - AREA B - IT		STATE OF CONNECTICUT DEPARTMENT OF ADMINISTRATIVE SERVICES DIVISION OF CONSTRUCTION SERVICES	
SUBMISSIONS		drawing prepared by:	
mark	date description	mark	date
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2	03/26/2018 100% CD BID PKG Suppl. #3	2	
REVISIONS		scale	
mark	date description	mark	date
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2	03/26/2018 100% CD BID PKG Suppl. #3	2	
project		drawing no.	
WESTERN CONNECTICUT STATE UNIVERSITY, RENOVATIONS TO HIGGINS HALL AND HIGGINS ANNEX DANBURY, CT		ITD1.01B	
state project no. BI-RD-290		office project no. 16092	



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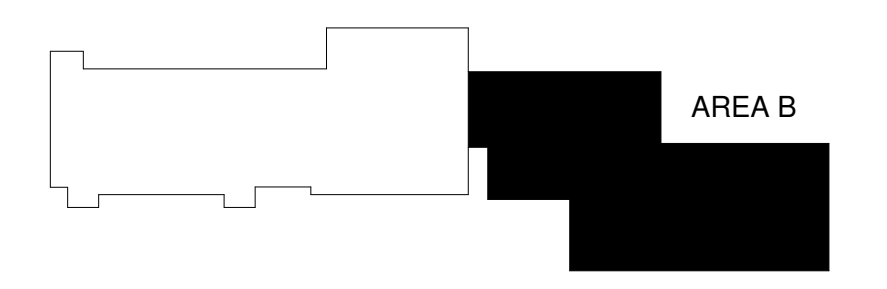


1 FIRST FLOOR DEMOLITION PLAN AREA B
MEPD1.11B SCALE: 1/8" = 1'-0"

FIRST FLOOR B MEP DEMOLITION KEYNOTES	
E1	REFER TO ARCHITECTURAL DRAWINGS FOR EXACT EXTENT OF DEMOLITION WORK.
E2	DISCONNECT AND REMOVE ALL EXISTING INTERIOR AND EXTERIOR LIGHTING FIXTURES, EXIT SIGNS, SWITCHES, BACKBOXES, CONDUIT AND WIRING BACK TO PANEL OR NEXT ETR/UPSTREAM DEVICE (TYPICAL FOR ALL AREAS, U.O.N.).
E3	DISCONNECT AND REMOVE ALL EXISTING RECEPTACLES, BACKBOXES, CONDUIT AND WIRING BACK TO PANEL OR NEXT ETR/UPSTREAM DEVICE (TYPICAL FOR ALL AREAS, U.O.N.).
E4	DISCONNECT AND REMOVE ALL FINAL CONNECTIONS, DISCONNECT SWITCHES, OUTLETS, CONDUIT AND WIRING FOR HVAC EQUIPMENT BACK TO PANEL (TYPICAL FOR ALL EQUIPMENT TO BE REMOVED, U.O.N.).
E5	DISCONNECT AND REMOVE ALL FINAL CONNECTIONS, DISCONNECT SWITCHES, OUTLETS, CONDUIT AND WIRING FOR PLUMBING EQUIPMENT BACK TO PANEL (TYPICAL FOR ALL EQUIPMENT TO BE REMOVED, U.O.N.).
E6	DISCONNECT AND REMOVE ALL EXISTING HARDWIRED FIRE ALARM DEVICES, BACKBOXES, CONDUIT AND WIRING BACK TO RESPECTIVE FIRE ALARM TERMINAL CABINET OR NEXT ETR/UPSTREAM DEVICE (TYPICAL FOR ALL AREAS, U.O.N.).
E7	ELECTRICAL CONTRACTOR SHALL MAINTAIN/RECONNECT ALL EXISTING BRANCH CIRCUIT WIRING DISTURBED DURING CONSTRUCTION BUT OUTSIDE OF NEW CONSTRUCTION AREA.
E8	ALL EXISTING PANELBOARDS, RECEPTACLES, FIRE ALARM DEVICES, BACKBOXES, CONDUIT AND WIRE, ETC. WITHIN SPACE ARE EXISTING TO REMAIN, U.O.N. EXISTING LIGHTING FIXTURES SHALL BE DISCONNECTED AND STORED AS REQUIRED TO ACCOMMODATE ANY WORK ABOVE THE CEILING. UPON COMPLETION OF WORK, REINSTALL AND RECONNECT LIGHTING FIXTURES.
E9	DISCONNECT AND REMOVE ALL EXISTING PANELBOARDS, SWITCHBOARDS, TRANSFORMERS, ETC. AND ALL ASSOCIATED FEEDERS BACK TO SOURCE (TYPICAL FOR ALL AREAS, U.O.N.).

