ADDENDUM NO.: 3.0 **DATE OF ADDENDUM: October 29, 2014**

Founders Hall Renovations for Allied Health and Nursing
Naugatuck Valley Community College, Waterbury, Connecticut
BI – CTC – 442 – CMR

Original Bid Due Date / Time: **Date: November 13, 2014** **Time: 2:00 PM EST**

Previous Addenda: 1.0, 2.0

TO: **Prospective Bid Proposers:**
This Addendum forms part of the "Contract Documents" and modifies or clarifies the original "Contract Documents" for this Project dated August 14, 2014. Prospective Bid Proposers shall acknowledge receipt of the total number of the Addenda issued for this Project on the space provided on Section 00 41 00 Bid Proposal Form. Failure to do may subject Bid Proposers to disqualification.

The following clarifications are applicable to drawings and specifications for the project referenced above.

GENERAL

Item 1.

The bid opening is unchanged.

PREVIOUS ADDENDA

Item 2.

ADDENDUM NO. 1 ITEM 66g: **REVISE** to read "Comply with requirements for plywood backboards in Section 260500, except paint color shall be white."

Item 3.

ADDENDUM NO. 1 ITEM 129: **REVISE** to read "…At detail 10 **REVISE** column line EXH to EXJ."

Item 4.

ADDENDUM NO. 1 ITEM 159b: **REVISE** referenced elevation to 7 (in lieu of 5).

Item 5.

ADDENDUM NO. 1 ITEM 159c: **REVISE** referenced elevation to 5 (in lieu of 7).

SPECIFICATIONS

Item 6.

SECTION 017830 – WARRANTIES AND BONDS - CMR, At Article 1.3, paragraph F, subparagraph 1, Specification/Warranty Table:

a. Item No. 2 **REVISE** Section No. to 05 05 13 (in lieu of 05 01 13).
b. **DELETE** Item No. 10 Roof Accessories without substitution.
c. **DELETE** Item No. 17 Steel Framed Entrances and Storefronts without substitution.
d. Item No. 39 **REVISE** Specification Product to read "Fixed Furniture".

Item 7.

SECTION 061023 – MISCELLANEOUS CARPENTRY: **DELETE** Article 3.6 FASTENING SCHEDULE in its entirety without substitution.

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Item 8.

SECTION 064023 – INTERIOR ARCHITECTURAL WOODWORK:

a. Article 2.1, paragraph G, **ADD** "in Division 22 or as scheduled by Drawings" to the end of the sentence.
b. Article 2.1, paragraph H, **REVISE** subparagraph 1 to read:
   "1. Engineered Stone ENG.ST-1 Basis of Design: The basis of design for engineered stoned ENG.ST-1 is E.I DuPont de Nemours and Co.: Zodiaq as scheduled. Subject to compliance with requirements provide the named product or comparable products of one of the following manufacturers and selected from the listed product line:
      a. CaesarStone: Caesarstone.
      b. Cosentino N.A.: ECO.
      c. HanWha Corporation: Hanstone Quartz.
      d. LG Hausys America: Viatera."
c. Article 2.1, paragraph H, **REVISE** subparagraph 2 to read:
   "2. Engineered Stone ENG.ST-2 Basis of Design: The basis of design for engineered stoned ENG.ST-2 is EcoSpec Ceramics: IceStone as scheduled. Subject to compliance with requirements provide the named product or comparable products of one of the following manufacturers and selected from the listed product line:
      a. CaesarStone: Caesarstone.
      b. Cosentino N.A.: ECO.
      c. E.I DuPont de Nemours and Co.: Zodiaq.
      d. HanWha Corporation: Hanstone Quartz.
      e. LG Hausys America: Viatera."
d. Article 2.3, **DELETE** paragraph O and substitute the following:
   "O. Perforated Metal Grilles: 5/16" round holes staggered at 7/16' on centers.
      1. Size as shown on Drawings.
      2. 16 gauge stainless steel, mill finish.
      3. 46% open area.
      4. Manufacturers: Provide perforated metal grille as specified produced by one of the following:
         a. McNichols Co.
         b. Hendrick Architectural Products
         c. Perforated Metals Plus."
e. Article 2.3, paragraph P, **ADD** subparagraph 3 as follows:
   "3. Aluminum Vanity Support Brackets: Made to order as detailed from 2 inch x 2 inch x 0.25 inch 6063-T6 extruded aluminum T-sections TIG welded with diagonal leg to support skirt panel, and engineered and installed to support load on counter of not less than 450 lbs applied at any point. Surface mount. All sharp edges ground and de-burred. Clear anodized finish. Include necessary hardware for anchorage to wall and anchorage of counter to bracket."

Item 9.

SECTION 066400 – PLASTIC PANELING: Article 2.1, paragraph A, **REVISE** subparagraph 3 to read:
"3. Surface Finish: Smooth."

Item 10.

SECTION 093013 – CERAMIC TILE:

a. Article 2.2, paragraph B, subparagraph 5, **ADD** sub-subparagraph c as follows:
   "c. Hakatai Enterprises."
b. Article 2.2, paragraph C, subparagraph 5, **REVISE** sub-subparagraph a to read "American Olean".
c. Article 2.2, paragraph D, subparagraph 5, **REVISE** sub-subparagraph a to read "American Olean".
d. Article 2.2, paragraph E, **REVISE** subparagraphs 1 and 2 as follows:
   "1. Base for Thin-Set Mortar Installations: Flat Top Cove shape A-34C1, module size (actual dimensions) 4¼ by 12¾ inches.
   2. Bullnose Trim for Thin-Set Mortar Installations: Surface Bullnose shape S-4289, module size (actual dimensions) 4¼ by 12¾ inches."
e. Article 3.3, **DELETE** paragraph G in its entirety without substitution.
f. Article 3.3 Paragraph J, **DELETE** "Where indicated" at beginning of sentence.

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Item 11.

SECTION 093033 – DIMENSION STONE TILE:

a. Article 2.2, **REVISE** paragraph F to read "Sizes: 24 by 24 inches, unless noted otherwise."
b. Article 2.3, **REVISE** paragraph F to read "Sizes: 24 by 24 inches, unless noted otherwise."

Item 12.

SECTION 095113 – ACOUSTICAL PANEL CEILINGS:

a. Article 2.10 Paragraph B **DELETE** subparagraph 1 in its entirety without substitution.

Item 13.

SECTION 096519 – RESILIENT FLOOR TILE:

a. Article 2.2, paragraph A, **REVISE** subparagraph 1 to read "Ecore Commercial Flooring".
b. Article 2.2, paragraph B, **REVISE** subparagraphs as follows:
   "1. Class III, Solid Vinyl Tile.
   2. Type A, smooth surface or Type B, embossed surface."
c. Article 2.2, **ADD** paragraphs G and H to read:
   "G. Wear Layer: not less than 0.022 inch (.55 mm).
   H. Edge Treatment: Square, unbeveled."
d. Article 2.3, paragraph A, **REVISE** subparagraph 1 to read "Ecore Commercial Flooring".
e. Article 2.3, paragraph A, **REVISE** subparagraph 2 to read "Halo Floors (CBC Flooring)".
f. Article 2.3, paragraph B, **REVISE** subparagraphs as follows:
   "1. Class III, Solid Vinyl Tile.
   2. Type A, smooth surface or Type B, embossed surface."
g. Article 2.3, **ADD** the word "minimum" to the end of paragraph C.
h. Article 2.3, **ADD** paragraphs G and H to read:
   "G. Wear Layer: 0.022 inch (.55 mm) minimum.
   H. Edge Treatment: Square, unbeveled."
j. Article 2.4, paragraph A, **ADD** subparagraph 4 to read "4. Tandus Centiva."
k. Article 2.4, **REVISE** paragraph B and related subparagraphs to read as follows:
   "B. Solid/Luxury Vinyl Floor Tile: ASTM F 1700.
      1. Class I Monolithic Vinyl Tile or Class III Printed Film Vinyl Tile.
      2. Type: A, Smooth Surface or Type B, embossed surface."
l. Article 2.4, **REVISE** paragraph C to read "Overall Thickness: not less than 0.087 inch (2.2 mm)."
m. Article 2.4, **REVISE** paragraph D to read "Size: 16 by 16 inches minimum, 18 by 18 inches maximum."
n. Article 2.4, **ADD** paragraphs G and H to read:
   "G. Wear Layer for Printed Film Vinyl Tile: 0.022 inch (.55 mm) minimum.
   H. Edge Treatment: Square, unbeveled."
o. Article 2.5, **REVISE** paragraph A to read "…'Mirra Granite' solid vinyl tile…".
p. Article 2.5, paragraph B, **ADD** "or B, embossed surface" to end of subparagraph 2.
q. Article 2.5, **REVISE** paragraph D to read "Wear Layer Thickness: not less than 0.022 inch (0.56 mm)".
r. Article 2.5, **ADD** paragraph H to read:
   "H. Edge Treatment: Square, unbeveled."
r. Article 2.6, paragraph A **DELETE** "'Freedom Tile' vinyl tile" and **REPLACE** with "'Cortina Grande' solid vinyl tile."
s. Article 2.6, paragraph A, **ADD** subparagraph 3 to read "3. Armstrong".
t. Article 2.6 **REVISE** paragraph B and related subparagraphs to read as follows:
   "B. Solid/Luxury Vinyl Floor Tile: ASTM F 1700.
      1. Class I Monolithic Vinyl Tile or Class III Printed Film Vinyl Tile.
      2. Type: A, Smooth Surface or Type B, embossed surface."
u. Article 2.6, **REVISE** paragraph C to read "Overall Thickness: not less than 0.120 inch (3.0 mm)".
v. Article 2.6, **ADD** the word "minimum" to the end of paragraph D.
w. Article 2.6, **REVISE** paragraph E to read "Size: 16 by 16 inches minimum, 18 by 18 inches maximum."
x. Article 2.6, **DELETE** paragraph H in its entirety without substitution.
y. Article 2.8, **REVISE** paragraph A to read "…Johnsonite 'Ecolibrium Bio-Based Traditional Rubber Wall Base'…"
z. Article 2.8, paragraph C, **CLARIFICATION**: the word "biobased content" implies rapidly renewable resources.

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aa. Article 2.8, **REVISE** paragraph D to read "…Cove (with top-set toe) at vinyl composition tile, vinyl tile flooring and other locations indicated; and straight (toeless) at carpet."
bb. Article 2.9, **REVISE** paragraph A to read "…Johnsonite Roundel Square Raised Disk Pattern Rubber Stair Treads with Integrated Riser and visually…".
cc. Article 2.9, paragraph A, **ADD** subparagraph 4 to read "4. Roppe Corporation".
dd. Article 2.9, **DELETE** paragraph B in its entirety without substitution.
ee. Article 2.9, paragraph C, subparagraph 2, **REVISE** sub-subparagraph a to read "…Raised Square design".
ff. Article 2.9, **REVISE** paragraph H to read "…to fit each stair tread/riser in one piece."
gg. Article 2.9, **REVISE** paragraph I to read "Integral Risers: Smooth, flat; in height to fully cover substrate; produced as one piece with tread."
hh. Article 2.10, paragraph B, **ADD** subparagraph 3 to read "3. VPI, LLC, Floor Products Division".
ii. **ADD** Article 2.12 and related paragraphs and subparagraphs as follows:

"**2.12 LUXURY VINYL FLOOR TILE LVT-3**

A. Basis-of-Design Product: Johnsonite "Cortina Grande" solid vinyl tile. Subject to compliance with requirements, provide the named product or a comparable product of one of the following manufacturers:
1. Mannington Mills, Inc.
2. TOLI International.

B. Solid/Luxury Vinyl Floor Tile: ASTM F 1700.
2. Class I Monolithic Vinyl Tile or Class III Printed Film Vinyl Tile.
3. Type: A, Smooth Surface or Type B, embossed surface.

C. Vinyl Floor Tile: ASTM F 1066.
4. Class: II, through-pattern homogenous vinyl tile.
2. Type: A, Smooth Surface or Type B, embossed surface.

D. Overall Thickness: 0.120 inch (3.0 mm) (3.2 mm) minimum.
E. Size: 16 by 16 inches (457 by 457 mm) minimum, 18 by 18 inches maximum.
F. Color and Pattern: As scheduled.
G. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 by a qualified testing agency.
5. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

H. Wear Layer: 0.020 inch (.51 mm) minimum.
I. Edge Treatment: Square, unbeveled."

Item 14.

SECTION 096813 – CARPET TILE:
a. Article 2.1, paragraph B, **REVISE** subparagraph 10 to read "10. Backing: Manufacturer's high performance, PVC-free, Cradle to Cradle Certified system."
b. Article 2.1, paragraph B, **DELETE** subparagraph 11 in its entirety without substitution.

Item 15.

SECTION 097700 – MECHANICALLY APPLIED PANELING:
a. Article 1.4, **REVISE** paragraph F to read "Product Data for LEED Credit MR4: Provide documentation indicating…"
b. Article 1.4, **ADD** paragraph H as follows:
"H. Credit MR 7: Certificates of chain-of-custody signed by manufacturers certifying that products specified to be made from certified wood were made from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria." Include evidence that mill is certified for chain-of-custody by an FSC-accredited certification body."
c. Article 1.5, **ADD** paragraph B as follows:
"B. Forest Certification: Provide interior architectural woodwork produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
d. Article 2.2, paragraph B, **DELETE** last sentence of subparagraph 1 in its entirety without substitution.
e. Article 2.3, paragraph A, **REVISE** subparagraphs 1 and 2 as follows:
"1. Intermediate Retainer Type: Single and Double Fin as indicated.
6. Outside Corner Type: Low Profile Corner and Bullnose Corner as indicated."

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Item 16.

SECTION 097713 – SITE FABRICATED STRETCHED FABRIC WALL AND CEILING SYSTEMS: Article 2.2, paragraph A, subparagraph 5, sub-subparagraph c, **REVISE** sub-sub-subparagraph 1) to read "1 inch thickness: 0.80 minimum NRC."

Item 17.

SECTION 098413 – ACOUSTICAL WALL PANELS: **DELETE** Section 098413 in its entirety without substitution.

Item 18.

SECTION 099100 – PAINTING:

a. Article 1.6, paragraph A, **ADD** subparagraph 1 and related sub-subparagraphs as follows:
   "1. Multicolor Wall Finish Applicator Qualifications: Applicator shall be a firm that shall have a minimum of three years of successful applications experience with projects utilizing multi-color wall finish similar in type and scope to that required for this Project and shall be approved by the manufacturer.
      a. Applicator shall certify in writing that technicians utilized for work in this Section have been trained by the manufacturer or its representative."
b. Article 1.9, **REVISE** paragraph B to read "Multicolor Wall Finish: Furnish Owner with 10 percent, but not less than one gallon, of brush/roll-on formula multicolor paint to match spray-applied finish."
c. Article 1.9, **DELETE** paragraph B in its entirety without substitution.
d. Article 2.1, paragraph A, **DELETE** subparagraph 3 in its entirety without substitution.

Item 19.

SECTION 101200 – BULLETIN BOARDS AND DISPLAY CASES:

a. Article 1.4, paragraph C, **DELETE** subparagraph 4 in its entirety without substitution.
b. Article 1.4, paragraph D, **DELETE** subparagraphs 2 and 3 in their entirety without substitution.
c. Article 1.4, **REVISE** paragraph G to read "…surface-burning characteristics of tack assembly."
d. Article 1.5, **REVISE** paragraph D to read "…Provide tack assembly with the surface-burning characteristics…"
e. Article 1.5, **DELETE** paragraph E in its entirety without substitution.
f. **DELETE** Article 1.6 in its entirety without substitution.
g. Article 2.1, **DELETE** paragraph F in its entirety without substitution.
h. **DELETE** Article 2.2 and **REPLACE** with new Article 2.2 to read as follows:
   "2.2 WALL-MOUNTED BULLETIN BOARD
      A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
         1. Nonilluminated, Wall-Mounted Bulletin Boards:
            a. AARCO Products, Inc.
            b. Claridge Products & Equipment, Inc.
            c. Moore Co. Inc.
      B. General: Factory-fabricated unit consisting of manufacturer's standard cabinet with tack assembly on back inside surface and glazed doors at front.
      C. Aluminum Framed Cabinet: Rectangle aluminum perimeter trim, satin anodized finish.
      D. Glazed Hinged Doors: Tempered glass set in frame matching cabinet material and finish. Equip each door with full-height continuous piano hinge and cylinder lock with two keys.
         1. Number of Doors: Two.
      E. Tack Surface: Natural tan cork.
      F. Width: 48 inches.
      G. Height: 36 inches.
      H. Depth: 1½" internally, minimum.
      I. Mounting Height: 36" from floor to bottom of unit, unless noted otherwise.
      J. Mounting: Surface mounted."
i. Article 2.3, **DELETE** paragraph E in its entirety without substitution.
j. Article 3.1, **DELETE** paragraph B in its entirety without substitution.

Item 20.

SECTION 101400 – ADA SIGNAGE AND PLAQUES: Article 1.6, **DELETE** paragraph B in its entirety without substitution.

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Item 21.

SECTION 102123.13 – CUBICLE CURTAINS AND TRACKS: Article 2.1, paragraph C, subparagraph 1, **DELETE** sub-subparagraph d in its entirety without substitution.

Item 22.

SECTION 102226 – OPERABLE PANEL PARTITIONS:

a. Article 1.3, **DELETE** paragraph B in its entirety without substitution.
b. Article 2.8, paragraph A, subparagraph 1, **REVISE** sub-subparagraph c to read "…for installation above pass door as shown."
c. Article 3.3, Paragraph A **DELETE** "storage pocket doors" and "pocket doors"; there are none.

Item 23.

SECTION 103013 – MARBLE FIREPLACE SURROUND:

a. Article 1.3, **DELETE** paragraph B in its entirety without substitution.
b. Article 1.4, paragraph C, **DELET**E subparagraph 3 in its entirety without substitution.

Item 24.

SECTION 104400 – FIRE-PROTECTION SPECIALTIES, Article 3.3, paragraph A, **REVISE** subparagraph 1 and 2 as follows:

"1. Fire-Protection Cabinets: 48 inches maximum above finished floor to cabinet door handle.
2. Mounting Brackets: 48 inches maximum above finished floor to handle of fire extinguisher."

Item 25.

SECTION 109000 – SPECIALTIES,

a. Article 2.4, **REVISE** paragraph B to read
   "B. Form column covers with horizontal reveals and with recessed bases, to shapes shown on Drawings from metal indicated below. Return horizontal edges to form reveals, vertical edges to form butt joints. Provide concealed anchorages to supporting construction."
b. Article 2.4, paragraph B, **REVISE** subparagraph 1 to read "Aluminum Sheet: 0.90 inch thickness; type 5052 alloy complying with ASTM B209."
c. Article 2.4, paragraph B, **REVISE** subparagraph 3 and sub-subparagraph a as follows:
   "3. Fabricate column covers with vertical butt joints and ¾ by ¾ inch horizontal reveals.
      a. Locate horizontal reveals in column surrounds at elevations shown by Drawings to coordinate with mechanically-applied paneling."
d. Article 2.4, paragraph B, **REVISE** subparagraph 4 to read "Fabricate column covers with recessed bases, heights as shown by Drawings to coordinate with room's wall base."
e. Article 2.4, paragraph B, **ADD** subparagraphs 6 and 7 as follows:
   "6. Diameter/Size: As shown on Drawings.
   7. Height: As shown on Drawings."
f. **REVISE** Article 2.5 to read "ORNAMENTAL FIBERGLASS COLUMN COVERS".
g. Article 2.5, paragraph A, **REVISE** first sentence to read "…ornamental fiberglass column covers is Edon Corporation…"
h. **REVISE** Article 3.5 to read "COLUMN COVER INSTALLATION".
g. Article 3.5, Paragraph D **ADD** "Provide additional bracing components as necessary to stiffen substructure and ensure solid mid-span bracings and connections."

Item 26.

SECTION 115000 – LAB EQUIPMENT,

a. Article 2.7, paragraph A, **REVISE** subparagraph 1 to read "...Styleview Vertical Lift, High Traffic Areas or Equal…"
b. Article 2.9, paragraph A, subparagraph 1, **REVISE** manufacturer to "Rescue Simulation Products".

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Item 27.

SECTION 122413 – WINDOW SHADES,

a. Article 2.1, **REVISE** paragraph C to read "Method of Installation: Ceiling/Soffit unless indicated otherwise."
b. Article 2.1, paragraph D, **REVISE** subparagraph 3 to read "Chain Location: As recommended by contractor and approved by Architect."
c. Article 2.3, **REVISE** paragraph A to read "…is based on Phifer: 'SheerWeave 7100' laminated blackout fabric."
d. Article 2.3, paragraph B, **REVISE** subparagraph 1 to read "Color: White/bone with white reverse side."
e. Article 2.3, paragraph B, **DELETE** subparagraph 2 in its entirety without substitution.
f. Article 2.4, **REVISE** paragraph A to read "…is based on Phifer: 'SheerWeave Infinity2' light filtering…"
g. Article 2.4, paragraph B, **DELETE** subparagraph 2 in its entirety without substitution.

Item 28.

SECTION 124813 – FLOOR MATS AND FRAMES,

a. Article 1.2, paragraph A, **REVISE** subparagraph 1 to read "Entrance tiles in recessed frames."
b. Article 1.2, paragraph A, **DELETE** subparagraph 2 in its entirety without substitution. Loose entrance mats will be provided by the Owner under a separate contract.
c. **ADD** Article 1.7 as follows:
   "1.7 EXTRA MATERIALS
      A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
         1. Entrance Tiles: Full-size units equal to 2 percent of amount installed for each size, color, and pattern indicated, but no fewer than 10 units."
d. **DELETE** Article 2.2 in its entirety without substitution.
e. Article 2.5, **DELETE** paragraph A in its entirety without substitution.

Item 29.

SECTION 126100 – FIXED FURNITURE,

a. Article 2.3, paragraph D, **REVISE** subparagraph 2 to read "Profile: ¾ inch by 1½ inch with ¼ inch radiused corners as shown on Drawings."
b. Article 3.3, paragraph A, subparagraph 2, **DELETE** the words "as specified in Section 262726 'Wiring Devices" and **REVISE** sentence to read "Test power receptacles when power is activated."

Item 30.

SECTION 142100 – ELECTRIC TRACTION ELEVATORS,

a. Article 2.8, **REVISE** end of paragraph D to read "…Division 28 Section 'Fire Alarm System'."
b. Article 2.8, paragraph G, **REVISE** end of subparagraph 3 to read "…Division 28 Section 'Fire Alarm System'."

Item 31.

SECTION 220500 – COMMON WORK RESULTS FOR PLUMBING,

a. Article 2.18, **REVISE** fourth sentence of paragraph A to read "The water heater shall be installed directly under the plumbing fixture without occupying any floor space nor interfering with handicapped accessible clearances."
b. Article 2.24 XL-TRACE ELECTRICAL HEAT TRACING FOR PIPELINES: **DELETE** Article in its entirety without substitution.

Item 32.

SECTION 230913 – INSTRUMENTATION AND CONTROL FOR HVAC,

a. Article 3.8, **DELETE** paragraphs C, D, and E in their entirety without substitution.
b. Article 3.18, paragraph E, REVISE subparagraph 6 to read "Submit test plan documentation 20 business days before start of tests."
c.

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Item 33.

SECTION 230993 – SEQUENCE OF OPERATIONS FOR HVAC CONTROLS: **REMOVE** Section 230993 SEQUENCE OF OPERATIONS FOR HVAC CONTROLS, as issued, from the specifications and **REPLACE** with Section 230993 SEQUENCE OF OPERATIONS FOR HVAC CONTROLS consisting of 28 pages attached to and issued with this Addendum.

Item 34.

SECTION 232113 – HYDRONIC PIPING,

a. **DELETE** Article 2.20 RADIATION – FIN-TUBE TYPE in its entirety without substitution
b. **DELETE** Article 2.30 XL-TRACE ELECTRICAL HEAT TRACING FOR PIPELINES in its entirety without substitution.

Item 35.

SECTION 233115 – BOXED LOUVERED PENTHOUSES,

a. Article 2.2, **CLARIFY:** The phrase "Boxed Louvered Penthouses" is interchangeable with "Ventilator".
b. Article 2.2, paragraph A, subparagraph 3, **REVISE** sub-subparagraph a to read
   "a. Louvers & Dampers for IV-1: Model IL-31 6 inch deep drainable blade louver system fabricated out of .081 inch thick, 6063-T6/T52 extruded aluminum."
c. Article 2.2, paragraph A, subparagraph 3, **ADD** sub-subparagraph b to read:
   "b. Louvers & Dampers for RV-1: Model IL-323; four-inch deep drainable blade louver system fabricated out of .081 thick, 6063-T5 extruded aluminum."
d. Article 2.2, paragraph A, subparagraph 3, **RENUMBER** sub-subparagraph b to sub-subparagraph c.

Item 36.

SPECIFICATION SECTION 23 64 26 – WATER COOLED CHILLERS: **ADD** to Paragraph 2.2.UNIT DESCRIPTION a second paragraph to read:

"Chillers shall be built and shipped completely assembled with bolt-together construction on major components for field disassembly and re-assembly on the job site. Suction and discharge lines shall have bolt-on flanges. Unit shall ship with vessel and head insulation. Unit shall ship with full factory refrigerant charge in the chiller. Mechanical contractor shall capture the refrigerant before the chiller is disassembled on site and store for future use. Refill the chiller with full refrigerant charge after chiller is assembled. Site disassembly and re-assembly must be completed by Chiller Manufacturer's service personnel".

Item 37.

SECTION 237200 – AIR TO AIR ENERGY RECOVERY EQUIPMENT,

a. Article 2.04, **REVISE** first sentence of paragraph B to read "installation as shown by Drawings."
b. Article 2.05, paragraph G, **REVISE** third sentence of subparagraph 2 to read "The filter media shall have an average efficiency of *85*%.

Item 38.

SPECIFICATION SECTION 23 73 13 – AIR HANDLING UNIT: **CHANGE** Paragraph 2.8.B to read "Provide flat filter sections with throwaway 30% efficiency pre filters and 85% (MERV 13) efficiency final filters. Filters shall be removable from motor side(s) of the unit."

Item 39.

SECTION 260000 – GENERAL ELECTRICAL, Article 1.1, **ADD** paragraph F as follows:

"F. Section 01 23 00 Substitution Procedures."

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Item 40.

SECTION 264100 – LIGHTNING PROTECTION, Article 1.1, **DELETE** second sentence of paragraph A entirely and without substitution.

Item 41.

SECTION 270000 – TELECOMMUNICATIONS INFRASTRUCTURE,

a. At Article 2.4, Paragraph A **CHANGE** the second sentence to read "Comply with Requirements for plywood backboards in Section 26 05 00, except paint color shall be white."
b. Article 3.2, **DELETE** paragraphs H, I and J in their entirety without substitution.
c. Article 3.5, **DELETE** the word "partitions" from paragraph C.
d. Article 3.10, **REVISE** second sentence of paragraph C to read "Submit to the Architect, via the Construction Manager, the locations proposed for using supplementary steel and channels for the support of equipment, fixtures, and raceways."
e. Article 3.22, paragraph B, subparagraph 5, **REVISE** the words "AutoCAD Version 2000" to "AutoCAD Version 2010".

Item 42.

SECTION 283100 – FIRE ALARM SYSTEM,

a. **DELETE** Article 3.8 in its entirety without substitution.
b. Article 3.9 **REVISE** paragraph A to read as follows:
    "A. Engage a factory-authorized service representative to train the Owner's maintenance personnel to adjust, operate, and maintain the fire alarm system for a minimum of two (2) separate 4-hour training sessions."

Item 43.

SECTION 311000 – SITE CLEARING, Article 1.2, paragraph B, **REVISE** subparagraph 2 to read "…and Section 018113 'Sustainable Design Requirements – LEED for New Construction v2009 Registered Project Checklist' for additional LEED requirements."

Item 44.

SECTION 311100 – SITE UTILITY PREPARATION AND DEMOLITION, Article 3.1, **REVISE** paragraph B to read "Refer to Construction Documents for requirements and limitations on site clearing and grubbing. Coordinate with work beyond Project Work/Scope Limit Line entitled NVCC Campus Improvements Project BI-CTC-436 which may be occurring simultaneously."

Item 45.

SECTION 312500 – STORM WATER POLLUTION AND CONTROL PLAN (SWPCP),

a. Article 1.2, paragraph A, **REVISE** second sentence of subparagraph 2 to read "The Construction Manager (CMR), or a contractor assigned by the CMR, shall be responsible for inspecting the erosion control measures and maintaining or repairing them as necessary."
b. Article 1.2, paragraph B, **ADD** the following subparagraphs:
    "4. Section 018113 Sustainable Design Requirements – CMR
    5. Section 312319 Dewatering"
c. Article 1.5, **REVISE** the first sentence of paragraph B to read "…Owner, Engineer, City of Waterbury and State of Connecticut DEEP for review" in lieu of "Owner, Engineer and Town of West Hartford for review."
d. Article 1.5, **REVISE** the first sentence of paragraph C to read "Submit a dewatering plan, as addressed under Section 312319 that will ensure protection…"

Item 46.

SECTION 314100 – EXCAVATION SUPPORT, Article 1.2, paragraph B, **ADD** subparagraph as follows:
"1. Section 024119 Selective Demolition"

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Item 47.

SECTION 314800 – UNDERPINNING, **ADD** the following Article and paragraphs:

"1.3 RELATED DOCUMENTS

A. Section 024119 Selective Demolition

B. Section 312319 Dewatering"

Item 48.

SECTION 321216 – BITUMINOUS ASPHALT CONCRETE PAVING,

a. Article 1.1, **REVISE** paragraph A to read "Bituminous Paving for parking lots shall include restoration of disturbed existing pavement areas from the installation of proposed curbing and utility trenching within the defined Site Contract Limit Line."

b. Article 1.4, **ADD** paragraph E with subparagraphs as follows:

"E. LEED Submittals:

1. Product Data for Credit MR 4 (Recycled Content): Provide data showing postconsumer and preconsumer recycled materials content of materials and fabricated items provided for this project, stated as a percentage of the materials included in these items or materials provided as part of the Work of this Section.
2. Product Data for Credit MR 5 (Regional Materials): Provide data showing materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value."

Item 49.

SECTION 321313 – CONCRETE PAVING, Article 1.4, paragraph B, **DELETE** subparagraph 2 in its entirety without substitution.

Item 50.

SECTION 333100 – SANITARY UTILITY SEWERAGE PIPING, Article 2.01, paragraph I, **REVISE** second sentence of subparagraph 2 to read "Covers shall be marked with lettering as approved by the Engineer."

Item 51.

SECTION 334100 – STORM UTILITY DRAINAGE PIPING, Article 1.3, **ADD** paragraph F and subparagraph 1 as follows:

"F. LEED Submittals:

1. Product Data for Credit MR 4 (Recycled Content): Provide data showing postconsumer and preconsumer recycled materials content of materials and fabricated items provided for this project, stated as a percentage of the materials included in these items or materials provided as part of the Work of this Section."

DRAWINGS

Item 52.

DRAWING CD-3 – SITE CODE INFORMATION AND EGRESS PLAN: **REVISE** egress numbers exiting the building as indicated on attached sketches AD3-SK-CD-3-1 and AD3-SK-CD-3-2 both titled "Revised Egress Numbers".

Item 53.

DRAWING L1.1 – SITE LAYOUT PLAN:

a. **ADD** dimensions along west side of building as indicated on attached sketch AD3-SK-L-1.1-1 titled "Revised Bike Rack Layout".

b. **ADD** dimensions near main entrance as indicated on attached sketch AD3-SK-L-1.1-2 titled "Additional Layout for Granite Bollards".

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c. **ADD** dimensions at southeast corner of building as indicated on attached sketch AD3-SK-L-1.1-3 titled "Additional Layout for Curb Ramp Width".
d. **REVISE** dimensions at east side of building as indicated on attached sketch AD3-SK-L-1.1-4 titled "Revised Bike Rack Layout".

Item 54.

DRAWING L1.2 – SITE IMPROVEMENTS PLAN: **ADD** dimensions near main entrance as indicated on attached sketch AD3-SK-L-1.2-1 titled "Additional Layout for Joints at Bollards".

Item 55.

DRAWING L2.1 – SITE LAYOUT ENLARGEMENT: At Main Entry & Terrace detail 1, **ADD** dimensions as indicated on attached sketch AD3-SK-L-2.1-1 entitled "Additional Layout for Paver Banding".

Item 56.

DRAWING L2.2 – SITE IMPROVEMENTS ENLARGEMENT: At Main Entry & Terrace detail 1, **REVISE** detail call outs as indicated on attached sketches AD3-SK-L-2.2-1 and AD3-SK-L2.2-2 both titled "Corrected Detail References".

Item 57.

DRAWING L3.1– SITE DETAILS: At detail 14, **ADD** dimension as indicated on attached sketch AD1-SK-L3.1-1 titled "River Stone Surface Added Depth Dimension".

Item 58.

DRAWING C1.0 – STORM WATER POLLUTION CONTROL PLAN (SWPCP):
a. **CLARIFICATION:** Dashed line (similar to the one shown on L-Drawings) indicates "work limit line"; work beyond will be accomplished through another project entitled NVCC Campus Improvements Project BI-CTC-436 which may be occurring simultaneously.
b. **ADD** call out to identify exterior dashed line to read: "Approximate Site Utility Work Limit Line, see Landscaping Plans for Limit Line associated with Site Improvements.
c. **DELETE** "Construct Temporary Sediment Basin No. 1 (5/C1.1), and "Construct" Rip Rap Swale" (6/C1.1) in their entirety; work will be accomplished as part of a separate project.

Item 59.

DRAWING C1.1 – STORM WATER POLLUTION CONTROL PLAN (SWPCP) NOTES & DETAILS: **DELETE** the following Details in their entirety:
5/C1.1 "Typical Sediment Pond Cross-section Detail"
6/C1.1 "Sediment Pond Outlet Weir Dimension Table"
7/C1.1 "Typical Sediment Pond Outlet Channel Cross Slope"

Item 60.

DRAWING C2.0 – SITE UTILITY DEMOLITION PLAN:
a. **CLARIFICATION:** Dashed line (similar to the one shown on L-Drawings) indicates "work limit line"; work beyond will be accomplished through another project entitled NVCC Campus Improvements Project BI-CTC-436 which may be occurring simultaneously.
b. **ADD** "xxxxx" to identify removing approximately 45-feet of the existing sanitary sewer piping exiting from the eastern side of the building to the proposed sanitary sewer manhole.
c. **ADD** call out to identify exterior dashed line to read: "Approximate Site Utility Work Limit Line, see Landscaping Plans for Limit Line associated with Site Improvements.
d. **ADD** note to grout fill approximately 100-feet of existing sanitary sewer piping from northeast corner of Annex Building to the sanitary sewer manhole being removed.
e. **ADD** Note "Contractor to provide caps for existing sanitary sewer laterals exiting from western and eastern building sides as shown by Drawing PL1.0B. Refer to the specifications for additional information.

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Item 61.

DRAWING C2.1 – SITE UTILITY PLAN:

a. **CLARIFICATION:** Dotted line (similar to the one shown on L-Drawings) indicates "Site Contract Limit Line"; work beyond will be accomplished through another project entitled NVCC Campus Improvements Project BI-CTC-436 which may be occurring simultaneously.
b. **ADD** general note to read "Bituminous Paving for parking lots shall include restoration of disturbed existing pavement areas from the installation of proposed curbing and utility trenching within the defined Site Contract Limit Line."
c. **ADD** call out to identify exterior dashed line to read: "Approximate Site Utility Work Limit Line, see Landscaping Plans for Limit Line associated with Site Improvements.
d. **ADD** note "Site Contractor to provide and install conduits, including, trenching, backfilling, compaction, and turf/pavement restoration. Extents are from CL&P Pole #1483 along West Main Street to building and transformer. Refer to Drawings SE.1 and SE.2, and Specifications for additional information."
e. **ADD** note "All Utility Frames, Grates, and Covers shall be installed flush with the proposed surrounding finish so as not to create any type of tripping hazard.
f. **REVISE** call out information for Proposed Catch Basin D-2 to read…INV = 508.80."
g. **REVISE** call out information for Proposed Catch Basin D-1 to read…INV = 509.00."
h. **REVISE** call out information for Proposed Storm MH D-3 to read… 5 FT. I.D., RIM = 514.08, INV = 508.50 (E), INV = 505.65 (W) EX. FOUND. DRN., INV = 505.65 (S), DELETE (NE) Stub."
i. **ADD** information to Proposed Storm MH D-6, INV. = 508.25 (NE) to read…12" DIA. CHDPE STUB. PROVIDE CAP FOR FUTURE CONNECTION"

Item 62.

