**Addendum No. 4**

**November 30, 2018**

**R. M. T. Johnson Elementary School**
**Renovations & Additions**
**500 Whittlesey Drive**
**Bethel, CT 06801**
**State Project No. 009-0059 RNV**
**Phase 1 of 2**

**This addendum shall modify/change and/or clarify the original bidding document for the above project. Acknowledgement of receipt of this document is provided on the Bid Form. Failure to acknowledge receipt of this addendum, previous and/or future addenda on the Bid From may result in disqualification of the bidder.**

**The modifications, changes and/or clarifications are as follows:**

GENERAL INFORMATION:

1. The Bid Due Date remains **December 12, 2018 at 11:00am.**

SCOPE CLARIFICATIONS:

1. **BP#16 – Electrical** - Delete exclusions a-d.
2. **BP#16 – Electrical** shall include all A/V System, Access Control System, Voice Communication System, and Video Surveillance System scope included in the bid specifications and drawings.

ATTACHMENTS:

1. RFI Pre-Bid Log
2. RFIs answered since Addendum #2 through 11/30/18
3. Perkins-Eastman Addendum # dated 11/30/18 with the following referenced attachments to the Addendum

   Specifications
   a. Item No. 1. – Revised Spec Section 06 40 23
   b. Item No. 8 - Additional Spec Section 23 74 23
   c. Item No. 10 – Add Spec Section 23 82 29
   d. Item No. 13 – Clarification
   e. Item No. 14 – Add Spec Section 28 05 00

   Drawings
   a. Item No. 1 – SKP-1; SKP-2; SKP-5
   b. Item No. 2 – SKP-3
   c. Item No. 3 – SKP-4
   d. Item No. 4 – SKP-6

e. Item No. 5 – SKP-7
f. Item No. 8 – SKM-1
g. Item No. 9 – SKM-2
h. Item No. 10 – SKM-3
i. Item No. 11 – SKM-4
j. Item No. 12 – SKS-3; SKS-6; SKS-7
k. Item No. 13 – SKS-2; SKS-3; SKS-6
l. Item No. 14 – SKS-3; SKS-6
m. Item No. 16 – SKS-1
n. Item No. 19 – SKS-4; SKS-6
o. Item No. 21 – T-001
p. Item No. 22 – T-101A
q. Item No. 23 – T-101B
r. Item No. 24 – T101C

**End of Addendum No. 4**

Renovation Additions to
Johnson Elementary School
500 Whittlesey Drive
Bethel, CT 06801

Rizzo Job # 18033
State Project No. 009-059 RNV

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Perkins Eastman | 11/2/18 | SMC | 4 | Marcelli Steel | 1 | 11/1/08 | Spec 05 12 00 1.05F states that the Steel Fabricator shall be AISC certified. Can the AISC certification be waived? | AISC certification will not be waived. | 11/5/18 | 1 |
| 002 | Perkins Eastman | 11/2/18 | SMC | 4 | Steeltech Bldg. Products | 1 | 11/2/18 | Can the designation for the Erector to be AISC certified be waived? | AISC certification will not be waived. | 11/5/18 | 1 |
| 003 | Perkins Eastman | 11/2/18 | SMC | 9B & 9D | M. Frank Higgins | 1 | 11/2/18 | The specs reference the finishes selected on the plans but the majority of the Manufacturer, Style, and Color columns on IN-601 are blank. 1) Please specify all finishes. | The specification is performance based for ceramic and porcelain tile. The resilient flooring specification is also performance based with 3 acceptable manufacturers listed. For carpet specification, J&J Flooring's Kinetex line is basis of design and other acceptable manufacturers are Tandus, Manning, Atlas, Shaw, and Bentley. (Correction on Finishes Schedule: VCt-6 is to be a 12x24 plank) | 11/6/18 | 1 |
| 004 | Perkins Eastman | 11/2/18 | SMC | 15 | CTC Bldg Solutions | 1 | 11/2/18 | Would Distech Controls by Connecticut Temperature Controls be acceptable? Distech Controls is built on the Open Niagara Platform and can meet or exceed the requirements outlined within the specification 230923. | No, Distech Controls by CTC are not acceptable. The manufacturers listed in the specifications are the only controls manufacturers permitted by the building owner. | 11/5//18 | 1 |
| 005 | Perkins Eastman | 11/5/18 | SMC | 9 | Integrated Interiors | 1 | 11/2/18 | Is the Integrated Interiors Series 2000 Acoustical Panel an acceptable alternate ? | Refer to Specification 01 60 00 Section 2.02 - "Substitutions will not be accepted during the bid period." | 11/9/18 | 1 |
| 006 | Perkins Eastman | 11/7/18 | SMC | 17 | Cromwell Concrete | 1 | 11/6/18 | 7/E-501 has a note that states "4-#7 verticals @ 2'-0" Dia, 4-#6 verticals@1-6" dia. The detail dimensions show a 1'-6" diameter light pole base. Please confirm that all light pole bases are 1'-6" diameter. | Light pole bases for all site fixtures to be 1'-6" diameter with 4-#6 vertizals | 11/8/18 | 1 |
| 007 | Perkins Eastman | 11/7/18 | SMC | 8 | Norwalk Glass | 1 | 11/7/18 | There are only 2 pages in Spec Section 10 71 13. Please provide complete spec section. | Refer to attached updated PDF that includes four pages | 11/12/18 | 1 |
| 008 | Perkins Eastman | 11/7/18 | SMC | 14 | PD Mechanical | 1 | 11/7/18 | P-102A No sanitary or DW piping below floor for the AS-HC's in the Art rooms 201 & 202, again in STEM 218 & Room 222 for the SK1-HC, SK2-HC and the WT, please advise? | Run new 3" sanitary in first floor below. | 11/9/18 | 1 |
| 009 | Perkins Eastman | 11/7/18 | SMC | 14 | PD Mechanical | 2 | 11/7/18 | P-101C No U/G sanitary piping indicated for the SK2-HC in the Health Room 143 please advise? | Run new 3" sanitary below slab to existing 6" sanitary in adjacent corridor. | 11/9/18 | 1 |
| 010 | Perkins Eastman | 11/7/18 | SMC | 8 | Norwalk Glass | 2 | 11/7/18 | Please confirm if this window (ST8) is truly supposed to be fire rated. The construction of this frame is curtainwall. | Yes. Provide as indicated in the documents. | 11/9/18 | 1 |
| 011 | Perkins Eastman | 11/7/18 | SMC | 6 | Kamco Supply of NE | 1 | 11/7/18 | "New Door in Existing Opening" Does this mean the frame is existing or the size given for a rough opening? I am asking because these openings give a frame detail (some have 4" heads) | All existing doors and frames shall be demolished. See door schedule for location of of frames with 4" heads. | 11/9/18 | 1 |

# Pre-Bid RFI Log
## Phase 1 of 2

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 012 | Perkins Eastman | 11/7/18 | SMC | 6 | Kamco Supply of NE | 2 | 11/7/18 | Are the openings with the Door Height of 6'11-3/8" to be assumed as "New Door in Existing Opening"? Please advise. | No, refer to documents - doors in existing opening vs. new openings. Existing masonry has been built with a 5 3/8" starter course affecting door height. Verify existing masonry coursing in field and in original building construction documents. | 11/9/18 | 1 |
| 013 | Perkins Eastman | 11/7/18 | SMC | 6 | Kamco Supply of NE | 3 | 11/7/18 | Door Types D9, D13, D14, D15, D16. These are not shown on th "Door Panels" details on sheet A-601. Where are the details for these door types? | Door types shall be changed as follows: Change Type D9 to D3, Change Type D13 to D4, ChangeType D14 to D2, Change Type D15 to D1, Change Type D16 ro D1 | 11/9/18 | 1 |
| 014 | Perkins Eastman | 11/7/18 | SMC | 11 | H. Weiss, Div of BHS | 1 | 11/7/18 | We would like to be added to the list of approved food service contractors. | Delete articles 1.04;A.3 and 1.04;A.4 from Specification section 11 40 00 in their entirety. | 11/13/18 | 1 |
| 015 | Perkins Eastman | 11/8/18 | SMC | 8 | Norwalk Glass | 3 | 11/8/18 | Which elevations are supposed to be windows? EFCO's 325X is specified, but everything appears to be CW and SEF with Glassvents. | Delete Section 08 51 13 – Aluminum Windows in its entirety. Provide Storefront with operable vents per section 08 41 13 and as indicated in the drawings. | 11/12/18 | 2 |
| 016 | Perkins Eastman | 11/8/18 | SMC | 8 | Norwalk Glass | 4 | 11/8/18 | Mullion extension are called out on the curtain wall and storefront frame schedule. There is nothing showing exactly what is required. Please confirm the design intent for the mullion extensions. | Screw curtain wall pressure plate to storefront mullion and provide 4.75" curtain wall cover to create mullion extension. Provide caps at top and bottom of curtain wall cover. | 11/14/18 | 2 |
| 017 | Perkins Eastman | 11/8/18 | SMC | 10 | Mulberry Signs | 1 | 11/8/18 | Is the dedication plaque Bronze or Aluminum? This is a very large plque and in bronze it will weigh upwards of 200 lbs. Aluminum is about half that. The area that it is being installed on must be reinforced. Art work in adobe illustrator of the seal must be provided. | Provide bronze as indicated. Art work to be provided during shop drawing process. | 11/9/18 | 1 |
| 018 | CHRO | 11/12/18 | SMC | 5 | Noreaster Installations | 1 | 11/9/18 | State law requires a minimum of twenty-five (25%) percent of contract as listed below be award to subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS"). 25% of the work with DAS certified Small and Minority owned businesses and 25% of that work with DAS certified Minority, Women and/or Disabled owned businesses. | | | |

## Pre-Bid RFI Log
## Phase 1 of 2

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| | | | | | | | | When it comes to the 6.25% MBE (25% of the 25% that is SBE) that's almost impossible to meet on a millwork package. This particular package has source limitations, i.e. one millwork company only, so we cannot have some components fabricated by someone else. In addition, this package requires an FSC-certified & QCP-certified millworker. Even if they relaxed the source limitation so that we could include another fabricator, there are zero (0) MBE-certified millwork companies that are both FSC certified and QCP certified. We have also tried in the past to purchase materials (lumber, plywood, particleboard, etc.) from a DAS company, but aside from the costs involved in shipping US materials to NS for fabrication, there are zero (0) MBE-certified lumber/plywood companies that are FSC-certified.<br><br>Nor'easter is an SBE and as long as installation is 25% of total cost, will be able to meet the SBE requirement. However, MBE requirements can only be met if some of the installation is subcontracted.<br>Millwork fabrication cannot meet the CHRO requirements. Can millwork fabrication be exempt from CHRO requirements? | | | |
| 019 | Perkins Eastman | 11/13/18 | SMC | 9 | Central CT Acoustics | 1 | 11/9/18 | The wall panel type for the Cafeteria Rm 134 is not labeled on the drawing. Please provide the type. | Provide AP-1 for the cafeteria. | 11/14/18 | 2 |
| 020 | Perkins Eastman | 11/13/18 | SMC | 9 | Central CT Acoustics | 2 | 11/9/18 | The interior finish schedule IN-601 does not match spec section 095113 as far as the ACT types go. Please clarify. | Provide ACT products as indicated per specification section 09 51 13. | 11/14/18 | 2 |
| 021 | Perkins Eastman | 11/13/18 | SMC | 17 | J. Iapaluccio | 1 | 11/12/18 | Drawings PD 101.B and P 101.C show an existing 10" storm drain pipe under the slab of the existing building. That exits the building into an existing 12" RCP as shown on the existing conditions plan, C100.1. The 12" RCP is shown to be removed, drawing C102.1 and is not replaced in the new utility drawing C301.1. Question: What happens to the storm water in the building if there is no outlet pipe? Please provide direction. | The existing 12" RCP pipe is to be removed as shown on C-102.1. The existing 10" storm drain pipe under the slab of the existing building will connect to a new 12" HDPE roof leader connecting to AD15A. | 11/19/18 | 2 |
| 022 | Perkins Eastman | 11/13/18 | SMC | 2 & 17 | J. Iapaluccio | 2 | 11/12/18 | Re: Scope of Work Item 29—Site Concrete<br>Paragraph (d)."The Site Work Subcontractor shall furnish and install all components of the exterior Amphitheater including, but not limited to Concrete, Seating, Seating Walls, Seating Stairs, etc. Drawings C 302.1 provides an enlarged view and C600.6 provides details of the site walls and stairs. | BP#2 - Concrete is responsible for all concrete work shown on the Structural Drawings. | 11/13/18 | 1 |