FIRST FLOOR B MEP DEMOLITION KEYNOTES	
E10	DISCONNECT AND REMOVE EXISTING GENERATOR, ALL ASSOCIATED EQUIPMENT, BACKBOXES, CONDUIT AND WIRING BACK TO SOURCE.
E11	PROVIDE TEMPORARY POWER TO PANELBOARD DURING CONSTRUCTION. UPON COMPLETION OF NEW TV STUDIO AND PRODUCTION CONTROL ROOM, DISCONNECT AND REMOVE PANELBOARD AND ALL ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE.
E12	DISCONNECT AND REMOVE EXISTING FIRE ALARM DEVICE AND WIRING BACK TO RESPECTIVE FIRE ALARM TERMINAL CABINET OR NEXT ETR/UPSTREAM DEVICE.
FP1	EXISTING FIRE STANDPIPE, VALVES, PIPING, ETC. TO BE REMOVED.
M1	ALL EXISTING DUCTWORK WITHIN ROOM TO BE REMOVED COMPLETE INCLUDING REGISTERS, GRILLES, AND DIFFUSERS, AND SUPPORTS.
M2	ALL EXISTING PNEUMATIC CONTROLS TO BE REMOVED COMPLETE INCLUDING TUBING, CONTROL PANELS, AND ACTUATORS.
M3	ALL EXISTING PERIMETER RADIATION INCLUDING COILS, VALVES, ACCESSORIES, AND CONTROLS TO BE REMOVED COMPLETE.
M4	ALL EXISTING PIPING NOT INDICATED TO REMAIN INCLUDING VALVES, ACCESSORIES, AND CONTROLS TO BE REMOVED COMPLETE.
M5	EXISTING VRF, REFRIGERANT PIPING, HOT WATER, DUCTWORK, ETC. SERVING MATH EMPORIUM TO REMAIN. CUT AND CAP DUCTWORK SERVING MATH EMPORIUM OUTSIDE OF SPACE IN CORRIDOR AND CAP FOR LATER RECONNECTION.
P1	EXISTING SANITARY, VENT, COLD AND HOT WATER TO BE REMOVED. UNUSED PENETRATIONS TO BE PATCHED BY GC IN NEW WORK SCOPE.
P2	EXISTING STORM PIPING TO BE REPLACED IN PLACE AS REQUIRED.
P3	EXISTING PLUMBING FIXTURES TO BE REMOVED. UNUSED PENETRATIONS TO BE PATCHED BY GC IN NEW WORK SCOPE.