DRAWING C3.3 – PATIO DRAIN AND STORM DRAINAGE MANHOLE DETAILS: At details 1 and 2, **REVISE** noted trench drain material from "polished bronze finish" to "cast iron" to match finish specified for Tree Grates.

Item 63.

DRAWING C3.4 – SITE UTILITY DETAILS: **DELETE** detail 5/C3.4 titled "Typical PVC Drain Heel-Proof Cover – 12" Diameter and Greater".

Item 64.

DRAWING A1.3B – THIRD FLOOR PLAN - NORTH: At east wall of Corridor F365 **ADD** bulletin board to south of existing column line 7.

Item 65.

DRAWING A3.0 – TYPICAL ROOF DETAILS:

a. At detail 8, **REVISE** boxed note to read "Coordinate lightning rod layout with approved lightning protection shop drawings".
b. **ADD** plan detail 14 at expansion joint in parapet wall as shown on attached sketch AD3-SK-14/A3.0.

Item 66.

DRAWING A5.1 – ROOM FINISH SCHEDULE: **REVISE** Room Finish Schedule as shown by attached sketches AD3-SK5.1A, AD3-SK5.1B and AD3-SK5.1C.

Item 67.

DRAWING A7.0 – WALL TYPES:

a. **ADD** wall type 18B consisting of 5/8" gwb one side 8" metal studs at 16" o.c.
b. **ADD** plan detail 2 at control joint in brick veneer as shown on attached sketch AD3-SK-2/A7.0.
c. **ADD** detail 3 at control joint in precast concrete coping as shown on attached sketch AD3-SK-3/A7.0.
d. **ADD** detail 4 at expansion joint in brick veneer as shown on attached sketch AD3-SK-4/A7.0.
e. **ADD** detail 5 at expansion joint in architectural precast concrete as shown on attached sketch AD3-SK-5/A7.0.

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Item 68.

DRAWING A8.1 – INTERIOR ELEVATIONS: At elevations 5, 6, 6A, and 13 **ADD** 6" dimension to difference in height of upper cabinets.

Item 69.

DRAWING A8.3 – CORRIDOR ELEVATIONS: At elevation 8 **ADD** bulletin board to right of existing column line 7. Mount bottom of unit 36" above finished floor.

Item 70.

DRAWING A8.4 – CORRIDOR ELEVATIONS:

a. At elevation 11 **ADD** x-ray notification light above door 213 with note "x-ray in use notification light centered above door, see dwg EP1.2".
b. At elevations 1 and 11 **ADD** bulletin board to right of existing column line 7. Mount bottom of unit just above chair rail.

Item 71.

DRAWING A9.1A – MAIN LEVEL REFLECTED CEILING PLAN - SOUTH: At Stair A F100 **REVISE** southern portion of ACT ceiling to gypsum wallboard, +/- 9" wide, flush with ACT, to coordinate with linear light fixture type EE.

Item 72.

DRAWING A9.3A – THIRD FLOOR REFLECTED CEILING PLAN - SOUTH: At Stair A F300 **REVISE** southern portion of ACT ceiling to gypsum wallboard, +/- 9" wide, flush with ACT, to coordinate with linear light fixture type EE.

Item 73.

DRAWING A11.1 – LECTURE HALL: At detail 2,

a. **ADD** wall type key "5C" to walls between Vestibules and Lecture Hall.
b. **ADD** wall type key "5F" to each side of double wall between Breakout and Lecture Hall.
c. **ADD** wall type key "18B" to eastern (front) walls of Lecture Hall.

Item 74.

DRAWING A11.5 – CLASSROOMS F121 & F122: At floor plan 1 **ADD** plan detail key 7/A7.3 where wall between classrooms meets the exterior window.

Item 75.

DRAWING A11.8 – RAD TECH: At floor plan 1 **ADD** note "X-ray in use notification light centered above door" to door from corridor into Diagnostic Lab F213 (corridor side).

Item 76.

DRAWING A11.9 – RAD TECH: At elevation 4 **REVISE** dimension to top of counter to 2'-6" (in lieu of 2'-10").

Item 77.

DRAWING A11.13 – SURGICAL TECH SUITE: At elevation 9 **REVISE** configuration and mounting height of surgical scrub sink as shown on attached sketch AD3-SK-A11.13.

Item 78.

DRAWING A11.16 – EMT CLASS LAB: At floor plan 1 **REVISE** number of built-in cubbies from 3 to 2 at EMT Lab F124.

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Item 79.

DRAWING A11.17 – MEDICAL EQUIPMENT: At detail 3 **REVISE** note at lower right-hand receptacles to read "receptacle – quad, ivory" to coordinate with electrical drawings.

Item 80.

DRAWING S1.1A – MAIN LEVEL FOUNDATION PLAN - SOUTH:

a. At partial plan 3/S1.1A **ADD** a sump to the interior of the elevator pit. Coordinate size and location with MEP Drawings.
b. At partial plan 3/S1.1A **ADD** note east of elevator pit that reads "coordinate location of floor drains with Architectural and MEP Drawings".
c. At partial plan 3/S1.1A **DELETE** note just west of column line D between 2 & 3 that reads "new foundation wall and footing".
d. At partial plan 3/S1.1A **REVISE** bottom of footing elevations of the elevator pit and two footings located to the west from 499.28' to 499.69'. Pit Depth is 5'-8".

Item 81.

DRAWING S2.2 – FOUNDATION SECTIONS:

a. At section 2/S2.2 **REVISE** elevator pit depth from 6'-1" to 5'-8"
b. At section 2/S2.2 **REVISE** bottom of footing from 499.28' to 499.69'.

Item 82.

DRAWING S2.7 – FOUNDATION SECTIONS: At section 1/S2.7 **REVISE** elevator pit depth from 6'-1" to 5'-8".

Item 83.

DRAWING S2.8 – FOUNDATION SECTIONS: At section 2/S2.8 **ADD** 9" dimension between top of existing slab and top of new exterior finished slab.

Item 84.

DRAWING S3.1 – FRAMING SECTIONS:

a. At section 2/S3.1 **REVISE** continuous pour stop at third floor slab edge to a continuous to 5 ½" x 11" x ½"bent plate. Provide continuous 7"x4"x3/8" galvanized bent plate to support precast. See Section 1/S3.2 for similar details. Provide vertical slotted holes weld after adjustment.
b. At section 3/S3.1 **ADD** note above the third floor slab that reads "Provide continuous 7"x4"x3/8" galvanized bent plate to support precast. See Section 1/S3.2 for similar details." **REVISE** slab edge bent plate from 5 ½" x 11" to 5 ½" x 11" x ½". Provide vertical slotted holes weld after adjustment.

Item 85.

DRAWING S3.2 – FRAMING SECTIONS:

a. At section 1/S3.2 the 7"x4"x3/8"bent plate shown supporting the precast is to be galvanized. Continuous #3 bars shown are to be changed from continuous to 3" long @ 12" o.c. The continuous #3 bar below is to be similar. **REVISE** note above 3rd floor that indicates 5 ½" x 11" bent plate to 5 ½"x11"x1/2" continuous bent plate. Provide vertical slotted holes weld after adjustment.
b. At section 2/S3.2 **REVISE** continuous pour stop at third floor slab edge to a continuous to 5 ½" x 11" x ½"bent plate. Provide continuous 7"x4"x3/8" galvanized bent plate to support precast. See Section 1/S3.2 for similar details. Provide vertical slotted holes weld after adjustment.

Item 86.

DRAWING S3.3 – FRAMING SECTIONS: At section 3/S3.3 **REVISE** shaft height dimension from 16'-8" clear to 17'-2" clear.

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Item 87.

DRAWING S3.4 – FRAMING SECTIONS: At section 2/S3.4 **ADD** similar diagonal braces at second floor beam as shown on 3rd floor above.

Item 88.

DRAWING S3.9 – FRAMING SECTIONS:

a. At section 1/S3.9 **REVISE** W12x30 shown in shaft just above roof to read "member to be provided by elevator manufacturer".
b. At Section 1/S3.9 **REVISE** 12'-4" dimension to 12'-6".
c. At Section 1/S3.9 **REVISE** 16'-8" dimension to 17'-2".

Item 89.

DRAWING PL1.1B – MAIN LEVEL FLOOR PLUMBING PLAN - NORTH: At bollards to south of generator enclosure **REVISE** note to read "provide (4) 6" steel bollards, painted yellow, coordinate w/ dwg 8/L3.3".

Item 90.

DRAWING M1.2A-D – SECOND FLOOR DUCTWORK PLAN - SOUTH: **ADD** flue exhaust venting detail as shown by attached sketch AD3-SK-M1.2A-D-1.

Item 91.

DRAWING EL1.1B – MAIN LEVEL FLOOR LIGHTING PLAN - NORTH: At water coolers in Corridor F155 **REVISE** the three type H1 light fixtures to type H2 light fixtures per attached sketch AD3-SK-EL1.1B-1.

Item 92.

DRAWING EL1.2B – SECOND FLOOR LIGHTING PLAN - NORTH: At water coolers in Corridor F246 **REVISE** the three type H1 light fixtures to type H2 light fixtures per attached sketch AD3-SK-EL1.2B-1.

Item 93.

DRAWING EL1.3B – THIRD FLOOR LIGHTING PLAN - NORTH: At water coolers in Corridor F365 **REVISE** the three type H1 light fixtures to type H2 light fixtures per attached sketch AD3-SK-EL1.3B-1.

Item 94.

DRAWING EL2.7 –LIGHT FIXTURE SCHEDULE: **ADD** new light fixture type H2 per attached sketch AD3-SK-EL2.7-1.

Item 95.

DRAWING EP1.0B – BASEMENT FLOOR POWER PLAN: At Part Plan of Electrical Room and MDF **ADD** note to ladder racks in MDF to read "ladder rack location and size per T dwg's".

Item 96.

DRAWING EP1.1A – MAIN LEVEL FLOOR POWER PLAN - SOUTH:

a. **ADD** "AC" abbreviation (indicating 'above counter') to outlet west of opening from Lobby into Food Service F103.
b. **REVISE** miscellaneous power/data items in Lecture Hall and related spaces per attached sketch AD3-SK-EP1.1A-1.
c. At Breakout F143 **REVISE** height of monitor per attached sketch AD3-SK-EP1.1A-2; **ADD** "see interior elevations for location" to end of note referencing data/electrical outlets for monitor.
d. **REVISE** miscellaneous power/data items in Lobby per attached sketch AD3-SK-EP1.1A-3.
e.

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Item 97.

DRAWING EP1.1B – MAIN LEVEL FLOOR POWER PLAN – NORTH: **REVISE** miscellaneous power/data items in Conference F130 per attached sketch AD3-SK-EP1.1B-1.

Item 98.

DRAWING EP1.2B – SECOND FLOOR POWER PLAN - NORTH:

a. At Part Plan of Room F213 and F214 **ADD** data/electrical outlets to west wall of Diagnostic Lab F213 to coordinate with headwall detail 2/A11.17.
b. At Computer Lab F202 **ADD** data/electrical outlets above counter in northeast corner.
c. **REVISE** miscellaneous power/data items in Group Study rooms per attached sketch AD3-SK-EP1.2B-1.
d. **REVISE** data items in PT Class Lab F207 per attached sketch AD3-SK-EP1.2B-2.
e. **REVISE** data items in Mobility Lab F208 per attached sketch AD3-SK-EP1.2B-3.
f. **REVISE** miscellaneous power/data items per attached sketch AD3-SK-EP1.2B-4.
g. **REVISE** power/data items in Ultrasound Lab F216 per attached sketch AD3-SK-EP1.2B-5.
h. At Part Plan of Room F213 and F214 **ADD** data outlet for camera and additional x-ray notification light above eastern door into Control F214 per attached sketch AD3-SK-EP1.2B-6.

Item 99.

DRAWING EP1.3A – THIRD FLOOR POWER PLAN –SOUTH:

a. **REVISE** power/data items in Conference F311 per attached sketch AD3-SK-EP1.3A-1.
b. **REVISE** miscellaneous power/data items in Non-Credit Storage F301 per attached sketch AD3-SK-EP1.3A-2.
c. **REVISE** power/data items in Conference F327 per attached sketch AD3-SK-EP1.3A-3.

Item 100.

DRAWING EP1.3B – THIRD FLOOR POWER PLAN –NORTH:

a. **REVISE** power/data items in HPS Labs per attached sketch AD3-SK-EP1.3B-1.
b. **REVISE** power/data items in Debrief rooms per attached sketch AD3-SK-EP1.3B-2.
c. **REVISE** power/data items in Fundamentals Lab F338 per attached sketch AD3-SK-EP1.3B-3.
d. **REVISE** power/data items in Fundamentals Lab F340 per attached sketch AD3-SK-EP1.3B-4.
e. **REVISE** miscellaneous power/data items per attached sketch AD3-SK-EP1.3B-5.
f. **REVISE** power/data items in Respiratory Therapy Class-Lab F349 per attached sketch AD3-SK-EP1.3B-6.
g. **REVISE** power/data items in Respiratory Therapy Lab F351 per attached sketch AD3-SK-EP1.3B-7.
h. **REVISE** power/data items in Fundamentals Lab F352 per attached sketch AD3-SK-EP1.3B-8.
i. **REVISE** power/data items in Fundamentals Lab F354 per attached sketch AD3-SK-EP1.3B-9.
j. **REVISE** power/data items in Surg-Tech O.R. F358 for Supplemental Bid #3 per attached sketch AD3-SK-EP1.3B-10.

Item 101.

DRAWING ES1.3A – THIRD FLOOR SPECIAL SYSTEMS PLAN –SOUTH: **ADD** Fire Alarm items to Non-Credit Storage F301 and Copy F302 per attached sketch AD3-SK-ES1.3A-1.

Item 102.

DRAWING TA1.1A through TA1.3B – AUDIOVISUAL INFRASTRUCTURE DRAWINGS:

a. At Audiovisual Equipment Legend **CLARIFICATION**: where “AV” is noted, actual equipment is NIC, to be provided under a future AV/FFE project.
b. At both lecterns listed in Audiovisual Equipment Legend **CLARIFICATION**: actual lecterns and equipment racks are NIC, to be provided under a future AV/FFE project.

Item 103.

DRAWING TA2.1A – AUDIOVISUAL INFRASTRUCTURE MAIN LVL FLR PLAN – SOUTH: At Breakout F143 **ADD** note that reads “see interior elevations for location” to data/electrical outlets for monitor.

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BIDDER QUESTIONS AND ANSWERS

Item 104.

RFI 0001: Temporary Toilets

1. Please reference Exhibit B for the subject Bid Package, item #23. In effort to put a fair and reasonable estimate on the quantity of temporary toilets required, we will need a man-loaded schedule. The bid documents do not include this. In the absence of a man-loaded schedule, it is unreasonable to put the responsibility to estimate the quantity of men that will be on-site at any given time. Therefore, we respectfully request that Morganti modify this requirement, via an Addendum, to either direct the General Trades contractor to carry a specific amount of cleanings, or an $ allowance. Regarding the OSHA standards, it has been our experience that this standard is too low, and often bi-weekly cleanings have been requested, which exceed the OSHA standard.

   A. The Bid Package #8 General Trades and or Drywall Contractor shall carry an allowance of $ 15,000.00 for item #23 listed in their scope of work for Portable Toilets, toilet service, hand sanitizer and cleaning of the Portable toilets. This allowance will be used as directed by The Morganti Group and any funds remaining upon completion of the job turned over to The Morganti Group.

Item 105.

RFI 0002: Aluminum framed entrances and storefronts

1. Section 084113 is calling for a painted finish exterior with a clear anodized finish interior. The specified EFCO products S-433, D500 and WV410 are not available with two finishes. Please clarify.

   A. Provide storefront systems, aluminum doors and aluminum windows at exterior openings with one finish (high performance organic finish as specified) only.

Item 106.

RFI 0003: Tile questions

1. There is no drawing showing the elevations at bathroom 372. The floor plan shows a tub in this room. Is the wall tile going on all walls including the tub surround walls?

   A. Elevations at Bathroom 372 are Elevations 10 & 11/A11.15. Provide ceramic tile on walls including tub surround walls per Addendum No. 1 Item 161.

2. Rooms 363, 366-369 drawing A6.3 show the wall tile to be different than all the other bathroom elevation drawings. It calls for a CT-2 1" strip then also a CT-3 accent tile. This tile is not in the spec and it doesn't call it out in the room finish schedule. The room finish schedule shows it as the same tile as the floors. Please Clarify

   A. At Rooms 363, 366-369 provide ceramic tile CTW-1 field tile on walls with 6 inch accent CTA-M at Men's rooms and CTA-W at Women's and Unisex rooms.

3. In the tile spec (Section 093013 Ceramic Tile) page 13 under wall tile installation: At Article 3.10 Paragraph A Has WT-1 being installed under a mortar bed bond coat and at Article 3.10 Paragraph B WT-2 being installed in a thinset manner. WT-1 is the field and Wall tile 2 is the accent tile within the field so they will be installed in the same manner.

   A. Specification Section 093013 Ceramic Tile Article 3.10 Wall Tile Installation specifies METHODS OF INSTALLATION of ceramic tile: WTI-1 for installation of ceramic tile on masonry backup and WTI-2 for installation of ceramic tile on cementitious backing panels; these are NOT wall tile types as stated by the RFI. CERAMIC TILE TYPES are specified at Article 2.2 of Section 093013 Ceramic Tile. Ceramic tile types WT-1 and WT-2 are field tile as shown by schedules on Drawings, not accent tile. The accent tiles are CTA-M and CTA-W. Refer to Drawings and Specifications.

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4. In the tile spec it says on page 5 section E line 1. Says the base is a straight module size 2x12. The modern dimensions base only comes in a 4x12. Also on the drawing referencing the wall tile at the water fountains it calls for a 2" bullnose piece at the outcorners where the tile stops. The bullnose for the tile specified only comes in a 4x12 piece. Please clarify.

   A. Refer to this Addendum No. 3 Item 10 for base and bullnose corners.

Item 107.

RFI 0004: Acoustical Ceiling Tiles

1. In spec section 095113, article 3.1, paragraph A, subparagraph 2 calls for the existing ceilings to be removed and reclaimed. Can you please verify this work is not part of Bid Package #09.

   A. There are no ceilings to be removed or reclaimed, this work is not part of any bid package.

2. In spec section 095113, article 2.10, paragraph B, subparagraph 1 calls for a stepped edge molding for ceiling tiles with a revealed edge detail. The ceiling details and wall section throughout the drawings show regular L-Molding. Which is correct?

   A. Drawings are correct; **DELETE** stepped edge moldings with revealed edge. Refer to Item No. 12 of this Addendum No. 3.

3. The detail listed as "TYP. WINDOW POCKET" on A 9.1A shows a U-shaped molding. Please confirm this is the Compasso Elite perimeter trim specified in 095113, article 2.9, paragraph A? Does this trim only get installed at the windows or does it extend to the gypsum exterior wall? Please note that that Compasso Elite has a ¾" bottom flange while the regular wall molding has a 7/8" bottom flange.

   A. U-shaped molding is the specified Compasso Elite perimeter trim; extend to gypsum exterior wall.

4. The acoustical panels described in spec section 098413 cannot be found on the drawings. All wall panels appear to be site fabricated. Please verify section 098413 is superfluous.

   A. Acoustical wall panels are site fabricated; **DELETE** Section 098413 in its entirety without substitution. Refer to Item No. 17 of this Addendum No. 3.

Item 108.

RFI 0005: Fixed Furniture

1. No edge is called out for the modesty panels and aisle standard for the classroom tables. Please clarify what the edge should be?

   A. Provide plastic laminate bullnose edge as shown by Product Data.

Item 109.

RFI 0006: EEO Bidder form

1. Certification of Bidder EEO Form # 004115 does not follow # 004114. Where should I look for the form?

   A. Delete any reference to this Form, Certification of Bidder EEO, 004115 as it does not exist. In the Notification to Bidders Section 002119, page 5, item 9, Part A, item 8, delete item 8d Certification of Bidder EEO Form:

Item 110.

RFI 0007: MEP Schedule

ADDENDUM NO.: 3.0 **DATE OF ADDENDUM: October 29, 2014**

1. Downloaded schedule (only one page) shows no HVAC work until 2016. Is that correct?

   A. Schedule shown is a milestone schedule and not detailed. Any item in the schedule showing MEP, Rough and Finish includes MEP Trades. Based on the schedule HVAC work is not anticipated to start until late 2015, early 2016.:

Item 111.

RFI 0008: Tile Questions

1. Drawing A6.3 shows all third floor wall tile to have an accent strip composed of CT2 + CT3. CT2 + CT3 are not in the specifications. Is this accent correct or should the accent be the same as the first and second floors showing a CTA-M or CTA-W glass tile accent via C/A6.1. Please clarify which accent should be used on the third floor wall tile.

   A. Refer to RFI 003 Question No. 2 at Item No. 106 of this Addendum No. 3.

2. Drawing A/A12.1B shows the typical floor pattern in specified vestibules and toilet rooms. The list includes all rooms with floor tile except #'s F161, F363 and F372. Are these rooms the same pattern? If not, what is the tile used and the pattern on the floors? Please clarify.

   A. Provide ceramic tile CTF-1 with no pattern per finish schedule.

3. Glazed Wall Tile CTW-2 is only shown to be used at the backsplash of the F103 Food Service Room shown on drawing 13/A8.1. Is this the only place in the whole building to receive CTW-2?

   A. Yes.

Item 112.

RFI 0009: Set-Aside Pre-Bid Question

1. Do you have a copy of the sign-in sheet for the Set-Aside pre-bid conference.

A. Yes see attached,

Item 113.

RFI 0010: Bid Package #1 Site Work Question

1. Do we have to remove the concrete foundations for the structure that is being demolished by others. BP#1 item 5, notes that we do.

A. No, the demolition contractor currently on site will remove the concrete foundation structure. This bidder BP#1 will be responsible for any suitable fill materials required to bring this are back to the appropriate grades.

All questions must be in writing by e-mail or fax (not phone) and must be forwarded to the Construction Manager (Edward Barrett, ebarrett@morganti.com, fax 203-790-6138) The Construction Manager, The Morganti Group, Inc. will review your questions in conjunction with the Owner and Architect and reply by addendum only

End of Addendum Three

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. The General Provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this Section.

B. The General Requirements in Sections 20 00 50 shall also govern the work under this Section.

C. Examine all drawings and data and coordinate the work of the Section with all related and adjoining work.

D. Refer to section 01 81 00, Commissioning of Integrated Automation requirements for work related to this section.

1.2 SUMMARY

A. This Section includes control sequences for HVAC systems, subsystems, and equipment.

B. Related Sections include the following:

1. Division 23, Section 23 09 13 “Instrumentation and Controls for HVAC” for control equipment and devices and for submittal requirements.

1.3 DEFINITIONS

A. DDC: Direct Digital Control

B. VAV: Variable Air Volume

1.4 HOT WATER SYSTEM CONTROL

A. Hot Water Boiler and Hot Water Pumps control:

1. Whenever OA is below or equal 65°F (adjustable) and there is a call for heat at one of the AHU heating coils or other two (2) heating terminal units (adjustable), the DDC system shall start the lead HW circulating pump and shall enable the boiler package control panel which shall fully open the lead boiler isolation valve and lead boiler shall be enabled. If the lead boiler cannot maintain hot water supply temperature at set point, the lag boiler’s isolation valve shall fully open and lag boiler will be enabled then both boilers shall modulate their firing rates to maintain hot water supply temperature at set point. After the set point is satisfied, the lag boiler shall be disabled, the lag boiler isolation valve shall fully close and the lead boiler shall remain on line with its isolation valve fully open. The boiler controls furnished as part as the boiler control package shall alternate the boilers for equal running time, open/close isolation valves, reset hot water supply (HWS) temperature based on OA temperature via BAS input and generate alarms. Wiring of the boiler control panel and its control components are the responsibility of the control contractor. The control contractor will interface all available control points and alarms from the boiler

control panel into the DDC system through Modbus. It is the boiler manufacturer responsibility to supply a control panel capable of sending this information to the control system via Modbus. HWS temperature shall be reset based on outside air temperature as follows:

a. OA = 65°F (adjustable) then HWS = 120°F (adjustable).
b. OA = 45°F (adjustable) then HWS = 140°F (adjustable).

The BAS shall generate alarms at operator's workstation for the following:

a. Lead boiler isolation valve failed to open/close.
b. Lag boiler isolation valve failed to open/close.
c. Hot water supply temperature is not at set point for 60 minutes (adjustable) and both boilers are enabled and at full fire.

Upon signal form refrigerant sensor the BAS shall disable hot water boilers and shut down hot water pumps.
Upon activation of manual emergency switch for the hot water system the BAS shall disable hot water boilers and shut down hot water pumps.
Upon activation of manual emergency switch for the chilled water system the BAS shall disable hot water boilers and shut down hot water pumps.

2. Building Heating Hot Water Pump Control:
Whenever the outside air temperature is 65°F or below, and/~~or~~ there is a call for heat at one of the AHU heating coils or other two (2) heating terminal units (adjustable), the heating hot water system shall be enabled and the BAS shall signal the lead hot water pump to start. Isolation control valve at lead boiler shall fully open prior to lead hot water pump start.

The lead pump's variable frequency drive (VFD) shall modulate the lead pump's motor speed to maintain the higher of two (2) differential pressure (DP) set point as sensed by the differential pressure sensors. Differential pressure set point shall be determined by balancing contractor, typical of 2. Whenever the lead pump is at 80% (adjustable) speed and differential pressure sensors set point is not at set point then the BAS shall start lag pump and gradually increase lag pump's speed and run both pumps to maintain the differential pressure at set point. When differential pressure is at set point for twenty (20) minutes (adjustable) then the BAS shall gradually slow down lag pump's speed to 30% and shut down lag pump or pump with higher number of running hours if DP is at set point. If any of two (2) differential pressure sensors fails then the BAS shall generate an alarm at operator work station, control pump(s) based on functional differential pressure sensor and "memory" of failed sensor in the last five (5) minutes (adjustable) prior to its failure and limit pump(s) speed to 60% (adjustable). Differential pressure set point shall be reset based on the zone requiring the most pressure; i.e. the set point is reset lower to keep zone control valve with the most demand open in range of 92-96% (adjustable). If control valve with the most demand exceeds 96% open then DP set point shall increase small amount. If control valve with the most demand drops below 92% open then DP set point shall decrease small amount. Hot water and chilled water differential pressure set points serving chilled beams shall be the same. The hot water pump shall operate continuously during occupied mode of operation, shall cycle during unoccupied mode of operation whenever there is a call for heating at one of the AHU's coils or heat recover unit or other three (3) heating terminal units (adjustable).

The BAS shall alternate the lead / lag position of the pumps every 200 hours (adjustable). Upon change over from an operating lead pump to an idle lag pump, the idle lag pump shall be started and its operation proven prior to the stopping of the operating lead pump. If the lead or lag pump fails to establish and/or maintain flow, as determined by the differential pressure sensor across the pump or current switch, the lag or lead pump shall be started and an alarm shall be issued.

Coordinate and direct the installation of the differential pressure sensors in the piping with the Mechanical Contractor. Locate the pressure controller approximately 2/3 the longest hydraulic distance from the discharge of the pumps. Refer to piping plans. Review and coordinate sensor location with the Owner and Engineer.

1.5 SNOW MELT CONTROL

1. In-slab snow/ice sensors shall be specifically designed for the application, able to automatically detect snow and ice on a walkway, and shall be suitable for direct installation in the snow melt slab.

2. In-slab Radiant Snow Melt System Operation:
Upon detection of a snow or ice condition at the snow melt slab, or as scheduled via the BAS, or as commanded by the BAS Operator, the in-slab radiant snow melt system shall be enabled. The BAS Operator shall be able to command the snow melt system "On" or "Off', or to operate automatically based on outdoor weather conditions. Under normal conditions, the snow melt system shall operate automatically based on outdoor weather conditions, with weather condition parameters being user defined and adjustable. The BAS Operator shall be able to schedule when the snow melt system may be allowed to be active, based on time-of-day, day-of-the-week, and/or month-of-the-year. The snow melt system shall normally be "locked-out" when outside air temperatures is above 40°F (adjustable) and/or slab temperatures is above 45°F (adj.)

When the in-slab radiant snow melt system is made active (OA≤40°F (adjustable) and slab temperature is less than 37°F (adjustable)), the glycol lead heating pump associated with the system shall be energized, and its status proven via current sensor. Failure to detect pump operation 30 seconds (adj.) after a pump has been commanded to run by the BAS, or failure to maintain pump operation, shall initiate an alarm at the operator's workstation and the BAS shall start standby pump. If standby pump fails to start or to run the BAS shall initiate an alarm at the operator’s workstation. The BAS shall alternate the lead / standby position of the pumps every 100 hours (adjustable). Upon change over from an operating lead pump to an idle standby pump, the idle standby pump shall be started and its operation proven prior to the stopping of the operating lead pump. The glycol heating pump shall operate continuously, except, until the snow melt system is made inactive (OA>40°F (adjustable) and slab temperature is equal or above 37°F (adjustable)), at which time, the pump shall be shut down.

The two-way normally closed (powered open - fail closed) control valve in the heating hot water supply piping at the inlet of plate heat exchanger HX-2 shall be

modulated as required to maintain a glycol heating supply (GS) temperature in the snow melt system at a set point of 138°F (adjustable).

The snow melt system glycol supply temperature shall be reset, based on outside air temperature and slab temperature, in order to prevent thermal shock of the slab, as follows: OA≤40°F (adjustable) and slab temperature is less than 45°F (adjustable) then glycol heating supply temperature is 130°F (adjustable), OA≤32°F (adjustable) or slab temperature is less than 37°F (adjustable) then glycol heating supply temperature is 138°F (adjustable). The snow melt control system shall anticipate outside air conditions (as possible), slab temperature, and glycol supply and return temperatures, in order to prevent over heating and/or "shocking" the slab.

The control system shall gradually increase or "ramp up" the snow melt system glycol heating supply temperature upon a "cold start" in order to avoid tubing and slab stress. The ramping time shall be per the recommendations of the In-Slab Radiant Snow Melt System Manufacturer/Supplier, and shall be operator adjustable.

Based on operator input regarding when snow is anticipated (i.e., "enable snow melt system idle"), the BAS shall start the snow melt system and operate it in an "idling" fashion in order to allow for faster pick up times.

The BAS shall monitor outside air temperature and slab temperature, and adjust snow melt system glycol supply temperature, in order to maintain the slab at an "above freezing temperature" (i.e., 37°F - adjustable), while cycling the circulating pump, and maintaining the minimum glycol supply temperature necessary to maintain the desired slab temperature. Once snow or ice is sensed, the system operation shall be adjusted as required to prevent slab freezing.

If, when the snow melt system is active, the glycol system return temperature is ever less than or equal to -10°F (adjustable), and/or circulating pump flow indication device is sensing pump operation, but little or no flow (indicating a glycol "slush" situation), the circulating pump shall be stopped, and an alarm shall be issued at the operator's workstation.

If, when the snow melt system is active, the slab temperature is ever less than or equal to 32°F (adjustable), an alarm shall be issued at the operator's workstation. If such a situation occurs during an "unoccupied" period, the alarm condition shall initiate a remote dial-out function to an Owner specified emergency telephone number (or numbers).
Upon signal form refrigerant sensor the BAS shall shut down glycol hot water pumps.
Upon activation of manual emergency switch for the hot water system the BAS shall shut down glycol hot water pumps.
Upon activation of manual emergency switch for the chilled water system the BAS shall shut down glycol hot water pumps.

1.6 CHILLED WATER SYSTEM CONTROL

1. The BAS system shall enable/disable chilled water system consisting of: chiller with the Chiller package control panel and two (2) compressors, variable flow chilled water pumps, cooling tower with modulating fan via VFD, constant volume condenser water pumps, constant volume side stream filtration pump, heat exchanger HX-1 (serving chilled beams) chilled water control valves and condenser water 3-way control valve. The chilled water system shall be enabled whenever the outside air temperature is 66°F or above (adjustable), or there is a call for cooling at one of the AHU's coils or other two (2) cooling terminal (adjustable). The chilled water system shall be disabled whenever the outside air temperature is below 66°F (adjustable).
   Wiring of the Chiller control panel and its control components is the responsibility of the control contractor. The control contractor will interface all available control points and alarms from the chiller control panel into the DDC system through BACnet. It is the chiller manufacturer responsibility to supply a control panel capable of sending this information to the control system via BACnet.

   The chiller shall be enabled/disabled to operate through the DDC system and shall be controlled by factory mounted and wired controls to maintain chilled water supply temperature at set point of 44°F (adjustable).
   When chilled and condenser water flows through chiller are proven via flow switches the chiller shall be enabled.
   Two way (2-way) chilled water bypass control valve shall modulate to maintain the required minimum chilled water flow through the chiller at all time and as calculated via chilled water differential pressure sensor at chiller. Whenever the minimum chilled water flow through chiller is below set point and loss of condenser and chilled water flows exist through chiller, then the BAS shall stop the chiller and generate alarms at operator's workstation.

   The DDC system shall provide a reset signal to the chiller control panel to reset the chilled water supply temperature as follows:
   a. OA ≤ 75°F (adjustable) then CHWS = 46°F (adjustable).
   b. OA >75°F (adjustable) then CHWS = 44°F (adjustable).

   Upon signal form refrigerant sensor the BAS shall disable chiller and shut down chilled water pumps, condenser water pumps, condenser water side stream filtration (CTFP-1) pump, and cooling tower.
   Upon activation of manual emergency switch for the hot water system the BAS shall disable chiller and shut down chilled water pumps, condenser water pumps, condenser water side stream filtration (CTFP-1) pump, and cooling tower.
   Upon activation of manual emergency switch for the chilled water system the BAS shall disable chiller and shut down chilled water pumps, condenser water pumps, condenser water side stream filtration (CTFP-1) pump, and cooling tower.

2. Building Chilled Water Pump Control (serving air handling units, heat recovery units and two fan coil units):
   Whenever the outside air temperature is 66°F or above (adj.), and there is a call for cooling at one of the AHU's coils or energy recovery unit, the chilled water system shall be enabled and the BAS shall signal the lead chilled water pump to start. Failure to detect pump operation 30 seconds (adj.) after a pump has been commanded to run by the BAS, or failure to maintain pump operation, shall initiate an alarm at the operator's workstation and the BAS shall start standby

pump. If standby pump fails to start or to run the BAS shall initiate an alarm at the operator's workstation. The BAS shall alternate the lead / standby position of the pumps every 200 hours (adjustable). Upon change over from an operating lead pump to an idle standby pump, the idle standby pump shall be started and its operation proven prior to the stopping of the operating lead pump.
The lead pump's variable frequency drive (VFD) shall modulate the lead pump's motor speed to maintain the differential pressure set point as determined by balancing contractor and as sensed by the differential pressure sensors. If any of two (2) differential pressure sensors fails then the BAS shall generate an alarm at operator work station, control pump based on functional differential pressure sensor and "memory" of failed sensor in the last five (5) minutes (adjustable) prior to its failure and limit pump speed to 60% (adjustable). Differential pressure set point shall be reset based on the AHU/zone requiring the most pressure; i.e. the set point is reset lower to keep AHU/zone control valve with the most demand open in range of 92-96% (adjustable). If control valve with the most demand exceeds 96% open then DP set point shall increase small amount. If control valve with the most demand drops below 92% open then DP set point shall decrease small amount.
The chilled water pump shall operate continuously during occupied mode of operation, shall cycle during unoccupied mode of operation whenever there is a call for cooling at one of the AHU's coils or heat recover unit and shall run continuously whenever chilled beam chilled water pump is running. Whenever the chilled water system is disabled the pumps shall be shut down.