## Pre-Bid RFI Log
## Phase 1 of 2

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| | | | | | | | | Bid package 2-Concrete , scope of work item 34 (b) states the concrete Subcontractor shall provide all concrete work unless specifically noted to be provided by others. Drawings S 101.C, Area C and details on S 309 are part of the building structural components.<br>Question: Is the Site Work Subcontractor responsible for the work shown on the Civil drawings and the Concrete Subcontractor responsible for the work shown on the Structural drawings? | | | |
| 023 | Rizzo | 11/14/18 | SMC | All | MJ Daly | 1 | 11/12/18 | Spec section 00 41 26 is the proposal form, however there are three sets of proposal forms (single package, combo bids within 1 school, combo bids for both schools). Since we will be doing all three, did you want us to provide three separate submissions per proposal form type, including all the paper work being asked for in triplicate, all separately? If yes, would the individual bid bonds suffice for the combo proposals, or are you looking for a multitude of combo-bid bid-bonds as well? | Bid Form "A" gets all the required Alternates, Unit Prices and attachments, all in triplicate. The attachments to Bid Form "A" are applicable to Bid Forms "A-1" and "A-2" so duplication is not required. Just submit Forms "A-1" and "A-2" in triplicate with no other attachments. With regard to Bid Bonds, submit a single bid bond with a cover letter from the Surety indicating the bond is also applicable to the bids submitted on Forms "A-1" and "A-2". | 11/14/18 | 1 |
| 024 | Rizzo | 11/14/18 | SMC | All | MJ Daly | 2 | 11/12/18 | Did you want Spec Section 00 45 13 “Contractor Qualification Statement” submitted by a certain timeframe, or since we have done work in the recent past together, are we already prequalified? | Contractor Qualification Statement is required to be submitted with all bids. See Spec Section 00 22 13 Item #12. | 11/14/18 | 1 |
| 025 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 1 | 11/12/18 | Interior Finish Schedule IN-601 says PL-2 is for FACULTY MILLWORK and PL-3 is for CLASSROOM MILLWORK. The elevation titles do not identify the type of millwork like they did in the Rockwell Elementary drawings. Do we assume similar finishes to Rockwell ES – i.e. admin suite, conference, support, work room, media center, control booth, nurse suite, and faculty dining are all considered “Faculty” while classrooms, spec.ed., math/lit suite instruction, learning center, maker space, and tech/coding areas are all considered “Classroom”? | Yes, assume similar finishes to Rockwell. | 11/26/18 | 2 |

# Pre-Bid RFI Log
## Phase 1 of 2

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 026 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 2 | 11/12/18 | Floor plans A-101a & A-102a include four single-sided benches tagged as detail A-552/5. That detail dimensions the depth of the bench as 1'-9½". The floor plan shows that none of the benches are the same depth as the detail. One is deeper at 2'-8" and three are shallower at 1'-2" or 1'-4". Are all of the benches intended to be the same size as dimensioned in the detail? Or is the floor plan correct, and the depths of the benches vary as shown? | Follow detail A-552/5 except at bench near stair #2; align bench with pilaster. | 11/15/18 | 1 |
| 027 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 3 | 11/12/18 | Please clarify the following about the bench in C101 Lobby that is adjacent to C101b Vestibule:<br>a. Is the bench double-sided per detail A-552/6 as shown in the elevations (see A-216/1,2)? Or is it single-sided per detail A-552/5 which is the tag used on floor plan A-101a?<br>b. Is the depth of the bench 1'-9½" as shown in the details on A-552 or 2'-8" deep as shown on the floor plan? | a. Provide double sided bench per A-552/6.<br>b. Provide depth per detail. | 11/15/18 | 1 |
| 028 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 4 | 11/12/18 | There is a note on elevation A-213/2 for solid surface at the top of the wall in 124 Media Center. No section detail is provided. Please provide more information including dimensions, profile, and which solid surface colour. | See attached sketch. | 11/27/18 | 4 |
| 029 | Perkins Eastman | 11/14/18 | SMC | 5, 10C | Nova Wood Products | 5 | 11/12/18 | There is a note on elevation A-213/3 that reads: ADJUSTABLE TRACK SHELVING WITH TACK BOARDS BETWEEN TRACKS. PROVIDE (3) 12" DEEP SHELVES PER BAY.<br>a. Section 06 40 23 does not include specifications for adjustable shelving hardware. Please provide specifications for standards & brackets, including manufacturer, model number, and finish. (Note that we are assuming "adjustable track shelving" is the same as standard adjustable shelving and not a special system.)<br>b. What finish is on the shelves – PL3 to match the cabinets?<br>c. Please confirm that the tackboards will be provided by the same package that has the rest of the visual display boards. | A. Provide standard adjustable track and bracket system in satin chrome finish. Heavy weight capacity.<br>B. Provide PL-3 to match the cabinets.<br>C. Rizzo to respond. (BP#10C – Visual Display Boards, to provide tack boards for installation by BP#5. – Architectural Woodwork – SMC @ Rizzo Corp.) | 11/15/18 | 1 |

# Pre-Bid RFI Log
## Phase 1 of 2

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 030 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 6 | 11/12/18 | There are two wide columns on the floor plan in 124 Media Center (see A-101A – intersections of grid lines Q and R with grid line 18). The floor plan shows a small square tucked in the corner of these columns. Elevation A-213/7 shows what looks like some kind of shelves in those locations, but there is not detail section tag and no notes provided. Is millwork required at these two columns? If so please provide additional information including a section detail with dimensions and millwork finishes. | Provide four shelves in the locations indicated above. Dimensions are indicated in plans. Provide PL-3 finish. Match standard and bracket system per RFI-029. | 11/15/18 | 1 |
| 031 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 7 | 11/12/18 | Please clarify what is required at the staff mailboxes. In elevation A-213/23 they appear to be standard mail slots in an open cabinet, presumably plastic laminate to match the rest of the casework. Section detail A-551/4 has no notes to identify the finishes at the mail slots, but it shows a back panel that appears to match the rest of the casework, top & bottom panels and shelves that are a different material, and no sides or gables at all. There is a leader pointing to the countertop with a note that says ¾" PLYWOOD TOP even though the counter top is drawn to look like a solid surface top. Is the note correct? The hatch pattern used at the top, bottom & shelves appears to indicate wood of some kind (solid lumber or wood-veneer-faced plywood), but the specification in section 06 40 23 do not include specs for wood species, cut, or finish. If wood veneer is used is it the same STAINED MAPLE that is used for the bench seats? | Reference elevation A-214/23. Provide per detail A-551/4. Use PL-2 for shelves, back panel, side panels, etc. | 11/15/18 | 1 |
| 032 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 8 | 11/12/18 | Floor plan A-101a includes a note at 101 Admin Suite that reads SWING GATE TO MATCH RECEPTION DESK MILLWORK. Please provide a section detail for this gate that includes dimensions and hardware specs. | Provide swing gate at height to match adjacent counter top; provide hinges with spring loaded closer and cabinet latch on office side. | 11/15/18 | 2 |
| 033 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 9 | 11/12/18 | Floor plan A-101a appears to show something inside 101f Admin Coat Closet. No elevation tag or section tag is provided. There are no section details for a coat closet with the millwork details on A-551 & A-552. There are no specifications for coat closet millwork or hardware in section 06 40 23. Is millwork required in this closet? | Provide 12" deep shelf with PL-2 and coat rod with appropriate hardware. | 11/15/18 | 1 |
| 034 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 10 | 11/12/18 | Elevation A-214/31 includes a note that the low wall cap is SS-1 CAP TO MATCH COUNTERTOP. Then interior finish schedule on IN-601 says that SS-1 is for window sills and SS-4 is for countertops. Which is correct? | Provide SS-4 for countertops. | 11/15/18 | 1 |

# Pre-Bid RFI Log
## Phase 1 of 2

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 035 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 11 | 11/12/18 | Floor plan A-102a includes detail tag A-552/8 at the recessed display case in C201 Corridor. Elevation A-219/9 includes detail tag A-552/7 at the same recessed display case. Which is correct? | Use detail A-552/7. | 11/15/18 | 1 |
| 036 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 10 | 11/12/18 | Summary in paragraph 1.02 of section 06 40 23 refers to plastic laminate & solid surface items. Quality Assurance in paragraph 1.06.A refers to sequence-matched wood veneers. Materials in paragraph 2.01 include plastic laminate and solid surface, but there are no specifications for wood veneers. There are notes for STAINED MAPLE in the drawings at the bench seats on A-552 (both sets of drawings). Is it Natural Maple (with colour variation between sap & heart wood) or is White Maple (sapwood only)? Is it plain sawn? What face grade is required ("A" is standard for transparent finishes like this)? | | | |
| 037 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 11 | 11/12/18 | Specifications in 06 40 23 indicate there are three (3) colours required for plastic laminate and three (3) colours required for solid surface. They are identified as "As scheduled on drawings" (see paragraph 2.01.D.2 and 2.01.E.2). Interior Finish Schedule IN-601 indicates there are four (4) colours each but none of the colours are identified.<br>a. Which is correct? Are there 3 colours for each or 4 colours?<br><br>b. Will specific colours be identified? Cost for plastic laminate varies widely, depending on manufacturer, colour/pattern, and finish/texture chosen. Cost for solid surface has an even wider range, depending on manufacturer & colour/pattern chosen. | Provide 4 colors of each per finish schedule. Colors to be selected from manufacturer's full range of standard colors. | 11/15/18 | 1 |
| 038 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 12 | 11/12/18 | Specifications in paragraph 2.02 of section 06 40 23 are for fire-retardant-treated materials. Where are these required? | Fire retardant materials are not required for Millwork. | 11/15/18 | 1 |
| 039 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 13 | 11/12/18 | Specifications in paragraph 2.03.G of section 06 40 23 are for a lockable pencil drawers at the reception desk in each school. There are no elevations of the staff side of these desks. The section details (see A-552/1,2 in both drawing sets) do not show any drawers. How many drawers are required at each desk and where are they located? | File cabinets at reception desk are to be part of the FF&E package. | 11/25/18 | 2 |

# Pre-Bid RFI Log
## Phase 1 of 2

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| 040 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 14 | 11/12/18 | Specification in paragraph 2.05.C indicate the cores of the plastic laminate casework is to be either medium-density-overlay or veneer-core plywood. AWS standards require either particleboard of MDF cores at doors & drawer faces because of warping & delamination. Please confirm that AWS standards take precedence over project specifications. (Note that if the owner/architect insists on another core at the doors & drawer faces, we will fabricate them, but they will not be covered by the warranty.) | AWS standards take precedence. | 11/15/18 | 1 |
| 041 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 15 | 11/12/18 | Scope of work for BP5 and summary paragraph at front of section 06 40 23 refer to custom display cases, however there are no specifications in section 06 40 23 for custom display cases. There are section details (A-552 for Johnson Elementary & A-553 for Rockwell Elementary) but the details are missing quite a bit of information and some of the notes contradict each other:<br>a. There are no thicknesses for the tempered glass, just notes that say “as specified”. How thick are the doors? Are the shelves the same thickness or are they different?<br>b. There are finishes for the hardware, but no sizes, manufacturers, or model numbers. Please provide specifications for door hinges & locks at swinging doors, door track systems & locks at sliding doors, and shelf standards & brackets at glass shelves.<br>c. The small display cases have notes for both pivot hinges & sliding doors – which is correct?<br>d. Please provide specifications for the fabric on the tack panels in the large cases – manufacturer, pattern, colour, etc. Also, please provide specs for the tackable core under the fabric.<br><br>e. The tack panel in the smaller cases does not include the description “fabric-wrapped”. Is it the same as the larger cases or is it something else?<br>f. There are notes for hardwood veneer panels at the top of the case. At the bottom there are notes for optional low-pressure laminate (i.e. melamine) in walnut or oak pattern at the top, bottom, and ends. Which is correct? | | | |