FIRST FLOOR B MEP DEMOLITION ABBREVIATIONS	
ETBR	EXISTING TO BE RELOCATED
ETR	EXISTING TO REMAIN
WP	WEATHER PROOF

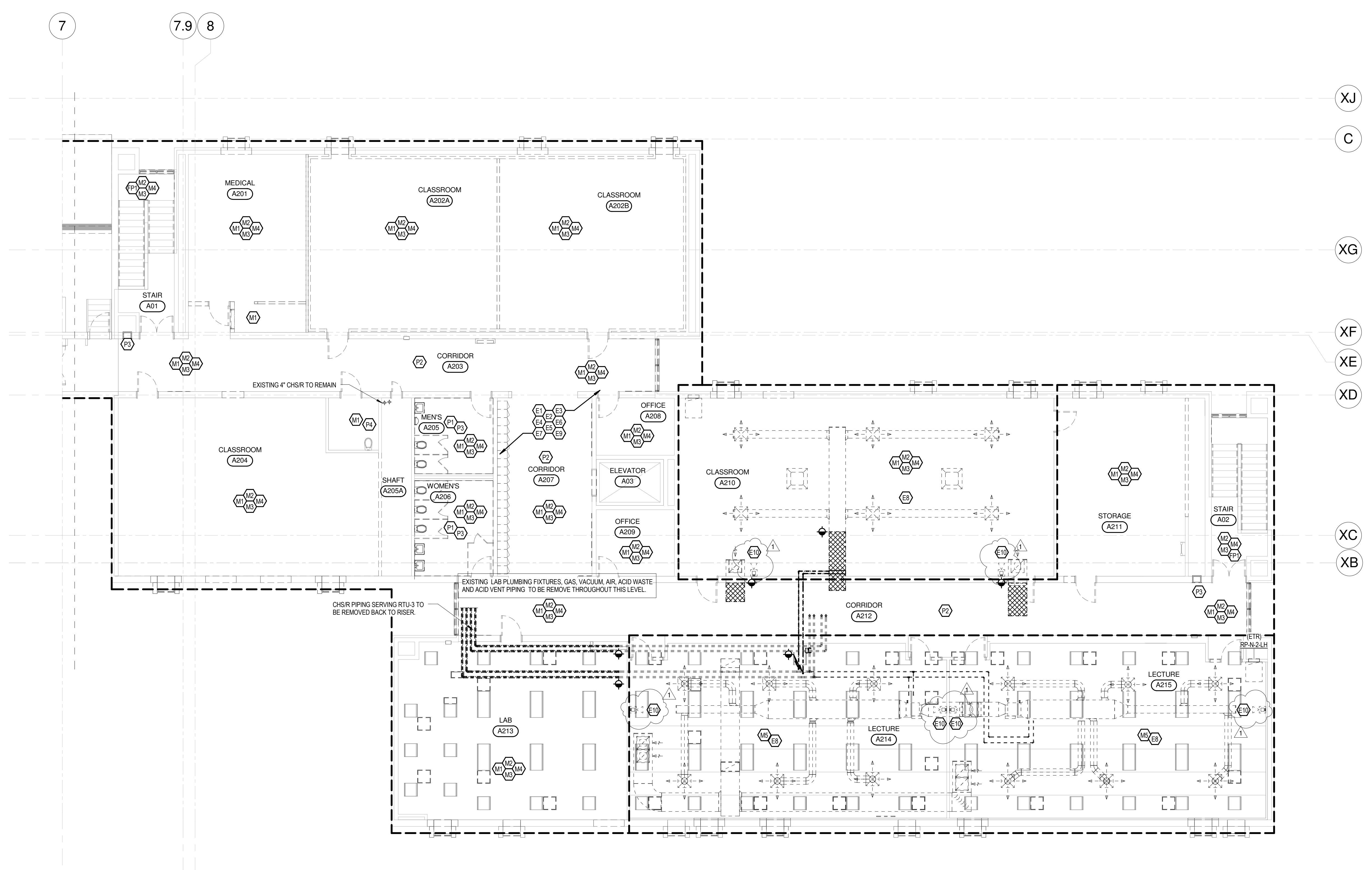


FIRST FLOOR DEMOLITION PLAN-AREA B-MEPD SUBMISSIONS mark date description 01/29/2018 100% CD BID PACKAGE		drawing prepared by: [Signature] date: 02/16/2018 scale: 1/8" = 1'-0" drawn by: KH approved by: KH drawing no.:	
REVISIONS mark date description 1 03/26/2018 100% CD BID PKG Suppl. #3		project: WESTERN CONNECTICUT STATE UNIVERSITY, RENOVATIONS TO HIGGINS HALL AND HIGGINS ANNEX DANBURY, CT state project no. BI-RD-290 office project no. 16092	



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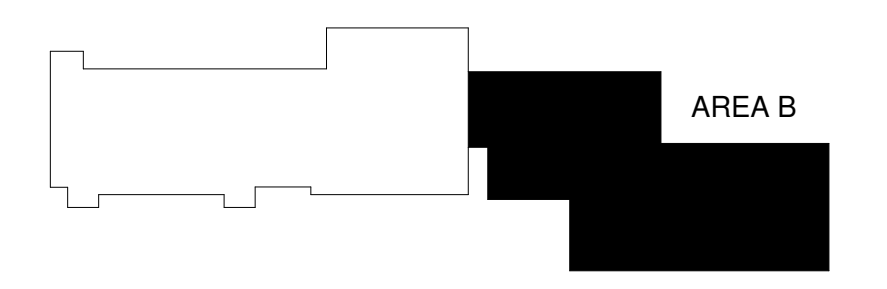
1 SECOND FLOOR DEMOLITION PLAN AREA B
MEPD1.21B SCALE: 1/8" = 1'-0"

SECOND FLOOR B MEP DEMOLITION KEYNOTES (M)	
E1	REFER TO ARCHITECTURAL DRAWINGS FOR EXACT EXTENT OF DEMOLITION WORK.
E2	DISCONNECT AND REMOVE ALL EXISTING INTERIOR AND EXTERIOR LIGHTING FIXTURES, EXIT SIGNS, SWITCHES, BACKBOXES, CONDUIT AND WIRING BACK TO PANEL OR NEXT ETR UPSTREAM DEVICE (TYPICAL FOR ALL AREAS, U.O.N.).
E3	DISCONNECT AND REMOVE ALL EXISTING RECEPTACLES, BACKBOXES, CONDUIT AND WIRING BACK TO PANEL OR NEXT ETR UPSTREAM DEVICE (TYPICAL FOR ALL AREAS, U.O.N.).
E4	DISCONNECT AND REMOVE ALL FINAL CONNECTIONS, DISCONNECT SWITCHES, OUTLETS, CONDUIT AND WIRING FOR HVAC EQUIPMENT BACK TO PANEL (TYPICAL FOR ALL EQUIPMENT TO BE REMOVED, U.O.N.).
E5	DISCONNECT AND REMOVE ALL FINAL CONNECTIONS, DISCONNECT SWITCHES, OUTLETS, CONDUIT AND WIRING FOR PLUMBING EQUIPMENT BACK TO PANEL (TYPICAL FOR ALL EQUIPMENT TO BE REMOVED, U.O.N.).
E6	DISCONNECT AND REMOVE ALL EXISTING HARDWIRED FIRE ALARM DEVICES, BACKBOXES, CONDUIT AND WIRING BACK TO RESPECTIVE FIRE ALARM TERMINAL CABINET OR NEXT ETR UPSTREAM DEVICE (TYPICAL FOR ALL AREAS, U.O.N.).