Coordinate and direct the installation of the differential pressure sensor in the piping with the Mechanical Contractor. Locate the pressure controller approximately 2/3 the longest hydraulic distance from the discharge of the pumps. Refer to piping plans. Review and coordinate sensors location with the Owner and Engineer.

3. Chilled Beam Chilled Water Pump Control (serving chilled beams and two fan coil units):
Whenever the chilled water system is enabled and there is a call for cooling at two (2) cooling terminals (adjustable) the BAS shall signal the chilled beam lead chilled water pump to start, fully open isolation 2-way control valve on 44°F chilled water piping and modulate 3-way control valve on 58°F chilled water piping at heat exchanger HX-1 to maintain the chilled beam chilled water supply temperature at all-time at 58°F. Failure to detect pump operation 30 seconds (adj.) after a pump has been commanded to run by the BAS, or failure to maintain pump operation, shall initiate an alarm at the operator's workstation and the BAS shall start standby pump. If standby pump fails to start or to run the BAS shall initiate an alarm at the operator's workstation. The BAS shall alternate the lead / standby position of the pumps every 200 hours (adjustable). Upon change over from an operating lead pump to an idle standby pump, the idle standby pump shall be started and its operation proven prior to the stopping of the operating lead pump. The lead pump's variable frequency drive (VFD) shall modulate the lead pump's motor speed to maintain the differential pressure set point as determined by balancing contractor and as sensed by the differential pressure sensors. If any of two (2) differential pressure sensors fails then the BAS shall generate an alarm at operator work

station, control pump based on functional differential pressure sensor and "memory" of failed sensor in the last five (5) minutes (adjustable) prior to its failure and limit pump speed to 60% (adjustable). Differential pressure set point shall be reset based on the zone requiring the most pressure; i.e. the set point is reset lower to keep zone control valve with the most demand open in range of 92-96% (adjustable). If control valve with the most demand exceeds 96% open then DP set point shall increase small amount. If control valve with the most demand drops below 92% open then DP set point shall decrease small amount. Hot water and chilled water differential pressure set points serving chilled beams shall be the same.
The chilled water pump shall operate continuously during occupied mode of operation, and shall cycle during unoccupied mode of operation whenever there is a call for cooling at three (3) cooling terminals (adjustable). Whenever the chilled water system is disabled the pumps shall be shut down.
Coordinate and direct the installation of the differential pressure sensors in the piping with the Mechanical Contractor. Locate the pressure controller approximately 2/3 the longest hydraulic distance from the discharge of the pumps. Refer to piping plans. Review and coordinate sensors location with the Owner and Engineer.

4. Colling Tower, Condenser Water Pump and Side Stream Condenser Water Filtration Pump Controls:
Whenever the chilled water system is enabled then the BAS shall signal the lead condenser water pump to start. Failure to detect pump operation 30 seconds (adj.) after a pump has been commanded to run by the BAS, or failure to maintain pump operation, shall initiate an alarm at the operator's workstation and the BAS shall start standby pump. If standby pump fails to start or to run the BAS shall initiate an alarm at the operator's workstation. The BAS shall alternate the lead / standby position of the pumps every 200 hours (adjustable). Upon change over from an operating lead pump to an idle standby pump, the idle standby pump shall be started and its operation proven prior to the stopping of the operating lead pump.
The condenser water pump shall operate continuously during occupied mode of operation, shall operate continuously during unoccupied mode of operation whenever building chilled water pump is running. Whenever the chilled water system is disabled the pumps shall be shut down.

The BAS shall modulate condenser water 3-way control valve to maintain condenser water supply temperature in range of 65-70°F (adjustable).
The BAS shall start and stop the cooling tower fan. The cooling tower fan's variable frequency drive (VFD) shall modulate the cooling tower fan motor speed from minimum to maximum speed and vice versa (The BAS shall shut down cooling tower fan at its 30% speed) to maintain condenser water supply temperature in range of 80-85°F (adjustable). Whenever the cooling tower vibration switch is above set point the BAS shall disable chiller and shut down chilled water pumps, condenser water pumps, condenser water side stream filtration (CTFP-1) pump, and cooling tower and generate priority alarm at operator's work station.
The BAS shall generate alarms at operator's workstation for the following:
a. Cooling tower fan failed to start/run/stop.

b. Cooling tower basin low water level alarm.
c. Cooling tower basin high water level alarm.

The BAS shall start/stop side stream condenser water filtration pump (CTFP-1). The side stream condenser water filtration pump (CTFP-1) shall operate continuously for a minimum of three (3) hours (adjustable) during occupied mode of operation and operation of condenser water pump, shall shut down during unoccupied mode of operation of the chilled water system. The BAS shall generate alarms at operator's workstation whenever side stream condenser water filtration pump fails to start/run/stop and for dirty filter at side stream condenser water filtration pump's package. Whenever the chilled water system is disabled the CTFP-1 pump shall be shut down.

1.7 VARIABLE VOLUME AIR HANDLING UNIT – MULTI PURPOSE ROOM (AHU-1)

A. Optimal Start Mode

1. The AHU-1 DDC controller will calculate how long it will take the AHU-1 to return from its unoccupied state to its occupied state to maintain occupied temperature setpoint in each zone based on the heating or cooling capacity of AHU-1 and the outside air temperature. The AHU-1 DDC controller will then adjust supply air temperature setpoint for the time necessary to ensure the occupied temperature in each zone is maintain 10-minutes (adjustable) prior to full occupancy.

2. The system will not start more than ~~4~~ one (1) hour~~s~~ before a scheduled occupancy.

B. Morning Warm Up Mode:

Whenever temperatures in any zone is 2°F (adjustable) below occupied heating temperature set points of 70°F (adjustable) then the supply and return fans are commanded on. The fans shall operate on 100% return air, the heating coil control valve shall modulate and the freeze protection pump shall start if not running to maintain SA temperature at 90°F (adjustable) to maintain each zone at occupied heating temperature set point. Run fans as needed to have all zones at occupied heating set point prior full occupancy. During morning warm up supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) equal supply air (SA) flow. If the supply or return fan~~s~~ fails to start and/or run in any mode of operation, as determined by the current sensor, an alarm shall be indicated at the head end computer and fans shall be commanded off.

1. Freeze protection pump control: Whenever the outside air (OA) is below 45°F (adjustable), SF and RF are running or the AHU-1 mixed air temperature is 38°F (adjustable) when fans are shut down then the freeze protection pump shall operate continuously. The freeze protection pump shall cycle whenever 45°F>OA≤ 65°F, SF and RF are running and supply air temperature is not at set point. If freeze protection pump fails to start and/or run in any mode of operation, as determined by the current sensor, an alarm shall be indicated at the head end computer and freeze protection pump shall be commanded off.

C. Morning Cool Down Mode:

Whenever temperatures in any zones is 2°F (adjustable) above occupied cooling temperature set points of 75°F (adjustable) then the supply and return fans are commanded on. The heating valve shall close, the circulating pump shall stop if was running, when outside air temperature permits, the AHU-1 DDC controller will first utilize the economizer for free cooling (OA damper fully open, RA damper fully closed and EA damper fully open), as long as the supply air (SA=OA) temperature is 2°F cooler than the average calculated zones temperature and the outside air enthalpy is less than average calculated zones enthalpy. When the economizer can no longer maintain these conditions then dampers shall modulate to their unoccupied mode positions or economizer cannot maintain each zone at occupied cooling temperature set point then the cooling coil valve shall modulate to maintain SA temperature at 55°F (adjustable) to maintain each zone at occupied cooling temperature set point (cooling coil control valve shall modulate only if cooling is available). Run fans as needed to have all zones at occupied cooling set point prior full occupancy. During morning cool down mode supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide exhaust air (EA) during full economizer or return air (RA) whenever the economizer is disabled to be equal supply air (SA) flow.

D. Occupied Heating Mode of Operation:

The supply and return fans shall continuously to run. The dampers open to their occupied mode positions (OA at minimum position as determined by balancing contractor, RA fully open, and EA fully closed) prior to fans start, the freeze protection pump shall start/run and heating coil control valve shall modulate as required to maintain supply air temperature at 65°F (adjustable) whenever average calculated space temperature is 70°F (adjustable) or 70°F (adjustable) whenever average calculated space temperature is 65°F (adjustable). During occupied heating mode of operation of AHU-3 the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) RA=SA-OFFSET.
A low temperature protection thermostat/freezestat located in the heating coil discharge shall shut down the unit fans, close the outside and exhaust dampers, open the heating coil valve full to the coil, start freeze protection pump if not running and stop freeze protection pump when AHU-3 mixed air temperature is above 40°F (adjustable), and indicate an alarm at the head end computer upon sensing a temperature below its set point of 36°F (adjustable).

E. Occupied Cooling:
The supply and return fans shall continuously to run and the dampers shall open to their occupied mode positions (OA at minimum position, RA fully open, and EA fully closed) prior to fans start.
Whenever average calculated zones temperature is in range of 72-75°F then SA temperature shall reset from 65°F to 55°F (when average calculated zones temperature is 75°F) then the heating valve shall close, the circulating pump shall stop if was running, the AHU-3 DDC controller will first utilize the economizer for free cooling (OA damper fully open, RA damper fully closed and EA damper fully open), as long as the supply air

temperature is 2°F cooler than the average calculated zones temperature and the outside air enthalpy is less than average calculated zones enthalpy. When the economizer can no longer maintain these conditions then dampers shall modulate to their occupied mode positions or economizer cannot maintain reset SA temperature at set point then the cooling coil control valve shall modulate to maintain reset SA temperature at set point. During occupied cooling mode of operation of AHU-3 the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) RA=SA-OFFSET.

F. Demand ventilation control:
During the occupied mode of operation of AHU-3, if average calculated zones CO2 level is is 690 PPM above OA CO2 (adjustable, 400 PPM OA CO2, typical), over a period of 10 minutes (adjustable) then the AHU-3 controller shall override current positions of OA dampers, modulate OA damper open for 10%, hold OA damper at position for 10 minutes (adjustable), if after 10 minutes (adjustable) average calculated CO2 level is not at set point then the OA damper shall modulate open for additional 10%, hold OA damper at position for 10 minutes (adjustable), if after 10 additional minutes (adjustable) average calculated CO2 level is not at set point then the OA damper shall continue to modulate open up to the its maximum OA position listed in the schedule and as determined by balancing contractor, and subject to a mixed air limit sensor. Whenever OA damper is at its maximum OA position for demand ventilation control then the AHU-1 controller shall override position of RA and EA dampers and modulate them to provide maximum specified OA flow for demand ventilation control, hold dampers in their position until average calculated zones CO2 drops below 690 PPM for 10 minutes (adjustable), then modulate all dampers to their occupied mode operation. The CO2 concentration shall be the difference between calculated indoor and outdoor air concentration.

G. Unoccupied Heating:

Whenever temperatures in any zone is 2°F (adjustable) below unoccupied heating temperature set points of 60°F (adjustable) then the supply and return fans are commanded on. The fans shall operate on 100% return air, the heating coil control valve shall modulate and the freeze protection pump shall start to maintain SA temperature at 90F (adjustable). When all zones are at unoccupied temperature set point for 10 minutes (adjustable) then fans shall slow down to their minimum speed of 30% and shut down. During unoccupied heating mode of operation the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) equal supply air (SA) flow.

H. Unoccupied Cooling:

Whenever temperatures in any zone is 2°F (adjustable) above unoccupied cooling temperature set points of 85°F (adjustable) then the supply and return fans are commanded on. The heating valve shall close, the circulating pump shall shut down if was running, the AHU-1 DDC controller will first utilize the economizer for free cooling (OA damper fully open, RA damper fully closed and EA damper fully open), as long as the supply air (SA=OA) temperature is 2°F cooler than the average calculated zones temperature and the outside air enthalpy is less than average calculated zones enthalpy. When the economizer can no longer maintain these conditions then dampers shall

modulate to their unoccupied mode positions or economizer cannot maintain each zone at unoccupied cooling temperature set point then, the cooling coil control valve will modulate to maintain SA temperature at 55°F (adjustable). When all zones are at unoccupied cooling temperature set point for 10 minutes (adjustable) then fans shall slow down to their minimum speed of 30% and shut down and close OA and EA dampers if not already closed. During unoccupied cooling mode of operation the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide exhaust air (EA) during full economizer or return air (RA) whenever the economizer is disabled to be equal supply air (SA) flow.

I. Smoke Detectors

This contractor shall monitor duct mounted smoke detectors furnished and installed under a different section. This contractor shall hard wire smoke detectors to shut down all fans then close dampers and send an alarm to the front end computer upon detecting products of combustion.

J. Duct Static Pressure Sensor

Duct static pressure set point shall be reset based on the zone requiring the most pressure; i.e. the set point is reset lower to keep zone VAV box damper with the most demand open in range of 92-96% (adjustable). If zone VAV box damper with the most demand exceeds 96% open then duct static pressure set point shall increase small amount. If zone VAV box damper with the most demand drops below 92% open then DP set point shall decrease small amount.

K. High Limit Static Pressure Sensor

The AHU-1 DDC controller shall shut down supply and return fans, close OA and EA dampers three (3) minutes (adjustable) after the fans shut down, and send an alarm to the front end computer whenever high limit static pressure sensor is at set point as determined by balancing contractor. AHU-1 shall return to mode of operation prior to activation of high limit static pressure sensor upon manual reset of that sensor. Coordinate duct static pressure classification, total AHU-1 static pressure with mechanical and balancing contractors prior to AHU-1 start.

L. Base bid

The specified sequence of operations for AHU-1 shall be provided and tested under base bid then disabled for future use. Under base bid the AHU-1 shall operate in unoccupied heating and unoccupied cooling mode of operations.

1.8 VARIABLE VOLUME AIR HANDLING UNIT – LECTURE HALL (AHU-2)

A. Optimal Start Mode

1. The AHU-2 DDC controller will calculate how long it will take the AHU-2 to return from its unoccupied mode to its occupied mode of operation to maintain occupied temperature set point in Lecture Hall based on the heating or cooling

capacity of AHU-2 and the outside air temperature. The AHU-2 DDC controller will then adjust air temperature set point for the time necessary to ensure the occupied temperature in Lecture Hall is maintain 10-minutes (adjustable) prior to full occupancy.

2. The system shall not start more than half (1/2) hour before a scheduled occupancy.

B. Morning Warm Up Mode:

Whenever temperatures in Lecture Hall is 2°F (adjustable) below occupied heating temperature set points of 70°F (adjustable) then supply air (SA) damper shall fully open and the supply and return fans are commanded on. The fans shall operate on 100% return air, the heating coil control valve shall modulate and the freeze protection pump shall start if not running to maintain SA temperature at 90°F (adjustable) to maintain Lecture Hall at occupied heating temperature set point. Run fans as needed to have Lecture Hall at occupied heating set point prior full occupancy. During morning warm up supply fan (SF) speed shall modulate to provide scheduled SA flow and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) equal supply air (SA) flow. If the supply or return fan fails to start and/or run in any mode of operation, as determined by the current sensor, an alarm shall be indicated at the head end computer and fans shall be commanded off.

2. Freeze protection pump control: Whenever the outside air (OA) is below 45°F (adjustable), SF and RF are running or the AHU-2 mixed air temperature is 38°F (adjustable) when fans are shut down then the freeze protection pump shall operate continuously. The freeze protection pump shall cycle whenever 45°F>OA≤ 65°F, SF and RF are running and supply air temperature is not at set point. If freeze protection pump fails to start and/or run in any mode of operation, as determined by the current sensor, an alarm shall be indicated at the head end computer and freeze protection pump shall be commanded off. If freeze protection pump is failed to start/run and temperature in Lecture Hall is 65°F (adjustable) or AHU-2 mixed air temperature is below 50°F (adjustable) then fans shall shut down, dampers shall modulate to their unoccupied positions (OA and EA dampers fully closed and RA damper fully open, typical) and an alarm shall be indicated at the head end computer. Manual bypass isolation valve shall be fully open in order to run AHU-2.

C. Morning Cool Down Mode:

Whenever temperatures in Lecture Hall is 2°F (adjustable) above occupied cooling temperature set points of 75°F (adjustable) then SA damper shall fully open and the supply and return fans are commanded on. The heating valve shall close, the circulating pump shall stop if it was running, when outside air temperature permits, the AHU-2 DDC controller will first utilize the economizer for free cooling (OA damper fully open, RA damper fully closed and EA damper fully open, typical), as long as the supply air (SA=OA) temperature is 2°F cooler than temperature in Lecture Hall and the outside air enthalpy is less than enthalpy in Lecture Hall. When the economizer can no longer maintain these conditions then dampers shall modulate to their unoccupied mode positions or economizer cannot maintain Lecture Hall at occupied cooling temperature set point then the cooling coil valve shall modulate to maintain SA temperature at 55°F (adjustable) to maintain Lecture Hall at occupied cooling temperature set point (cooling

coil control valve shall modulate only if cooling is available). Run fans as needed to have Lecture Hall at occupied cooling set point prior full occupancy. During morning cool down mode supply fan (SF) speed shall modulate to provide scheduled SA flow and return fan (RF) speed shall modulate/track supply fan speed to provide exhaust air (EA) during full economizer or return air (RA) whenever the economizer is disabled to be equal supply air (SA) flow.

D. Occupied Heating Mode of Operation:

The supply and return fans shall continuously to run. The dampers open to their occupied mode positions (OA at minimum position as determined by balancing contractor, RA fully open, and EA fully closed, typical), SA damper open to position to provide 80% of scheduled SA flow (minimum position, adjustable, typical) as determined by balancing contractor (typical) prior to fans start, the freeze protection pump shall start/run and heating coil control valve shall modulate as required to maintain reset supply air temperature in range of 80-90°F (adjustable) whenever Lecture Hall temperature is in range of 72-68°F (adjustable) as first stage of heating. If Lecture Hall temperature is not at set point then SA damper shall modulate to fully open position over five (5) minutes (adjustable) as last stage of heating. When Lecture Hall temperature is at set point for twenty (20) minutes (adjustable) then the AHU-2 controller shall provide reverse sequence of operation for SA damper. During occupied heating mode of operation of AHU-2 the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point for each SA damper position as determined by balancing contractor (typical) and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) RA=SA-OFFSET.
A low temperature protection thermostat/freezestat located in the heating coil discharge shall shut down the unit fans, close the outside and exhaust dampers, open the heating coil valve full to the coil, start freeze protection pump if not running and stop freeze protection pump when AHU-2 mixed air temperature is above 40°F (adjustable), and indicate an alarm at the head end computer upon sensing a temperature below its set point of 36°F (adjustable).

E. Occupied Cooling:

The supply and return fans shall continuously to run and the dampers shall open to their occupied mode positions, SA damper open to its minimum position prior to fans start. Whenever Lecture Hall temperature is in range of 72-75°F then SA temperature shall reset from 65°F to 55°F (when Lecture Hall temperature is 75°F), then the heating valve shall close, the circulating pump shall stop if was running, the AHU-2 DDC controller will first utilize the economizer for free cooling as long as the supply air (SA=OA) temperature is 2°F cooler than the temperature in Lecture Hall and the outside air enthalpy is less than enthalpy in Lecture Hall as first stage of cooling with SA damper in fully open position. When the economizer can no longer maintain these conditions then dampers shall modulate to their occupied mode positions with SA damper at its minimum position or economizer cannot maintain reset SA temperature at set point then the cooling coil control valve shall modulate to maintain reset SA temperature at set point as second stage of cooling.
If Lecture Hall temperature is not at set point then SA damper shall modulate to fully open position, if economizer is disabled, over five (5) minutes (adjustable) as last stage of cooling. When Lecture Hall temperature is at set point for twenty (20) minutes

(adjustable) then the AHU-2 controller shall provide reverse sequence of operation for SA damper, if economizer is disabled.
During occupied cooling mode of operation of AHU-2 the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point for each SA damper position as determined by balancing contractor (typical) and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) RA=SA-OFFSET.

F. Demand ventilation control:

During the occupied mode of operation of AHU-2, if Lecture Hall CO2 level is 690 PPM above OA CO2 (adjustable, 400 PPM OA CO2, typical), over a period of 10 minutes (adjustable) then the AHU-2 controller shall override current positions of OA damper, modulate OA damper open for 10%, hold OA damper at position for 10 minutes (adjustable), if after 10 minutes (adjustable) Lecture Hall CO2 level is not at set point then the OA damper shall modulate open for additional 10% and also EA and RA shall modulate, hold all dampers at position for 10 minutes (adjustable), if after 10 additional minutes (adjustable) Lecture Hall CO2 level is not at set point then all dampers shall continue to modulate until OA damper opens to its maximum OA position listed in the schedule for demand ventilation control and as determined by balancing contractor. Hold dampers in their position until Lecture Hall CO2 drops below 690 PPM for 10 minutes (adjustable), and then modulate all dampers to their occupied mode operation. Modulation of OA damper shall be subject to Lecture Hall temperatures; 67°F (adjustable) in winter, 70°F (adjustable) in summer and a mixed air limit sensor temperature. The CO2 concentration shall be the difference between indoor and outdoor air concentration. SA damper control shall be subject to temperature control loop during demand ventilation sequence of operation of AHU-2

G. Unoccupied Heating:

Whenever temperatures in two (2) zones (adjustable) are 2°F (adjustable) below unoccupied heating temperature set points of 60°F (adjustable) then the supply and return fans are commanded on. The fans shall operate on 100% return air, the heating coil control valve shall modulate and the freeze protection pump shall start to maintain SA temperature at 90F (adjustable). When all zones are at unoccupied temperature set point for 10 minutes (adjustable) then fans shall slow down to their minimum speed of 30% and shut down. During unoccupied heating mode of operation the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) equal supply air (SA) flow.

H. Unoccupied Cooling:

Whenever temperatures in two (2) zones (adjustable) are 2°F (adjustable) above unoccupied cooling temperature set points of 85°F (adjustable) then the supply and return fans are commanded on. The heating valve shall close, the circulating pump shall shut down if was running, the AHU-1 DDC controller will first utilize the economizer for free cooling (OA damper fully open, RA damper fully closed and EA damper fully open), as long as the supply air (SA=OA) temperature is 2°F cooler than the average calculated zones temperature and the outside air enthalpy is less than average calculated zones enthalpy. When the economizer can no longer maintain these conditions then dampers

shall modulate to their unoccupied mode positions or economizer cannot maintain each zone at unoccupied cooling temperature set point then, the cooling coil control valve will modulate to maintain SA temperature at 55°F (adjustable). When all zones are at unoccupied cooling temperature set point for 10 minutes (adjustable) then fans shall slow down to their minimum speed of 30% and shut down and close OA and EA dampers if not already closed. During unoccupied cooling mode of operation the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide exhaust air (EA) during full economizer or return air (RA) whenever the economizer is disabled to be equal supply air (SA) flow.

I. Smoke Detectors

This contractor shall monitor duct mounted smoke detectors furnished and installed under a different section. This contractor shall hard wire smoke detectors to shut down all fans then close dampers and send an alarm to the front end computer upon detecting products of combustion.

J. Duct Static Pressure Sensor

Duct static pressure set point shall be reset based on the zone requiring the most pressure; i.e. the set point is reset lower to keep zone VAV box damper with the most demand open in range of 92-96% (adjustable). If zone VAV box damper with the most demand exceeds 96% open then duct static pressure set point shall increase small amount. If zone VAV box damper with the most demand drops below 92% open then DP set point shall decrease small amount.

K. High Limit Static Pressure Sensor

The AHU-2 DDC controller shall shut down supply and return fans, close OA and EA dampers three (3) minutes (adjustable) after the fans shut down, and send an alarm to the front end computer whenever high limit static pressure sensor is at set point as determined by balancing contractor. AHU-2 shall return to mode of operation prior to activation of high limit static pressure sensor upon manual reset of that sensor. Coordinate duct static pressure classification, total AHU-2 static pressure with mechanical and balancing contractors prior to AHU-2 start.

L. Occupancy sensor: upon a signal from occupancy sensor, the zone space temperature shall revert to "stand-by" mode. Unique stand-by software set points for cooling, plus 2°F (adjustable) above space cooling set point, and heating, minus 2°F (adjustable) below space heating set point shall be provided.

M. Occupancy override: an indication of override condition is provided via push button led on the wall temperature sensor. The AHU-2 control is in the normal occupied mode. The AHU-2 control returns to the unoccupied mode after an elapsed time set point (three hours, adjustable). During occupancy override mode of operation of AHU-2 the AHU-2 shall run continuously with supply and OA air flows as specified for occupied mode of operation(s) to maintain zone temperature setpoint. When Lecture Hall becomes unoccupied, shut down AHU-2 and revert to unoccupied mode of operation.

1.9 VARIABLE VOLUME AIR HANDLING UNIT - LOBBY (AHU-3)

A. Optimal Start Mode

1. The AHU-3 DDC controller will calculate how long it will take the AHU-3 to return from its unoccupied state to its occupied state to maintain occupied temperature setpoint in each zone based on the heating or cooling capacity of AHU-3 and the outside air temperature. The AHU-3 DDC controller will then adjust supply air temperature setpoint for the time necessary to ensure the occupied temperature in each zone is maintain 10-minutes (adjustable) prior to full occupancy.

2. The system will not start more than ~~4~~ one (1) hour~~s~~ before a scheduled occupancy.

B. Morning Warm Up Mode:

Whenever temperatures in two (2) zones (adjustable) are 2°F (adjustable) below occupied heating temperature set points of 70°F (adjustable) then the supply and return fans are commanded on. The fans shall operate on 100% return air, the heating coil control valve shall modulate and the freeze protection pump shall start if not running to maintain SA temperature at 90°F (adjustable) to maintain each zone at occupied heating temperature set point. Run fans as needed to have all zones at occupied heating set point prior full occupancy. During morning warm up supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) equal supply air (SA) flow. If the supply or return fan~~s~~ fails to start and/or run in any mode of operation, as determined by the current sensor, an alarm shall be indicated at the head end computer and fans shall be commanded off.

1. Freeze protection pump control: Whenever the outside air (OA) is below 45°F (adjustable), SF and RF are running or the AHU-3 mixed air temperature is 38°F (adjustable) when fans are shut down then the freeze protection pump shall operate continuously. The freeze protection pump shall cycle whenever 45°F>OA≤ 65°F, SF and RF are running and supply air temperature is not at set point. If freeze protection pump fails to start and/or run in any mode of operation, as determined by the current sensor, an alarm shall be indicated at the head end computer and freeze protection pump shall be commanded off.

C. Morning Cool Down Mode:

Whenever temperatures in two (2) zones (adjustable) are 2°F (adjustable) above occupied cooling temperature set points of 75°F (adjustable) then the supply and return fans are commanded on. The heating valve shall close, the circulating pump shall stop if was running, when outside air temperature permits, the AHU-3 DDC controller will first utilize the economizer for free cooling (OA damper fully open, RA damper fully closed and EA damper fully open), as long as the supply air (SA=OA) temperature is 2°F cooler than the average calculated zones temperature and the outside air enthalpy is less than average calculated zones enthalpy. When the economizer can no longer maintain these

conditions then dampers shall modulate to their unoccupied mode positions or economizer cannot maintain each zone at occupied cooling temperature set point then the cooling coil valve shall ~~be~~ modulate~~d~~ to maintain SA temperature at 55°F (adjustable) to maintain each zone at occupied cooling temperature set point (cooling coil control valve shall modulate only if cooling is available). Run fans as needed to have all zones at occupied cooling set point prior full occupancy. During morning cool down mode supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide exhaust air (EA) during full economizer or return air (RA) whenever the economizer is disabled to be equal supply air (SA) flow.

D. Occupied Heating Mode of Operation:

The supply and return fans shall continue~~o~~usly to run. The dampers open to their occupied mode positions (OA at minimum position as determined by balancing contractor, RA fully open, and EA fully closed) prior to fans start, the freeze protection pump shall start/run and heating coil control valve shall modulate as required to maintain supply air temperature at 65°F (adjustable) whenever average calculated space temperature is 70°F (adjustable) or 70°F (adjustable) whenever average calculated space temperature is 65°F (adjustable). During occupied heating mode of operation of AHU-3 the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) RA=SA-OFFSET.
A low temperature protection thermostat/freezestat located in the heating coil discharge shall shut down the unit fans, close the outside and exhaust dampers, open the heating coil valve full to the coil, start freeze protection pump if not running and stop freeze protection pump when AHU-3 mixed air temperature is above 40°F (adjustable), and indicate an alarm at the head end computer upon sensing a temperature below its setpoint of 36°F (adjustable).

E. Occupied Cooling:

The supply and return fans shall continuously to run and the dampers shall open to their occupied mode positions (OA at minimum position, RA fully open, and EA fully closed) prior to fans start.
Whenever average calculated zones temperature is in range of 72-75°F then SA temperature shall reset from 65°F to 55°F (when average calculated zones temperature is 75°F) then the heating valve shall close, the circulating pump shall stop if was running, the AHU-3 DDC controller will first utilize the economizer for free cooling (OA damper fully open, RA damper fully closed and EA damper fully open), as long as the supply air temperature is 2°F cooler than the average calculated zones temperature and the outside air enthalpy is less than average calculated zones enthalpy. When the economizer can no longer maintain these conditions then dampers shall modulate to their occupied mode positions or economizer cannot maintain reset SA temperature at set point then the cooling coil control valve shall modulate to maintain reset SA temperature at set point. During occupied cooling mode of operation of AHU-3 the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) RA=SA-OFFSET.

F. Demand ventilation control:

During the occupied mode of operation of AHU-3, if average calculated zones CO2 level is 690 PPM above OA CO2 (adjustable, 400 PPM OA CO2, typical), over a period of 10 minutes (adjustable) then the AHU-3 controller shall override current positions of OA dampers, modulate OA damper open for 10%, hold OA damper at position for 10 minutes (adjustable), if after 10 minutes (adjustable) average calculated CO2 level is not at set point then the OA damper shall modulate open for additional 10%, hold OA damper at position for 10 minutes (adjustable), if after 10 additional minutes (adjustable) average calculated CO2 level is not at set point then the OA damper shall continue to modulate open up to the its maximum OA position listed in the schedule and as determined by balancing contractor, and subject to a mixed air limit sensor. Whenever OA damper is at its maximum OA position for demand ventilation control then the AHU-3 controller shall override position of RA and EA dampers and modulate them to provide maximum specified OA flow for demand ventilation control, hold dampers in their position until average calculated zones CO2 drops below 690 PPM for 10 minutes (adjustable), then modulate all dampers to their occupied mode operation.-The CO2 concentration shall be the difference between calculated indoor and outdoor air concentration.

G. Unoccupied Heating:

Whenever temperatures in two (2) zones (adjustable) are 2°F (adjustable) below unoccupied heating temperature set points of 60°F (adjustable) then the supply and return fans are commanded on. The fans shall operate on 100% return air, the heating coil control valve shall modulate and the freeze protection pump shall start to maintain SA temperature at 90F (adjustable). When all zones are at unoccupied temperature set point for 10 minutes (adjustable) then fans shall slow down to their minimum speed of 30% and shut down. During unoccupied heating mode of operation the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) equal supply air (SA) flow.

H. Unoccupied Cooling:

Whenever temperatures in two (2) zones (adjustable) are 2°F (adjustable) above unoccupied cooling temperature set points of 85°F (adjustable) then the supply and return fans are commanded on. The heating valve shall close, the circulating pump shall shut down if was running, the AHU-3 DDC controller will first utilize the economizer for free cooling (OA damper fully open, RA damper fully closed and EA damper fully open), as long as the supply air (SA=OA) temperature is 2°F cooler than the average calculated zones temperature and the outside air enthalpy is less than average calculated zones enthalpy. When the economizer can no longer maintain these conditions then dampers shall modulate to their unoccupied mode positions or economizer cannot maintain each zone at unoccupied cooling temperature set point then, the cooling coil control valve will modulate ~~open~~ to maintain SA temperature at 55°F (adjustable). When all zones are at unoccupied cooling temperature set point for 10 minutes (adjustable) then fans shall slow down to their minimum speed of 30% and shut down and close OA and EA dampers if not already closed. During unoccupied cooling mode of operation the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide exhaust air (EA) during full

economizer or return air (RA) whenever the economizer is disabled to be equal supply air (SA) flow.

I. Smoke Detectors

This contractor shall monitor duct mounted smoke detectors furnished and installed under a different section. This contractor shall hard wire smoke detectors to shut down all fans then close dampers and send an alarm to the front end computer upon detecting products of combustion.

J. Duct Static Pressure Sensor

Duct static pressure set point shall be reset based on the zone requiring the most pressure; i.e. the set point is reset lower to keep zone VAV box damper with the most demand open in range of 92-96% (adjustable). If zone VAV box damper with the most demand exceeds 96% open then duct static pressure set point shall increase small amount. If zone VAV box damper with the most demand drops below 92% open then DP set point shall decrease small amount.

K. High Limit Static Pressure Sensor

The AHU-3 DDC controller shall shut down supply and return fans, close OA and EA dampers three (3) minutes (adjustable) after the fans shut down, and send an alarm to the front end computer whenever high limit static pressure sensor is at set point as determined by balancing contractor. AHU-3 shall return to mode of operation prior to activation of high limit static pressure sensor upon manual reset of that sensor. Coordinate duct static pressure classification, total AHU-3 static pressure with mechanical and balancing contractors prior to AHU-3 start.

1.10 VARIABLE VOLUME AIR HANDLING UNIT – 3RD FLOOR OFFICES (AHU-4)

A. Optimal Start Mode

1. The AHU-4 DDC controller will calculate how long it will take the AHU-4 to return from its unoccupied state to its occupied state to maintain occupied temperature setpoint in each zone based on the heating or cooling capacity of AHU-4 and the outside air temperature. The AHU-4 DDC controller will then adjust supply air temperature setpoint for the time necessary to ensure the occupied temperature in each zone is maintain 10-minutes (adjustable) prior to full occupancy.

2. The system will not start more than one (1) hour before a scheduled occupancy.

B. Morning Warm Up Mode:

Whenever temperatures in two (2) zones (adjustable) are 2°F (adjustable) below occupied heating temperature set points of 70°F (adjustable) then the supply and return fans are commanded on. The fans shall operate on 100% return air, the heating coil control valve shall modulate and the freeze protection pump shall start if not running to maintain SA temperature at 90°F (adjustable) to maintain each zone at occupied heating temperature

set point. Run fans as needed to have all zones at occupied heating set point prior full occupancy. During morning warm up supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) equal supply air (SA) flow. If the supply or return fan fails to start and/or run in any mode of operation, as determined by the current sensor, an alarm shall be indicated at the head end computer and fans shall be commanded off.

1. Freeze protection pump control: Whenever the outside air (OA) is below 45°F (adjustable), SF and RF are running or the AHU-4 mixed air temperature is 38°F (adjustable) when fans are shut down then the freeze protection pump shall operate continuously. The freeze protection pump shall cycle whenever 45°F>OA≤ 65°F, SF and RF are running and supply air temperature is not at set point. If freeze protection pump fails to start and/or run in any mode of operation, as determined by the current sensor, an alarm shall be indicated at the head end computer and freeze protection pump shall be commanded off.