## Pre-Bid RFI Log
## Phase 1 of 2

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| | | | | | | | | g. Who is responsible for the Reglet trim – millworker or drywaller? If the millworker is intended to provide it, we need to know the profile, size (width/height and depth – only the height is noted on the drawings), and finish. Is the same profile & size used at the cement block wall location(s) at Johnson Elementary? | | | |
| 042 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 16 | 11/12/18 | Millwork section details (A-551 for both drawing sets) show solid surface countertops dimensioned as 1¼" thick at the front edge. The enlarged detail of the countertop edge shows the countertop dimensioned as 1½" thick. Solid surface material is ½" thick and builds up to 1½" as shown in the enlarged detail. Please confirm that 1½" is the correct thickness. | 1 ½" is the correct thickness. | 11/25/18 | 2 |
| 043 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 17 | 11/12/18 | Millwork section detail A-551/6 is a section through a work counter. Is the apron piece below the countertop solid surface to match the top or plastic laminate to match the rest of the casework in the room? | Provide Plastic Laminate to match. | 11/25/18 | 2 |
| 044 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 18 | 11/12/18 | The section details on A-551 & A-552 (both sets of drawings) include notes for SUPPORT ANGLE under open countertops. Specifications in section 06 40 23 do not include countertop support brackets. Please provide specs including manufacturer, model number, type of metal (steel or aluminum), and finish. | | | |
| 045 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 19 | 11/12/18 | Interior Finish Schedule IN-601 says SS-2 is for INDICATED MILLWORK AND INFORMATION DESK. Where is SS-2 required?<br><br>a. SS-2 is not indicated on the drawings for either school<br>b. There is a note in the Rockwell drawings that suggests the circulation desk in the Media Center is also called the information desk. But the section details are the same ones used for the reception desk in the Admin Suite, which is not called an information desk. Neither desk is referred to as an information desk in the Johnson drawings. | Use SS-2 for solid surface material indicated in details 1 and 2 on A-552 | 11/27/18 | 4 |
| 046 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 20 | 11/12/18 | Section details for the reception & circulation desks on A-552 (both drawing sets) show a PL-2 plastic laminate base with a ½" aluminum reveal in one detail (detail 1 in both sets) but an aluminum base with no reveal in the other detail (detail 2 at Johnson and detail 3 at Rockwell). Which is correct? | Provide aluminum base as shown in Detail 2 | 11/27/18 | 4 |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 047 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 21 | 11/12/18 | Do the lockers in the Receiving area (room 128 at Rockwell ES & room 142 at Johnson ES) require a solid surface cap similar to the corridor lockers? There are no elevations provided and no note on the floor plan. | No. | 11/25/18 | 2 |
| 048 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 22 | 11/12/18 | The Art rooms in both schools include open base cabinets with six shelves each (see elevation A-213/1 at Rockwell ES & A-215/8 at Johnson ES). No section detail is provided for this cabinet. Are these shelves adjustable or fixed? | Fixed. | 11/25/18 | 2 |
| 049 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 23 | 11/12/18 | All solid surface sills are drawn as if they are fabricated from ¾" thick material. Many sill details also include a note that reads ¾" SOLID SURFACE SILL. The solid surface is specified in section 06 40 23 as ½" thick (see paragraph 2.08.B) and standard solid surface is ½" thick. Please confirm that ½" is correct. | ½" is correct. | 11/25/18 | 2 |
| 050 | Perkins Eastman | 11/14/18 | SMC | 5 | Nova Wood Products | 24 | 11/12/18 | Please clarify which sill is required at each window type. Each drawing set has several different solid surface sill details. There are no sill detail tags on the window elevations on A-610 & A-611 in either drawing set to identify which sill goes at which window type. We are trying to work from building elevations to building & wall sections to determine which sills go where, but that is difficult. We're assuming all windows in the same stretch of wall have the same sill detail. Some walls do not have any section tags, so we're trying to determine the wall type by looking at the building exteriors so we can match it to the description in the sill detail titles. Some walls are not shown on the building exteriors. In addition, there are several locations that have inconsistent/contradictory information provided. | The sill details for the following exterior windows are:<br>Detail 1 / A-321: CW7b, CW7c, CW8, CW9, ST5R, ST5L, ST18a, ST18b, ST18c, ST19R, ST19L.<br><br>Detail 4 / A-321: CW2a, CW13, ST1, ST2a, ST2b, ST3, ST4a, ST4b, ST4c, ST6R, ST6L, ST7, ST8, ST9, ST11, ST12, ST13, ST14, ST16, ST17. | 11/27/18 | 4 |
| 051 | Rizzo | 11/15/18 | SMC | 18 | Kencal Maintenance | 1 | 11/12/18 | What will need to be cleaned? What is the square footage for the post-construction cleaning? | Your scope of work is in BP#18 in Volume 1 of the Specifications. The project is phased - see Phasing Plans for completion of areas. Square footage is on drawing LS-102. | 11/15/18 | 1 |
| 052 | Rizzo | 11/15/18 | SMC | 17 | J. Iapaluccio | 3 | 11/12/18 | Re: Spec Section 10 14 01—Site Signage<br>This specification applies to the sign in and on the building and they do not apply to the traffic control signs which are installed on the site.<br>We request that this specification be removed from our scope of work and add the note that the signs should be furnished and installed in accordance with CDOT form 817. | Specification Section 10 14 01 is not interior signage. It is Site Signage. | 11/15/18 | 1 |
| 053 | Perkins Eastman | 11/15/18 | SMC | 17 | J. Iapaluccio | 4 | 11/13/18 | Re: Drawing C200.1, Site Plan-Materials | The surface around the transformer area shall | 11/19/18 | 2 |

## Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
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| | | | | | | | | There are two areas containing equipment pads, 1st is the transformer and gas pads; The 2nd is the generator and chiller pads.<br>There is no legend which describes the type of materials required within these areas.<br>Please provide the desired surface. | be lawn. The surface around the generator and chiller shall be gravel. | | |
| 054 | Perkins Eastman | 11/15/18 | SMC | 17 | J. Iapaluccio | 5 | 11/13/18 | There is no specification for the wood fiber mulch included in the documents. Is that intentional or has it been omitted? Please provide specifications for this item. | See Detail 8 on Sheet C-600.3 for the wood fiber mulch as manufactured by GameTime or approved equal. Contractor to submit shop drawing for approval. | 11/19/18 | 2 |
| 055 | Rizzo | 11/15/18 | SMC | 17 | J. Iapaluccio | 6 | 11/13/18 | The requirement to furnish and install Vapor Barrier is included in the scope of work for both BP No 2-Concrete and BP No 17-Site Work. Who is responsible for furnishing and installing the vapor barrier? Please provide direction. | BP#2 – Concrete only owns vapor barrier and insulation under slabs on grade. All other vapor barrier and insulation is the responsibility of BP#17 – Site Work. | 11/15/18 | 1 |
| 056 | Perkins Eastman | 11/16/18 | SMC | 15 | MJ Daly | 3 | 11/13/18 | Please confirm that the Roof Top Units and DOAS are using the same specification (23 7416). Also please provide a specification for the Make Up Air Units (MAU-1s), as they are only listed in the mechanical equipment schedules. | Yes, specification for RTUs and DOAS units are the same, with requirements in section 23 74 16. See new spec section 23 74 23 "Packaged, Direct-Fired, Outdoor, Heating-Only Makeup- | 11/27/18 | 4 |
| 057 | Rizzo | 11/16/18 | SMC | All | MJ Daly | 4 | 11/13/18 | Are there any liquidated damages associated with this project? If so, please define them and their caps? | There are no liquidated damage clauses | 11/19/18 | 2 |
| 058 | Perkins Eastman | 11/16/18 | SMC | 15 | MJ Daly | 5 | 11/13/18 | Please advise if TACO can be added as an approved manufacturer for the Plate & Frame Heat Exchangers? | Refer to Specification 01 60 00 Section 2.02 – "Substitutions will not be accepted during the bid period." | 11/26/18 | 2 |
| 059 | Perkins Eastman | 11/16/18 | SMC | 14 | MJ Daly | 6 | 11/13/18 | Please advise if Nelson could be added as an approved manufacturer for the heat trace if they can meet the spec, as a couple approved manufacturers do not have CT representation. | Refer to Specification 01 60 00 Section 2.02 – "Substitutions will not be accepted during the bid period." | 11/26/18 | 2 |
| 060 | Perkins Eastman | 11/16/18 | SMC | 15 | MJ Daly | 7 | 11/13/18 | Please advise if TWA & Vulcan could be added as approved manufacturers for the Radiant Heating Hydronic Panels (RPs)? | Refer to Specification 01 60 00 Section 2.02 – "Substitutions will not be accepted during the bid period." | 11/26/18 | 2 |
| 061 | Perkins Eastman | 11/16/18 | SMC | 15 | MJ Daly | 8 | 11/13/18 | Can Rittling, Vulcan & Sterling be added as approved manufacturers for the Cabinet Unit Heaters and Unit Heaters? There are currently quite a few manufacturers listed in the spec that cannot meet the spec or listed scheduled data. Also, Rittling is shown on the schedule but not approved in the spec? | Rittling and Sterling are acceptable manufacturers for Cabinet Unit Heaters and Unit Heaters. Vulcan is not acceptable. | 11/27/18 | 4 |
| 062 | Perkins Eastman | 11/16/18 | SMC | 15 | MJ Daly | 9 | 11/13/18 | Please provide a spec for the baseboard radiation (BB-1) for accurate vendor pricing and please advise if Sterling & Rittling can be added as approved manufacturers? | See new spec section 23 82 29 "Radiators". We are not aware that Rittling or Sterling manufacture flat-pipe steel radiators equivalent to the specified Runtal radiators. Provide manufacturer per 23 82 29. | 11/27/18 | 4 |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
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| 063 | Perkins Eastman | 11/16/18 | SMC | 15 | MJ Daly | 10 | 11/13/18 | Can Carrier be added as an approved manufacturer for the RTUs? | Refer to Specification 01 60 00 Section 2.02 – "Substitutions will not be accepted during the bid period." | 11/26/18 | 2 |
| 064 | Perkins Eastman | 11/16/18 | SMC | 15 | MJ Daly | 11 | 11/13/18 | Can Daikin be added as an approved manufacturer for Chillers & RTUs? | Refer to Specification 01 60 00 Section 2.02 – "Substitutions will not be accepted during the bid period." | 11/26/18 | 2 |
| 065 | Perkins Eastman | 11/16/18 | SMC | 15 | MJ Daly | 12 | 11/13/18 | Can Price be added as an approved manufacturer for the VAV Boxes? | Refer to Specification 01 60 00 Section 2.02 – "Substitutions will not be accepted during the bid period." | 11/26/18 | 2 |
| 066 | Rizzo | 11/16/18 | SMC | 14, 15 | MJ Daly | 13 | 11/13/18 | Please verify that all Condensate Piping for the indoor FCUs and Ductless Splits will be furnished and installed by the HVAC Contractor? | Yes | 11/19/18 | 2 |
| 067 | Perkins Eastman | 11/16/18 | SMC | 15 | MJ Daly | 14 | 11/13/18 | Please advise if Grooved Piping Systems (Victaulic, Anvil, etc.,) would be acceptable for all aboveground hydronic piping 2-1/2" and larger in lieu of welded systems? Additionally, please advise if ProPress Copper Systems (Viega, Nibco, etc.,) would be acceptable for hydronic piping systems including condensate systems for piping 2" and smaller? ProPress shown under section 2.2, but not shown as an option under the piping application section 3.1? | No, grooved piping systems for steel and ProPress copper systems for copper piping are not acceptable. Bids to include piping as required by 23 21 13 Paragraph 3.1. | 11/27/18 | 4 |
| 068 | Perkins Eastman | 11/16/18 | SMC | 15 | MJ Daly | 15 | 11/13/18 | Can Danfoss & Yaskawa be added as approved manufacturers for the VFD drives? 3 approved manufacturers are usually needed on public projects, unless this is a proprietary spec? | ABB Low Voltage HVAC Drives are required by the building owner. Danfoss and Yaskawa are not acceptable to the owner. | 11/27/18 | 4 |
| 069 | Rizzo | 11/16/18 | SMC | 15 | MJ Daly | 16 | 11/13/18 | Bid docs provide a general statement that the HVAC Contractor responsible for BIM drawings, but who is responsible for gatekeeping duties (clash detection, incorporating other trades drawings into the model, etc.)? Is Rizzo spearheading this portion of coordination, will a third-party firm be performing this work, or will this be on the HVAC Contractor? | HVAC Subcontractor is the coordinator for the BIM process. | 11/19/18 | 2 |
| 070 | Perkins Eastman | 11/16/18 | SMC | 14, 15 | MJ Daly | 17 | 11/13/18 | Please advise if Novia Associates (rep'd by Seismic Control Products) will be acceptable for the Vib-Iso & Seismic Control Products? They have a stronger representation in the CT area than most of the other spec'd manufacturer's, they can meet all specs and provide a PE stamp & calculations where necessary. | Refer to Specification 01 60 00 Section 2.02 – "Substitutions will not be accepted during the bid period." | 11/26/18 | 2 |
| 071 | Rizzo | 11/16/18 | SMC | 14, 15 | MJ Daly | 18 | 11/13/18 | Please verify that all gas piping, valves, fittings & regulators will be furnished and installed by the plumbing contractor up to and including connection to HVAC mechanical equipment? | Confirmed | 11/19/18 | 2 |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
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| 072 | Perkins Eastman | 11/16/18 | SMC | 14, 15 | MJ Daly | 19 | 11/13/18 | Are there any associated CAD fees with signing over the release forms from the Architect to start our 3D coordination? | No. | 11/27/18 | 4 |
| 073 | Rizzo | 11/16/18 | SMC | 4, 15 | MJ Daly | 20 | 11/13/18 | HVAC Scope of Work places part of spec 05 50 00 in our scope? After reviewing the Metal Fabrications spec (05 50 00), all the items noted seemed to be related to a separate bid packages (Metal Ladders, Steel Trim, Bearing and Leveling Plates, One-Way Barrier Gates, etc.,)? Which of the spec'd items is being requested by the HVAC Contractor (if any)? | Delete Spec 05 50 00 from BP#15 - HVAC Scope of Work. | 11/19/18 | 2 |
| 074 | Rizzo | 11/16/18 | SMC | 7, 15 | MJ Daly | 21 | 11/13/18 | Please verify that all exterior sheet metal flashing and trim is to be furnished and installed by a separate roofing or miscellaneous metals contractor? | Yes | 11/19/18 | 2 |
| 075 | Rizzo | 11/16/18 | SMC | 11B, 15 | MJ Daly | 22 | 11/13/18 | HVAC Scope of Work places part of spec 11 66 53 in our scope? After reviewing the Gymnasium Dividers spec (11 66 53), nothing could be identified that would be the HVAC Contractor's responsibility? Please advise what scope of work the HVAC Contractor would own in regards to the Gymnasium Dividers? | Coordination with Divider installation. | 11/19/18 | 2 |
| 076 | Rizzo | 11/16/18 | SMC | 14, 15 | MJ Daly | 23 | 11/13/18 | Who is responsible for patching holes in existing floors & walls (masonry & sheetrock) when demo is removed (i.e. piping, ductwork, CUHs, etc.)? | BP#3 - Masonry owns masonry wall patching, BP#6 - General Trades owns all other wall patching, BP#5 - Structural Steel & Misc. Metals owns any metal deck patching & BP#2 - Concrete owns concrete floor patching. | 11/19/18 | 2 |
| 077 | Rizzo | 11/16/18 | SMC | 14, 15 | MJ Daly | 24 | 11/13/18 | Who is responsible for opening & closing existing walls for any new piping, ductwork, etc.? We are assuming the masons would own masonry walls, sheetrockers would own sheetrock walls, etc., but please confirm? | BP#15 - HVAC is responsible for cutting their own wall penetrations in existing walls. Coordinate with specific trade contractor for required openings in new construction. | 11/19/18 | 2 |
| 078 | Rizzo | 11/16/18 | SMC | 14, 15 | MJ Daly | 25 | 11/13/18 | Who is responsible for closing up the concrete slabs when existing piping or ductwork is removed? We are assuming the concrete contractor, but please advise? | See response to RFI-076 | 11/19/18 | 2 |
| 079 | Rizzo | 11/16/18 | SMC | 14/15 | MJ Daly | 26 | 11/13/18 | Who owns cutting up any interior slabs for HVAC and Plumbing UG piping (and ductwork if applicable) for existing and/or new construction? We are assuming the concrete contractor, but please advise? | Cutting of interior slabs is by BP#1 - Demolition & Abatement. There should be no cutting required for new construction. | 11/19/18 | 2 |
| 080 | Rizzo | 11/16/18 | SMC | 14, 15 | MJ Daly | 27 | 11/13/18 | Who owns trenching, excavating, and backfilling for the underground mechanical (PLBG & HVAC) piping? We are assuming the site contractor owns all of it, please verify? | BP#17 - Site Work | 11/19/18 | 2 |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
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| 081 | Rizzo | 11/19/18 | SMC | 5 | Legere Group | 1 | 11/13/18 | Plastic laminate and solid surface materials are not specified per the finish schedule on IN-601. Have these materials been selected at this point? | See Specification Section 06 40 23 | 11/19/18 | 2 |
| 082 | Perkins Eastman | 11/19/18 | SMC | 5 | Legere Group | 2 | 11/13/18 | On 3/A-551 the interiors of cabinets are melamine. Spec p.839 of Volume 2, semi-exposed surfaces will use high-pressure decorative laminate. Please advise. | Provide high pressure decorative laminate. | 11/29/18 | 4 |
| 083 | Perkins Eastman | 11/19/18 | SMC | 5 | Legere Group | 3 | 11/13/18 | 1/A-551 mentions a "PL-4 painted accent panel." Please elaborate. | Disregard the word “painted.” | 11/28/18 | 4 |
| 084 | Perkins Eastman | 11/19/18 | SMC | 5 | Legere Group | 4 | 11/13/18 | Spec p.837 of Volume 2, there are "locks on all cabinet doors and drawers." Please confirm that this is the case. | Provide locks on all cabinet doors and drawers as specified. | 11/28/18 | 4 |
| 085 | Perkins Eastman | 11/19/18 | SMC | 5 | Legere Group | 5 | 11/13/18 | Elevation 3/A-214 shows no plumbing panel under the sink. However, section views 1/A-551 and 5/A-551 show plumbing panels. Please advise. | Provide panels as indicated in details. | 11/28/18 | 4 |
| 086 | Perkins Eastman | 11/19/18 | SMC | 17 | J. Iapaluccio | 7 | 11/14/18 | Re: Spec Section 32 1400: Concrete Unit Pavers<br>Article 2.1(A) ‘Pavers that were removed from the existing Sensory Garden and stockpiled are to be reused’<br>There is no ‘Sensory Garden’ at the existing school to salvage existing pavers. Please provide a specification for the desired product. | Concrete unit pavers are not required for this project. Please disregard this specification section. | 11/27/18 | 4 |
| 087 | Rizzo | 11/19/18 | SMC | 1 | Sothern CT Demo | 1 | 11/14/18 | So there will be no abatement done thru the Xmas holiday? Feb/Apr vacations? Usually, when we do these large projects…we go in during vacations to do floor tile so the other trades have a slight jump by the time summer work arrives? | See Phasing Plans - Flooring is scheduled to be removed during the first summer. All other abatement is being done by phase. | 11/19/18 | 2 |
| 088 | Perkins Eastman | 11/19/18 | SMC | 7 | Barrett Roofing | 1 | 11/14/18 | Has there been roof core samples taken of the existing roof outlining the composition? i. e. existing decking, deck slope, insulation type & thickness, membrane etc. If so, where are these results listed? If not, can this information be obtained and made available? | | | |
| 089 | Perkins Eastman | 11/19/18 | SMC | 5 | Legere Group | 6 | 11/14/18 | Specifications (Volume 2, p.837) specify Doug Mockett 3" XG5 grommets. I have not found any instances of grommets being called out. Please advise. | Provide a minimum of 1 grommet per 72” of work surface in the following areas: 1) Reception desk in Admin Suite 101; 2) Circulation/Information Desk in Media Center 124 | 11/30/18 | 4 |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 090 | Perkins Eastman | 11/19/18 | SMC | 16 | The NY-Conn Corp. | 2 | 11/16/18 | Drawing M-604, dated 7/27/18, includes a condensate pump schedule, which indicates that electrical services are provided at each recessed ceiling fan coiil unit and at each wall mounted indoor split system unit. Please note that the electrical drawings do not indicate any circuitry for these condensate pumps, and there appears to be no details included on the mechanical or electrical drawings regarding whether they are integral to the units or fed from the same circit as the unit being served. Please advise. | Provide 120VAC receptacle mounted above the ceiling at every fan coil unit and wall-mounted indoor split system unit. Connect 8 fan coil units / indoor splits to one circuit and wire with 2#12, #12G, 3/4"C to local 120V panelboard to spare 20A-1P circuit breaker. Provide a 42-circuit panelboard for LP3-L in lieu of a 30-circuit panelboard. Provide a 72-circuit panelboard for LP5-L in lieu of a 60-circuit panelboard. | 11/27/18 | 4 |
| 091 | Perkins Eastman | 11/19/18 | SMC | 16 | The NY-Conn Corp. | 3 | 11/16/18 | The Fan Coil Schedule, found on drawing M-603, dated 7/27/18, states that the units are to be provided with "Unit Mounted Disconnects." In several instances within the electrical panel schedules, it is noted that the electrical contractor is to provide the local disconnect switch for the FCUs (see attached for a typical example) Please clarify if the FCU disconnects are to be integral to the FCUs. If they are not, please clarify who is to provide the disconnects in question. | Mechanical contractor to provide FCU disconnect switches as a factory option / accessory. | 11/27/18 | 4 |
| 092 | Perkins Eastman | 11/19/18 | SMC | 16 | The NY-Conn Corp. | 4 | 11/16/18 | The Cabinet Unit Heater Schedule, found on drawing M-601, dated 7/27/18, states that the "Mechanical Contractor DIV 23, is to provide the local disconnect switch" for the heaters. In several instances within the electrical panel schedules, it is noted that the electrical contractor is to provide the local disconnect switch for the CUHs (see attached for a typical example). Please clarify who is to provide the CHU disconnects. | Mechanical contractor to provide CUH disconnect switches as a factory option / accessory. | 11/27/18 | 4 |
| 093 | Perkins Eastman | 11/19/18 | SMC | 5 | Legere Group | 7 | 11/15/18 | Section detail 1/A-321 shows a 5” deep window sill. However, floor plans show a 7” deep sill when calling out this detail. Conversely, section detail 4/A-321 shows a 7” deep sill, yet floor plans show a 5” deep sill where that detail is called out. Please advise. | Follow dimensions as shown on the respective details. All final sill dimensions will need to be verified in field. | 11/28/18 | 4 |
| 094 | Perkins Eastman | 11/19/18 | SMC | 5 | Legere Group | 8 | 11/15/18 | Elevation 2, page A-213 shows solid surface. Please provide section details of this instance. | | | |
| 095 | Perkins Eastman | 11/19/18 | SMC | 5 | Legere Group | 9 | 11/15/18 | Specifications (Volume 2, page 839) specify Hafele coat hooks for cubby units. I have not found cubbies in the drawings. Please clarify. | There are no cubby units on this project. | 11/28/18 | 4 |
| 096 | Rizzo | 11/19/18 | SMC | 5 | Legere Group | 10 | 11/15/18 | Elevations 5 and 6 on page A-552 show single-sided and double-sided benches, respectively. It is unclear which parts of these benches fall under bid package 5’s scope of work. Please clarify. | The entire bench, including stainless steel supports is part of BP#5 Scope. | 11/19/18 | 2 |

## Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 097 | Perkins Eastman | 11/21/18 | SMC | 15,16 | MJ Daly | 28 | 11/19/18 | Please verify that all duct mounted smoke detectors are furnished by the Fire Alarm Contractor and installed by the HVAC Contractor? | Duct mounted smoke detectors to be provided by electrical contractor, installed by mechanical contractor, connected to alarm system by fire alarm contractor, and connected to BMS by mechanical contractor. | 11/27/18 | 4 |
| 098 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 29 | 11/19/18 | Please verify that all required Smoke Detectors, Smoke Dampers and Fire Dampers required for this project are shown on the drawings? If not, please update drawings to show all required dampers and detectors so our Sheet Metal and Controls subs can account for them with their bids. | Mechanical General Note #2 on drawings M-101A, M-101B, M-102A, & M-102B applies to the entire project. HVAC General Note #7 on page M-001 applies to the entire project. | 11/27/18 | 4 |
| 099 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 30 | 11/19/18 | CUH-11 is shown on drawing MP-101B, but not defined on the equipment schedule? Please add to equipment schedule for vendor pricing. | See attached sketch SKM-3 showing revised cabinet unit heater schedule from drawing M-601including CUH-11. | 11/27/18 | 4 |
| 100 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 31 | 11/19/18 | CUH-1, CUH-3, CUH-4 & CUH-5 are defined on the HVAC Equipment Schedule, but none were found when reviewing the Johnson E.S. floor plans? Please verify that these unit types are not required for the Johnson E.S? If they are required, please add them to the floor plans. | CUH-1, CUH-3, CUH-4 & CUH-5 are not required for Johnson ES. | 11/27/18 | 4 |
| 101 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 32 | 11/19/18 | UH-2 & UH-3 are defined on the HVAC Equipment Schedule, but none were found when reviewing the Johnson E.S. floor plans? Please verify that these unit types are not required for the Johnson E.S? If they are required, please add them to the floor plans. | UH-2 & UH-3 are not required for Johnson ES. | 11/27/18 | 4 |
| 102 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 33 | 11/19/18 | There are some discrepancies between the pipe sizes shown feeding the FCUs on the floor plans versus the pipe sizes called out on the Fan Coil Unit Schedule? Please verify that the pipe sizes shown on the schedule can be used for pipe sizes feeding the corresponding FCUs shown on the floor plans when there are discrepancies? | Please verify where discrepancies exist as Fan Coil Unit Schedule does not list pipe sizes. If any discrepancies exist, contractor shall install the larger pipe size. | 11/27/18 | 4 |
| 103 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 34 | 11/19/18 | Please verify that both the Air Intake and Exhaust Vents from the Condensing Boilers and Gas Water Heaters are to be furnished and installed using material spec'd under 23 51 23 Gas Vents? | Yes, bids shall be based on requirements from 235123 Gas Vents. | 11/27/18 | 4 |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 104 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 35 | 11/19/18 | HVAC Drawings M-001, note #49, states to "***Provide handrails if equipment on the Roof located less 10 feet from roof edge (see architectural drawings)*** ". After reviewing the HVAC Roof drawings, the following equipment was found to be less than 10 feet from the roof:<br>· **Johnson E.S.** - EF-1 & CU-2<br>Please advise if these pieces of equipment will need handrails and please verify who would own this work (assuming miscellaneous metals contractor if necessary, but please verify)? | It is the requirement of the project to provide handrails if equipment on rooftop is less than 10'-0" from roof edge. Coordinate final installation with equipment manufacturer. | 11/27/18 | 4 |
| 105 | Perkins Eastman | 11/21/18 | SMC | 14, 15 | MJ Daly | 36 | 11/19/18 | The Plumbing drawings show 3 separate Radon pits with Radon piping penetrating through the roof. There is also a Radon Evacuation Venting Diagram (Detail #9 on P502) that shows an inline Radon exhaust fan. When reviewing the HVAC drawings, there is nothing shown within the building or on the roof regarding Radon piping work, but there is a schedule for Inline Radon Fans. Please clarify if the intent for this school was for the HVAC Contractor to furnish the three radon fans and install inline, and the plumber would continue to pipe up through the roof, as shown on Detail #9 on P502, or please correct if this assumption is incorrect? | Radon fan is an inline fan to be mounted above the roof surface. Gooseneck and bird screen to be installed downstream (above) radon fan. | 11/27/18 | 4 |
| 106 | Rizzo | 11/21/18 | SMC | 14, 15 | MJ Daly | 37 | 11/19/18 | For instances where the HVAC Condensate piping is tying into the plumbers waste pipe, please verify the point of connection where responsibilities shift? Detail #7 on M-503 shows an Indirect Connection Detail, with a P-Trap, nipple, and air gap. Does the HVAC Contractor own getting the piping to the Air Gap, and the Plumbing Contractor owns from the Air Gap, back to their main? | | | |
| 107 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 38 | 11/19/18 | Secondary Auxiliary Condensate Drain Pans are shown on M-503 and are being requested for every ducted FCU. FCU Schedule states to use Stainless Steel Drain Pans? Please advise if stainless steel is required, or if galvanized pans would be acceptable to reduce costs? Additionally, regardless of metal type required, please advise on the acceptable gauge of metal so bidding sheet metal contractors are accounting for the accurate material (20 gauge?)? | Primary drain pans (inside FCU) to be stainless steel. Secondary auxiliary drain pans to be 20-gauge galvanized steel. | 11/27/18 | 4 |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 108 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 39 | 11/19/18 | One Chemical Pot Feeder is shown on the drawing M-201, but hydronic piping spec states to install bypass chemical feeders in each hydronic system where indicated? Please clarify if two chemical shot feeders are required for each school (one for HWS&R and one for CHWS&R system)? | Two chemical shot feeders are required for each school (interior HW & CHW systems) plus one glycol feed system for the exterior CHW loop. | 11/27/18 | 4 |
| 109 | Rizzo | 11/21/18 | SMC | 15 | MJ Daly | 40 | 11/19/18 | Please reaffirm the HVAC Scope of Work Item #1 which states "***Demolition: disconnect and drop to the floor to be removed by Demolition Subcontractor.*** " The HVAC specs states to remove the demoed equipment, piping ductwork, etc., which carries much more labor and costs than disconnecting & dropping. Just wanted to confirm that the scope of work trumps the specs in this case? | HVAC Scope of Work Item #1 is correct. | 11/30/18 | 4 |
| 110 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 41 | 11/19/18 | The HVAC General Duty Valve Spec currently has High Performance Butterfly Valves flat spec'd for all butterfly valve applications (shutoff service and dead-end service for all HVAC systems)? Please verify that this is required, or if a less expensive yet equally effective type of butterfly valve would be acceptable in most cases to save on overall cost (for example all valves outside of the mechanical room)? If this is acceptable please provide a spec and approved manufacturer for those valves (Hammond, Milwaukee, Nibco, Crane, Stockham, etc.,)? Additionally, if an earlier RFI is accepted and Grooved Piping is deemed acceptable for hydronic systems 2-1/2" and larger, please advise if grooved valves would also be acceptable (Victaulic, Nibco, Anvil, etc.,) | High performance butterfly valves are required. | 11/27/18 | 4 |
| 111 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 42 | 11/19/18 | The Division 23 HVAC Specs bring up Steam quite often throughout the specifications? Can you please confirm that there is no Steam work required for this project by the HVAC Contractor? Nothing was spotted on the floor plans or the civil drawings, but just in case we are missing something on the civil drawings (or another bid package set) can you please let us know? | No steam work required. | 11/27/18 | 4 |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 112 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 43 | 11/19/18 | UG HVAC Piping Spec states to "***Install cathodic protection devices and connections for piping and conduit systems.*** " However, with the casing piping being constructed of HDPE, can this spec item be waived? HDPE has excellent corrosion resistance, is virtually inert, and commonly used in lieu of expensive maintenance or cathodic protection. However, if it is still required, please provide locations and spec on cathodic protection, as this is not common installation practice anymore and pricing would need to be obtained by a specialty vendor, separate from the UG piping vendor. | Cathodic protection is not required. | 11/27/18 | 4 |
| 113 | Perkins Eastman | 11/21/18 | SMC | 15 | MJ Daly | 44 | 11/19/18 | Please verify that the spec requirement shown under spec 23 2513, paragraph 3.5.B, can be waived? Spec states to "***Provide a 'how to-use' self-contained breathing apparatus video that details exact operating procedures of equipment*** ." After reviewing the plans and remainder of the spec, a self-contained breathing apparatus is not requested in any of the docs and with this chillers being installed outside, this seems to not be required, correct? Please verify? | Self-contained breathing apparatus not required. | 11/27/18 | 4 |
| 114 | Perkins Eastman | 11/21/18 | SMC | 16 | The NY-Conn Corp. | 5 | 11/19/18 | Specification Section 26 05 48.16-2.1-B-2, states that the Seismic Restraint performance requirements for the building are to be "Seismic Design Category: B." It is our understanding that Seismic Design Category B, requires no seismic restraint for mechanical and electrical systems. Please clarify if Seismic Restraints are required for the electrical system installation in the building. | Confirmed with Structural Engineer, building is Seismic Design Category B and seismic restraints are NOT required. | 11/27/18 | 4 |
| 115 | Perkins Eastman | 11/21/18 | SMC | 16 | CE Electrical Contr. | 1 | 11/19/18 | Please clarify the Electrical Scope for low voltage work<br>- Are we responsible for Communication Infrastructure wiring, wiring & terminations, or is it provided by others?<br>- Are we responsible for Audio Visual wiring, wiring & terminations, or is it provided by others?<br>- Are we responsible for Sound/Public Address System wiring, wiring & terminations, or is it provided by others?<br>- Are we responsible for Security System wiring, wiring & terminations, or is it provided by others? | All systems and cabling is part of the base bid. | 11/29/18 | 4 |
| 116 | Perkins Eastman | 11/21/18 | SMC | 9C | Joseph Cohn | 1 | 11/19/18 | Corridor C-107 calls for TZ-2. is this part of Alternate #2? What happens to existing terrazzo floors? | | | |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 117 | Rizzo | 11/21/18 | SMC | 16 | The NY-Conn Corp. | 7 | 11/20/18 | There are some areas of the existing concrete slab on grade that will have to be saw cut, trenched and patched in order to provide electrical and tele-com services to floor boxes, etc. Some of the areas where cutting into the existing slab will be required for Divisions 26,27 & 28 scopes of work, are not shown to be cut out on the architectural demolition drawings. Please clarify who will be responsible for saw cutting the existing slabs, trenching, then backfilling and restoring the slab for electrical floor boxes, services and the like, including any chipping and patching of existing foundations to allow new services to enter the existing building. | | | |
| 118 | Perkins Eastman | 11/21/18 | SMC | 16 | The NY-Conn Corp. | 6 | 11/20/18 | Specification Section 26 41 13-3.4-B, states that the Lightning Protection contrator is to provide the surge protection devices per UL96a We are assuming that this would include low voltage surge suppression devices for incoming telecommunication services. Typically surge protection for the incoming telecommunication services is provided and installed by the service provider, and the quantity and type of surge protection devices required is typically dictated by the quantity and type of service cables installed by the telecommunications service provider. That being the case, please clarify who will be responsible for furnishing the surge suppression devices on the incoming telecommunications services. If the lightning protection contractor is to furnish them, please provide all pertinent information regarding the incoming telecommunication service cables to be installed by the service provider for bidding purposes. | Assume 25 pair copper for bidding | 11/27/18 | 4 |
| 119 | Perkins Eastman | 11/21/18 | SMC | 9 | Central CT Acoustics | 3 | 11/20/18 | TR-1 on the finish schedule calls for 2" Axiom. Detail 3 on A-121 calls for 4". Please clarify. | Provide 4” | 11/29/18 | 4 |
| 120 | Perkins Eastman | 11/21/18 | SMC | 9 | Central CT Acoustics | 4 | 11/20/18 | WDC-1 on the interior finish schedule calls for 3" Armstrong Plank. Spec. Section 09 51 26 calls for Grille. Please clarify. | Follow as specified in section 09 51 26. | 11/29/18 | 4 |
| 121 | Rizzo | 11/21/18 | SMC | 6, 9 | Central CT Acoustics | 5 | 11/20/18 | Why is the FCU acoustical enclosure in our bid package? | BP#6 – General Trades shall furnish and install FCU enclosure. Delete from BP#9 – Acoustical Ceilings & Panels. | 11/30/18 | 4 |
| 122 | Perkins Eastman | 11/21/18 | SMC | 9 | Central CT Acoustics | 6 | 11/20/18 | What is the Spec for ACC-1? The hexagon floating clouds. | Provide “Soundscapes” by Armstrong or equal. | 11/29/18 | 4 |
| 123 | Perkins Eastman | 11/21/18 | SMC | 9 | Central CT Acoustics | 7 | 11/20/18 | Are the little hexagonal panels in the Gym the Tectum listed in Spec Section 09 84 13? | Yes. | 11/29/18 | 4 |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 124 | Perkins Eastman | 11/21/18 | SMC | 15 | AB Mechanical | 1 | 11/20/18 | On drawing numbers M-102A, M-103A, M-103B, M-103C there is a grid pattern noted on the ductwork drawings. The key note symbol notes sound attenuators but there are none noted or spec'd. Please advise. | M-602 provides a schedule for "HVAC SILENCERS". Supply-air / outdoor-air and return-air / exhaust-air silencers are designated for each unit. For example, DOAS-4 has two silencers with one supply-air / outdoor-air silencer tagged DOAS-4 S and one return-air / exhaust-air silencer tagged DOAS-4 R. Silencer labels have been revised on M-102A and M-103C. See attached sketches and spec section 23 33 00. | 11/27/18 | 4 |
| 125 | Perkins Eastman | 11/28/18 | SMC | 15 | Ferguson | 1 | 11/21/18 | Spec. Section 233113 Page 8, 2.5 – "Sheet Metal Materials" Paragraph F – "Factory or Shop applied Antimicrobial Coating." This isn't typically required and would lead to substantial increase in costs to the project. Is this required on these projects? | | | |
| 126 | Perkins Eastman | 11/28/18 | SMC | 15 | Ferguson | 2 | 11/21/18 | Spec. Section 233113 Page 10, 2.6 – "Duct Liner" Paragraph C, Item 9 – "Secure Insulation between perforated Sheet Metal Inner Duct". Is it the intent for all Lined Duct to be Double Wall? | | | |
| 127 | Perkins Eastman | 11/28/18 | SMC | 15 | Ferguson | 3 | 11/21/18 | Spec. Section230713 – Duct Insulation, Page26, 3.13- "Outdoor, Field-Applied Jacket Schedule". The specifications call for Stainless Steel Jacketing. Drawing M-502 Detail 1 has Aluminum Jacketing. Would a more cost effective Jacketing such as Flexglass 400 or Venture Clad 1577 CW be acceptable? Also, for the Exterior Duct Insulation can R-12, 2" Thick ISO Polystyrene Board be used in lieu of the specified 2" Thick 2 LB density Mineral Fiber Board? | | | |
| 128 | Perkins Eastman | 11/28/18 | SMC | 5 | Legere Group | 11 | 11/21/18 | Elevation 4, page A-552 shows a 3" locker filler panel. Material for this panel is not called out. Assuming material is metal. Please confirm. | Confirmed. | 11/29/18 | 4 |
| 129 | Perkins Eastman | 11/28/18 | SMC | 5 | Legere Group | 12 | 11/21/18 | BP5 owns the installation of the TB-4 tackboards shown at elevation 3/A-213. Please provide details of the installation method for these tackboards. | Install per spec section 10 11 00, 3.04. | 11/29/18 | 4 |
| 130 | Perkins Eastman | 11/28/18 | SMC | 12 | CT Lighting | 1 | 11/21/18 | Are Draper Shades acceptable for these schools? Draper is a major supplier to the commercial shade market. We are not substituting anything, we are supply as per spec with Draper. You have Mecho and Lutron as acceptable suppliers. Mecho motorized shades are 110volt and Lutron shades are low voltage. Please advise. | Provide shades as specified. | 11/29/18 | 4 |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 131 | Perkins Eastman | 11/28/18 | SMC | 15 | PD Mechanical | 3 | 11/26/18 | We need some clarity on the Zoeller sewage ejector pump. Specs call for a 6840, which is no longer available, it's been replaced with a 7011, however would you know the GPM @ 14' TDH. Also would you know the voltage and phase? The basin specified is floor mounted, which means double walled or free standing basin. Please advise. | | | |
| 132 | Perkins Eastman | 11/28/18 | SMC | 15 | MJ Daly | 45 | 11/26/18 | Spec 23 0713, paragraph 3.9: requests a qualified testing agency to perform tests and inspections? Please verify that the testing agency is provided by the owner or engineers rather than the HVAC Contractor? If being requested by the HVAC Contractors, please provide a list of acceptable firms to perform the testing (with assistance from the HVAC Insulation Contractor) for this project? | | | |
| 133 | Perkins Eastman | 11/28/18 | SMC | 15 | MJ Daly | 46 | 11/26/18 | Please advise if the CUH-9 shown on M-201 (on Stair 4) is the same CUH-9 as the one shown on MP-101C (on Stair 4), or if there are two CUH-9s being requested in that stairwell (one on first floor and one on the boiler room level)? Similarly, please advise if the UH-1 shown on M-201 (adjacent to Stair 5) is the same UH-1 as the one shown on MP-101C (adjacent to Stair 5), or if there are two UH-1s being requested near Stair 5 (one on first floor and one on the boiler room level)? | | | |
| 134 | Rizzo | 11/28/18 | SMC | 15 | MJ Daly | 47 | 11/26/18 | Equipment Screen is shown around DOAS-3 (Johnson School) on drawing M-103A. Please verify which Bid Package owns furnishing and installing this screen (assuming Misc. Metals)? If requested by the HVAC Contractor, please provide specs and schedule for the equipment screen, along with three approved manufacturers and confirm that equipment screen is only being requested for DOAS-3 at the Johnson Elementary School? | | | |
| 135 | Perkins Eastman | 11/28/18 | SMC | 7 | Silktown Roofing | 1 | 11/26/18 | Please provide a type of acoustical insulation (all elements) which need to be install by roofer. If this is a fiberglass butt insulation or composites assembly labor is lot different. | | | |
| 136 | Rizzo | 11/28/18 | SMC | 7 | Silktown Roofing | 2 | 11/26/18 | Roofing scope should include Ice& snow removal, as nobody can predict weather could you established fix allowance for this operation? | | | |
| 137 | Rizzo | 11/28/18 | SMC | 7 | Silktown Roofing | 3 | 11/26/18 | There is PCB and asbestos report for roofing, who is responsible to removing it? | | | |
| 138 | Rizzo | 11/28/18 | SMC | 7 | Silktown Roofing | 4 | 11/26/18 | Please confirm roofing contractor will be responsible for his own carting during reroofing? | | | |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 139 | Perkins Eastman | 11/28/18 | SMC | 1A | ACV Enviro | 1 | 11/26/18 | Can you provide the size and material of the underground tank to be removed? | The underground storage tank is a 10,000 gallon tank. The material of the tank is unknown. | 11/29/18 | 4 |
| 140 | Rizzo | 11/28/18 | SMC | 18 | Advantage Maintenance | 1 | 11/26/18 | Is the final cleaning contractor going to be responsible for stripping and wax flooring? | | | |
| 141 | Perkins Eastman | 11/28/18 | SMC | 15 | MJ Daly | 48 | 11/27/18 | Roof Ductwork Drawing M-502 Detail #1 calls for open weave glass fabric and mastic then metal jacket. We haven't used fabric and mastic in years. Can we qualify the 2" board then venture clad then the metal jacket? | | | |
| 142 | Rizzo | 11/28/18 | SMC | 1 | Standard Demolition | 1 | 11/26/18 | The schedule calls for removal of all the ACM flooring during summer of 2019. If the flooring is located under the millwork that gets removed at a later phase, how will this be handled? | | | |
| 143 | Rizzo | 11/28/18 | SMC | 2 | Standard Demolition | 2 | 11/26/18 | The specification required the contractor to perform TCLP testing for lead to determine if it is hazardous for lead. Please provide a new bid form with a unit cost for lead hazardous wastes. | | | |
| 144 | Rizzo | 11/28/18 | SMC | 3 | Standard Demolition | 3 | 11/26/18 | Will active containments for asbestos removal be allowed while school is in session? Removal will be performed only on 2nd and 3rd shift, not 1st shift. | | | |
| 145 | Rizzo | 11/28/18 | SMC | 4 | Standard Demolition | 4 | 11/26/18 | Who is responsible for weather protection at windows and new exterior openings? | | | |
| 146 | Perkins Eastman | 11/28/18 | SMC | 6, 8 | Park Roway | 1 | 11/27/18 | Opening 101.1 one is listed as a wood door with full glass, but has a note stating "Secure Vestibule. Level 4 Ballistic Entrance System" . The Bullet Resistant Entrance Spec ( 08 41 39 ) only lists Aluminum Assembly. Should this opening be treated as an aluminum entrance or a wood door? Please advise. | Aluminum. | 11/29/18 | 4 |
| 147 | Perkins Eastman | 11/28/18 | SMC | 4 | Steeltech Bldg. Products | 2 | 11/27/18 | In looking at the Alternate Curved Canopy, the Structural drawings show it as straight steel tube framing S-102b, but the Arch drawings A-323 call for radiused steel framing. Please advise. | Provide straight tube framing per structural plan. | 11/29/18 | 4 |
| 148 | Perkins Eastman | 11/28/18 | SMC | 12 | Ehrlich Interiors | 1 | 11/27/18 | Classrooms on drawing A-112b do not look like they receive any shades but all other classrooms do, instead of dotted lines to signify shades there are shaded in/ solid lines. Not sure if these rooms actually get shades or not. | All exterior windows shown on A-112b (except in rooms T207a and T207b and Stair 3) shall receive WT-1 shades. | 11/29/18 | 4 |
| 149 | Perkins Eastman | 11/28/18 | SMC | 12 | Ehrlich Interiors | 2 | 11/27/18 | Clarification is needed on the window types and shade types for the media center and maker space, some of the windows are not labeled and some do not have the shade type noted | All shades are WT-1, UNO. Add one 6'-0" WT-1 shade at east side of eastern CW8 (A-111a) | 11/29/18 | 4 |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 150 | Perkins Eastman | 11/28/18 | SMC | 12 | Ehrlich Interiors | 3 | 11/27/18 | Need clarification on any window treatments that are going in the ceiling/ sky lights, where do I find the sizes to those windows? | There are no Skylights in the project. | 11/29/18 | 4 |
| 151 | Perkins Eastman | 11/28/18 | SMC | 12 | Ehrlich Interiors | 4 | 11/27/18 | Can you confirm that the cafe, gym, maker space and media space are the only areas that get WT-2? | Refer to Contract documents. | 11/29/18 | 4 |
| 152 | Rizzo | 11/29/18 | SMC | 17 | Richard's Corp. | 1 | 11/27/18 | Please identify which bid package is responsible for the following items shown on sheet C-600.6:<br>1. Cast in place concrete stairs and walls<br>2. Brick veneer<br>3. Precast capstone<br>4. Handrails and guardrails | | | |
| 153 | Rizzo | 11/29/18 | SMC | 13 | Fire Rated | 1 | 11/27/18 | Are we to provide temporary fire protection during construction, since there are no existing fire protection systems? Please advise. | | | |
| 154 | Perkins Eastman | 11/29/18 | SMC | 12 | Turner Commercial | 1 | 11/27/18 | The depicted images for the roller shades does not always coincide with the related descriptions, i.e., many locations describe the shades with pockets but the images do not have pockets. Can/should all the shades be assumed to be provided with pockets for bidding purposes? | | | |
| 155 | Perkins Eastman | 11/29/18 | SMC | 12 | Turner Commercial | 2 | 11/27/18 | Please confirm the manual blackout shades indicated do NOT require side or sill channels. | | | |
| 156 | Perkins Eastman | 11/29/18 | SMC | 12 | Turner Commercial | 3 | 11/27/18 | Spec section 2.01.B & C both list two different fabric types, but the shades are all single banded shades.<br>For 2.01.B, WT-1 type shades, which is the correct fabric, the Euroveil (light-filtering) fabric, or the Thermoveil Blackout fabric?<br><br>For 2.01.C, WT-2 type shades, which is the correct fabric, the Euroveil (light-filtering) fabric, or the Thermoveil Blackout fabric? | | | |
| 157 | Perkins Eastman | 11/29/18 | SMC | 12 | Turner Commercial | 4 | 11/27/18 | The Thermoveil Blackout fabric must be identified from the blackout fabric options as one of the following fabrics: Classic Blackout, aka 700 Series; Distintive Blackout, aka 800 Series; Chelsea Blackout, or 250 Series; Equinox Blackout, or 100 Series; Midnite Blackout, or 200 Series. Which of these is the correct blackout fabric to use for correct pricing?<br><br>Will this fabric be used for both WT-1 & WT-2 type shades? | | | |
| 158 | Perkins Eastman | 11/29/18 | SMC | 9F | Mackenzie | 1 | 11/27/18 | Are the Custom Digital Wallcoverings going to be supplied by the owner, or are we to carry the material costs? | | | |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 159 | Perkins Eastman | 11/29/18 | SMC | 12A | Robert Lord | 1 | 11/27/18 | Subsection 1.02.A.1. Calls for wall attached stationary stands (Base Bid) and 1.02.A.2. Calls for wall attached telescoping stands (ADD Alternate). The issue is that the architectural drawing A-101c reflects two banks or two row bleacher. A two row bleacher does NOT telescope! That being said, how do we approach the request for the ADD alternate for telescoping stands? Do we add another row to make it a three row bleacher? | | | |
| 160 | Perkins Eastman | 11/29/18 | SMC | 12A | Robert Lord | 2 | 11/27/18 | Subsection 2.03.A.1. Calls for integral power with limit switches and motion monitor. If the project stays at two rows, then this option is not available. If we increase to three rows, you can supply said power but it will be expensive and would only move one row. This would be a savings on the electrical side as well. | | | |
| 161 | Perkins Eastman | 11/29/18 | SMC | 12A | Robert Lord | 3 | 11/27/18 | Subsection 2.03.D Calls for Manufacturers standard with transparent finish. It should be noted that the other manufacturers will only offer Polyethylene Top Coated decks that DO NOT meet FSC! | | | |
| 162 | Perkins Eastman | 11/29/18 | SMC | 12A | Robert Lord | 4 | 11/27/18 | Subsection 2.03.I Calls for Aisle Closures. These no longer exist due to the need for intermediate aisle steps and aisle handrails. | | | |
| 163 | Perkins Eastman | 11/29/18 | SMC | 9 | Central CT Acoustics | 8 | 11/27/18 | Please provide an item number, color and species for the wood grille ceilings. | | | |
| 164 | Perkins Eastman | 11/30/18 | SMC | 1A | ACV Enviro | 2 | 11/27/18 | Will there be an engineer on-site to oversee the tank removal and take samples or is that the responsibility of the contractor? | | | |
| 165 | Perkins Eastman | 11/30/18 | SMC | 9 | Central CT Acoustics | 9 | 11/27/18 | Please provide fabric and colors for wall panel types AP-1 thru Ap-4. | | | |
| 166 | Perkins Eastman | 11/30/18 | SMC | 2 | Manafort Bros. | 1 | 11/27/18 | S-101a footing schedule calls out the reinforcing requirements for the FC01 - FC05 footings. The bottom transverse bars are called out as (6) # 8 bars for the FC01 footing. This footing is 100LF long. Should these be installed at a certain spacing for the entire length of the footing? The same condition applies for footings FC02 - FC05. Can this be verified please with the engineer of record? | | | |
| 167 | Perkins Eastman | 11/30/18 | SMC | 9F | Mackenzie | 2 | 11/28/18 | At both schools the finish schedule indicates Wolf-Gordon as the manufacturer of the Custom Wall Graphics, but the Specifications mentions “Level custom graphics”. Wolf-Gordon Does not manufacturer Level one. Clarification is needed as we are in able to get pricing at this time. | | | |

# Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 168 | Rizzo | 11/30/18 | SMC | 7 | Barrett Roofing | 2 | 11/28/18 | Please verify which contractor is to furnish and install the Acoustical Elements for the Acoustical Metal Decking. | | | |
| 169 | Perkins Eastman | 11/30/18 | SMC | 7 | Barrett Roofing | 3 | 11/28/18 | Please verify the minimum R-Value required for the roof insulation system. Specifications state minimum 3.5" plus minimum ¼" thickness for tapered insulation for a total minimum thickness of 3.75". Also, notes on details state 4" minimum thickness. | | | |
| 170 | Rizzo | 11/30/18 | SMC | 7 | Barrett Roofing | 4 | 11/28/18 | Exhibit A – BP #7 – Roofing Scope of Work states a Fully Adhered EPDM Roofing System. Spec Section 075323 specifies a Mechanically Fastened EPDM Roof System. Please verify if the desired roof system is to be Fully Adhered EPDM or Mechanically Fastened EPDM. | | | |
| 171 | Rizzo | 11/30/18 | SMC | 5 | Steeltech Bldg. Products | 3 | 11/28/18 | Per our Bid Pkg. 4 Scope of Work, it states that we are responsible for the costs to identify and the removal of lead paint? Isn't Bid Pkg. #1 responsible for all costs relating to lead paint? | | | |
| 172 | Rizzo | 11/30/18 | SMC | All | Robert Lord | 5 | 11/28/18 | Do all Bid Packages have to carry Pollution Insurance? | | | |
| 173 | Rizzo | 11/30/18 | SMC | All | Horizon Services | 1 | 11/28/18 | If we submit a bid under $50,000 we do not need a bid bond. However, if we bid the same trade for both schools combined the combined bid will be over $50,000. Would we need a bond in this case? | | | |
| 174 | Perkins Eastman | 11/30/18 | SMC | 6 | Park Roway | 2 | 11/28/18 | Opening 139D is listed as a Hollow Metal narrow light door with an STC-55 rating. STC-55 is 3" thick, 23 lbs per square foot and not ADA 5 lbs operating force compliant. Should we offer 1-3/4" thick STC-53? Please advise. | | | |
| 175 | Perkins Eastman | 11/30/18 | SMC | 5 | Northeast Interior Syst | 2 | 11/28/18 | Detail shows a valence at bottom of wall cabinets. Cabinet elevations (open cabinets) do not show this valence. Is a valence required? | | | |
| 176 | Perkins Eastman | 11/30/18 | SMC | 5 | Northeast Interior Syst | 3 | 11/28/18 | Detail shows cabinet door and drawer pulls oriented horizontally and pulls and locks in specific locations.<br>1. Elevations show door pulls oriented vertically: which is correct?<br>2. Can our standard pull and lock locations be used to assure lock bolt operates correctly? (Distance from receiver/strike plate is critical). | | | |
| 177 | Perkins Eastman | 11/30/18 | SMC | 5 | Northeast Interior Syst | 4 | 11/28/18 | Detail shows mailbox box as 2" thick panel and horizontal shelves as 1" thick. For economy and consistency can mailbox components be made from 3/4" panel material? | | | |