SECOND FLOOR B MEP DEMOLITION KEYNOTES (M)	
E7	ELECTRICAL CONTRACTOR SHALL MAINTAIN/RECONNECT ALL EXISTING BRANCH CIRCUIT WIRING DISTURBED DURING CONSTRUCTION BUT OUTSIDE OF NEW CONSTRUCTION AREA.
E8	ALL EXISTING PANELBOARDS, RECEPTACLES, FIRE ALARM DEVICES, BACKBOXES, CONDUIT AND WIRE, ETC. WITHIN SPACE ARE EXISTING TO REMAIN, U.O.N. EXISTING LIGHTING FIXTURES SHALL BE DISCONNECTED AND STORED AS REQUIRED TO ACCOMMODATE ANY WORK ABOVE THE CEILING. UPON COMPLETION OF WORK, REINSTALL AND RECONNECT LIGHTING FIXTURES.
E9	DISCONNECT AND REMOVE ALL EXISTING PANELBOARDS, SWITCHBOARDS, TRANSFORMERS, ETC. AND ALL ASSOCIATED FEEDERS BACK TO SOURCE (TYPICAL FOR ALL AREAS, U.O.N.).
E10	DISCONNECT AND REMOVE EXISTING FIRE ALARM DEVICE AND WIRING BACK TO RESPECTIVE FIRE ALARM TERMINAL CABINET OR NEXT ETR UPSTREAM DEVICE.
PP1	EXISTING FIRE STANDPIPE VALVES, PIPING, ETC. TO BE REMOVED.
M1	ALL EXISTING DUCTWORK WITHIN ROOM TO BE REMOVED COMPLETE INCLUDING REGISTERS, GRILLES, AND DIFFUSERS, AND SUPPORTS.

SECOND FLOOR B MEP DEMOLITION KEYNOTES (M)	
M2	ALL EXISTING PNEUMATIC CONTROLS TO BE REMOVED COMPLETE INCLUDING TUBING, CONTROL PANELS, AND ACTUATORS.
M3	ALL EXISTING PERIMETER RADIATION INCLUDING VALVES, ACCESSORIES, AND CONTROLS TO BE REMOVED COMPLETE.
M4	ALL EXISTING PIPING NOT INDICATED TO REMAIN INCLUDING COILS, VALVES, ACCESSORIES, AND CONTROLS TO BE REMOVED COMPLETE.
M5	EXISTING TERMINAL BOX, HWS/R PIPING, EXTERIOR RADIATION, DUCTWORK AND ROOF TOP UNIT SERVING SECOND FLOOR CLASSROOMS TO REMAIN. CUT AND CAP ALL SYSTEMS IN CORRIDOR AT CLASSROOM WALLS FOR LATER RECONNECTION.
P1	EXISTING SANITARY, VENT, COLD AND HOT WATER TO BE REMOVED. UNUSED PENETRATIONS TO BE PATCHED BY GC IN NEW WORK SCOPE.
P2	EXISTING STORM PIPING TO BE REPLACED IN PLACE AS REQUIRED.
P3	EXISTING PLUMBING FIXTURES TO BE REMOVED. UNUSED PENETRATIONS TO BE PATCHED BY GC IN NEW WORK SCOPE.
P4	EXISTING PLUMBING FIXTURES TO REMAIN.

SECOND FLOOR B MEP DEMOLITION ABBREVIATIONS	
ETBR	EXISTING TO BE RELOCATED
ETR	EXISTING TO REMAIN
WP	WEATHER PROOF



drawing title: SECOND FLOOR DEMOLITION PLAN-AREA B-MEPD		STATE OF CONNECTICUT DEPARTMENT OF ADMINISTRATIVE SERVICES DIVISION OF CONSTRUCTION SERVICES	
SUBMISSIONS			
mark	date	description	date
1	01/29/2018	100% CD BID PACKAGE	02/16/2018
REVISIONS			
mark	date	description	date
1	03/26/2018	100% CD BID PKG Suppl. #3	
drawing prepared by:			
project:		WESTERN CONNECTICUT STATE UNIVERSITY, RENOVATIONS TO HIGGINS HALL AND HIGGINS ANNEX DANBURY, CT	
state project no. BI-RD-290		office project no. 16092	
		scale: 1/8" = 1'-0" drawn by: KH approved by: KH drawing no. MEPD1.21B	

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TRANSMITTAL

Via: Messenger

To: Eric Lessne
Western Connecticut State University
Facilities Planning and Engineering
181 White Street
Danbury, CT 06810

203-837-8723

From: Paul C. Lanteri

Date: May 25, 2011

Project: Higgins Hall
BI RD 263
WJE No. 2009.3008.1

Subject: Roof and Masonry Restoration

Firestone Roofing Warranty

**FIRESTONE PLATINUM-P
ROOFING SYSTEM LIMITED WARRANTY**

Warranty No: PL002495

FBPCO # AD0828

Square Footage: 15000 s.f.