C. Morning Cool Down Mode:

Whenever temperatures in two (2) zones (adjustable) are 2°F (adjustable) above occupied cooling temperature set points of 75°F (adjustable) then the supply and return fans are commanded on. The heating valve shall close, the circulating pump shall shut down if was running, when outside air temperature permits, the AHU-4 DDC controller will first utilize the economizer for free cooling (OA damper fully open, RA damper fully closed and EA damper fully open), as long as the supply air (SA=OA) temperature is 2°F cooler than the average zones temperature and the outside air enthalpy is less than average zones enthalpy. When the economizer can no longer maintain these conditions then dampers shall modulate to their unoccupied mode positions or economizer cannot maintain each zone at occupied cooling temperature set point then the cooling coil valve shall modulate to maintain SA temperature at 55°F (adjustable) to maintain each zone at occupied cooling temperature set point (cooling coil control valve shall modulate only if cooling is available). Run fans as needed to have all zones at occupied cooling set point prior full occupancy. During morning cool down mode supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide exhaust air (EA) during full economizer or return air (RA) whenever the economizer is disabled to be equal supply air (SA) flow.

D. Occupied Heating Mode of Operation:
The supply and return fans shall continuously to run. The dampers open to their occupied mode positions (OA at minimum position as determined by balancing contractor, RA fully open, and EA fully closed) prior to fans start, the freeze protection pump shall start/run and heating coil control valve shall modulate as required to maintain supply air temperature at 65°F (adjustable) whenever average calculated space temperature is 70°F (adjustable) or 70°F (adjustable) whenever average calculated space temperature is 65°F (adjustable). During occupied heating mode of operation of AHU-4 the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) RA=SA-OFFSET.
A low temperature protection thermostat/freezestat located in the heating coil discharge shall shut down the unit fans, close the outside and exhaust dampers, open the heating coil valve full to the coil, start freeze protection pump if not running and stop freeze

protection pump when AHU-4 mixed air temperature is above 40°F (adjustable), and indicate an alarm at the head end computer upon sensing a temperature below its setpoint of 36°F (adjustable).

E. Occupied Cooling:
The supply and return fans shall continuously to run and the dampers shall open to their occupied mode positions (OA at minimum position, RA fully open, and EA fully closed) prior to fans start.
Whenever average calculated zones temperature is in range of 72-75°F then SA temperature shall reset from 65°F to 55°F (when average calculated zones temperature is 75°F) then the heating valve shall close, the circulating pump shall stop if was running, the AHU-4 DDC controller will first utilize the economizer for free cooling (OA damper fully open, RA damper fully closed and EA damper fully open), as long as the supply air temperature is 2°F cooler than the average calculated zones temperature and the outside air enthalpy is less than average calculated zones enthalpy. When the economizer can no longer maintain these conditions then dampers shall modulate to their occupied mode positions or economizer cannot maintain reset SA temperature at set point then the cooling coil control valve shall modulate to maintain reset SA temperature at set point. During occupied cooling mode of operation of AHU-4 the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return air (RA) RA=SA-OFFSET.

F. Demand ventilation control:
During the occupied mode of operation of AHU-4, if return air (RA) CO2 level is 520 PPM (adjustable) above OA CO2 (adjustable, 400 PPM OA CO2, typical), over a period of 10 minutes (adjustable) then the AHU-4 controller shall override current positions of OA damper, modulate OA damper open for 10%, hold OA damper at position for 10 minutes (adjustable), if after 10 minutes (adjustable) RA CO2 level is not at set point then the OA damper shall modulate open for additional 10%, hold OA damper at position for 10 minutes (adjustable), if after 10 additional minutes (adjustable) RA CO2 level is not at set point then the OA damper shall continue to modulate open up to the its maximum OA position listed in the schedule and as determined by balancing contractor, and subject to a mixed air limit sensor. Whenever OA damper is at its maximum OA position for demand ventilation control then the AHU-4 controller shall override position of RA and EA dampers and modulate them to provide maximum specified OA flow for demand ventilation control, hold dampers in their position until RA CO2 drops below 520 PPM (adjustable) for 10 minutes (adjustable), then modulate all dampers to their occupied mode operation. The CO2 concentration shall be the difference between RA and outdoor air concentration.

G. Unoccupied Heating:
Whenever temperatures in two (2) zones (adjustable) are 2°F (adjustable) below unoccupied heating temperature set points of 60°F (adjustable) then the supply and return fans are commanded on. The fans shall operate on 100% return air, the heating coil control valve shall modulate and the freeze protection pump shall start if not running to maintain SA temperature at 90F (adjustable). When all zones are at unoccupied heating temperature set point for 10 minutes (adjustable) then fans shall slow down to their minimum speed of 30% and shut down. During unoccupied heating mode of operation the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide return

air (RA) equal supply air (SA) flow.

H. Unoccupied Cooling:

Whenever temperatures in two (2) zones (adjustable) are 2°F (adjustable) above unoccupied cooling temperature set points of 85°F (adjustable) then the supply and return fans are commanded on. The heating valve shall close, the circulating pump shall shut down if was running, the AHU-4 DDC controller will first utilize the economizer for free cooling (OA damper fully open, RA damper fully closed and EA damper fully open), as long as the supply air (SA=OA) temperature is 2°F cooler than the average zones temperature and the outside air enthalpy is less than average zones enthalpy. When the economizer can no longer maintain these conditions then dampers shall modulate to their unoccupied mode positions or economizer cannot maintain each zone at unoccupied cooling temperature set point then, the cooling coil control valve will modulate to maintain SA temperature at 55F (adjustable). When all zones are at unoccupied cooling temperature set point for 10 minutes (adjustable) then fans shall slow down to their minimum speed of 30% and shut down and close economizer dampers if not already closed. During unoccupied cooling mode of operation the supply fan (SF) speed shall modulate to maintain duct static pressure sensor at set point and return fan (RF) speed shall modulate/track supply fan speed to provide exhaust air (EA) during full economizer or return air (RA) whenever the economizer is disabled to be equal supply air (SA) flow.

I. Smoke Detectors

This contractor shall monitor duct mounted smoke detectors furnished and installed under a different section. This contractor shall hard wire smoke detectors to shut down all fans then close dampers and send an alarm to the front end computer upon detecting products of combustion.

J. Duct Static Pressure Sensor

Duct static pressure set point shall be reset based on the zone requiring the most pressure; i.e. the set point is reset lower to keep zone VAV box damper with the most demand open in range of 92-96% (adjustable). If zone VAV box damper with the most demand exceeds 96% open then duct static pressure set point shall increase small amount. If zone VAV box damper with the most demand drops below 92% open then DP set point shall decrease small amount.

K. High Limit Static Pressure Sensor

The AHU-4 DDC controller shall shut down supply and return fans, close OA and EA dampers three (3) minutes (adjustable) after the fans shut down, and send an alarm to the front end computer whenever high limit static pressure sensor is at set point as determined by balancing contractor. AHU-4 shall return to mode of operation prior to activation of high limit static pressure sensor upon manual reset of that sensor. Coordinate duct static pressure classification, total AHU-4 static pressure with mechanical and balancing contractors prior to AHU-4 start.

L. Low Limit Static Pressure Sensor

The AHU-4 DDC controller shall shut down supply and return fans, close OA and EA dampers three (3) minutes (adjustable) after the fans shut down, and send an alarm to the front end computer whenever low limit static pressure sensor is at set point as determined by balancing contractor. AHU-4 shall return to mode of operation prior to activation of low limit static pressure sensor upon manual reset of that sensor. Coordinate duct static pressure classification, total AHU-4 static pressure with mechanical and balancing contractors prior to AHU-4 start.

M. Combination Fire/Smoke Dampers

This contractor shall monitor status of duct mounted combination fire/smoke dampers furnished and installed under a different section. This contractor shall wire each combination fire/smoke damper switch package to AHU-4 DDC controller to shut down all fans at time of closure of any combination fire/smoke damper, then close dampers three (3) minutes (adjustable) after the fans shut down and send an alarm to the front end computer. AHU-4 DDC controller shall verify status of each combination fire/smoke damper prior to fans start. AHU-4 DDC controller shall not start fans if any of combination fire/smoke damper is closed.

N. Base bid

The AHU-4 DDC controller shall open enough VAV boxes dampers serving shell space for future office fit-out to provide stable operation of fans at minimum SA and RA flows during all modes of operation of AHU-4.

1.11 TYPICAL VARIABLE AIR VOLUME BOX SEQUENCE OF OPERATION

A. Morning warm-up: If space temperature is 2°F (adjustable) below occupied heating set point of 70°F (adjustable) then VAV box damper shall modulate down to scheduled minimum airflow setpoint if not at this position, then modulating reheat coil control valve to maintain a maximum scheduled discharge air temperature, then increasing air flow to scheduled heating cfm setpoint as the last stage of heating in order to maintain each zone at heating setpoint of 70°F (adjustable). In zones with VAV boxes and hot water radiation elements the DDC system shall modulate hot water control valves to maintain zones temperature at setpoints. In zones with VAV boxes and hot water radiant panels the DDC system shall modulate hot water control valves at VAV boxes and open/close hot water control valves at hot water radiant panels to maintain zones temperature at setpoints. When occupied space temperature set point is reached, damper at VAV box and hot water reheat control valve shall go to their occupied positions.

B. Morning cool-down: If space temperature is 2°F (adjustable) above occupied cooling set point of 73°F (adjustable) (75°F in storage rooms and corridors) then the VAV box damper shall modulate between minimum and maximum cfm set points and hot water reheat coil

control valve shall fully close at VAV box to maintain each zone at cooling setpoint of 73°F (adjustable) (75°F in storage rooms and corridors). When occupied space temperature set point is reached, damper at VAV box and hot water reheat control valve shall go to their occupied positions.

C. Cooling: VAV box damper shall modulate between minimum and maximum airflow setpoints in order to maintain each zone at cooling setpoint of 75°F (adjustable +/-2 °F at thermostat, day-unoccupied 77°F) during occupied mode of operation, and 85°F (adjustable) during unoccupied mode of operation.

D. Heating (where is applicable): VAV box damper shall modulate down to scheduled minimum airflow setpoint if it is not at that setpoint, then modulating hot water reheat coil control valve to maintain a maximum scheduled discharge air temperature, then increasing air flow to scheduled heating cfm setpoint as the last stage of heating in order to maintain each zone at heating setpoint of 70°F (adjustable +/- 2°F at thermostat, day unoccupied 68°F) during occupied mode of operation, and 60°F (adjustable) during unoccupied mode of operation

E. Ventilation rate control: VAV box serving room with specified CO2 sensor shall modulate to maintain space CO2 level at setpoint. Whenever space CO2 level is 500 PPM (adjustable) above OA CO2 level (400 PPM OA CO2) the DDC system shall override current position of VAV box damper to gradually increase air flow for 10% (adjustable) then hold VAV box damper at that position for 10 minutes (adjustable) in order to maintain CO2 level at setpoint. If after 10 minutes (adjustable) the space CO2 level is not at setpoint then the DDC system shall repeat this sequence every 10 minutes (adjustable) in order to maintain space CO2 level at setpoint. Whenever space CO2 level is at setpoint then the VAV box damper shall be subject to temperature control loop. If VAV box damper provides maximum cooling or heating air flow or during its modulations space temperature drops below heating setpoint the DDC system shall override current position of AHU outdoor air damper to increase outdoor air flow to maintain CO2 level at setpoint and VAV box damper shall modulate to maintain space temperature at setpoint.

F. Occupancy sensor (refer to electrical drawings for occupancy sensors location): Upon a signal from occupancy sensor, the zone space temperature shall revert to "stand-by" mode. Unique stand-by software set points for cooling, plus 2°F (adjustable) above space cooling set point, and heating, minus 2°F (adjustable) below space heating set point shall be provided for each zone except corridor. If the occupancy sensor detects that any room becomes occupied for minimum 15 minutes (adjustable) served by VAV box, then the room day occupied temperature setpoints are restored and VAV box shall operate in heating or cooling mode of operation. When all rooms become unoccupied then the DDC system shall revert VAV box operation to "stand-by" mode.

G. Alarms:

1. A VAV box has been at max flow for more than 6 hours (adjustable)
2. VAV box does not reach commanded CFM.

3. There is no supply air temperature rise with VAV box hot water reheat coil control valve fully open.

H. Refer to air handling unit sequence of operations for additional controls requirement for VAV boxes.

1.12 VARIABLE VOLUME HEAT RECOVERY UNIT

A. Occupied Mode

1. The modulating outside and exhaust air dampers shall open fully and the by-pass damper shall close.
2. The fan's VFDs shall slowly ramp up the fan speed until the duct pressure reaches the sensor setpoint.
3. If the supply or exhaust fan fails to operate, as determined by the VFD alarm contacts, both fans shall be stopped and an alarm shall be generated at the head end.
4. If supplemental heat/cooling is required to maintain discharge air temperature, than the heating or cooling valves will modulate.
5. Whenever the heating coil valve is open to the coil, or the outside air temperature is below 38°F (adj.), the freeze pump shall operate.
6. If the duct mounted low temperature sensor senses a temperature below its setpoint, the dampers shall position to close off the outside air, the heating valve shall open full, the freeze pump (if not running) shall start, the supply and return VFDs shall stop, and an alarm shall be indicated at the head end.
7. When supplemental cooling is required, if the temperature outside is less than 60deg F(adj.) but more than 45deg F (adj.), the heating valve shall close, the circulating pump shall stop, the unit's discharge sensor shall maintain its setpoint in the cooling mode of operation by utilizing outside air through the economizer mode of operation, provided the outside air enthalpy is sufficient for free cooling. During this mode of operation, the heat wheel will be stopped. If the outside air cannot be utilized, and cooling is available than the cooling coil valve shall modulate and the heat wheel shall return to its occupied operation.
8. A temperature sensor, located in the heat wheel discharge shall vary the wheel speed upon sensing a temperature below its setpoint, to prevent frosting. Coordinate with unit manufacturer.
9. A CO2 sensor located in the exhaust duct will monitor the CO2 concentration in the return air. When the concentration is less than 800ppm (adj), the outside air damper and exhaust air damper shall modulate close, while the by-pass damper shall modulate open. When the CO2 sensor installed in the exhaust duct, or any of the space mounted CO2 sensors detect concentrations in excess of 900ppm (adj), the outside and exhaust air dampers shall open and the by-pass air damper shall close.
10. The individual zone supply and return dampers shall be opened or closed as called for by the space mounted occupancy, CO2 or temperature sensor.

B. Unoccupied Mode

1. The by-pass damper shall open, the wheel shall stop, the outside air and return dampers shall close and the unit shall operate on 100% return air. Fans shall

modulate as necessary to maintain required air flow.

C. Smoke Detectors.

This contractor shall monitor duct mounted smoke detectors furnished and installed under a different section. Unit shall shut down, close dampers and send an alarm to the front end upon detecting products of combustion.

1.13 ROOM ISOLATION DAMPERS

A. Upon sensing occupancy for the space occupancy sensor provided by the EC, the classroom isolation dampers shall open allowing for air flow across the chilled beam units. Space CO2 sensors shall also open the isolation dampers upon detection of levels of CO2 above 900ppm (adjustable). When the CO2 concentration in the space exceeds 1200ppm (adjustable), an alarm shall be generated at the head-end. If the dampers are closed and the space temperature can not be maintained, the dampers shall also open.

1.14 ACTIVE CHILLED BEAMS

A. A 6-way sensible cooling water or hot water control valve shall open or close to maintain occupied/unoccupied space temperature setpoint.

B. At each sensible cooling water zone control valve, a condensation sensor shall be installed on the underside of a section of un-insulated supply pipe ahead of the first chilled beam run-out. Upon sensing the formation of condensation, the associated control valve shall close and an alarm will be indicated at the head end computer.

1.15 RADIATION AND RADIANT PANEL CONTROL

A. A space sensor shall cycle the low voltage 2-position spring return, normally open, radiation valve in order to maintain it’s occupied and unoccupied setpoint.

1.16 EXHAUST FANS CONTROLLED BY DDC

A. The exhaust fans shall operate during the occupied period and remain off during the unoccupied period. The exhaust fan damper shall be open prior to starting the exhaust fans. If the fan status is not verified by the current sensor then an alarm will be indicated at the head end computer.

1.17 EXHAUST FANS CONTROLLED BY TEMPERATURE SENSOR

A. Mechanical, elevator machine room and electrical room exhaust fans shall be control by a space sensor. When the room space temperature rises above setpoint, the outside air damper shall open and the exhaust fan stall start. If the fan status is not verified by the current sensor then an alarm will be indicated at the head end computer.

1.18 CABINET & UNIT HEATERS

A. A space sensor shall cycle the cabinet/unit heater control valve as need to maintain the space temperature. A strap-on aquastat shall prevent fan operation the if hot return temperature fall below 85 degrees F.

1.19 REFRIGERANT MONITORING

A. Refrigerant leak detector installed in the mechanical room shall shut down the boilers and water heaters and generate a visual and audible alarm at a remote location and at the head end.

Exhaust fan associated with the refrigerant monitoring system shall run all the time at half of it's capacity. Upon detecting a refrigerant leak, the fan shall ramp up to deliver full air flow.

1.20 WARRANTY

A. The entire building control system shall be warranted for a period as specified in Section 01 78 30 "Warranty and Bonds". Any manufacturing defects arising during this period shall be corrected without cost to the owner. This warranty commences on Date of Substantial Completion. Please refer to Section 01 78 30 for additional warranty requirements.

PART 2 - PRODUCTS

None

PART 3 - EXECUTION

3.1 INSTRUCTION AND ADJUSTMENTS

A. Upon completion of the project, the Temperature Control Contractor shall: Check, validate, and calibrate, where required, all controllers, controlled devices, valves, actuators, auxiliary devices, relays, etc. provided under this section.

3.2 COORDINATION

A. Coordinate the controls furnished under this section with the controls furnished with the boilers and chillers resulting in a complete system properly interfaced.

3.3 SYSTEM TURN OVER

A. Upon completion of the installation, the Control Contractor shall start-up the system and perform all necessary testing and run diagnostics to ensure proper operation. An acceptance test in the presence of the Owner's Representative, the Architect, or the

Engineer shall be performed. The acceptance test shall consist of a point-to-point check-out within each terminal unit controller to insure proper operation of all system components.

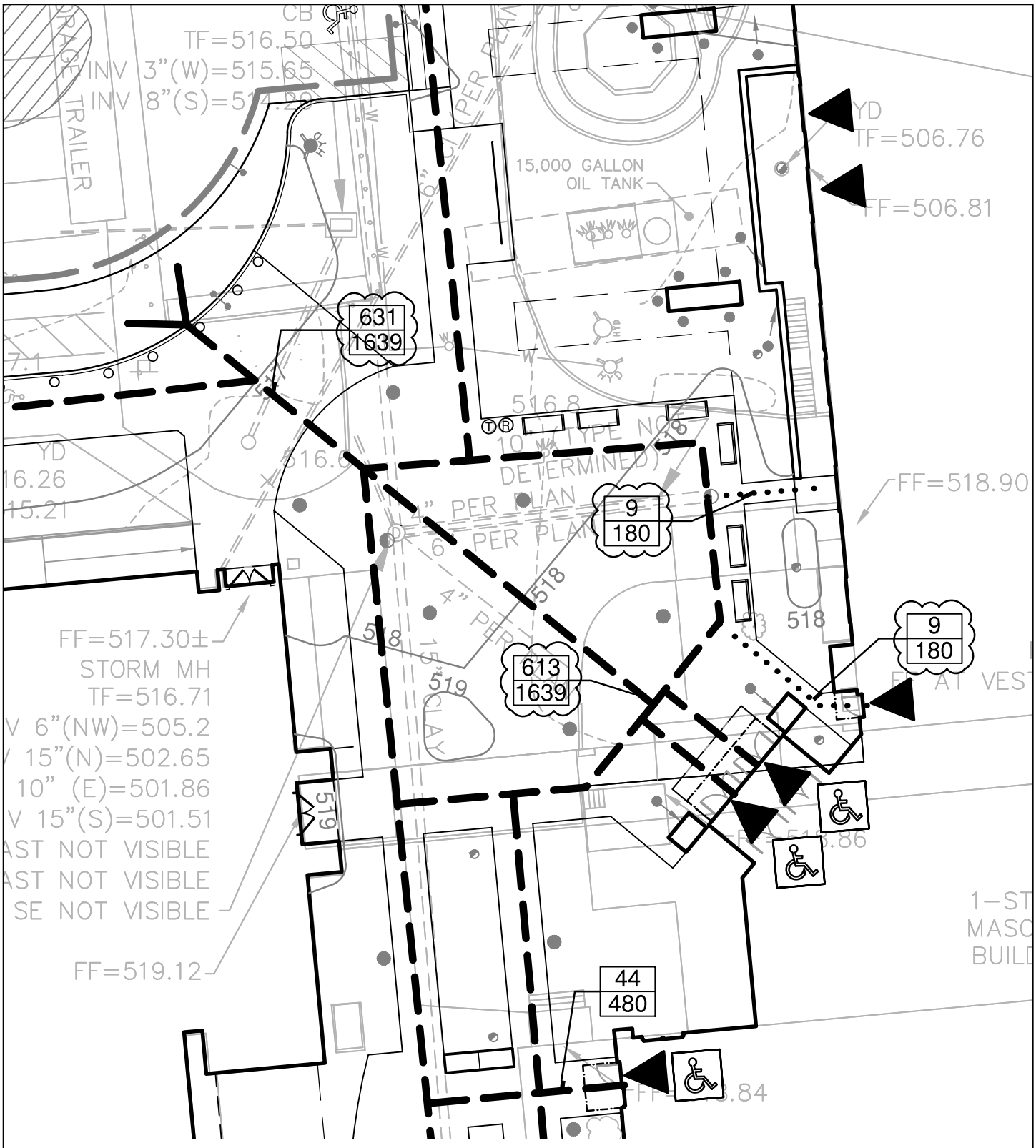
B. When the system is deemed satisfactory as a whole or in parts by these observers, the system as a whole or in parts will be accepted for use. Warranty commences on the latter of date accepted for use by Owner or Date of Substantial Completion, but in any case will not commence until entire system as a whole is accepted for use by Owner.

C. Problems which occur within approved and installed hardware or software comprising this system during warranty period shall be promptly corrected in an appropriate fashion under warranty to Owner's satisfaction. Any such occurrence shall not void previous approval; however, the Control Contractor shall be responsible to attend to, and remedy, such items arising within the Warranty Period. Appropriate logs, schedules, and reports shall be maintained to reflect these items and their redress.

3.4 TRAINING/OWNER'S INSTRUCTION

A. The Control Contractor shall provide two (2) CD copies of an operator's manual describing all operating and routine maintenance service procedures to be used with the system. The Control Contractor shall instruct the owner's designated representative in these procedures during the start-up and test period. The duration of the instruction are to be conducted during normal working hours and shall be no less than sixteen (16) hours.

END OF SECTION 23 09 93



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

SKETCH TITLE
REVISED EGRESS NUMBERS

DATE 10/29/2014

SCALE: 1" = 20'-0"

SKETCH NO.
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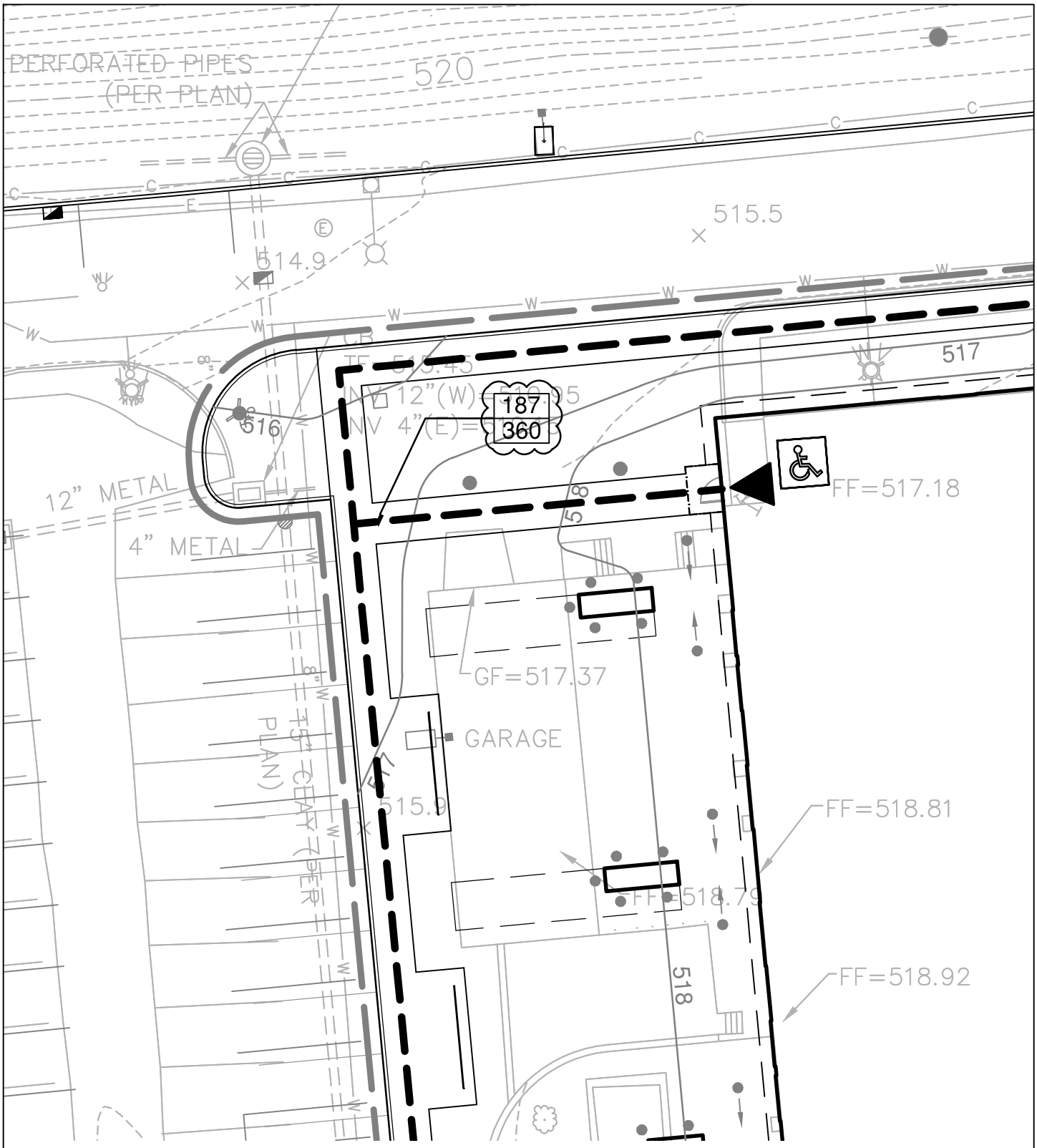

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DATE 10/29/2014

SCALE: 1" = 20'-0"

SKETCH NO.
AD3-SK-CD-3-2

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PROJECT TITLE
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PROJECT NO BI-CTC-442

SKETCH TITLE
REVISED BIKE RACK LAYOUT

DATE 10/29/2014

SCALE: 1" = 20'-0"

SKETCH NO.
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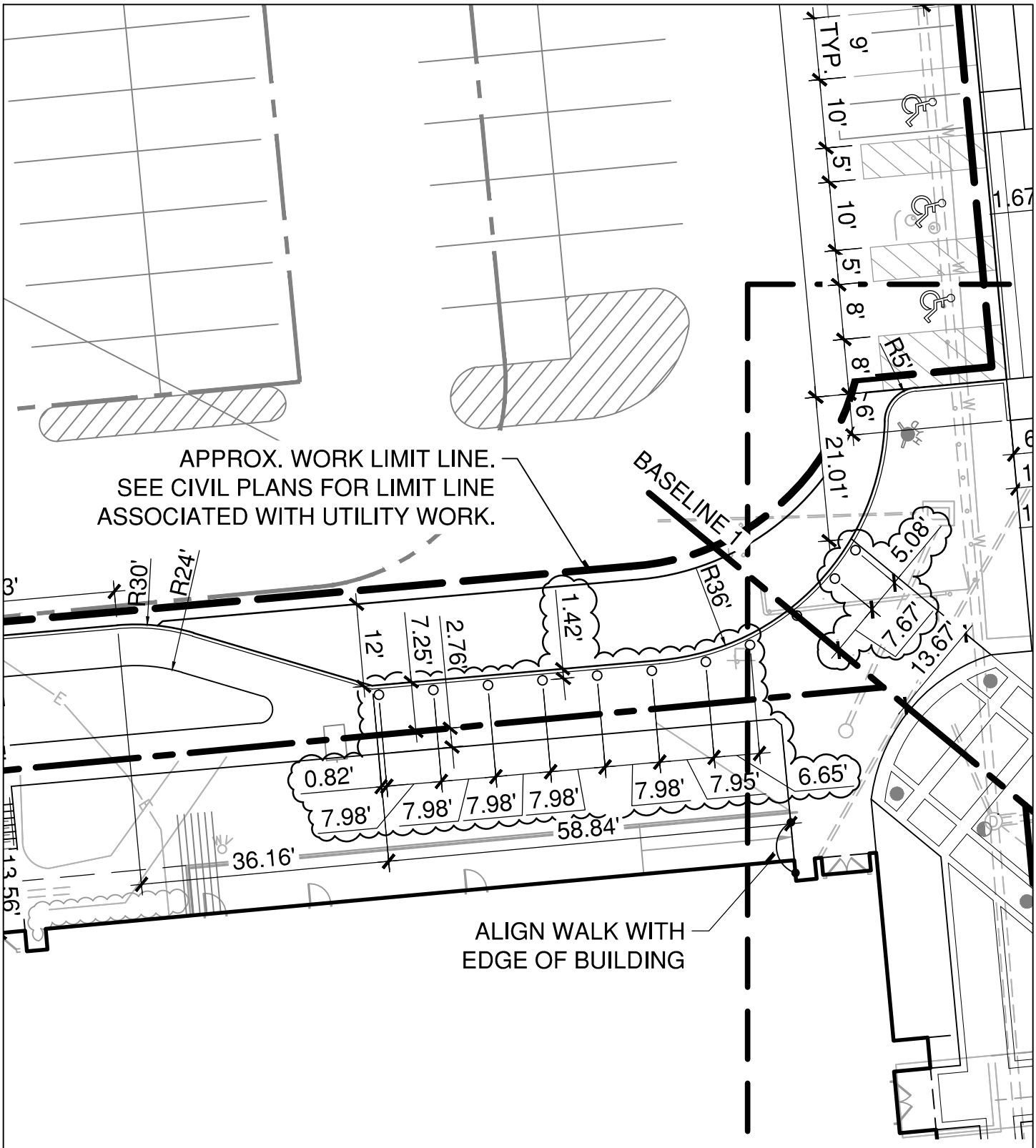

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PROJECT TITLE
Naugatuck Valley Community College
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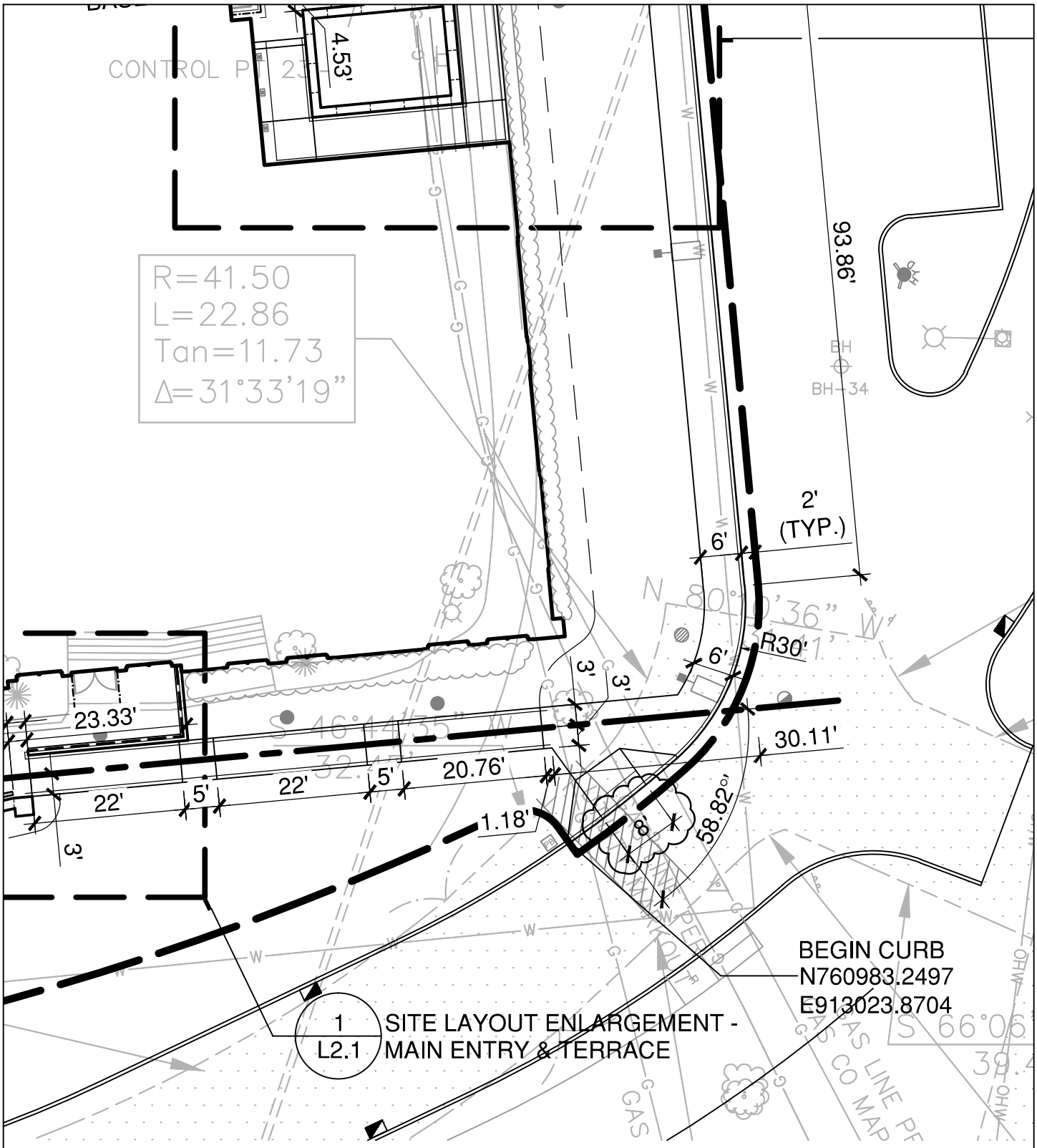
PROJECT NO BI-CTC-442

SKETCH TITLE
ADDITIONAL LAYOUT FOR
GRANITE BOLLARDS

DATE 10/29/2014

SCALE: 1" = 20'-0"

SKETCH NO.
AD3-SK-L1.1-2



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PROJECT NO BI-CTC-442

SKETCH TITLE
ADDITIONAL LAYOUT FOR
CURB RAMP WIDTH

DATE 10/29/2014

SCALE: 1" = 20'-0"