## Pre-Bid RFI Log
## Phase 1 of 2

| RFI# | Sent To | Date | Sent By | BP# | Contractor | Contractor RFI # | Date Rec'd | Question | Answer | Ans. Date | Addendum # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 178 | Perkins Eastman | 11/28/18 | SMC | 5 | Northeast Interior Syst | 7 | 11/28/18 | Specification calls for KV 331 shelf support, which is a metal pin inserted into a hole bored in the cabinet side. This is consistent with all of the details on sheet A-551 except for 7/A-551, which calls for recessed metal standard shelf supports. Can the KV 331 shelf pin be used at all cabinet shelves including the full height wardrobe shown in 7/A-551? | | | |
| 179 | Perkins Eastman | 11/28/18 | SMC | 5 | Northeast Interior Syst | 8 | 11/28/18 | 2,4,6/A-552 various bench types are shown with metal support pedestals and wall-mount angle support brackets. This is rovided by BP#5 as indicated in RFI-096. Please identify required make and model.<br>What does the rectangle with the circle at the intersection of the bench top and front drop-edge represent? | | | |

# RFI FORM

**RFI NO.** 028

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/14/18

**FROM:** Danielle Baines
**COMPANY NAME:** Nova Wood Products Limited

**SUBJECT:** Solid Surface at Media Center

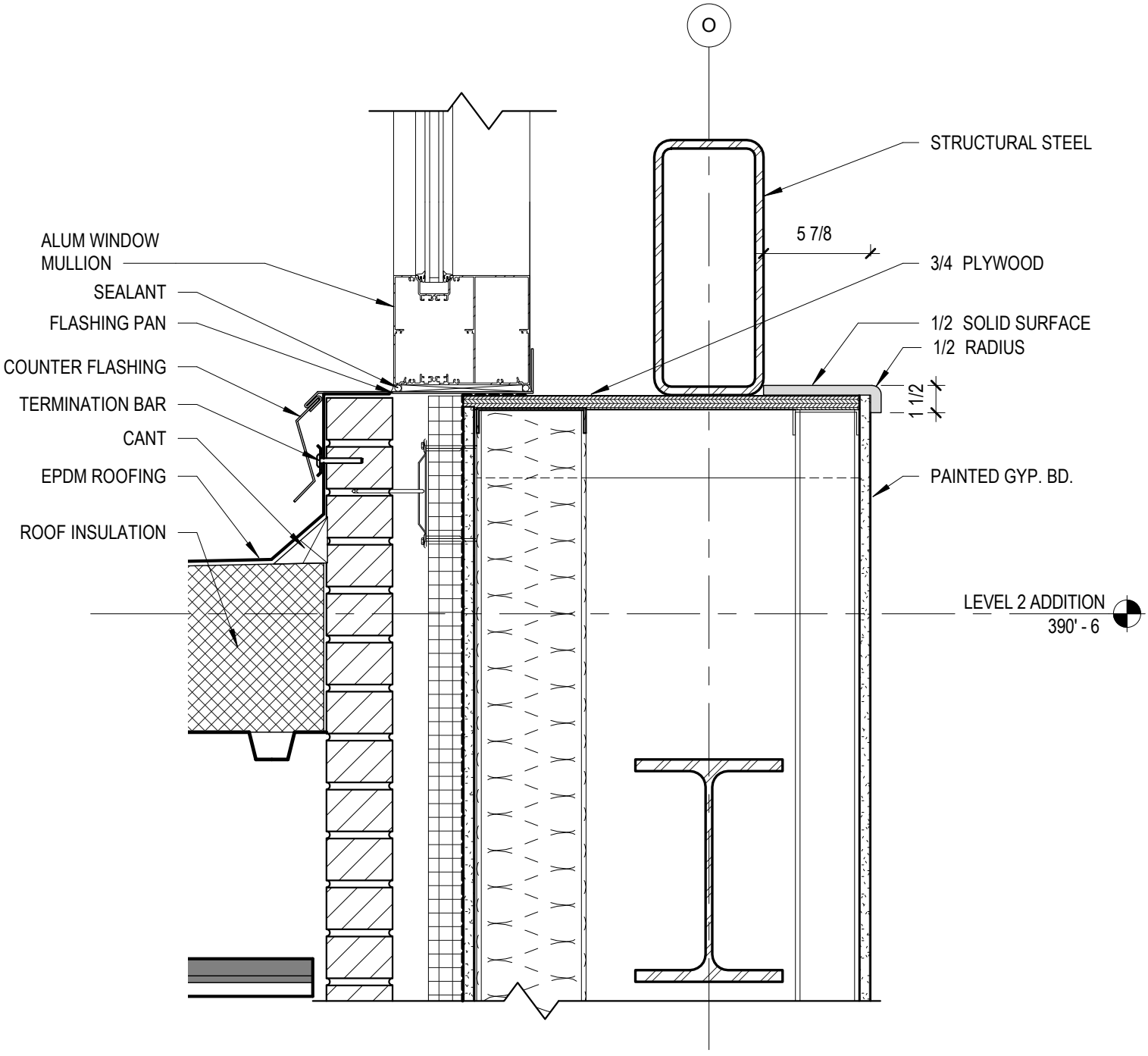
**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:** A-213/3

**QUESTION:**
There is a note on elevation A-213/2 for solid surface at the top of the wall in 124 Media Center. No section detail is provided. Please provide more information including dimensions, profile, and which solid surface colour.

**ANSWER:**
See attached sketch.

**RESPONSE BY:** Jon Seibert@PE **DATE:** 11/27/2018

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| | | | |
|---|---|---|---|
| PRO ECT | RALPH M. T. OHNSON ELEMENTARY SCHOOL ADDITIONS RENOVATIONS | PRO ECT NO. | 68962 |
| DRAWING TITLE | BID RFI 28/94 SECTION DETAIL AT MEDIA CENTER | SCALE | 1 1/2 1'-0 |
| DATE | ULY 27 2018 | DWG. NO. | **S A-001** |

# RFI FORM

**RFI NO.** 045

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/14/18

**FROM:** Danielle Baines
**COMPANY NAME:** Nova Wood Products Limited

**SUBJECT:** Information Desk

**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:** IN-601

**QUESTION:**
Interior Finish Schedule IN-601 says SS-2 is for INDICATED MILLWORK AND INFORMATION DESK. Where is SS-2 required?
a. SS-2 is not indicated on the drawings for either school
b. There is a note in the Rockwell drawings that suggests the circulation desk in the Media Center is also called the information desk. But the section details are the same ones used for the reception desk in the Admin Suite, which is not called an information desk. Neither desk is referred to as an information desk in the Johnson drawings.

**ANSWER:**
Use SS-2 for solid surface material indicated in details 1 and 2 on A-552

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 046

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/14/18

**FROM:** Danielle Baines
**COMPANY NAME:** Nova Wood Products Limited

**SUBJECT:** Reception & Circulation Desks

**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:** A-552

**QUESTION:**
Section details for the reception & circulation desks on A-552 (both drawing sets) show a PL-2 plastic laminate base with a ½" aluminum reveal in one detail (detail 1 in both sets) but an aluminum base with no reveal in the other detail (detail 2 at Johnson and detail 3 at Rockwell). Which is correct?

**ANSWER:**
Provide aluminum base as shown in Detail 2

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 050

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/14/18

**FROM:** Danielle Baines
**COMPANY NAME:** Nova Wood Products Limited

**SUBJECT:** Window Sills

**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:** A-610, A-611

**QUESTION:**
Please clarify which sill is required at each window type. Each drawing set has several different solid surface sill details. There are no sill detail tags on the window elevations on A-610 & A-611 in either drawing set to identify which sill goes at which window type. We are trying to work from building elevations to building & wall sections to determine which sills go where, but that is difficult. We're assuming all windows in the same stretch of wall have the same sill detail. Some walls do not have any section tags, so we're trying to determine the wall type by looking at the building exteriors so we can match it to the description in the sill detail titles. Some walls are not shown on the building exteriors. In addition, there are several locations that have inconsistent/contradictory information provided.

**ANSWER:**
The sill details for the following exterior windows are:

Detail 1 / A-321: CW7b, CW7c, CW8, CW9, ST5R, ST5L, ST18a, ST18b, ST18c, ST19R, ST19L.

Detail 4 / A-321: CW2a, CW13, ST1, ST2a, ST2b, ST3, ST4a, ST4b, ST4c, ST6R, ST6L, ST7, ST8, ST9, ST11, ST12, ST13, ST14, ST16, ST17.

**RESPONSE BY:** Jon Seibert PE **DATE:** Nov. 27, 2018

# RFI FORM

**RFI NO.** 056

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/16/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** HVAC Equipment

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** 23 74 16

**QUESTION:**
Please confirm that the Roof Top Units and DOAS are using the same specification (23 74 16). Also please provide a specification for the Make Up Air Units (MAU-1s), as they are only listed in the mechanical equipment schedules.

**ANSWER:**
Yes, specification for RTUs and DOAS units are the same, with requirements in section 23 74 16. See new spec section 23 74 23 "Packaged, Direct-Fired, Outdoor, Heating-Only Makeup-Air Units"

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# SECTION 23 7423

# PACKAGED, DIRECT-FIRED, OUTDOOR, HEATING-ONLY MAKEUP-AIR UNITS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. Section includes outdoor, direct, gas-fired heating-only, makeup air units, including the following components:

1. Casings.
2. Outdoor-air intake hood.
3. Roof curbs.
4. Fans, drives, and motors.
5. Air filtration.
6. Dampers.
7. Direct, gas-fired burners.
8. Unit control panel.
9. Controls.
10. Accessories.

### 1.3 ACTION SUBMITTALS

A. Product Data: For each outdoor, direct, gas-fired heating-only, makeup air unit.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
3. Include unit dimensions and weight.
4. Include cabinet material, metal thickness, finishes, insulation, and accessories.
5. Fans:

a. Include certified fan-performance curves with system operating conditions indicated.
b. Include certified fan-sound power ratings.
c. Include fan construction and accessories.
d. Include motor ratings, electrical characteristics, and motor accessories.

6. Include filters with performance characteristics.
7. Include direct, gas-fired burners with performance characteristics.
8. Include dampers, including housings, linkages, and operators.

B. Sustainable Design Submittals:

1. Product data showing compliance with ASHRAE 62.1.
2. Product Data: For air filtration performance.
3. Product Data: For adhesives, mastics, and sealants, indicating VOC content.
4. Laboratory Test Reports: For adhesives, mastics, and sealants, indicating compliance with requirements for low-emitting materials.

C. Shop Drawings: For each outdoor, direct, gas-fired, heating-only, makeup air unit.

1. Include plans, elevations, sections, and mounting or attachment details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Detail fabrication and assembly of gas-fired heating and ventilating units, as well as procedures and diagrams.
4. Include diagrams for power, signal, and control wiring.