Building Owner: WESTERN CONNECTICUT STATE UNIVERSITY

Building Identification: HIGGINS HALL

Building Address: DR. JAMES ROACH AVE, DANBURY, CT, 06810

Warranty Period Of: THIRTY (30) Years, Beginning On: 05/03/11

Roofing Contractor: EAGLE RIVET ROOF SERVICE CORP. (02361)

For the warranty period indicated above, Firestone Building Products Company, LLC ("Firestone"), an Indiana limited liability company, warrants to the Building Owner ("Owner") above that Firestone will, subject to the Terms, Conditions, and Limitations set forth below, repair any leak in the Firestone Roofing System ("System").

TERMS, CONDITIONS AND LIMITATIONS

1. The Firestone PLATINUM Roofing System is composed of all Firestone materials. Any materials not manufactured or supplied by Firestone are not covered under this warranty and are listed herein.
2. In the event any leak should occur in the System: (a) The Owner must give written notice to Firestone within thirty (30) days of any occurrence of a leak. By so notifying Firestone, the Owner authorizes Firestone or its designee to investigate the cause of the leak. (b) If upon investigation, Firestone determines that the leak is not excluded under the Terms, Conditions and Limitations set forth in this limited warranty, the Owner's sole and exclusive remedy and Firestone's liability will be limited to the repair of the leak. (c) Should the investigation reveal that the leak is excluded under the Terms, Conditions and Limitations, the Owner is responsible for payment of the investigation costs. Failure by Owner to pay for these costs shall render this Firestone PLATINUM P Roof System Limited Warranty ("Limited Warranty") null and void. Firestone will advise the Owner of the type and/or extent of repairs required to be made at the Owner's expense that will permit this Limited Warranty to remain in effect for the unexpired portion of its term. Failure by the Owner to properly make these repairs in a reasonable manner using a Firestone licensed applicator and within a reasonable time shall render this Limited Warranty null and void. (d) Any dispute, controversy or claim between the Owner and Firestone concerning this Limited Warranty shall be settled by mediation. In the event that the Owner and Firestone do not resolve the dispute, controversy or claim in mediation, the Owner and Firestone agree that neither party will commence or prosecute any suit, proceeding, or claim other than in the courts of Hamilton County in the state of Indiana or the United States District Court, Southern District of Indiana, Indianapolis Division. Each party irrevocably consents to the jurisdiction and venue of the above-identified courts.
3. Firestone shall have no obligation under this Limited Warranty unless and until Firestone and the licensed applicator have been paid in full for all materials, supplies, services, warranty costs and other costs which are included in, or incidental to, the System.
4. As a special term of this warranty, Firestone will repair any leaks caused by unintentional and occasional damage to the membrane as a result of normal rooftop inspection, maintenance or service.
5. Firestone shall have no obligation under this Limited Warranty, or any other liability, now or in the future if a leak or damage is caused by: (a) Natural forces, disasters, or acts of God including, but not limited to, winds in excess of 100MPH, hurricanes, tornadoes, hail, lightning, earthquakes, atomic radiation, insects, or animals; (b) Any act(s), conduct or omission(s) by any person, or act(s) of war, which damages the System or which impairs the System's ability to resist leaks; (c) Failure by the Owner to use reasonable care in maintaining the building, said maintenance to include, but not limited to those items listed on the reverse side of this Limited Warranty titled "Building Envelope Care and Maintenance Guide"; (d) Deterioration or failure of building components, including, but not limited to, the roof substrate, walls, mortar, HVAC units, etc.; (e) Condensation or infiltration of moisture in, through, or around the walls, copings, rooftop hardware or equipment, building structure or underlying or surrounding materials. Firestone specifically excludes any damage to the Firestone insulation or roof system that may come from moisture within the roof deck or existing roof system. (f) Any acid, oil, harmful chemical, chemical or physical reaction and the like which comes in contact with the System, which damages the System, or which impairs the System's ability to resist leaks; (g) Alterations or repairs to the System not approved in writing by Firestone; (h) The architecture, engineering, construction or design of the roof, roofing system, or building. Firestone does not undertake any analysis of the architecture or engineering required to evaluate what type of roof system is appropriate; (i) A change in building use or purpose; (j) Deterioration caused by marine salt water atmosphere or by regular spray of either salt or fresh water. (k) Failure to give proper notice as set forth in paragraph 2(a) above.
6. This Limited Warranty shall be transferable subject to Firestone inspection, written approval, and payment of the current transfer fee.
7. During the term of this Limited Warranty, Firestone, its designated representative or employees shall have free access to the roof during regular business hours. In the event that roof access is limited due to security or other restrictions, Owner shall reimburse Firestone for all reasonable costs incurred during inspection and/or repair of the System that are due to delays associated with said restrictions. Owner shall be responsible for the removal and replacement of any overburdens, superstrata or overlays, either permanent or temporary, excluding accepted stone ballast or pavers, as necessary to expose the system for inspection and/or repair.
8. Firestone's failure to enforce any of the terms or conditions stated herein shall not be construed as a waiver of such provision or of any other terms and conditions of this Limited Warranty.
9. This Limited Warranty shall be governed and construed in accordance with the laws of the State of Indiana without regard to conflict of laws.