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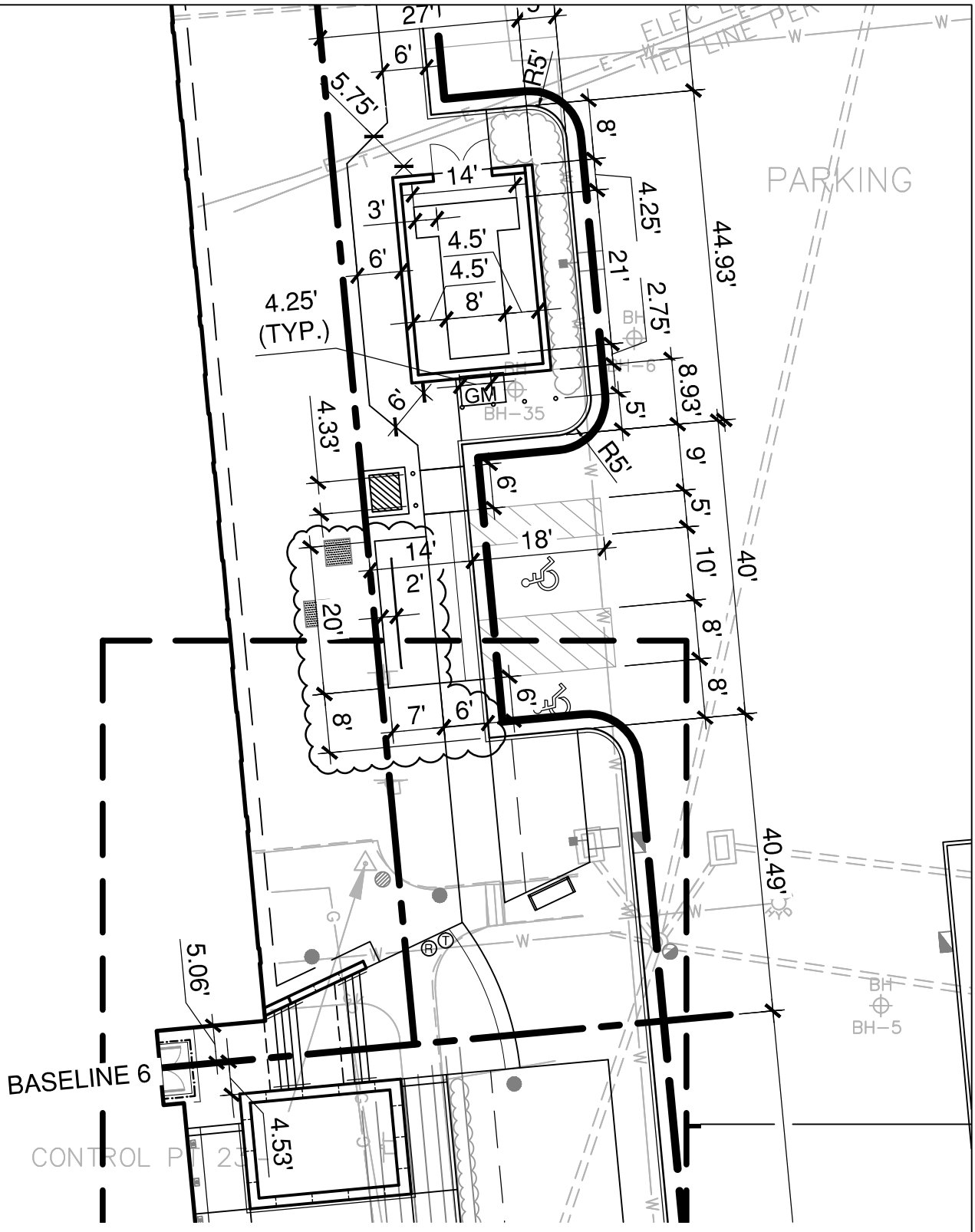

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PROJECT TITLE
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PROJECT NO BI-CTC-442

SKETCH TITLE
REVISED BIKE RACK LAYOUT

DATE 10/29/2014

SCALE: 1" = 20'-0"

SKETCH NO.
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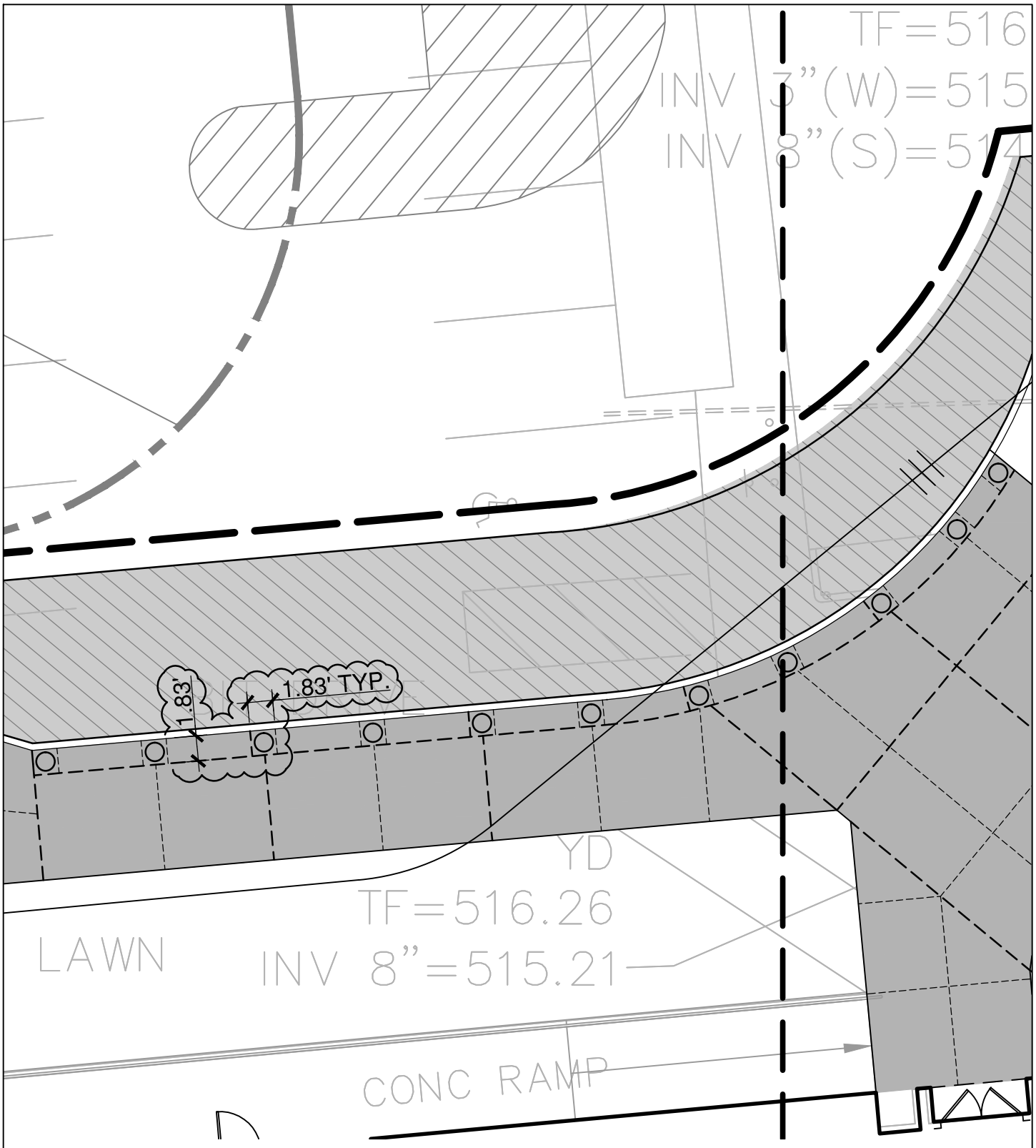

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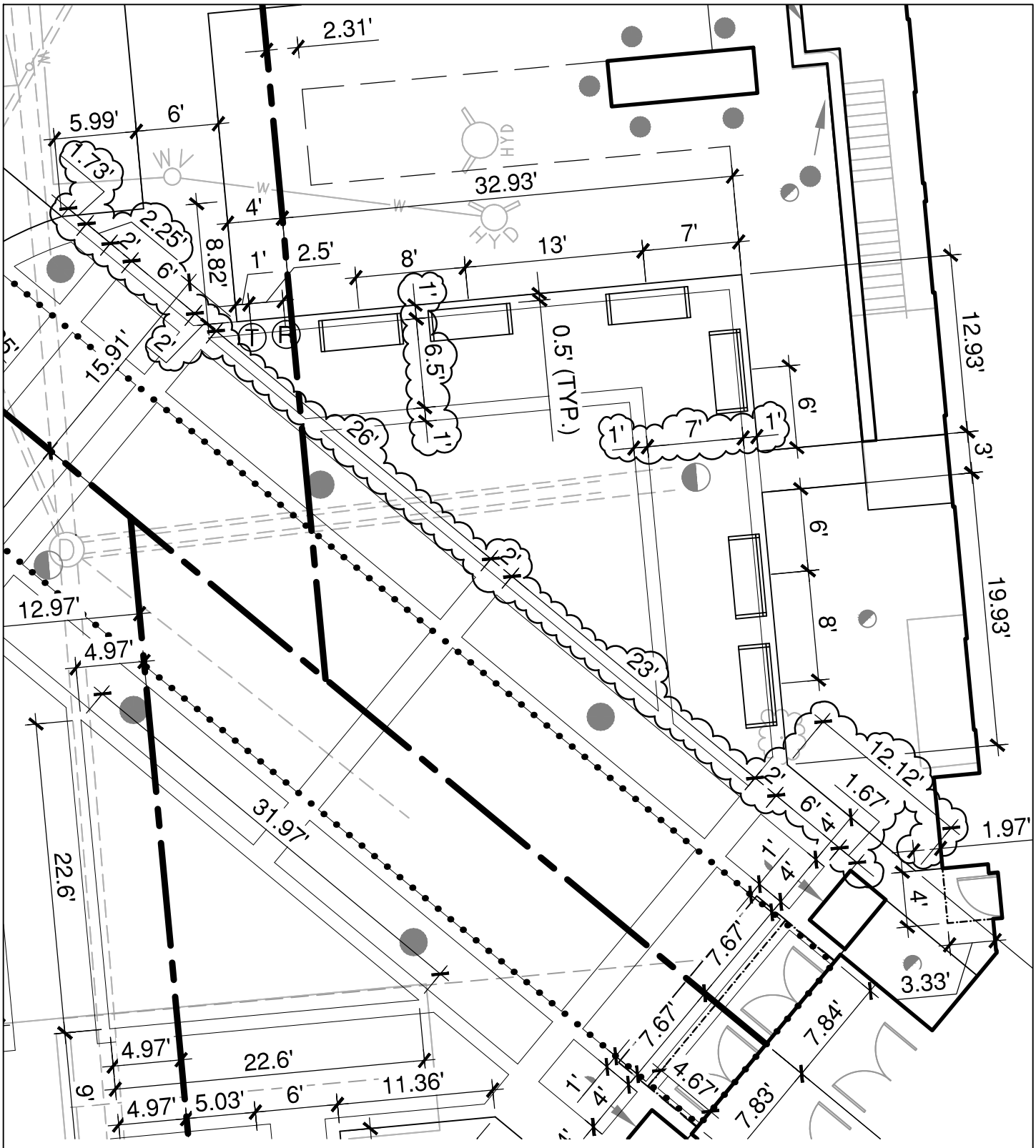
PROJECT NO BI-CTC-442

SKETCH TITLE
ADDITIONAL LAYOUT FOR
JOINTS AT BOLLARDS

DATE 10/29/2014

SCALE: 1" = 10'-0"

SKETCH NO.
AD3-SK-L1.2-1



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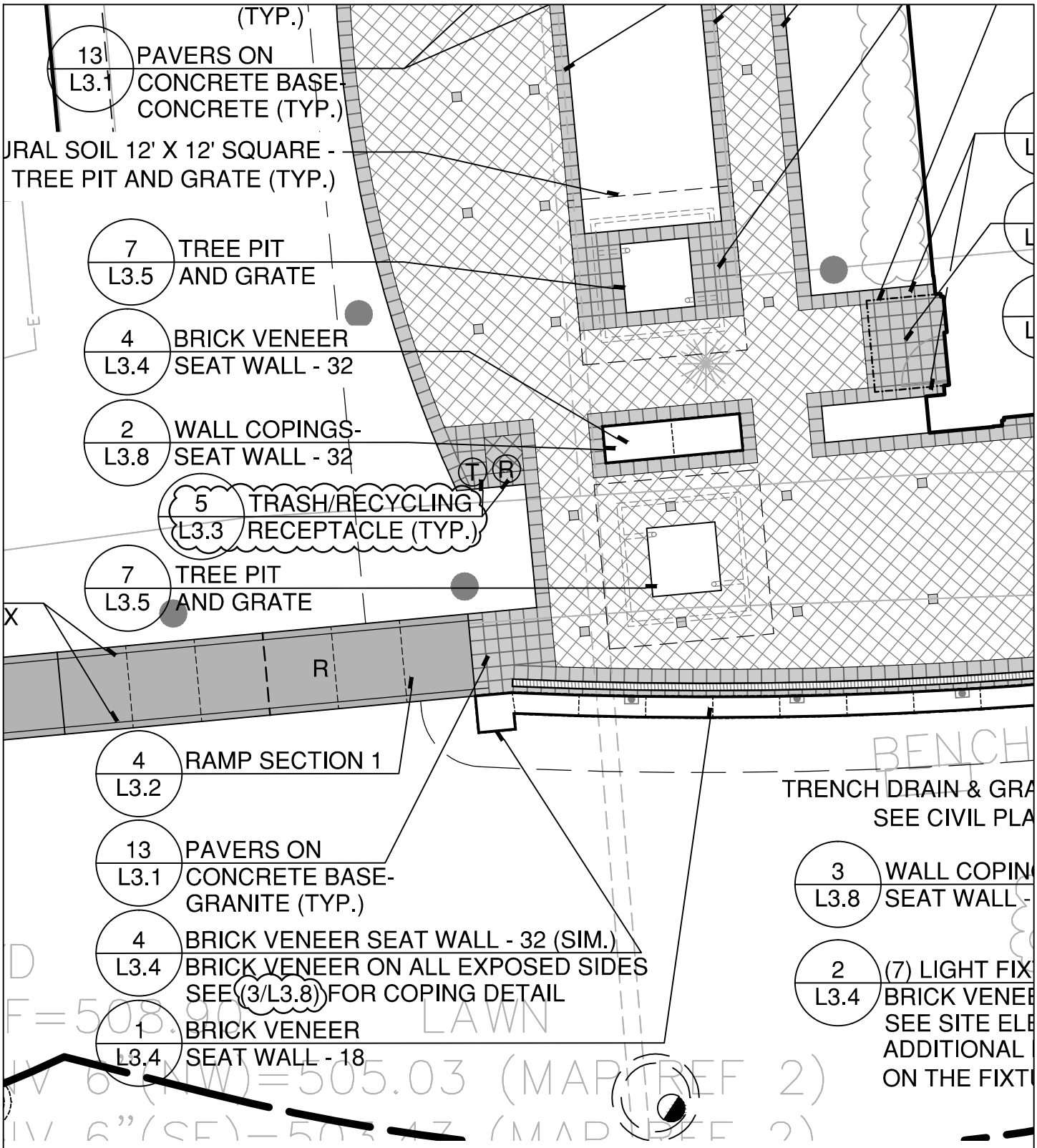
SKETCH TITLE
ADDITIONAL LAYOUT FOR
PAVER BANDING

DATE 10/29/2014

SCALE: 1" = 10'-0"

SKETCH NO.
AD3-SK-L2.1-1



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PROJECT NO BI-CTC-442

SKETCH TITLE
CORRECTED DETAIL

REFERENCES

DATE 10/29/2014

SCALE: 1" = 10'-0"

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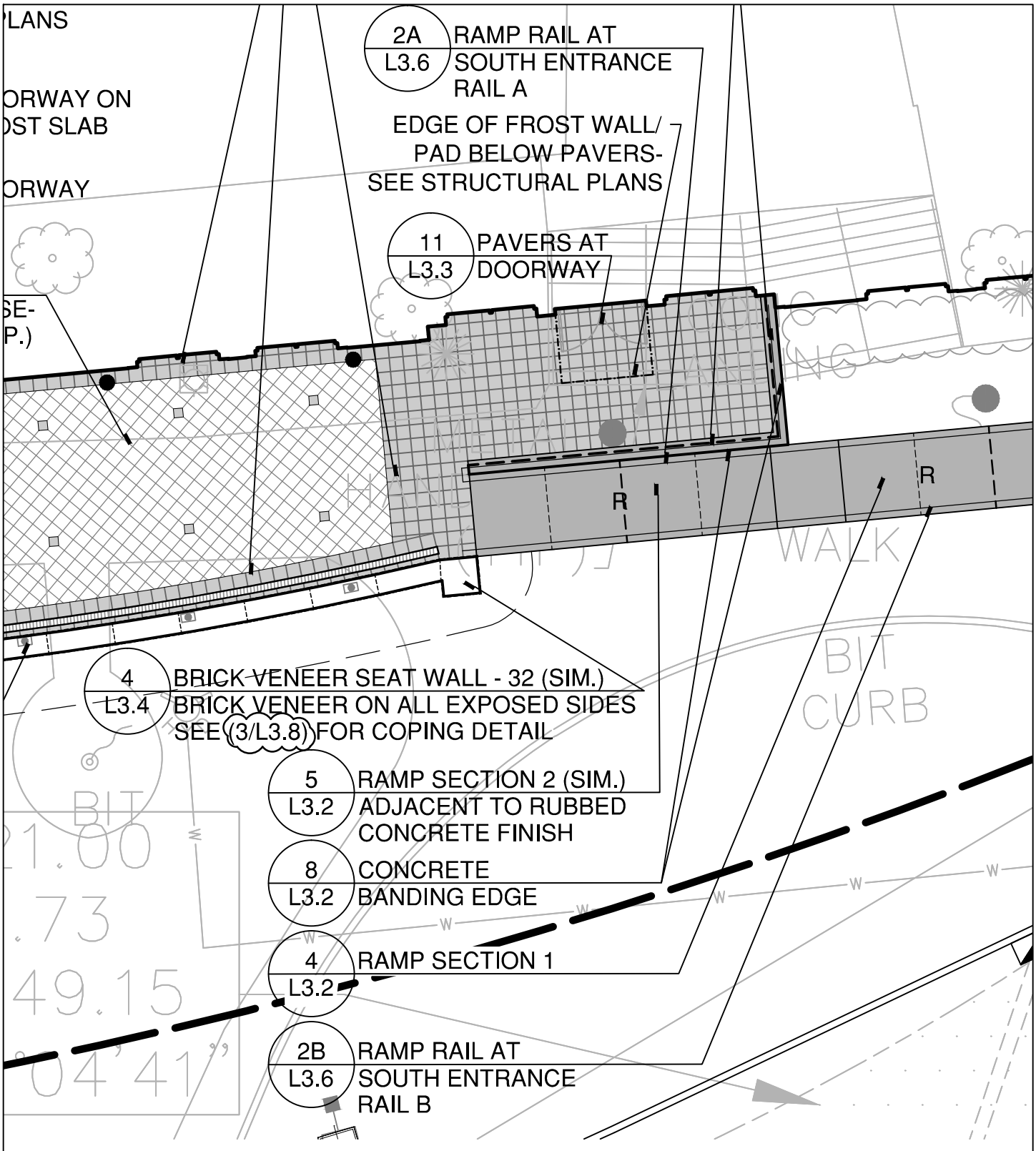

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CORRECTED DETAIL
REFERENCE

DATE 10/29/2014

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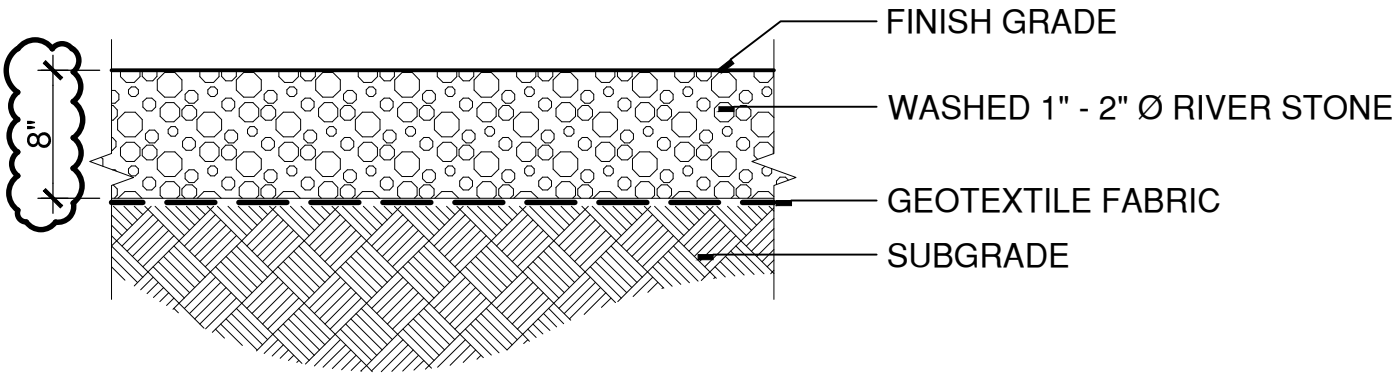

14 River Stone Surface

SCALE: 1"=1'

RiverStoneSurface.dwg

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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

SKETCH TITLE
RIVER STONE SURFACE
ADDED DEPTH DIMENSION

DATE 10/29/2014

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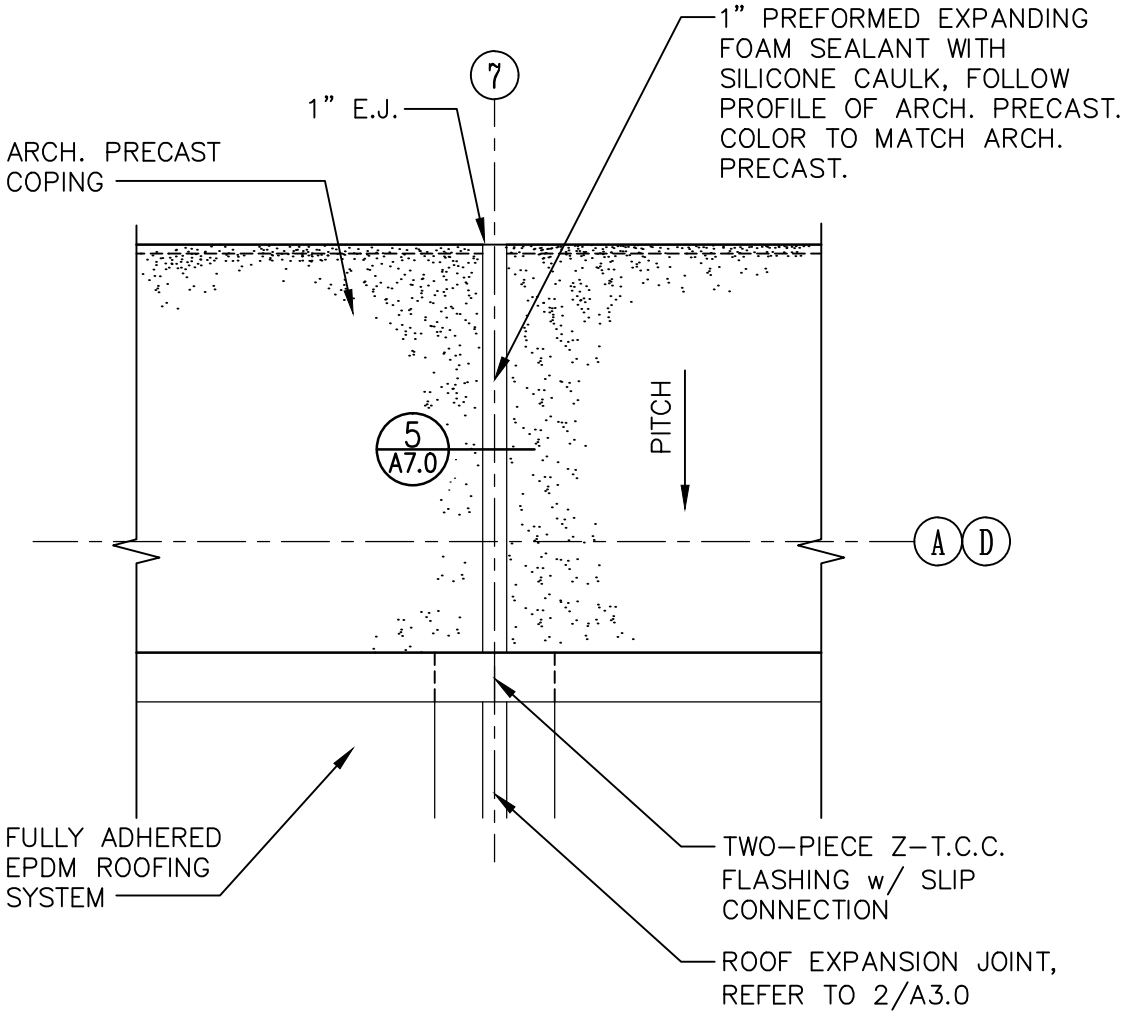

PLAN DETAIL
PRECAST COPING @ E.J.

14 / A3.0

SCALE: 1 1/2"=1'-0"

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WETHERSFIELD, CT. 06109
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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

SKETCH TITLE
PLAN DETAIL @
E.J. @ PARAPET WALL

DATE 10/29/2014

SCALE: AS NOTED

SKETCH NO.
AD3-SK-14/A3.0

NVCC - Founders Hall
Material Color Pallet
28-Oct-14

Spec.No.	Material Key	Type	Manufacturer	Product/Style/Pattern	Size	Color No.	Color Name	General Location	Notes
064023	Interior Architectural Woodwork								
		High-Pressure Decorative Laminate							
	P.LAM-1T		Formica Corporation			6221-58	american rose granite	main conference	
	P.LAM-2V					5876-58	fossil weft	copy rm vertical face	
	P.LAM-2T		Nevamar Decorative Surfaces (Panolam)			TQ6001-T	gray tranquility	copy rm countertop	
	P.LAM-3T					S3069T	soft island breeze	class/labs countertop	
	P.LAM-3V					WF0002E	Washington Apple	class/labs vertical face	
		Solid Surfacing Material							
BoD	SS-1		DuPont Polymers	Corian, Terra Collection	1/2" or 3/4"	(price group C)	dove	typical window stools	
BoD	ENG.ST-1		DuPont Polymers	Zodiac			galaxy black	café countertop	
BoD	ENG.ST-2		IceStone (Ecospec Ceramics)	IceStone			sky pearl	bathroom countertop	
066400	Plastic Paneling								
		Glass-Fiber Reinforced Plastic (FRP) Wall Paneling							
BoD	FRP-1		Marlite	Standard FRP - smooth surface	3/32" thick	S 100G	White		
093013	Ceramic Tile								
		Unglazed Ceramic Mosaic Tile							
BoD	CTF-1		DalTile	Keystones Colorbody Porcelain	2"x2"	D325	Marble	bathroom floor field	
BoD	CTFA-W					D148	Spa	accent for Women	DP3002 pattern
BoD	CTFA-M					D169	Waterfall	accent for Men	DP3002 pattern
		Porcelain (Glazed) Wall Tile							
BoD	CTW-1 & CTB-1		DalTile	Modern Dimensions - matte	4 1/4 x 12 3/4"	K775	Matte Biscuit	bathroom wall field	
BoD	CTW-2			Modern Dimensions - semi-gloss	4 1/4 x 12 3/4"	X114	Desert Gray	food service wall	
		Glass (Wall) Tile							
BoD	CTA-W		DalTile	Color Wave Mosaic Tile	1"x1"	CW12	whisper green	accent for Women/Unisex	
BoD	CTA-M				1"x1"	CW13	blue lagoon	accent for Men's bathrooms	
093033	Dimension Stone Tile								
		Granite Gneiss (Precambrian)							
BoD	STONE		Stony Creek		24"x24"	honed finish	pink multi	lobby	
BoD	ACCENT		Cold Springs Granite, MN		24"x24"	honed finish	charcoal black	lobby	
096519	Resilient Floor Tile								
		Solid Vinyl Floor Tile/Luxury Vinyl Tile							
BoD	LVT-M		Centiva	Event Stone LVT	18"x18"	NS-7107-E	ash limestone	Multipurpose, Student Lounge	
BoD	LVTA-M			Contour Stone LVT	18"x18"	CS-0620-C	modern lime niko	Multipurpose accent	
BoD	LVT-2		Estrie (American BiltRite)	Mirra Granite LVT		GN-019	Natural Granite	Student Lounge	
BoD	LVT-1		Johnsonite	Cortina Grande SVT (Azrock Collection)	16"x16"	CG404	Pumice	typical corridor	
BoD	LVT-3					CG502	Picnic Basket	typical classroom/lab	
BoD	LVTA-1					CG513	Splash	accent at 1st floor	
BoD	LVTA-2					CG516	SeaSun	accent at 2nd floor	
		Vinyl Composition Tile							
BoD	VCT-1		Armstrong World Industries, Inc.	Standard Excelon Imperial Texture		51810	washed linen	food service areas	

DATE 10/28/2014

SCALE: NONE
SKETCH NO. AD3-SK-A5.1A

PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442
SKETCH TITLE MATERIAL COLOR PALLET (PART A) TO
COORDINATE WITH FINISH SCHEDULE

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		Resilient Stair Accessories							
BoD	RBR-T		Johnsonite	Raised Round Tread Riser		58	windsor blue	raised square	
096723	Resinous Flooring								
		Resinous Flooring System: Permable, Self Leveling							
BoD	RES-VP		Sherwin Williams	General Polymers' AquArmor			medium gray		
		Resinous Flooring System: Non-permable, Self Leveling							
BoD	RES		Sherwin Williams	General Polymers' Epo-Flex MER II System			gray		
096816	Carpet		**MUST BE CRADLE-TO-CRADLE**						
		Broadloom Carpeting							
BoD	CPT-1		Bentley	Structural Obsession Loop (High Perf. PC)	12'-6" width	880227	Blue Print	admin. common areas	
BoD	CPT-2		Shaw Contract Group	Profile 60736, ecoworx backing	28 oz.	36315	vapor	offices	
		Modular Carpet Tile							
BoD	CPTT		Shaw Contract Group	Sketch Tile 59591, ecoworx backing	24"x24"	33315	vapor		
097713	Site Fabricated Stretched Fabric Wall Systems								
		System							
BoD			Novawall Systems, Inc.		1" core				
		Fabric Facing							
BoD	FAB-1		Guilford of Maine	Groove 3497	66" width	022	Winter	lecture hall and lobby	
BoD	FAB-2			Crosstown 2526	66" width	031	Birch	multi-purpose room	
099100	Painting								
	PNT-X	Solid Color Paint							
	MULTI-C	Multi-Color Wall Finish							
			Zolatone	(extra materials in Flex)		FLX0010, similar	Stonepath, similar		
102113	Toilet Compartments								
	Phenolic-Core Units with Color-Matched Core								
BoD			General Partitions Mfg. Corp.			3450C	grey mist		
102123.13	Cubicle Curtains and Tracks								
		Overhead Metal Curtain Track and Guides, plus Curtains							
		Cubicle Fabric							
BoD			Interspec	2010 Roundup	72"	15	Sandbar		
102226	Operable Panel Partitions								
		Electrically Operated, Acoustical Panel Partitions							
BoD			Modernfold, Inc.						
				vinyl facing (Koroseal)	30 oz.	310(H)	Spellbound - Apollo		
				trim & hinge		SW6002	smoke gray		
105113	Metal Lockers								
		Knocked-Down, Standard Metal Lockers							
BoD			Lyon Workspace Products			5024-58	pastel blue		
122413	Window Shades								
		Manually Operated, Vertical Roll-Up, Fabric Window Shades							
		Motor Operated, Vertical Roll-Up, Fabric Window Shade							
		Translucent Fabric							
			Phifer	SheerWeave Infinity2 3%			almond		
		Room Darkening Fabric							
			SWF Contract Shading Systems	Room Darkening			beige duplex		

DATE 10/28/2014

SCALE: NONE

SKETCH NO. AD3-SK-A5.1B

PROJECT TITLE Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

SKETCH TITLE MATERIAL COLOR PALLET (PART B) TO COORDINATE WITH FINISH SCHEDULE

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124813	Floor Mats and Frames								
		Fibered Modular Tile Entrance System (Tire Tile)							
BoD	TIRE-T		Mats Incorporated	Tire Tile	12"x12"x3/8"		Earth Tone	vestibules	
124816	Foot Grilles								
		Stainless Steel Foot Grille Assembly							
BoD			Mats Incorporated	Safe Track					
126100	Fixed Audience Seating								
		Lecture Hall Fixed Tables							
BoD			Navetta	Symmetra Series					
			Sedia Systems	M 50 Series					
			Lecture Hall: top and aisle ends						
		BoD		LG Surfaces: Hi-Macs solid surface		VL22	Volcanics Merea		
			Lecture Hall: modesty panel						
		BoD		3form: eco resin, patina finish			ivory		
			EMT Lab & Computer CR: top						
		BoD		Nevamar plastic laminate		VA2002T	Vision Vava		
			EMT Lab & Computer CR: modesty & end panel						
		BoD		Nevamar plastic laminate		WF0002E	Washington Apple		
			Supports and other metal finishes						
						Lecture Hall:	silver (Navetta)		
					EMT Lab & Computer CR:		almond (Sedia Systems)		

DATE 10/28/2014

SCALE: NONE

SKETCH NO. AD3-SK-A5.1C

PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

SKETCH TITLE
MATERIAL COLOR PALLET (PART C) TO
COORDINATE WITH FINISH SCHEDULE

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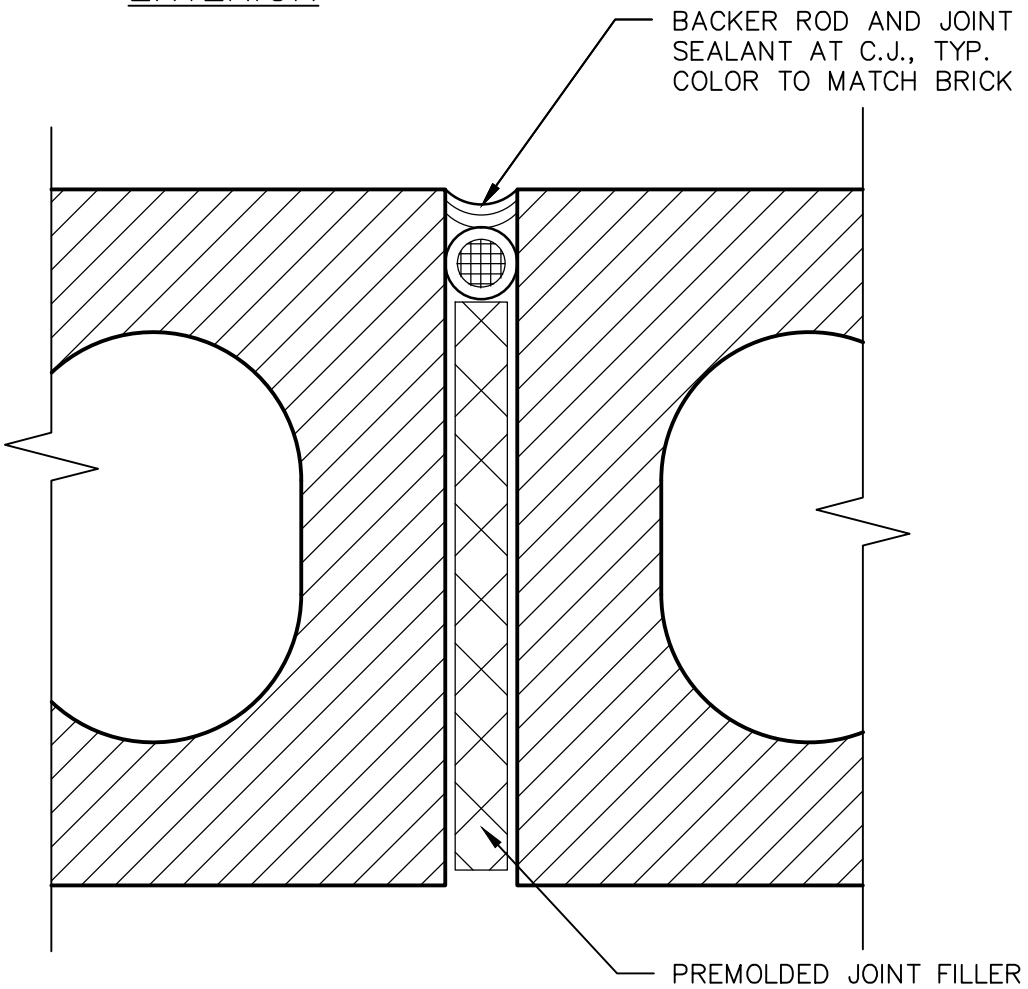
EXTERIOR



TYP C.J. IN BRICK VENEER

2 / A7.0

SCALE: FULL SIZE

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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