FIRESTONE DOES NOT WARRANT PRODUCTS INCORPORATED OR UTILIZED IN THIS INSTALLATION WHICH IT HAS NOT FURNISHED. FIRESTONE SPECIFICALLY DISCLAIMS LIABILITY, UNDER ANY THEORY OF LAW, ARISING OUT OF THE INSTALLATION OR PERFORMANCE OF, OR DAMAGES SUSTAINED BY OR CAUSED BY, PRODUCTS NOT FURNISHED BY FIRESTONE. THIS LIMITED WARRANTY SUPERSEDES AND IS IN LIEU OF ALL OTHER WARRANTIES OR GUARANTEES WHETHER WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THIS LIMITED WARRANTY SHALL BE THE OWNER'S SOLE AND EXCLUSIVE REMEDY AGAINST FIRESTONE, AND FIRESTONE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGE TO THE BUILDING OR ITS CONTENTS OR THE ROOF DECK. THIS LIMITED WARRANTY CANNOT BE AMENDED, ALTERED OR MODIFIED IN ANY WAY EXCEPT IN WRITING SIGNED BY AN AUTHORIZED OFFICER OF FIRESTONE. NO OTHER PERSON HAS ANY AUTHORITY TO BIND FIRESTONE WITH ANY REPRESENTATION OR WARRANTY WHETHER ORAL OR WRITTEN.

FIRESTONE BUILDING PRODUCTS COMPANY, LLC

By: Phil LaDuke

Authorized

Signature:

Title:

Director, Quality Assurance

BUILDING ENVELOPE CARE AND MAINTENANCE GUIDE
(Recommendations for Buildings with PLATINUM Warranted Roofing Systems)

Congratulations on your purchase of a Firestone Platinum Roofing System! Your roof is a valuable asset that should be properly maintained. **All roofs and roofing systems require periodic inspection and maintenance to perform as designed and to keep your Limited Warranty in full force and effect.**

1. The roof should be inspected at least twice yearly and after any severe storms. A record of all inspection and maintenance activities should be maintained, including a listing of the date and time of each activity as well as the identification of the parties performing the activity.
2. Proper maintenance and good roofing practice require that ponded water (defined as water standing on the roof forty-eight hours after it stops raining) not be allowed on the roof. Roofs should have slope to drain, and all drain areas must remain clean. Bag and remove all debris from the roof since such debris can be quickly swept into drains by rain. This will allow for proper water run-off and avoid overloading the roof.
3. The Firestone Platinum Roofing System should not be exposed to acids, solvents, greases, oil, fats, chemicals and the like. If the Firestone Platinum Roofing System is in contact with any such materials, these contaminants should be removed immediately and any damaged areas should be inspected by a Firestone Licensed Applicator and repaired if necessary.
4. The Firestone Platinum Roofing System is designed to be a waterproofing membrane and not a traffic surface. Roof traffic other than periodic traffic to maintain rooftop equipment and conduct periodic inspections should be prohibited. In any areas where periodic roof traffic may be required to service rooftop equipment or to facilitate inspection of the roof, protective walkways should be installed by a Firestone Licensed Applicator as needed to protect the roof surface from damage.
5. Some Firestone Platinum roofing membranes require maintenance of the surface of the membrane:
 - a) **Smooth-surfaced Firestone APP membranes** should be coated with an approved liquid coating, such as Firestone Aluminum Roof Coating or Firestone AcryliTop applied in accordance with Firestone Platinum specifications, in order to maximize the service life of the membrane. If this coating is not applied as part of the initial roofing installation, it should be applied within the first five years after the roof is installed to help protect the membrane from surface crazing and cracking. In addition, this coating should be maintained as needed to re-coat any areas that have blistered, peeled or worn through.
 - b) **Granule-surfaced Firestone APP and SBS membranes** do not normally require surface maintenance other than periodic inspection for contaminants, cuts or punctures. If areas of granular loss are discovered during inspection, these areas should be coated with Firestone AcryliTop or other Firestone-approved coating applied in accordance with Firestone Platinum specifications.
 - c) **Gravel-surfaced Firestone BUR membranes** do not normally require surface maintenance other than periodic inspection for contaminants or damage. If areas of gravel loss are discovered during inspection, gravel must be reinstalled into hot asphalt to protect the surface of the membrane. Coatings on smooth surface BUR membranes must be maintained as needed to re-coat any areas that have blistered, peeled or worn through.
 - d) **Firestone Platinum EPDM and TPO roofing membranes** do not normally require surface maintenance other than periodic inspection for contaminants, cuts or punctures. Occasionally, approved liquid roof coatings, such as Firestone AcryliTop, are applied to the surface of EPDM membranes in order to provide a lighter surface color. Such coatings do not need to be maintained to assure the performance of the underlying EPDM roof membrane, but some maintenance and re-coating may be necessary in order to maintain a uniform surface appearance.
 - e) **Firestone Una-Clad metal roofing panels and trim** do not normally require surface maintenance other than periodic inspection for contaminants or damage. In addition, periodic cleaning of the surface may be required to remove dirt and maintain the aesthetic appearance of the coated metal. Simple washing with plain water using hoses or pressure spray equipment is usually adequate. If cleaning with agents other than water is contemplated, several precautions should be observed: (1) do not use wire brushes, abrasives, or similar cleaning tools which will mechanically abrade the coating surface, and (2) cleaning agents should be tested in an inconspicuous area before use on a large scale.
6. All metal work, including counter-flashings, drains, skylights, equipment curbs and supports, and other Firestone brand rooftop accessories must be properly maintained at all times. Particular attention should be paid to sealants at joints in metal work and flashings. If cracking or shrinkage is observed, the joint sealant should be removed and replaced with new sealant.
7. Any alterations to the roof, including but not limited to roof curbs, pipe penetrations, roof-mounted accessories, and tie-ins to building additions must be performed by a licensed Firestone Licensed Applicator and reported to Firestone. Additional information and reporting forms for roof alterations are available at www.firestonebpc.com.
9. Should you experience a leak:
 - (a) Check for the obvious: clogged roof drains, loose counterflashings, broken skylights, open grills or vents, broken water pipes.
 - (b) Note conditions resulting in leakage. Heavy or light rain, wind direction, temperature and time of day that the leak occurs are all-important clues to tracing roof leaks. Note whether the leak stops shortly after each rain or continues to drip until the roof is dry. If you are prepared with the facts, the diagnosis and repair of the leak can proceed more rapidly.
 - (c) Contact Firestone Warranty Claims at 1-800-830-5612 as soon as possible...but please don't call until you are reasonably sure that the Firestone Platinum Roofing System is the cause of the leak.