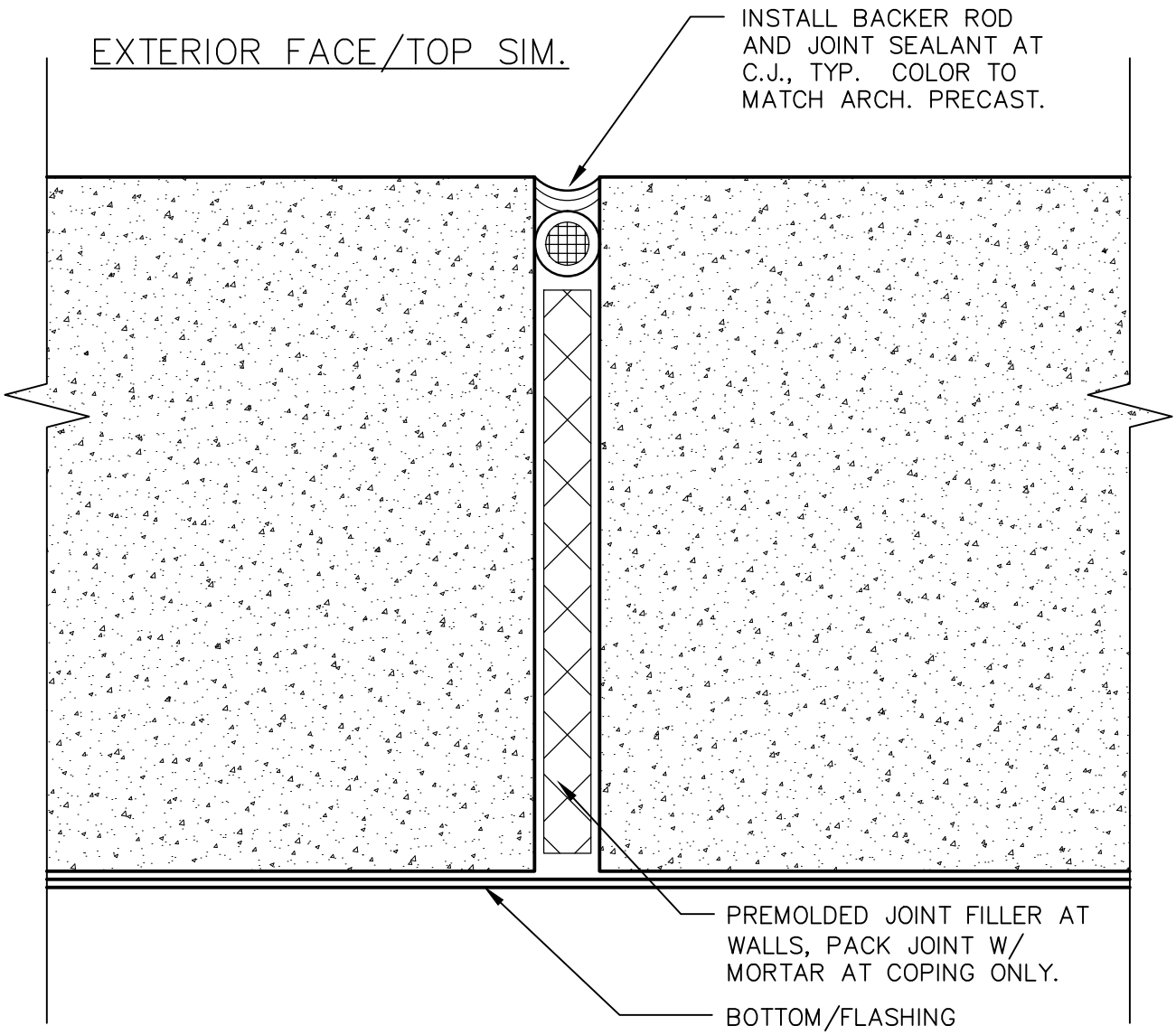
PROJECT NO BI-CTC-442

SKETCH TITLE
PLAN DETAIL @
C.J. @ BRICK VENEER

DATE 10/29/2014

SCALE: AS NOTED

SKETCH NO.
AD3-SK-2/A7.0



TYP C.J.–ARCH. PRECAST

3/A7.0 SCALE: FULL SIZE

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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

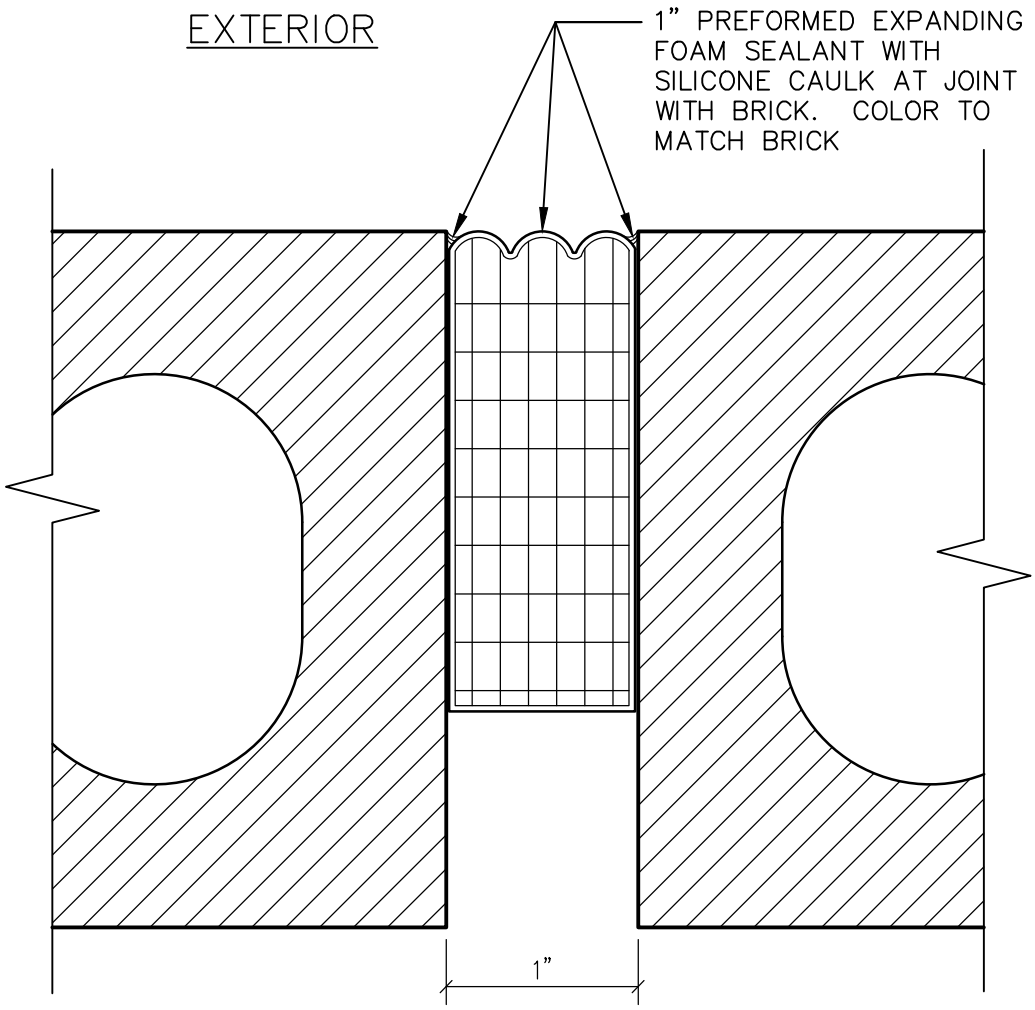
PROJECT NO BI-CTC-442

SKETCH TITLE C.J. AT PRECAST

DATE 10/29/2014

SCALE: AS NOTED

SKETCH NO.
AD3-SK-3/A7.0



TYP E.J. IN BRICK VENEER

4 / A7.0

SCALE: FULL SIZE

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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

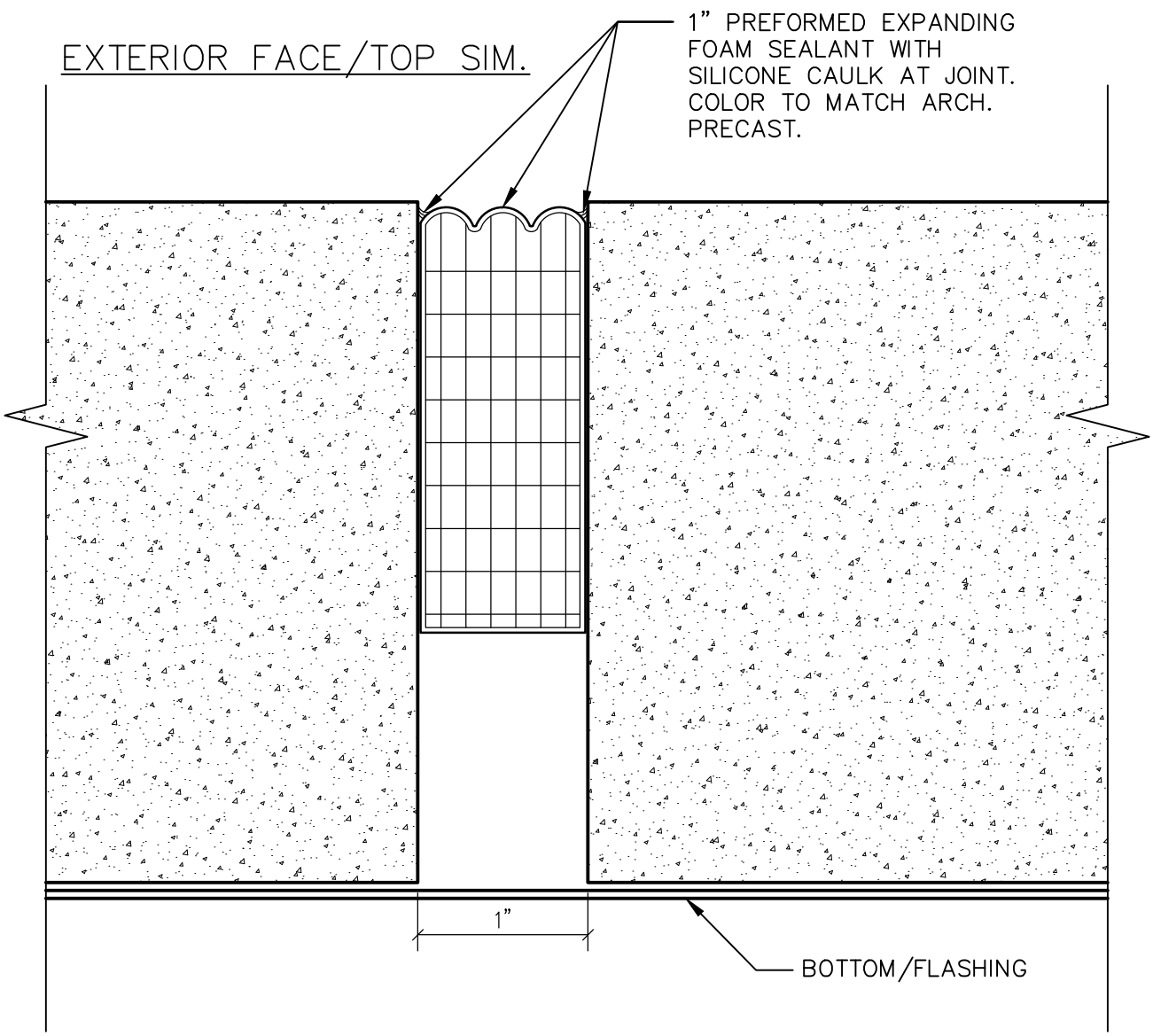
PROJECT NO BI-CTC-442

SKETCH TITLE
EXPANSION JOINT DETAIL
AT BRICK VENEER

DATE 10/29/2014

SCALE: AS NOTED

SKETCH NO.
AD3-SK-4/A7.0



TYP E.J. IN ARCH. PRECAST

5 / A7.0

SCALE: FULL SIZE

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PROJECT TITLE
Naugatuck Valley Community College
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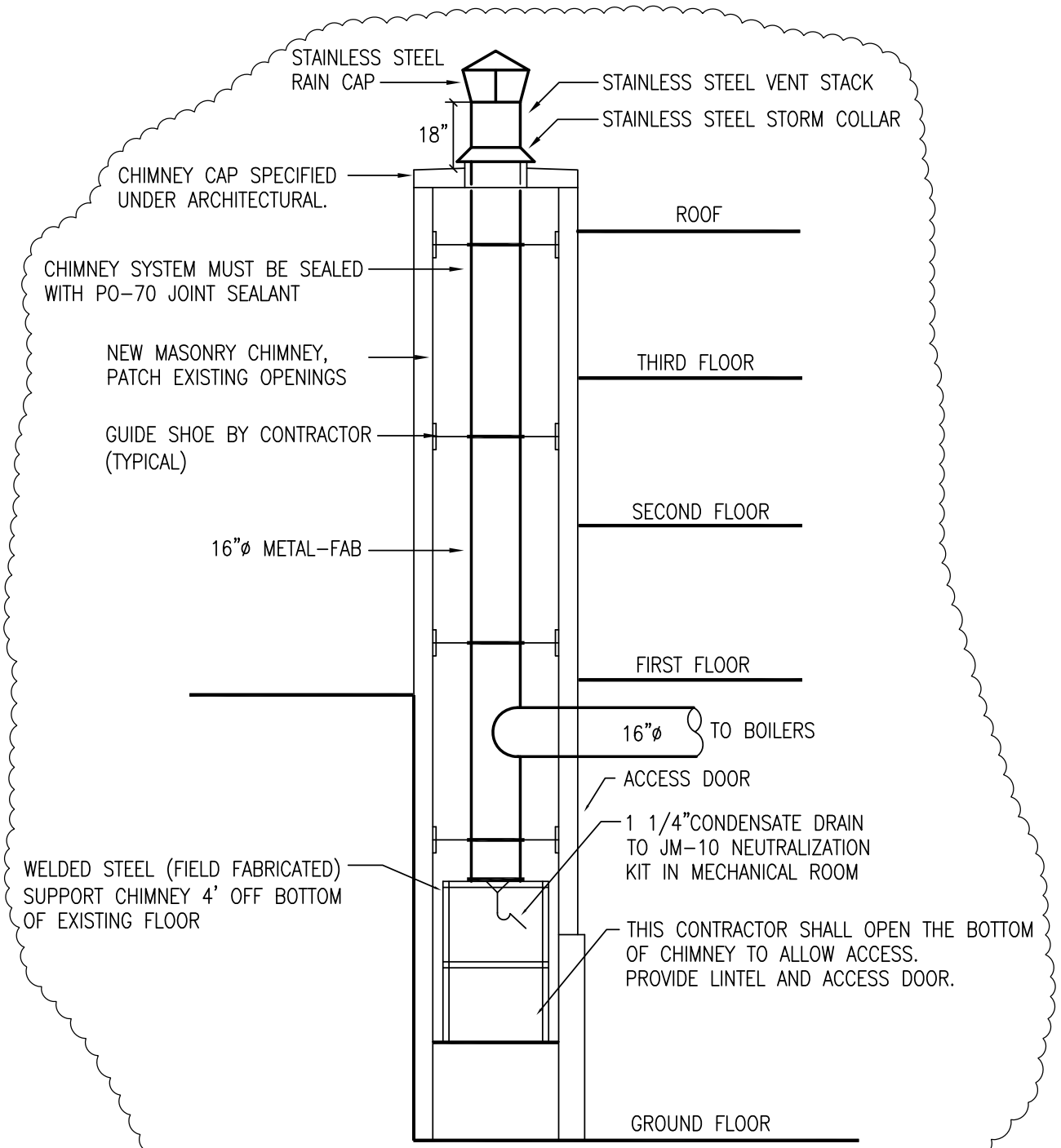
PROJECT NO BI-CTC-442

SKETCH TITLE
EXPANSION JOINT DETAIL
AT ARCH. PRECAST

DATE 10/29/2014

SCALE: AS NOTED

SKETCH NO.
AD3-SK-5/A7.0



FLUE EXHAUST VENTING

NO SCALE

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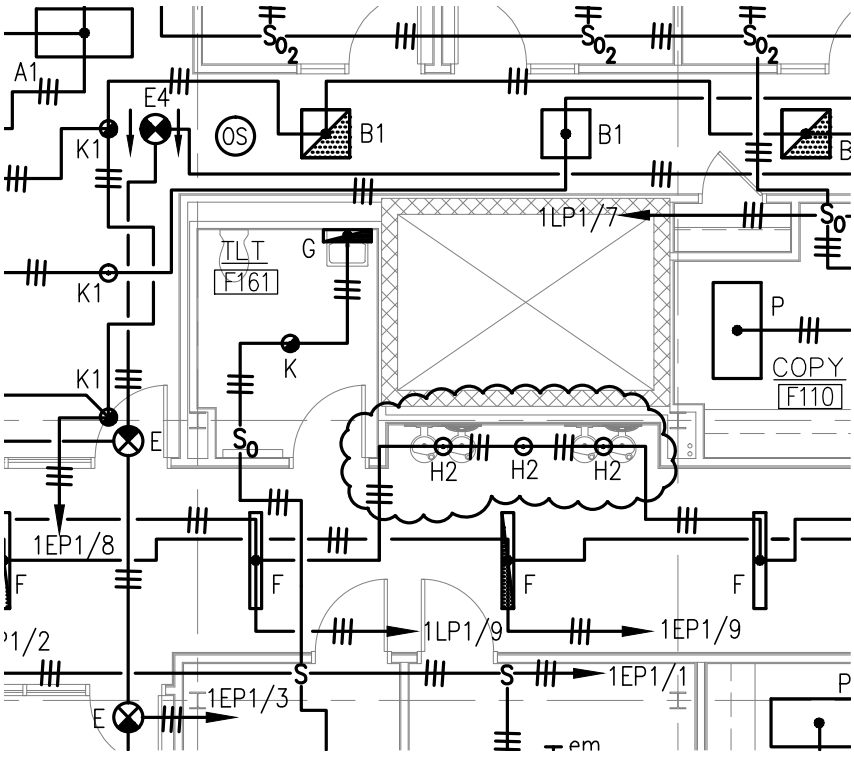
SKETCH TITLE
FLUE EXHAUST VENTING DETAIL

-

DATE 10/29/2014

SCALE: NONE

SKETCH NO.
AD3-SK-M1.2A-D-1



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PROJECT TITLE

Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

SKETCH TITLE

MAIN LEVEL FLR. LIGHTING PLAN - NORTH

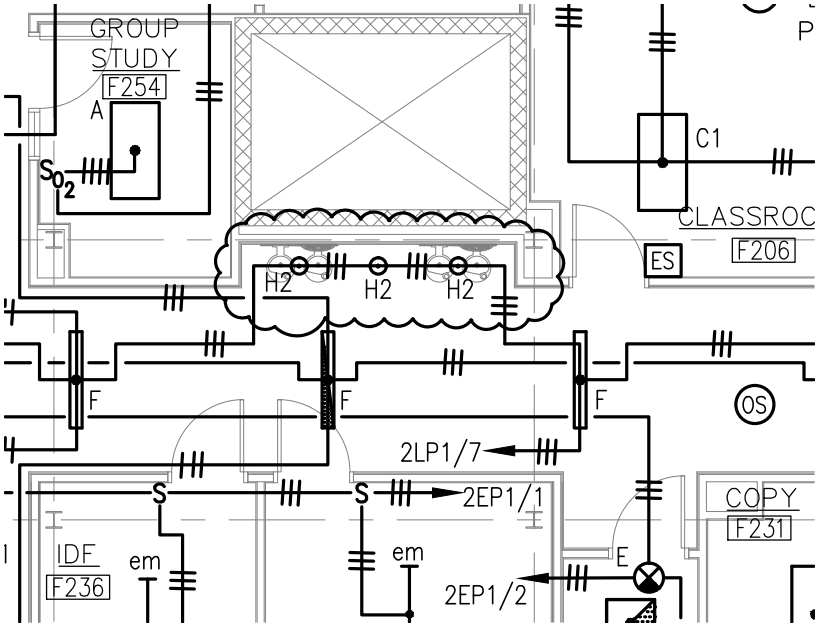
LIGHTING REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.

AD3-SK-EL1.1B-1



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

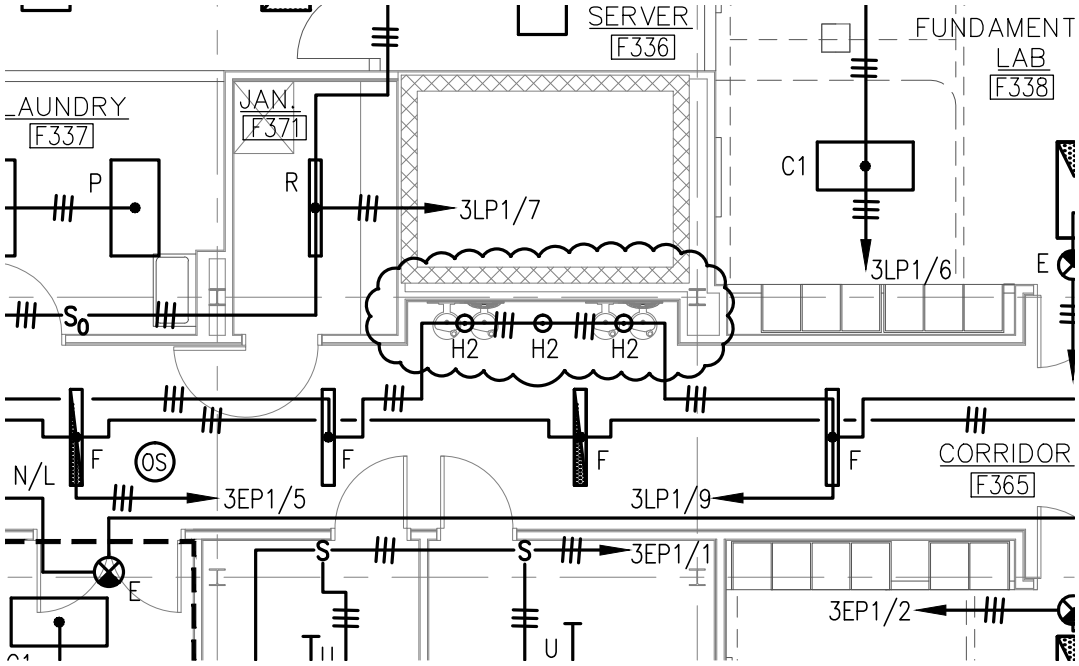
SKETCH TITLE
SECOND FLOOR LIGHTING PLAN - NORTH

LIGHTING REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EL1.2B-1



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

SKETCH TITLE
THIRD FLOOR LIGHTING PLAN - NORTH

LIGHTING REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EL1.3B-1

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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO
BI-CTC-442

SKETCH TITLE
LIGHT FIXTURE SCHEDULE

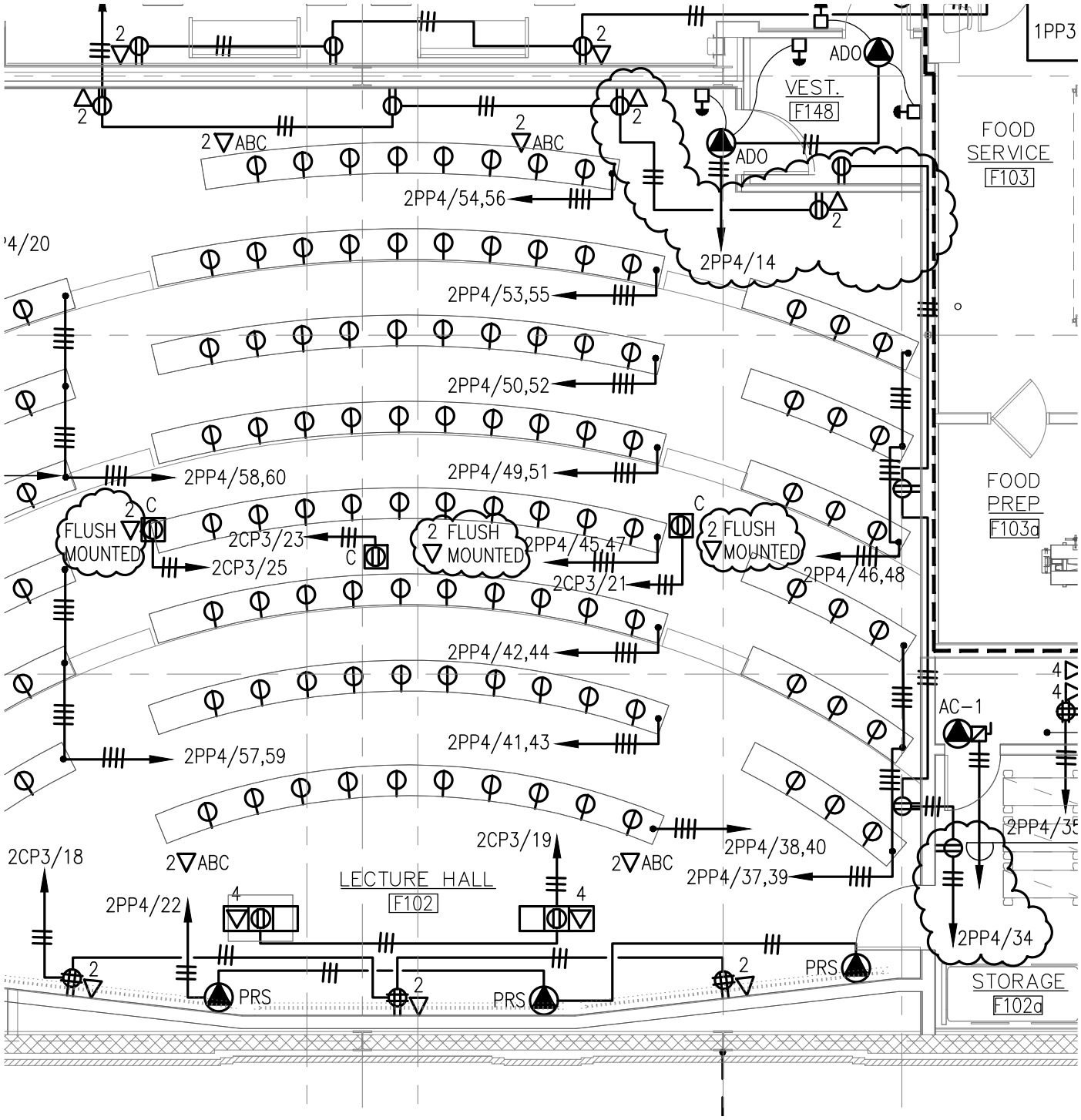
NEW FIXTURE TYPE H2

H1	2" DIA. APERTURE X 7 1/2"H RECESSED LED DOWNLIGHT FIXTURE WITH STEEL J-TUBE HOUSING, EXTRUDED ALUMINUM HEAT SINK, AMERICAN MATTE CLEAR ALZAK REFLECTOR WITH 25° MEDIUM DISTRIBUTION AND WHITE FLANGE, AND LUTRON ECOSYSTEM DIMMING LED DRIVER (277V). PRESCOLITE #D2LED277V-LUTRON ECOSYSTEM-2D9LED12L35K8MD25MFCWT.	XICATO XSM LED'S, 1200 LUMENS, 3500° K, 80 CRI	24	-	LUCIFER #DLRF3-8022/DHNC USAI #3021-AC2/LRTD4-9024/NCSM
H2	2" DIA. APERTURE X 7 1/2"H RECESSED LED DOWNLIGHT FIXTURE WITH STEEL J-TUBE HOUSING, EXTRUDED ALUMINUM HEAT SINK, AMERICAN MATTE CLEAR ALZAK REFLECTOR WITH 25° MEDIUM DISTRIBUTION AND WHITE FLANGE, AND LUTRON ECOSYSTEM DIMMING LED DRIVER (277V). PRESCOLITE #D2LED277V-LUTRON ECOSYSTEM-2D9LED9L35K8MD25MFCWT.	XICATO XSM LED'S, 900 LUMENS, 3500° K, 80 CRI	17	-	LUCIFER #DLRF3-8013/DHNC USAI #3021-AC2/LRTD4-9016/NCSM
I	NOT USED.	-	-	-	-
J	4" DIA. APERTURE X 7 1/4"H RECESSED LED DOWNLIGHT FIXTURE WITH	CREE TRUE WHITE	18	-	LIGHTOLIER #C4L15N-DL-CCD-W

DATE 10/29/2014

SCALE: NONE

SKETCH NO.
AD3-SK-EL2.7-1



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PROJECT TITLE

Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

SKETCH TITLE

MAIN LEVEL FLOOR POWER PLAN - SOUTH

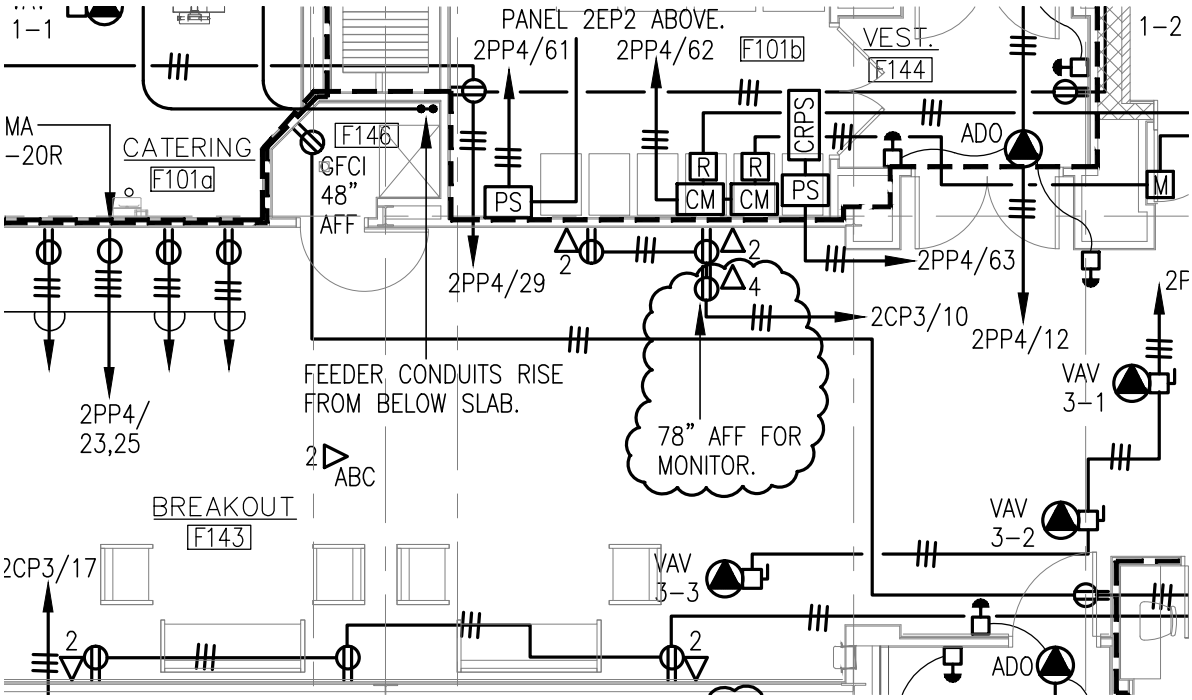
F102 & F102a POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.

AD3-SK-EP1.1A-1



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PROJECT TITLE
Naugatuck Valley Community College
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Allied Health and Nursing

PROJECT NO BI-CTC-442

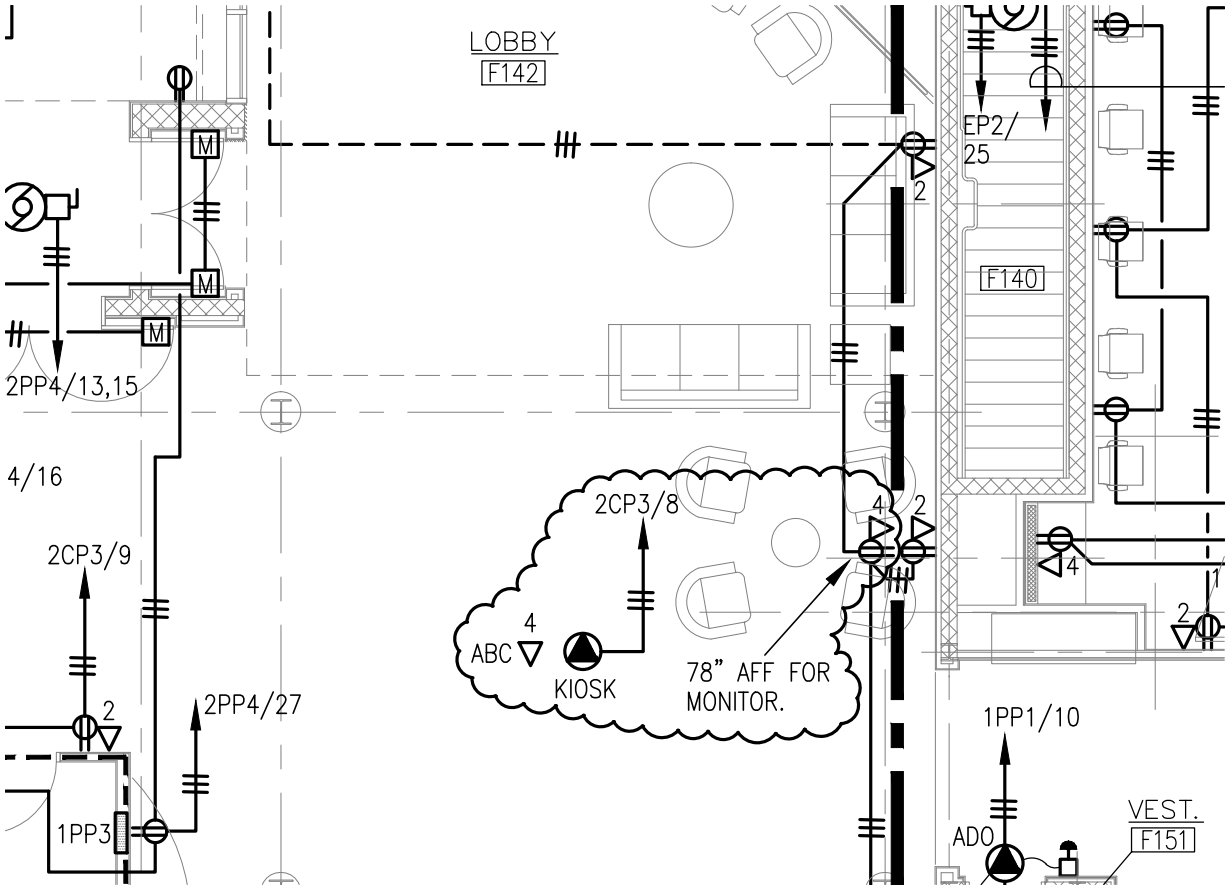
SKETCH TITLE
MAIN LEVEL FLOOR POWER PLAN - SOUTH

F143 POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.1A-2



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

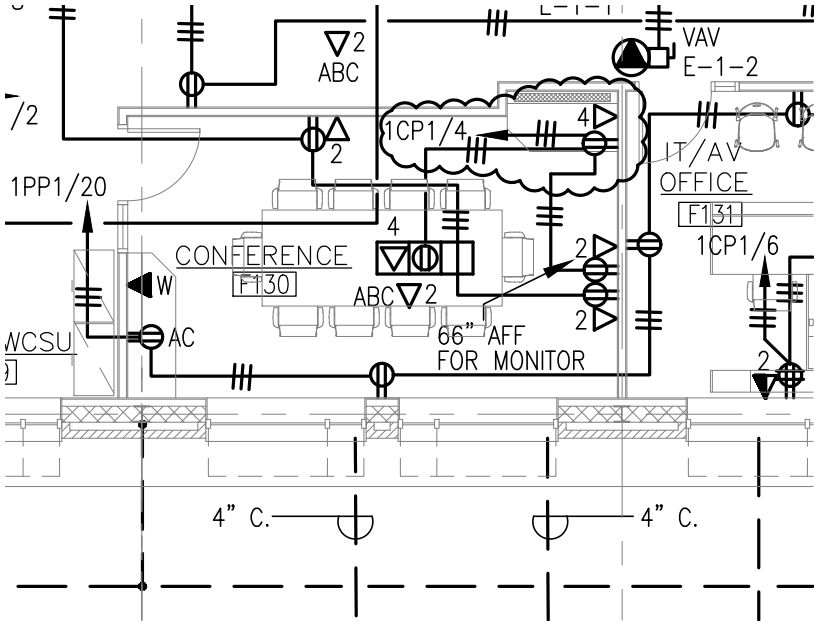
SKETCH TITLE
MAIN LEVEL FLOOR POWER PLAN - SOUTH

LOBBY F142 POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.1A-3



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

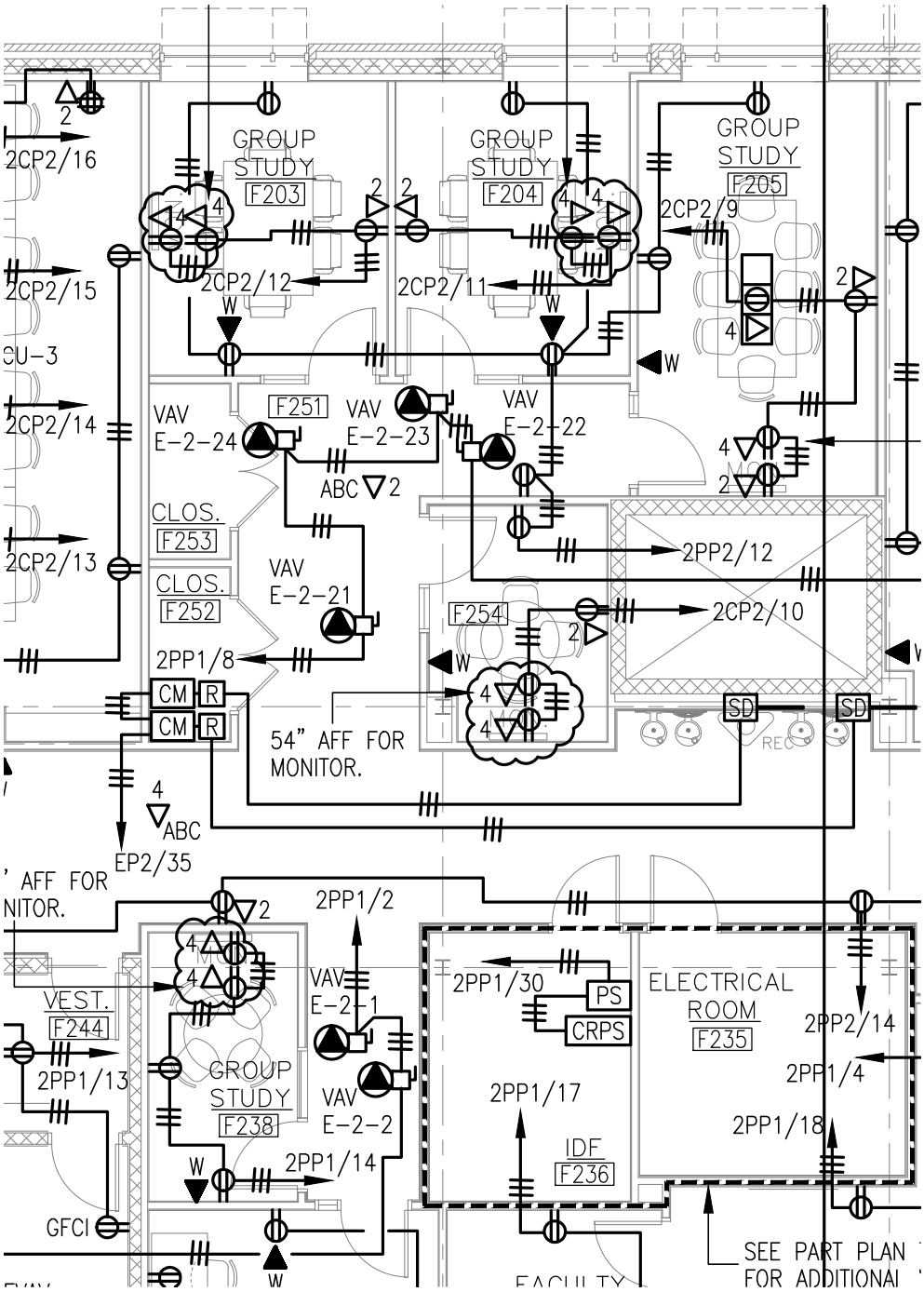
SKETCH TITLE
MAIN LEVEL FLOOR POWER PLAN - NORTH

CONF. F130 POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.1B-1



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

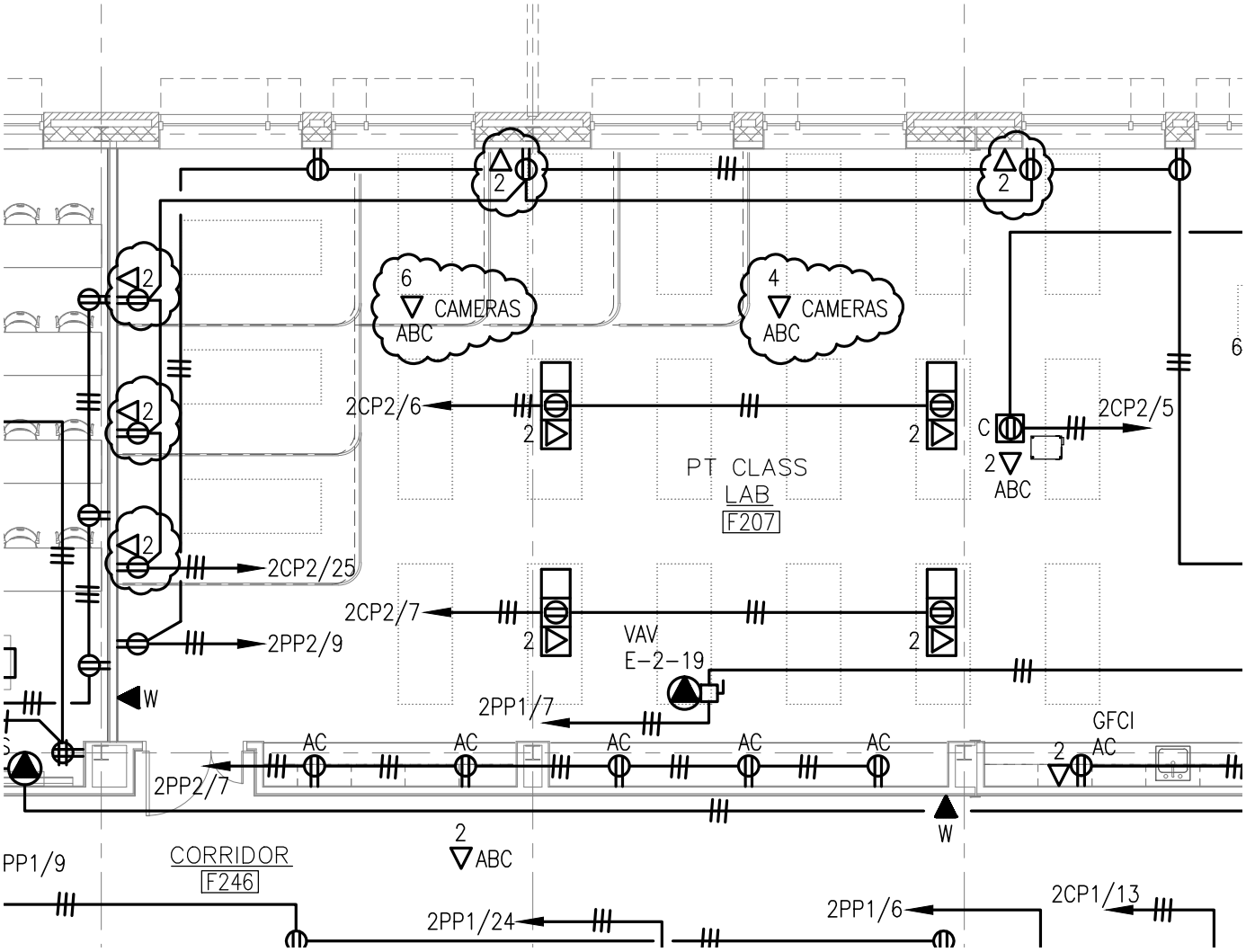
SKETCH TITLE
SECOND FLOOR POWER PLAN - NORTH

GROUP STUDY ROOMS DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.2B-1



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

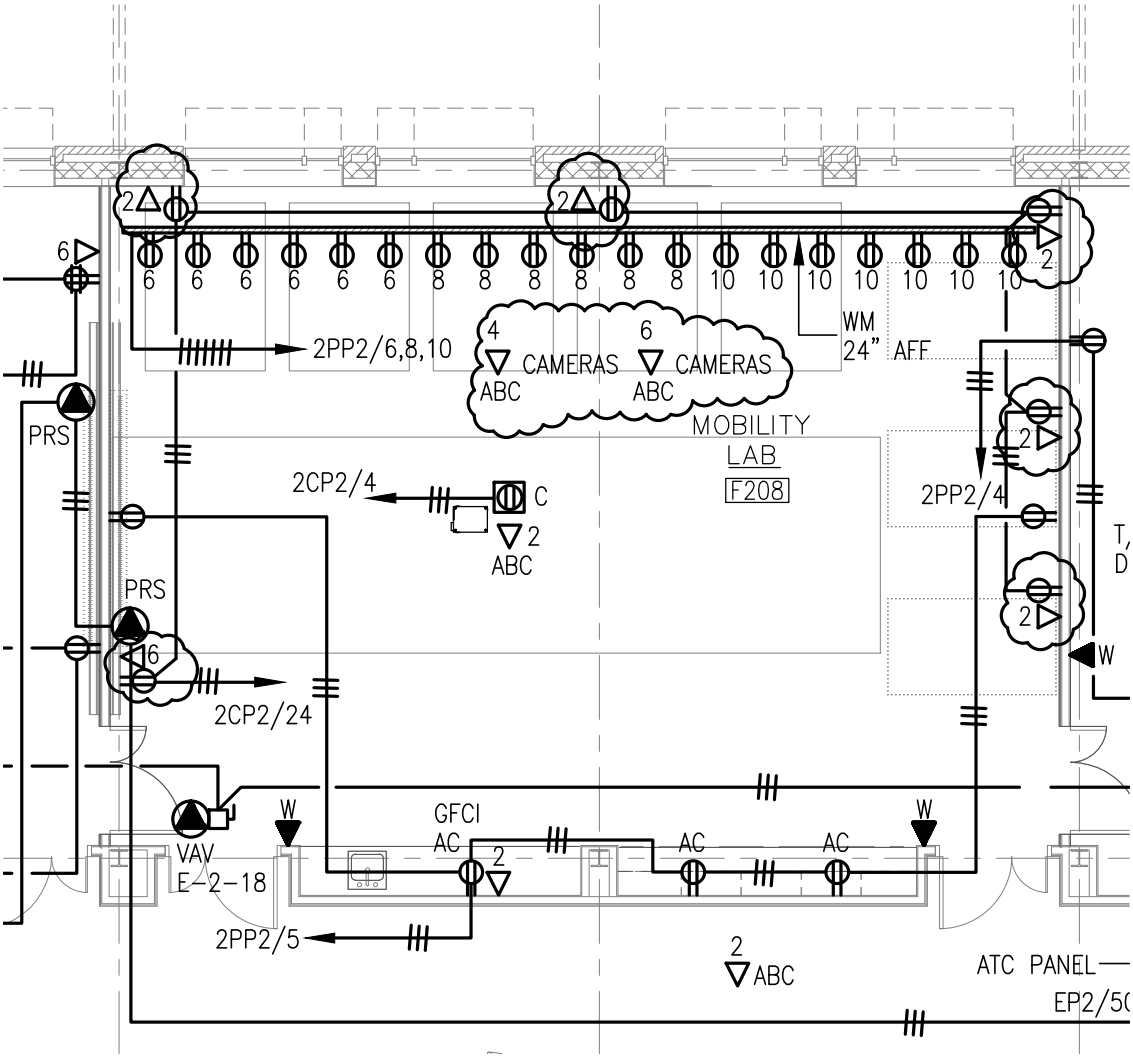
SKETCH TITLE
SECOND FLOOR POWER PLAN - NORTH

PT CLASS LAB F207 DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.2B-2



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

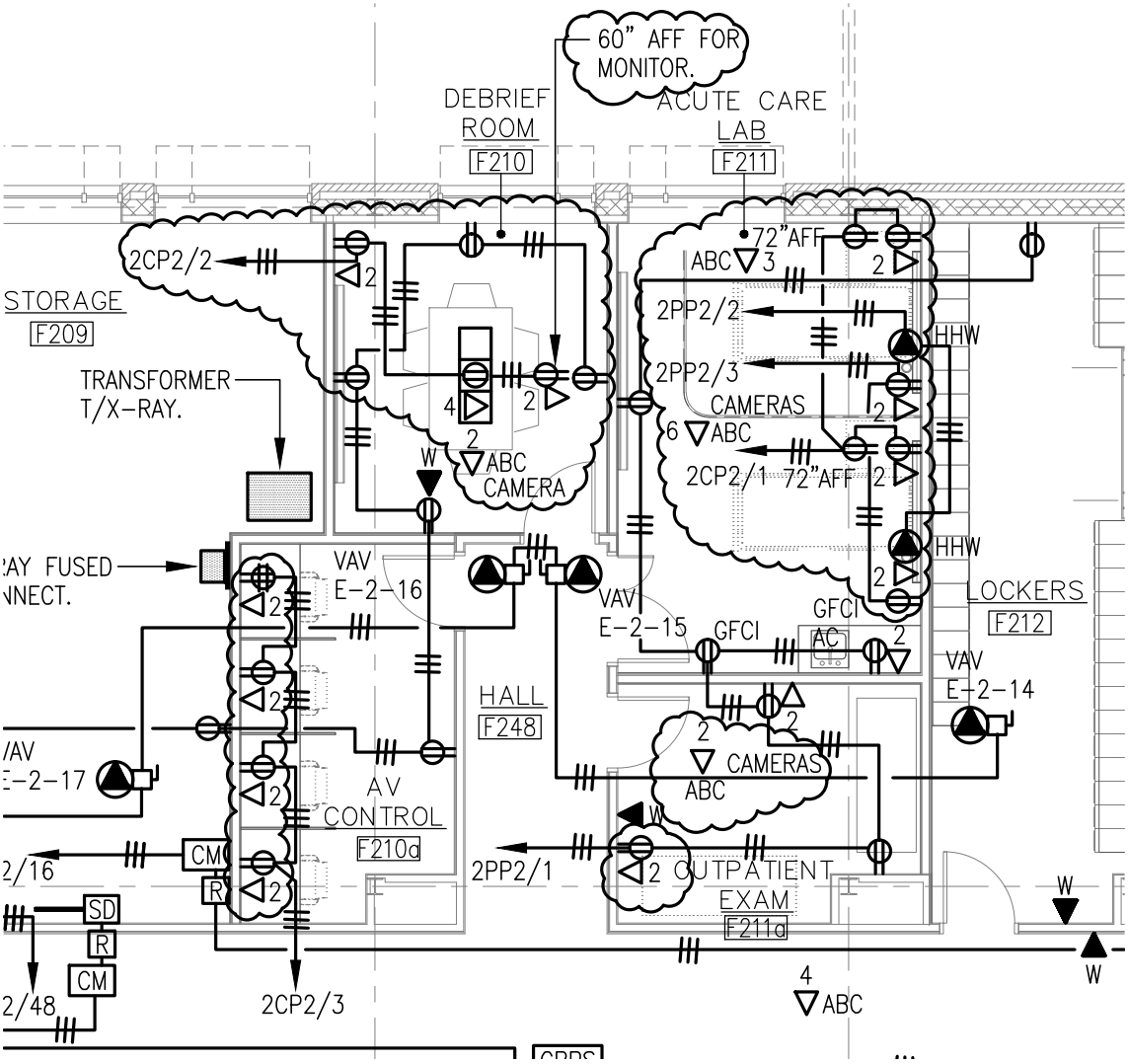
SKETCH TITLE
SECOND FLOOR POWER PLAN - NORTH

MOBILITY LAB F208 DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.2B-3



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

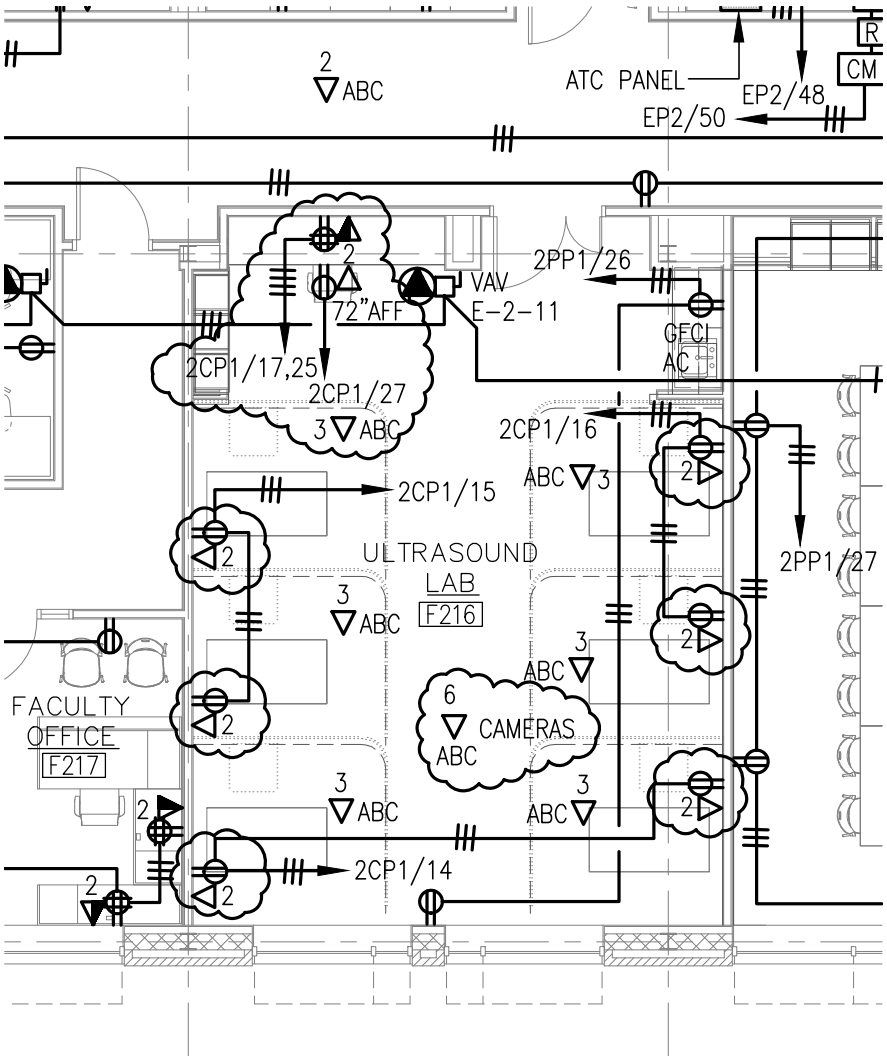
SKETCH TITLE
SECOND FLOOR POWER PLAN - NORTH

POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.2B-4



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PROJECT TITLE
Naugatuck Valley Community College
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PROJECT NO BI-CTC-442

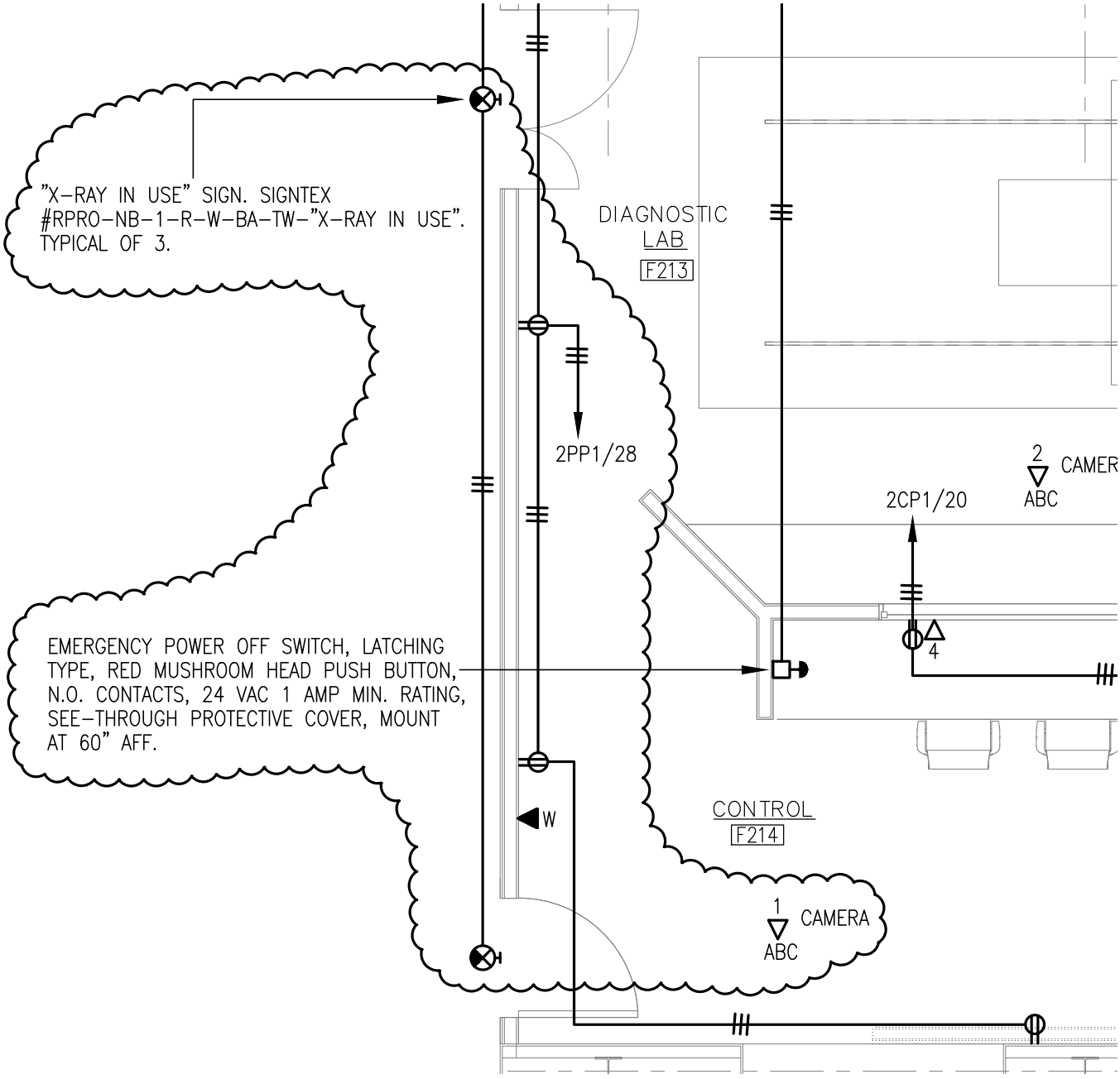
SKETCH TITLE
SECOND FLOOR POWER PLAN - NORTH

U.S. LAB F216 POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.2B-5



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860 563 6164

PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

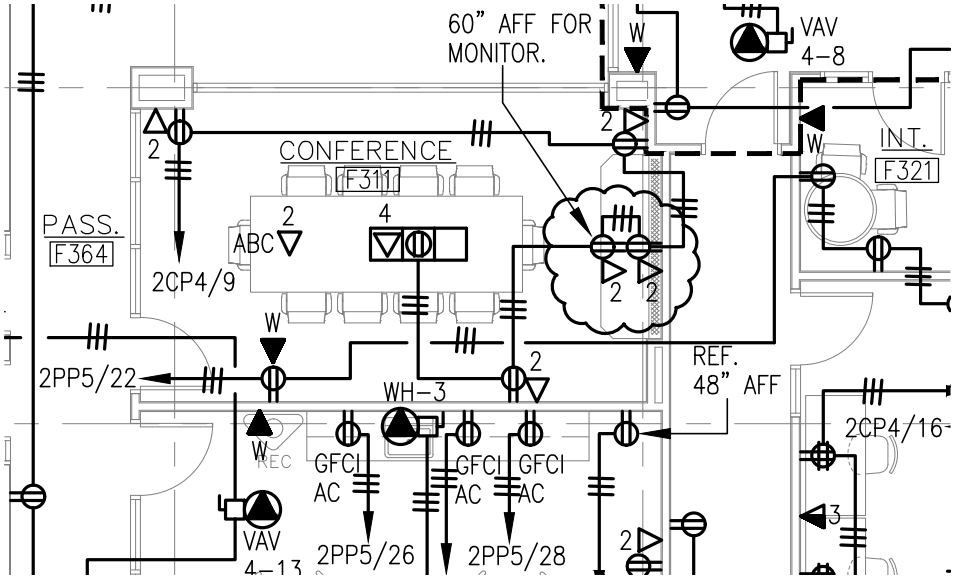
SKETCH TITLE
SECOND FLOOR POWER PLAN - NORTH

F213 & F214 POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/4" = 1'-0"

SKETCH NO.
AD3-SK-EP1.2B-6



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PROJECT TITLE

Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

SKETCH TITLE

THIRD FLOOR POWER PLAN - SOUTH

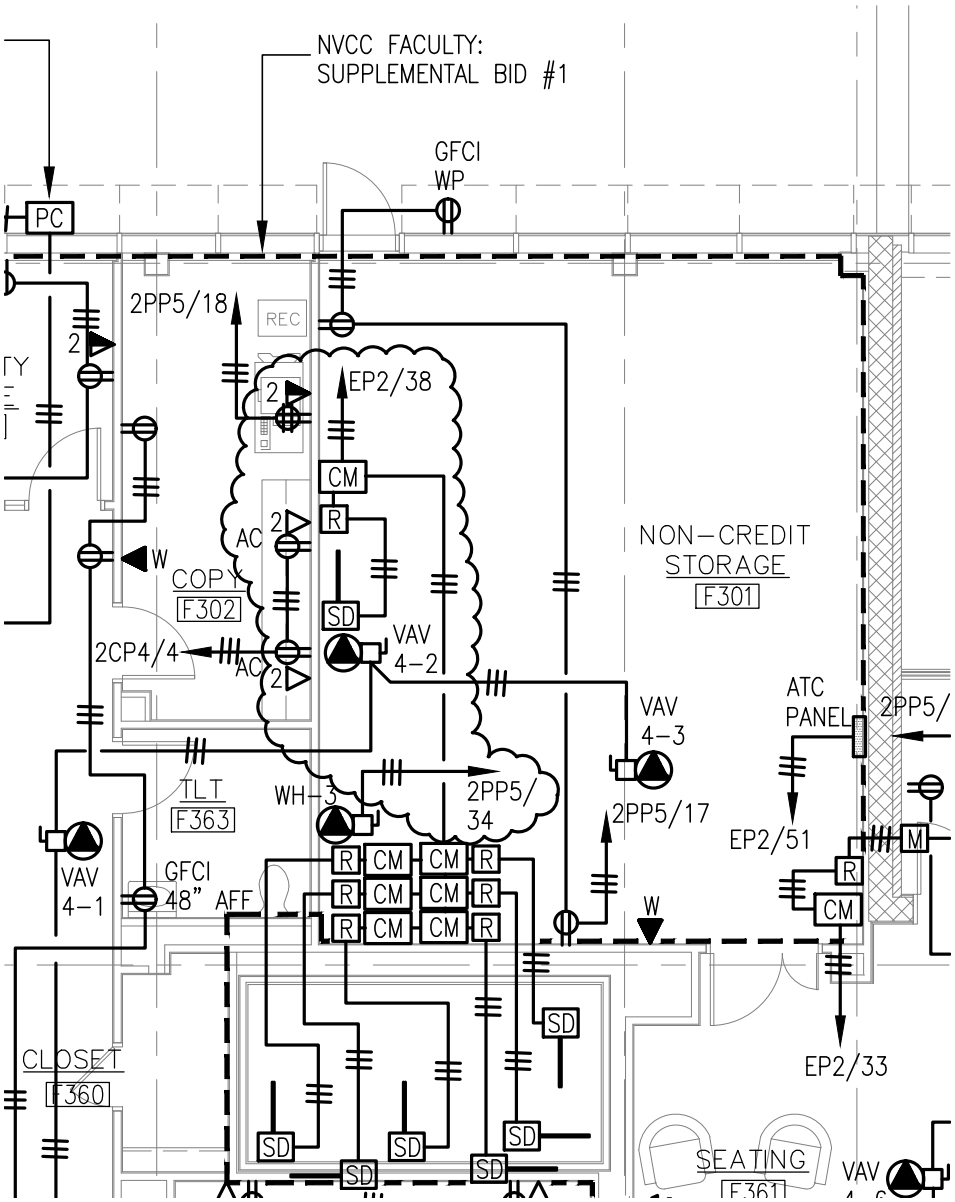
CONFERENCE F311 DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.

AD3-SK-EP1.3A-1



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

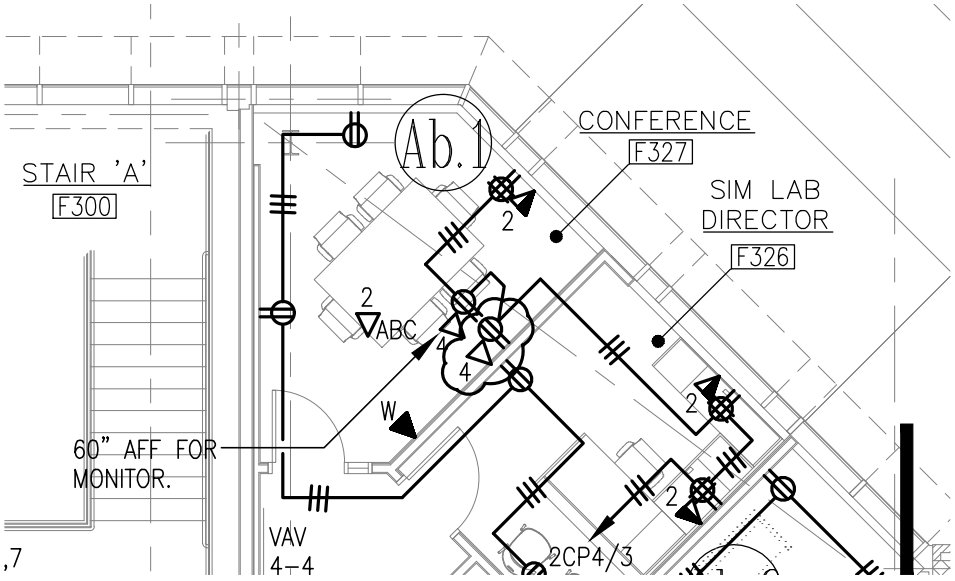
SKETCH TITLE
THIRD FLOOR POWER PLAN - SOUTH

F301 POWER REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.3A-2



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

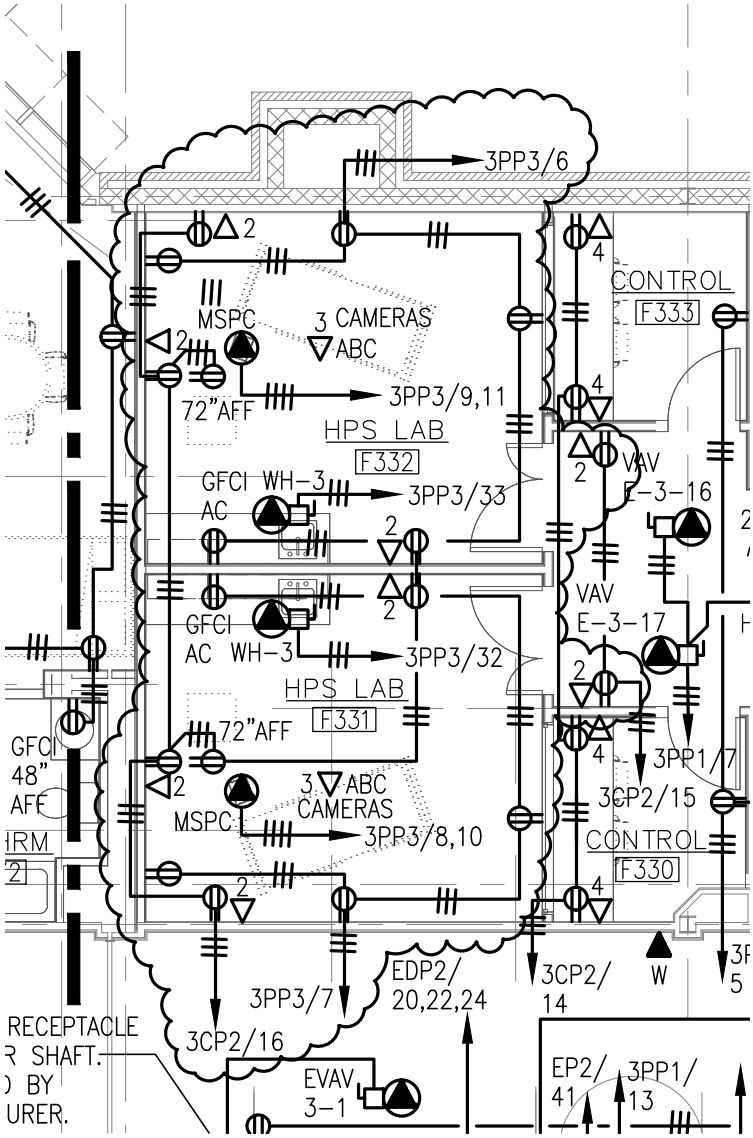
SKETCH TITLE
THIRD FLOOR POWER PLAN - SOUTH

CONFERENCE F327 DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.3A-3



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

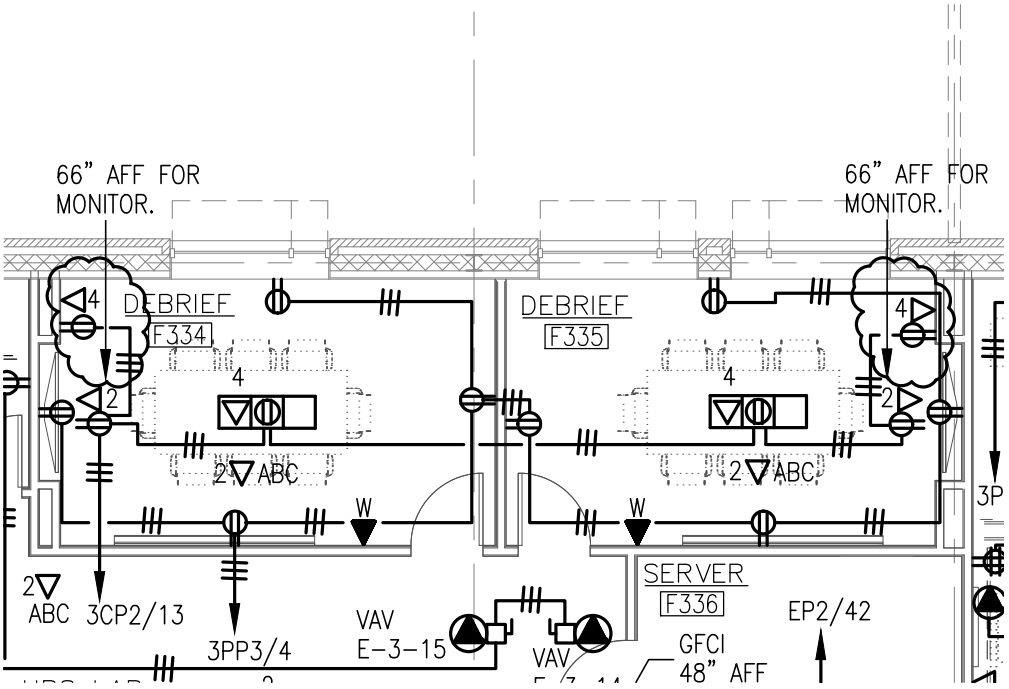
SKETCH TITLE
THIRD FLOOR POWER PLAN - NORTH