Firestone feels that the preceding requirements will assist you, the building owner, in maintaining a watertight roof for many years. Your roof is an investment, and maintenance is essential to maximize your return on this important investment.

Firestone

BUILDING PRODUCTS

NOBODY COVERS YOU BETTER™

250 West 96th Street – Indianapolis, IN 46260

1-800-428-4442 * 1-317-575-7000 * FAX 1-317-575-7100

www.firestonebpc.com



NOW THAT YOU HAVE A NEW FIRESTONE ROOFING SYSTEM...

Congratulations on your purchase of a Firestone Roofing System! Your new roof is a valuable asset and as such should be properly maintained. All components of the building envelope require periodic maintenance to perform as designed. "Building Envelope Care And Maintenance Guide" printed on the back of your Firestone Limited Warranty contains a number of important items to assist you in maintaining a watertight building for many years. These maintenance guidelines recommend that the building envelope be inspected at least twice each year. Although this inspection can be performed by any qualified person selected by you, **Firestone recommends that at least one inspection every year be conducted by the Firestone Licensed Applicator who installed your roof.**

Whenever an inspection of the roof is performed, Firestone recommends that the following items be included:

1 ROOF CONDITIONS REQUIRING PERIODIC INSPECTION:

Periodic inspection of the following items is very important to assure that the Firestone Roofing System has not been exposed to conditions not covered by Firestone's Limited Warranty:

- a. **Roof Traffic & Walkways:** The Firestone Roofing System is designed to be a waterproofing component—not a traffic bearing component of the building envelope. As stated in Firestone's System Design Instructions for all Firestone Roofing Systems, "Walkways help protect the membrane from damage due to necessary roof-top service traffic." Please note that walkways should be maintained at all roof access points, around all mechanical equipment which requires maintenance and at all areas where roof traffic more frequent than once a month is anticipated. **If, because of traffic requirements, walkways need to be installed on your roof, contact your Firestone Licensed Applicator before proceeding.**
- b. **Discharges:** All components of the Firestone roof system must be protected from discharges, such as petroleum products, greases, oils and fats, acids and the like. If the building will have any such discharges, please contact Firestone for suggested methods of protection. **If, because of the presence of chemical discharges, protection measures are recommended, contact your Firestone Licensed Applicator before proceeding.**

- c. Ponding Water:** Proper maintenance and good roofing practice suggests that ponded water (defined as standing water on the roof forty-eight (48) hours after it stops raining) should not be allowed on the roof. Roofs should have slope to drain and all drain areas should remain clean. **If ponded water areas are observed on the roof that cannot be corrected by periodic cleaning of drain areas, contact your Firestone Licensed Applicator for suggestions.**
- d. Storms:** The building envelope should be inspected after any severe storm, especially after any storm that involves high sustained winds, heavy wind gusts or tornado-like conditions. All roof surfaces should be inspected for damage caused by wind-blown debris. The roof also should be inspected after any hail or ice storm which could have damaged the roofing system. **If storm-related damage to the roof system is observed, contact your Firestone Licensed Applicator before proceeding.**
- e. Moisture Infiltration:** It is very important to inspect the roofing system for moisture infiltration from sources excluded by Firestone's Limited Warranty. These sources can include but are not limited to:
1. Latent moisture in a pre-existing roofing system or roof insulation remaining beneath the Firestone Roofing System.
 2. Moisture infiltration in or through building walls, copings, mortar joints and roof-top equipment.
 3. Condensation of water vapor within the roofing system due to temperature and humidity differentials.