HPS LAB POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.3B-1



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

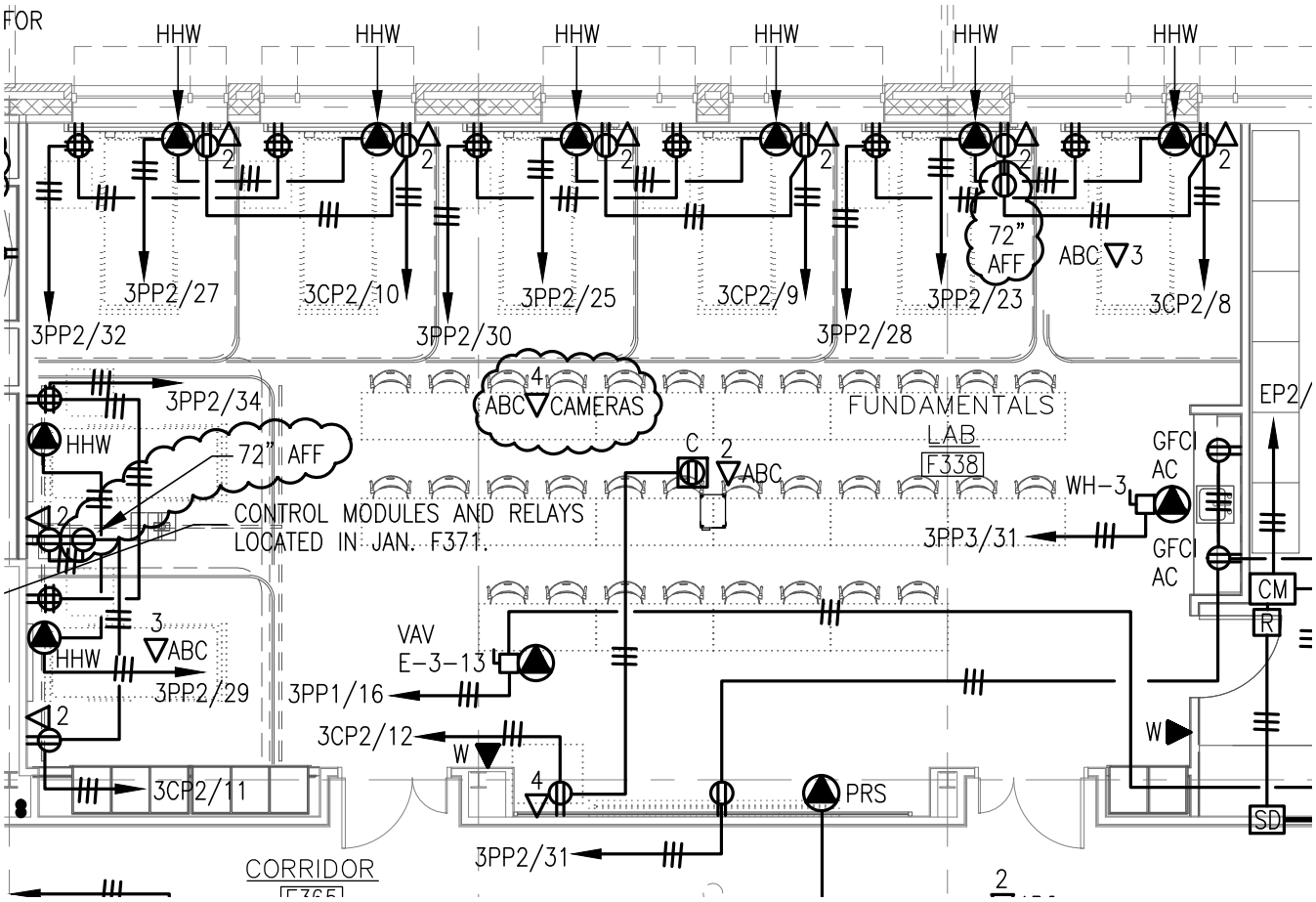
SKETCH TITLE
THIRD FLOOR POWER PLAN - NORTH

DEBRIEF ROOMS POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.3B-2



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

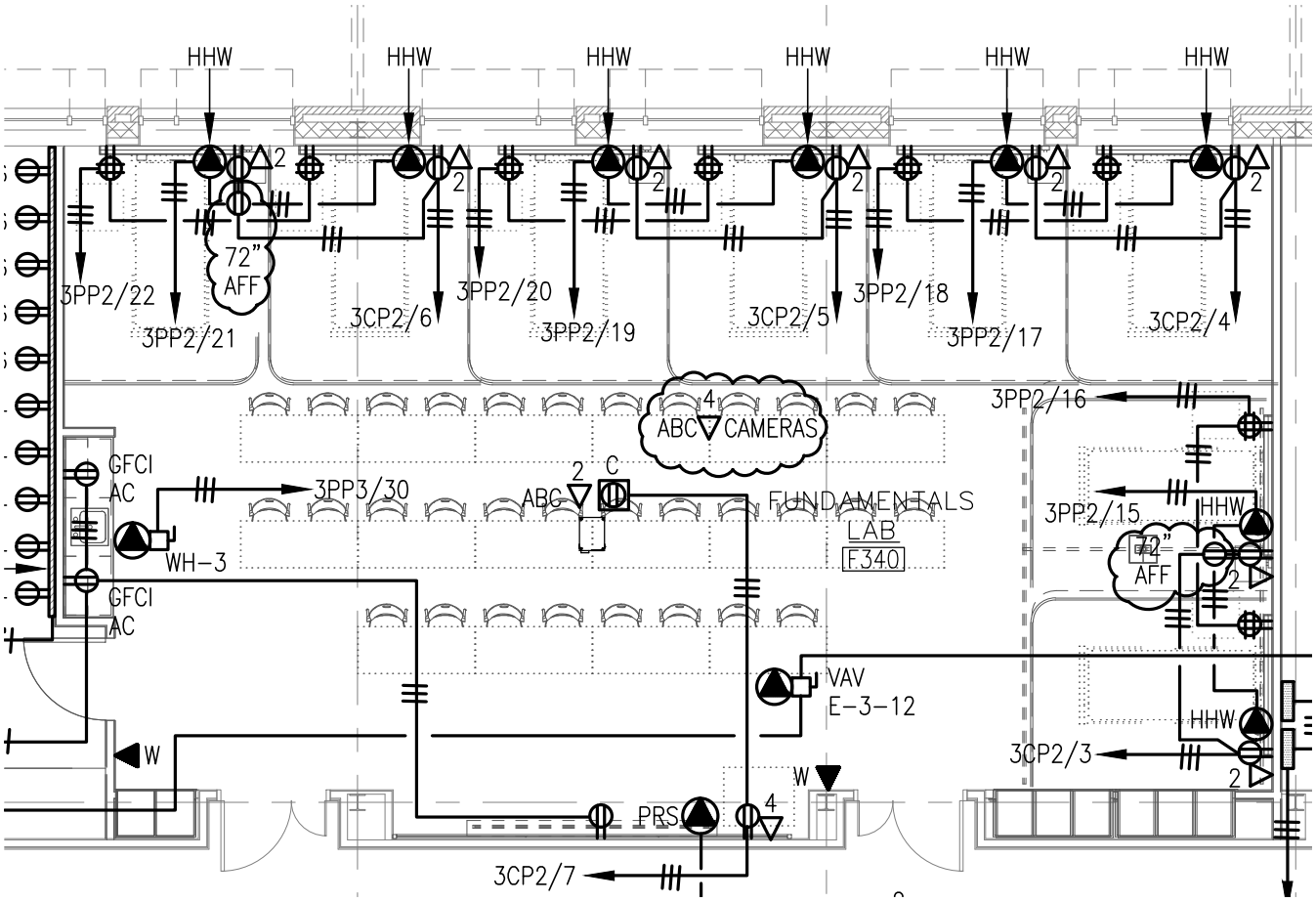
SKETCH TITLE
THIRD FLOOR POWER PLAN - NORTH

FUNDAMENTALS LAB F338 DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.3B-3



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

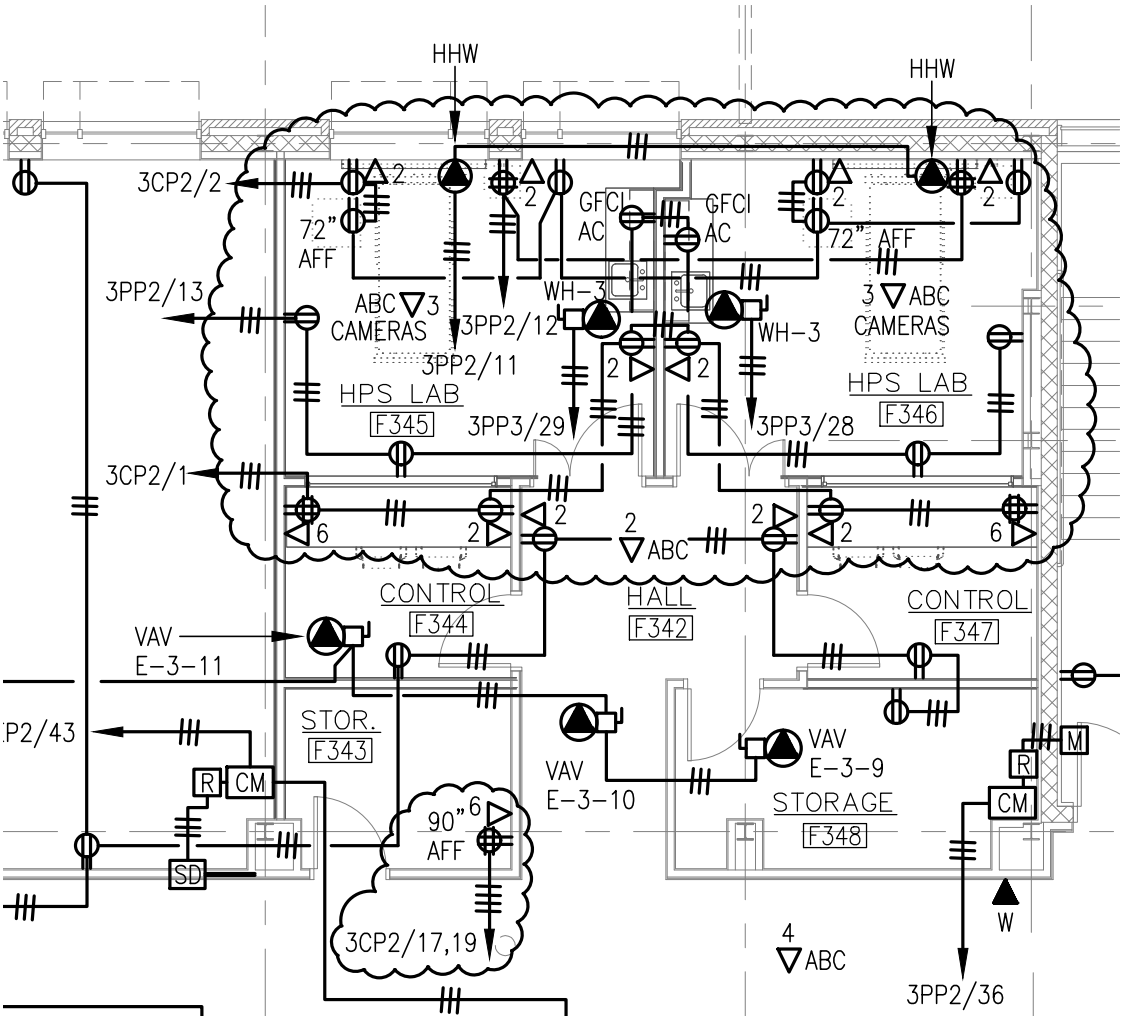
SKETCH TITLE
THIRD FLOOR POWER PLAN - NORTH

FUNDAMENTALS LAB F340 DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.3B-4



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

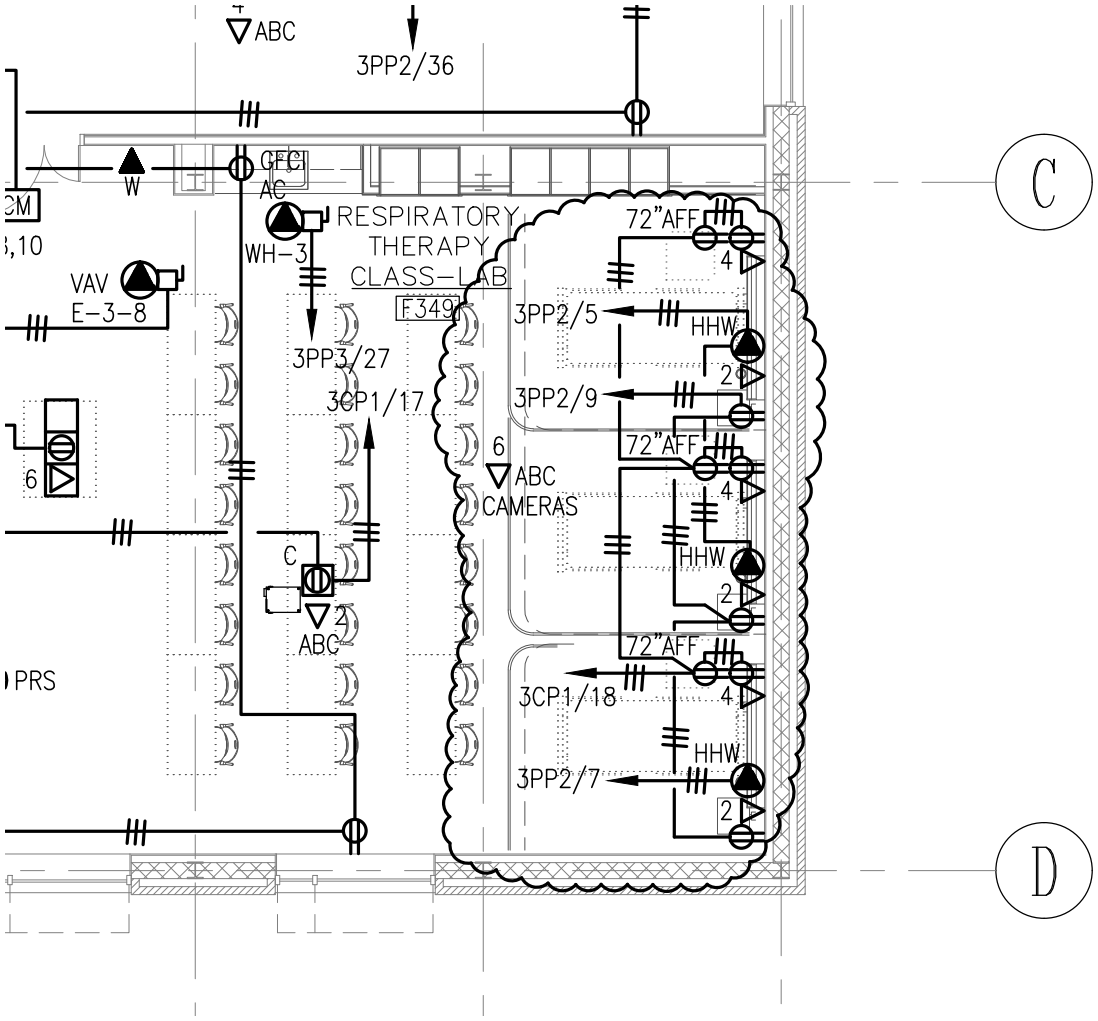
SKETCH TITLE
THIRD FLOOR POWER PLAN - NORTH

POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.3B-5



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

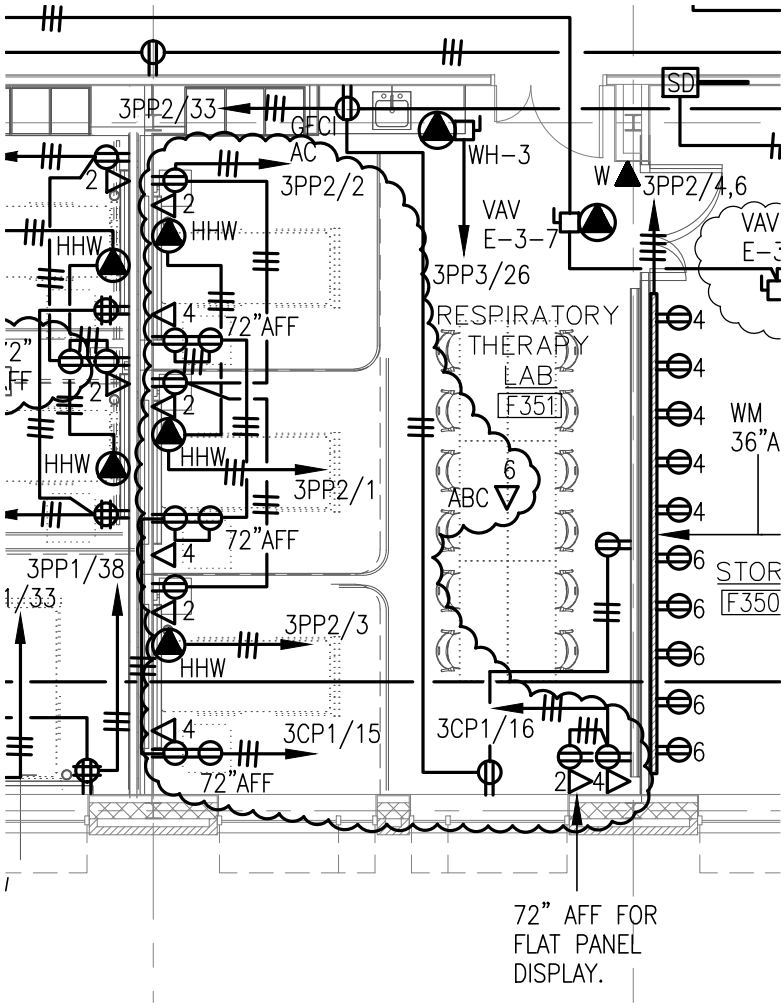
SKETCH TITLE
THIRD FLOOR POWER PLAN - NORTH

F349 POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.3B-6



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

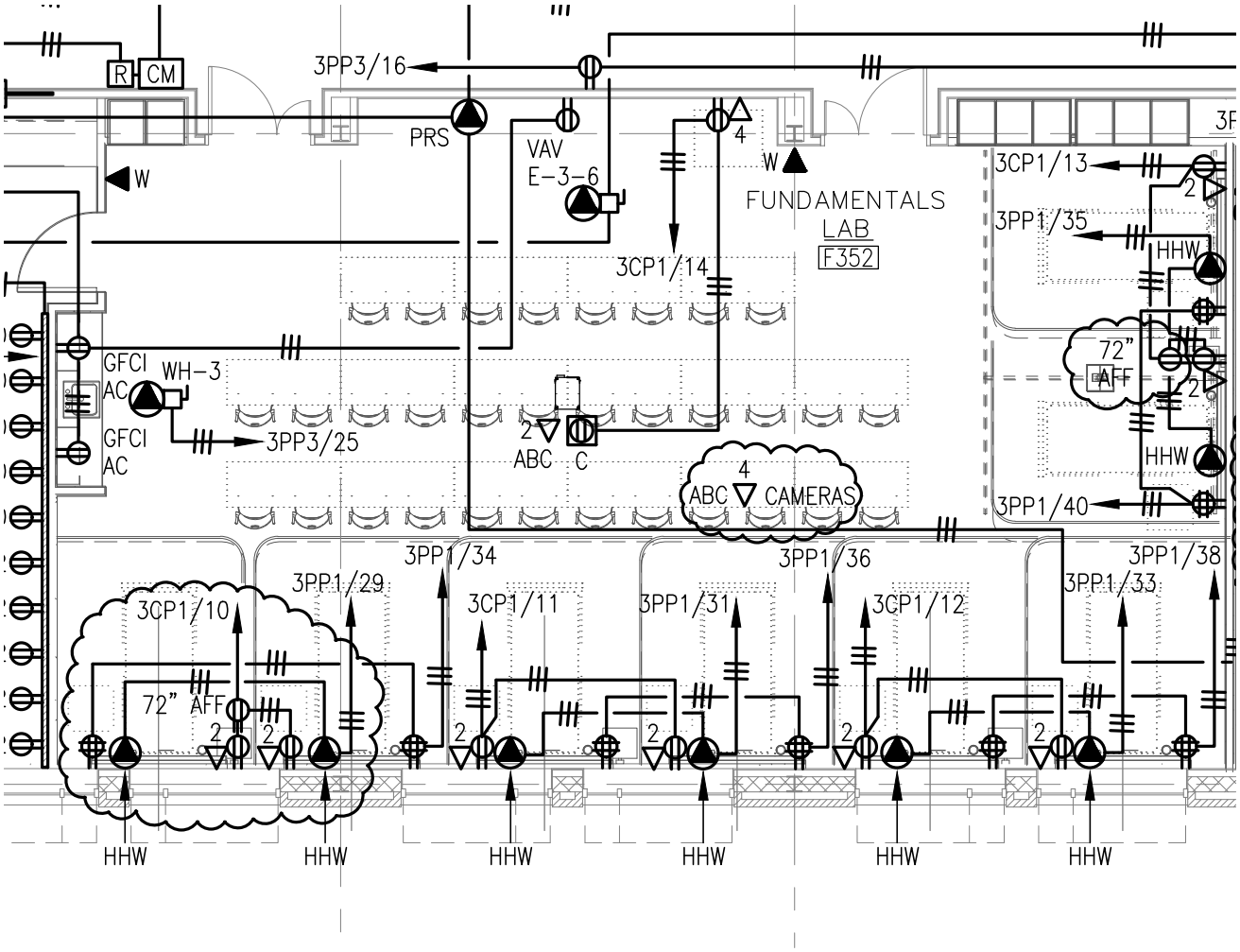
SKETCH TITLE
THIRD FLOOR POWER PLAN - NORTH

F351 POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.3B-7



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PROJECT TITLE

Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

SKETCH TITLE

THIRD FLOOR POWER PLAN - NORTH

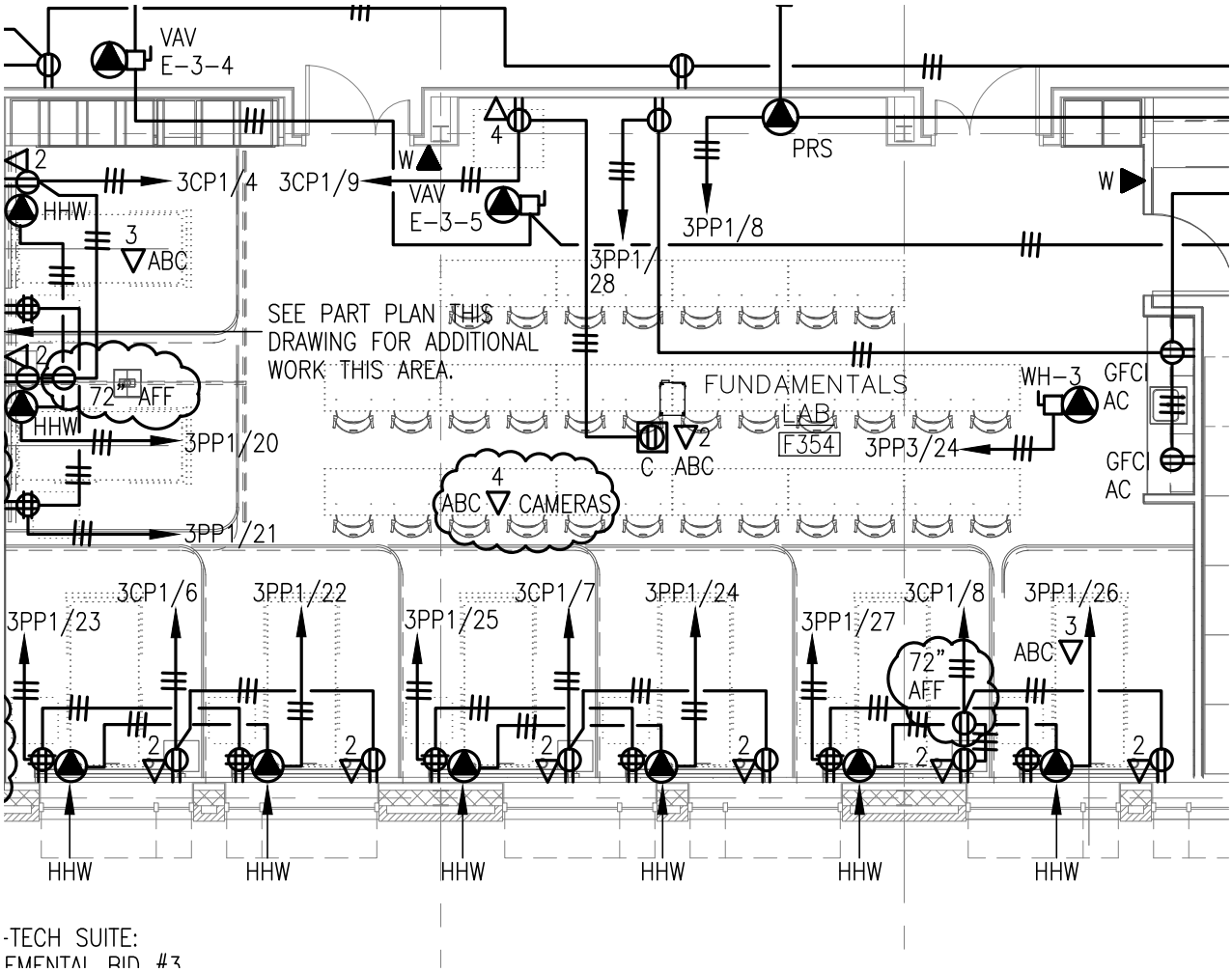
F352 POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.

AD3-SK-EP1.3B-8



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

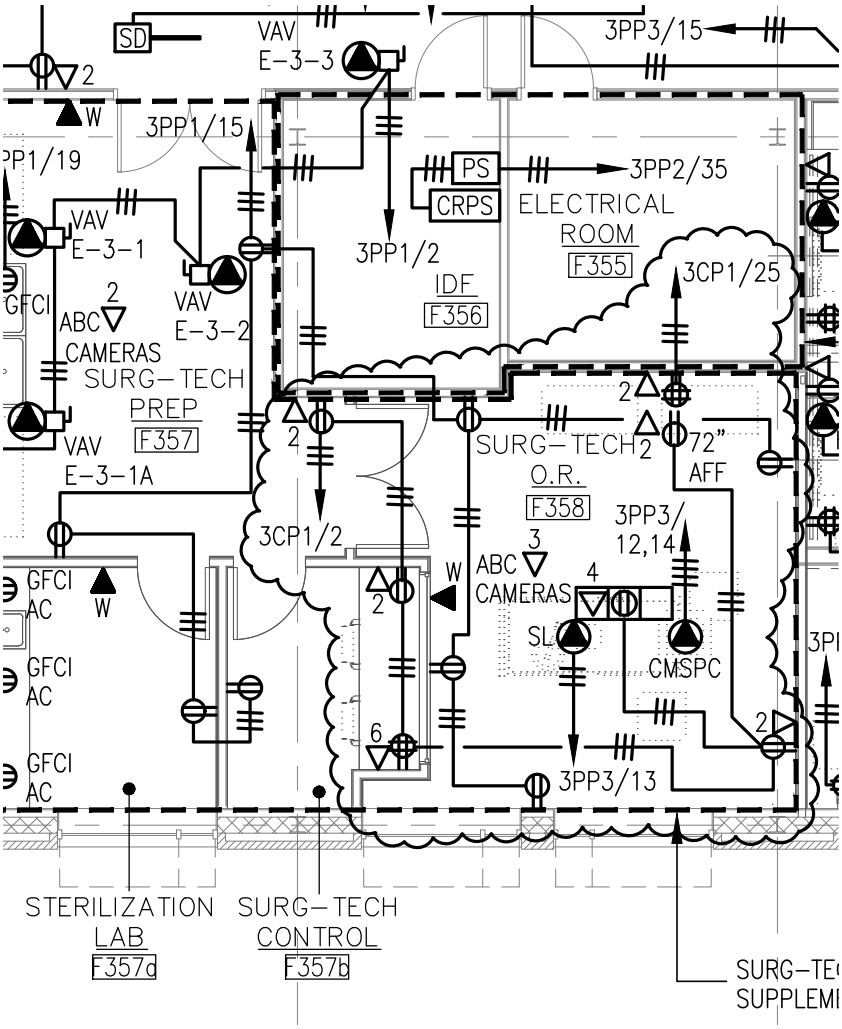
SKETCH TITLE
THIRD FLOOR POWER PLAN - NORTH

F354 POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.3B-9



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PROJECT TITLE
Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

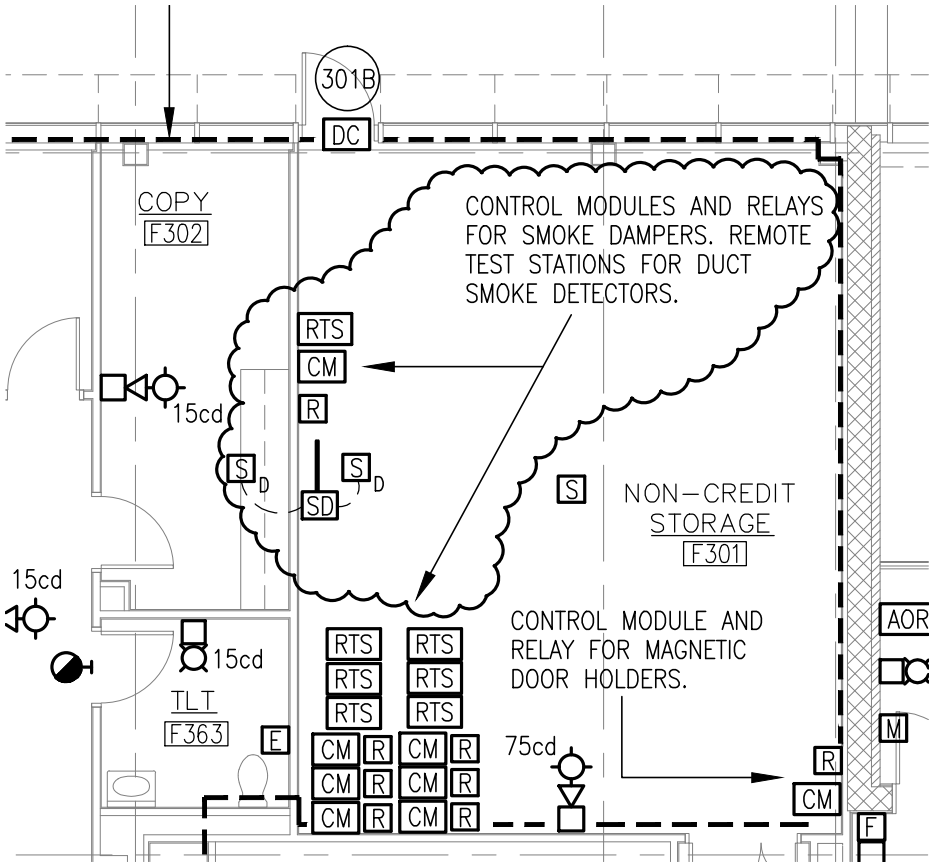
SKETCH TITLE
THIRD FLOOR POWER PLAN - NORTH

F357 & F358 POWER/DATA REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.
AD3-SK-EP1.3B-10



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PROJECT TITLE

Naugatuck Valley Community College
Founders Hall Renovations for
Allied Health and Nursing

PROJECT NO BI-CTC-442

SKETCH TITLE

3rd FLR. SPECIAL SYSTEMS PLAN - SOUTH

F301 & F302 FIRE ALARM REVISIONS

DATE 10/29/2014

SCALE: 1/8" = 1'-0"

SKETCH NO.

AD3-SK-ES1.3A-1

Connecticut DAS Division of Construction Services

3005
Preconstruction Phase Meeting
Founders Hall Renovations NVCC-Set Aside Contractors
Attendance Log

CTDCS Project No.:	BI-CTC-442 CMR
Date:	October 23, 2014
Meeting Start Time:	2:00 pm
Meeting Location:	450 Columbus Boulevard, Hartford

Meeting Purpose:
- ☐ Design Phase Meeting
- X Pre-Bid Conference
- ☐ Other: _____

Name: Peter D. Clement	**Title:** VP
Company/Department: Beacon Electric	**E-mail:** Peter@Beaconelec.com
Street: 298 Clark Street	**Phone:** 860 613 8118
City/State/Zip Milldale CT	**FAX:** 860 601 3288

Name: Sandie D. Clement	**Title:** President
Company/Department: Beacon Electric	**E-mail:** Sandie@Beaconelec.com
Street: 298 Clark Street	**Phone:** 8606213818
City/State/Zip Milldale CT	**FAX:** 8606213288

Name: Rick Baker	**Title:** Sr. Acct Exec
Company/Department: Simplex Grinnell	**E-mail:** RIBAKER@simplexgrinnell.com
Street: 429 Hayden Station Road	**Phone:** 203-710-9081
City/State/Zip Windsor, CT 06095	**FAX:**

Name: Joe Villano	**Title:** Estimating
Company/Department: Conn Carp Corp	**E-mail:** mvillano@CTCarpentry.com
Street: 936 Silas Deane	**Phone:** 860-571-8812 x306
City/State/Zip Wethersfield, CT	**FAX:** 860 571-8891

Name: Cordell Snow	**Title:** Intern
Company/Department: Conn. Carp. Corp.	**E-mail:** CSnow@my.ccsu.edu
Street: 936 Silas Deane	**Phone:** 860-571-8812 x 307
City/State/Zip Wethersfield, CT	**FAX:** 860-571-8812

Name: Jim Burns — Lee Lenapes	**Title:** OPS MANAGERS
Company/Department: Lenapes Landscape Design	**E-mail:** JimBurns95@gmail.com
Street: 398 Stamm Road	**Phone:** 860-666-3536
City/State/Zip Newington, CT 06111	**FAX:**

Connecticut DAS Division of Construction Services

3005
Preconstruction Phase Meeting
Founders Hall Renovations NVCC-Set Aside Contractors
Attendance Log

CTDCS Project No.:	BI-CTC-442 CMR
Date:	October 23, 2014
Meeting Start Time:	2:00 pm
Meeting Location:	450 Columbus Boulevard, Hartford

Name: MIKE GERANGRYA	**Title:** ESTIMATOR
Company/Department: QUALITY ROOFING SERVICES, INC.	**E-mail:** mikeG@qualityroofing.com
Street: 599 ISLAND LANE	**Phone:** 203-931-7663
City/State/Zip WEST HAVEN, CT 06516	**FAX:** 203-931-0466

Name: Dave Sasinowski	**Title:** VP Sales
Company/Department: Chamberlain Oak BLDG. Mart	**E-mail:** dsasinowski@cobm.net
Street: 1840 Silas Deane Hgwy	**Phone:** 860-563-9507
City/State/Zip Rocky Hill, CT 06067	**FAX:**

Name: RICK ROWE	**Title:** OWNER
Company/Department: ROWE ENTERPRISE	**E-mail:** RROWE@ROWEENTERPRISE.com
Street: 6 CLOVER LN	**Phone:** 860-899-5133
City/State/Zip BLOOMFIELD, CT. 06002	**FAX:**

Name: Carola Camillo	**Title:** Managing Member
Company/Department: OWI Contractors, LLC	**E-mail:** Carola@owicontractors.com
Street: 1681 Bonum Ave. Ste 2	**Phone:** 203 908 3945
City/State/Zip Stratford CT 06614	**FAX:** 203 870-6630

Name: Steven Aston	**Title:** estimator
Company/Department: Oscar's Abatement	**E-mail:** oabatement@aol.com
Street: 29½ Meadow Street	**Phone:** (860)-296-7415
City/State/Zip Hartford CT 06114	**FAX:** (860)-296-7417

Name: PETER D'AGOSTINO	**Title:** Project Manager
Company/Department: Acoustics Inc	**E-mail:** PeTod@acoustics inc.net
Street: 56 Alna Lane	**Phone:** 860-282-0227
City/State/Zip East Hartford, CT 06108	**FAX:** 860-289-0690