Because inspection for moisture infiltration requires professional roofing experience, Firestone recommends that this inspection be performed by a Firestone Licensed Applicator at least once a year.

2 NON-FIRESTONE MATERIALS:

In some instances, non-Firestone supplied materials are used in conjunction with Firestone Roofing Systems. These materials may include, but are not limited to the following items:

- a. Locally-fabricated sheet metal flashings.
- b. Non-Firestone sealants at roof terminations.
- c. Non-Firestone roof insulations.
- d. Non-Firestone insulation fastening devices, including but not limited to roofing screws, insulation plates, construction adhesives and roofing asphalt.
- e. Preservative-treated wood nailers and blocking.
- f. Roof drains and drain inserts.
- g. Pre-fabricated roof curbs.
- h. Concrete walkway or ballast pavers.
- i. Stone ballast.
- j. Non-Firestone roof coatings.

Because such items are not warranted by Firestone, it is important to establish an ongoing inspection and maintenance program to assure that the performance of non-Firestone materials does not adversely affect the weathertight integrity of the Firestone roofing system. **Sheet metal items** should be checked for weathertightness and re-anchored/recalced as needed. **Nailers and blocking** should be checked for soundness, and replaced or re-secured if necessary. **Roof drains and drain inserts** should be cleared of any debris. **Sealants** should be inspected for shrinking or cracking and replaced as required. The integrity of **roof insulation and insulation attachments** should be verified. **Walkway pavers** should be checked for cracking or splitting and replaced if necessary. **Ballast stone** should be checked for deterioration due to freeze/thaw conditions. In addition, all ballasted roofs should be inspected for localized wind displacement of the ballast, especially along perimeter roof areas. In the event ballast displacement is observed, the ballast should be carefully re-dispersed uniformly and the addition of larger ballast stones should be considered.

3 FIRESTONE PRODUCTS REQUIRING PERIODIC INSPECTION:

Although Firestone products do not necessarily require periodic maintenance to assure long-term performance, periodic inspection is very important to assure that these products have not been exposed to conditions excluded by Firestone's Limited Warranty:

- a. The **Firestone Roofing Membrane** should be inspected for tears or punctures caused by wind storms, falling objects, roof traffic and the like. If the Firestone membrane is supplied with a factory applied coating, such as roofing granules, the coating should be inspected for any discontinuities caused by abrasion from wind, roof traffic or other sources. **Tears, punctures and abrasions to the membrane must be repaired by a Licensed Firestone Applicator using Firestone specified repair procedures.**

In addition, the membrane should be inspected for any contamination from discharges, such as petroleum products, greases, oils and fats, acids and the like. If any such discharges are observed on the membrane, please contact Firestone for suggested methods of protection. If, because of the presence of chemical discharges, protection measures are recommended by Firestone, contact your Firestone Licensed Applicator before proceeding.

- b. **Firestone Wall Flashings** also should be inspected for tears, punctures, abrasion and contamination from discharges, following the same procedures as for the Firestone Roof Membrane.

4 INSPECTIONS AND SAFETY:

Inspection of any building envelope should be undertaken only by qualified persons who are familiar with safe practices, including all applicable occupational health and safety regulations relating to roofing and construction. **Firestone recommends that all roof inspections be performed by a Firestone Licensed Applicator or a similar roofing professional.**

5 ARRANGING FOR PERIODIC INSPECTIONS:

Please note that the cost of periodic inspections, either by your Firestone Licensed Applicator or by any other roofing professional, are not included in the cost of your Limited Warranty. Firestone recommends that you contact your Firestone Licensed Applicator to obtain a proposal for inspection and maintenance services.

6 ADDITION OF PHOTOVOLTAIC (PV), GARDEN, OR SIMILAR SYSTEMS:

Not all roofing systems are configured in a way that allows them to accept photovoltaic (PV) systems, garden systems, or other above-membrane additions. Prior to installing any systems over your Firestone roofing membrane, you must contact Firestone Roofing Solutions Department at 1-800-428-4442 for review of the roofing system's readiness for accepting above-membrane systems.

Firestone feels that the preceding recommendations will help you maintain a watertight building for many years. To maximize your return on your building investment, appropriate care is essential. Whenever you have questions concerning your roofing system, do not hesitate to contact your Firestone Licensed Applicator or your local Firestone Sales Representative.

Firestone

BUILDING PRODUCTS
NOBODY COVERS YOU BETTER.™

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