D. Delegated-Design Submittal: For vibration isolation and seismic restraints indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Include design calculations for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.

## 1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Floor plans and other details, or BIM model, drawn to scale, showing the items described in this Section, and coordinated with all building trades.

B. Sample Warranty: For manufacturer's warranty.

C. Seismic Qualification Data: Certificates for outdoor, direct, gas-fired, heating-only, makeup air units, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
4. Restraint of internal components.

D. Product Certificates: Submit certification that specified equipment will withstand wind forces identified in "Performance Requirements" Article and in Section 230548 "Vibration and Seismic Controls for HVAC."

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculations.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of wind force and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

E. Startup service reports.

F. Field quality-control reports.

## 1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For direct, gas-fired, heating-only, makeup air units to include in emergency, operation, and maintenance manuals.

## 1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Filters: One set(s) for each unit.
2. Gaskets: One set(s) for each access door.
3. Fan Belts: One set(s) for each unit.

## 1.7 WARRANTY

A. Warranty: Manufacturer agrees to repair or replace components of direct-fired heating and ventilating units that fail in materials or workmanship within specified warranty period.

1. Warranty Period for Entire Unit: Manufacturer's standard, but not less than one year(s) from date of Substantial Completion.

2. Warranty Period for Burners: Manufacturer's standard, but not less than 10 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by an NRTL, and marked for intended location and application.

B. NFPA Compliance: Comply with NFPA 90A for design, fabrication, and installation of units and components.

C. ASHRAE 62.1 Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."

D. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."

E. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design vibration isolation and seismic restraints, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

F. Seismic Performance: Indoor, indirect gas-fired, heating and ventilating units shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
2. Component Importance Factor: 1.0.

### 2.2 MANUFACTURERS

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

1. CaptiveAire Systems.
2. Greenheck Fan Corporation.
3. RuppAir.

### 2.3 UNIT CASINGS

A. General Fabrication Requirements for Casings:

1. Forming: Form walls, roofs, and floors with at least two breaks at each joint.
2. Casing Joints: Sheet metal screws or pop rivets, factory sealed with water-resistant sealant.
3. Makeup Air Unit Mounting Frame: Formed galvanized-steel channel or structural channel supports, designed for low deflection, welded with integral lifting lugs.

B. Configuration: Horizontal unit with horizontal or bottom discharge for roof-mounting installation.

C. Double-Wall Construction:

1. Outside Casing Wall: Galvanized steel, minimum 20 gauge thick, with manufacturer's standard finish.
2. Inside Casing Wall:

    a. Inside Casing, Burner Section: Galvanized steel, solid, minimum 14-gauge- thick steel.
    b. Inside Casing, All Other Sections: Galvanized steel solid steel.

3. Floor Plate: Galvanized steel, minimum 20 gauge thick.
4. Casing Insulation:

    a. Materials: Foil faced, glass-fiber blanket or board insulation, Type I or Type II ASTM C1071.
    b. Insulation Thickness: 1 inch.
    c. Thermal Break: Provide continuity of insulation with no through-casing metal in casing walls, floors, or roof of unit.

5. Airstream Surfaces: Surfaces in contact with airstream shall comply with requirements in ASHRAE 62.1.

D. Panels and Doors:

1. Panels:

    a. Fabrication: Formed and reinforced, with same materials and insulation thickness as casing.
    b. Fasteners: Two or more camlock type for panel lift-out operation. Arrangement shall allow panels to be opened against airflow.
    c. Gasket: Neoprene, applied around entire perimeters of panel frames.
    d. Size: Large enough to allow unobstructed access for inspection and maintenance of unit's internal components.

2. Doors:

    a. Fabrication: Formed and reinforced with same materials and insulation thickness as casing.

b. Hinges: A minimum of two ball-bearing hinges or stainless steel piano hinge and two wedge-lever-type latches, operable from inside and outside. Arrange doors to be opened against airflow. Provide safety latch retainers on doors so that doors do not open uncontrollably.
c. Gasket: Neoprene, applied around entire perimeters of panel frames.
d. Size: Large enough to allow unobstructed access for inspection and maintenance of unit's internal components.

3. Locations and Applications:

a. Fan Section: Doors.
b. Access Section: Doors.
c. Gas-Fired Burner Section: Doors.
d. Damper Section: Doors.
e. Filter Section: Doors large enough to allow periodic removal and installation of filters.
f. Mixing Section: Doors.

## 2.4 OUTDOOR-AIR INTAKE HOOD

A. Type: Manufacturer's standard hood or louver.

B. Materials: Match cabinet.

C. Bird Screen: Comply with requirements in ASHRAE 62.1.

D. Filter: Aluminum, 2 inches cleanable.

E. Configuration: Designed to inhibit wind-driven rain and snow from entering unit.

## 2.5 ROOF CURBS

A. Roof curbs with vibration isolators and wind or seismic restraints are specified in Section 230548 "Vibration and Seismic Controls for HVAC."

B. Materials: Galvanized steel with corrosion-protection coating, watertight gaskets, and factory-installed wood nailer; complying with NRCA standards.

1. Curb Insulation and Adhesive: Comply with NFPA 90A or NFPA 90B.

a. Materials: ASTM C1071, Type I or Type II.
b. Thickness: 1 inch.

2. Application: Factory applied with adhesive and mechanical fasteners to the internal surface of curb.

a. Liner Adhesive: Comply with ASTM C916, Type I.
b. Mechanical Fasteners: Galvanized steel, suitable for adhesive attachment, mechanical attachment, or welding attachment to duct without damaging liner when applied as recommended by manufacturer and without causing leakage in cabinet.
c. Liner materials applied in this location shall have air-stream surface coated with a temperature-resistant coating or faced with a plain or coated fibrous mat or fabric depending on service air velocity.
d. Liner Adhesive: Comply with ASTM C916, Type I.

C. Curb Height: 20 inches.

D. Wind and Seismic Restraints: Metal brackets compatible with the curb and casing, painted to match unit, used to anchor unit to the curb, and designed for loads at Project site. Comply with requirements in Section 230548 "Vibration and Seismic Controls for HVAC" for wind-load requirements.

## 2.6 FANS, DRIVES, AND MOTORS

A. Fan and Drive Assemblies: Statically and dynamically balanced and designed for continuous operation at maximum-rated fan speed and motor horsepower.

B. Fans: Centrifugal, rated according to AMCA 210; galvanized steel; mounted on solid-steel shaft.

1. Shafts: With field-adjustable alignment.
2. Shaft Bearings: Heavy-duty with an L50 rated life of 200,000 hours according to ABMA 9.
3. Housings: Formed- and reinforced-steel panels to form curved scroll housings with shaped cutoff and spun-metal inlet bell.
4. Mounting: For internal vibration isolation and seismic control. Factory-mount fans with manufacturer's standard restrained vibration isolation mounting devices having a minimum static deflection of 1 inch.
5. Shaft Lubrication Lines: Extended to a location outside the casing.
6. Flexible Connector: Factory fabricated with a fabric strip minimum 3-1/2 inches wide, attached to two strips of minimum 2-3/4-inch-wide by 0.028-inch-thick, galvanized-steel sheet.

a. Flexible Connector Fabric: Glass fabric, double coated with neoprene. Fabrics, coatings, and adhesives shall comply with UL 181, Class 1.

C. Drives: Factory-mounted V-belt drive, with adjustable alignment and belt tensioning, and with 1.5 or 1.25 service factor based on fan motor.

1. Pulleys: Cast iron or cast steel with split, tapered bushing, dynamically balanced at the factory.

2. Belts: Oil resistant, non-sparking and nonstatic; in matched sets for multiple-belt drives.
3. Belt Guards: Comply with requirements specified by OSHA and fabricate according to SMACNA's "HVAC Duct Construction Standards"; 0.146-inch-thick, 3/4-inch diamond-mesh wire screen, welded to steel angle frame; prime coated.

D. Motors:

1. Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
2. Motor Sizes: Maximum sizes as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
3. Enclosure: Open, drip proof.
4. Motor Pulleys: Adjustable pitch for use with 5-hp motors and smaller; fixed pitch for use with motors larger than 5 hp. Select pulley size so pitch adjustment is at the middle of adjustment range at fan design conditions.

## 2.7 AIR FILTRATION

A. Panel Filters:

1. Description: Pleated factory-fabricated, self-supported, disposable air filters with holding frames.
2. Filter Unit Class: UL 900.
3. Media: Interlaced glass, synthetic or cotton fibers coated with nonflammable adhesive and antimicrobial coating.
4. Filter-Media Frame: Beverage board with perforated metal retainer, or metal grid, on outlet side.

B. Cleanable Filters:

1. Cleanable aluminum mesh.

C. Adhesive, Sustainability Projects: As recommended by air-filter manufacturer and with a VOC content of 80 g/L or less.

D. Adhesive, LEED for Schools Projects: As recommended by air-filter manufacturer and that complies with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

E. Side-Access Filter Mounting Frames:

1. Particulate Air Filter Frames: Match inner casing and outer casing material, and insulation thickness. Galvanized steel track.

a. Sealing: Incorporate positive-sealing device to ensure seal between gasketed material on channels to seal top and bottom of filter cartridge frames to prevent bypass of unfiltered air.

## 2.8 DAMPERS

A. Dampers: Comply with requirements in Section 230923.12 "Control Dampers."

B. Outdoor-Air Dampers: Low-leakage, double-skin, airfoil-blade, galvanized-steel dampers with compressible jamb seals and extruded-vinyl blade edge seals in opposed-blade or parallel-blade arrangement with zinc-plated steel operating rods rotating in sintered bronze or nylon bearings mounted in a single galvanized-steel frame, and with operating rods connected with a common linkage. Leakage rate shall not exceed 4 cfm/sq. ft. at 1-inch wg and 8 cfm/sq. ft. at 4-inch wg rated in accordance with AMCA 500D.

C. Damper Operators: Comply with requirements in Section 230923 "Direct Digital Control (DDC) System for HVAC."

D. Electronic Damper Operators:

1. Direct-coupled type designed for minimum 60,000 full-stroke cycles at rated torque.
2. Electronic damper position indicator shall have visual scale indicating percent of travel and 2- to 10-V dc, feedback signal.
3. Operator Motors:

    a. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
    b. Size to operate with sufficient reserve power to provide smooth modulating action or two-position action.
    c. Permanent Split-Capacitor or Shaded-Pole Type: Gear trains completely oil immersed and sealed. Equip spring-return motors with integral spiral-spring mechanism in housings designed for easy removal for service or adjustment of limit switches, auxiliary switches, or feedback potentiometer.

4. Nonspring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running torque of 150 in. x lbf and breakaway torque of 300 in. x lbf.
5. Spring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running and breakaway torque of 150 in. x lbf.
6. Size dampers for running torque calculated as follows:

    a. Parallel-Blade Damper with Edge Seals: 7 inch-lb/sq. ft. of damper.
    b. Opposed-Blade Damper with Edge Seals: 5 inch-lb/sq. ft. of damper.
    c. Parallel-Blade Damper without Edge Seals: 4 inch-lb/sq. ft of damper.
    d. Opposed-Blade Damper without Edge Seals: 3 inch-lb/sq. ft. of damper.

e. Dampers with 2- to 3-Inch wg of Pressure Drop or Face Velocities of 1000 to 2500 fpm: Increase running torque by 1.5.
f. Dampers with 3- to 4-Inch wg of Pressure Drop or Face Velocities of 2500 to 3000 fpm: Increase running torque by 2.0.

7. Coupling: V-bolt and V-shaped, toothed cradle.
8. Overload Protection: Electronic overload or digital rotation-sensing circuitry.
9. Fail-Safe Operation: Mechanical, spring-return mechanism with external, manual gear release on nonspring-return actuators.
10. Power Requirements (Two-Position Spring Return): 24 V dc.
11. Power Requirements (Modulating): Maximum 10 VA at 24 V ac or 8 W at 24 V dc.
12. Proportional Signal: 2 to 10 V dc or 4 to 20 mA, and 2- to 10-V dc position feedback signal.
13. Temperature Rating: Minus 22 to plus 122 deg F.
14. Run Time: 12 seconds open, 5 seconds closed.

## 2.9 DIRECT-FIRED GAS BURNER

A. Description: Factory assembled, piped, and wired; and complying with ANSI Z21.47 and with NFPA 54.

B. CSA Approval: Designed and certified by and bearing label of CSA.

C. Burners: Aluminized steel with stainless-steel inserts.

1. Rated Minimum Turndown Ratio: 30 to 1.
2. Fuel: Natural gas.
3. Ignition: Electronically controlled electric spark with flame sensor.
4. Gas Control Valve: Modulating.
5. Gas Train: Regulated, redundant, 24-V ac gas valve assembly containing pilot solenoid valve, electronic-modulating temperature control valve, pilot filter, pressure regulator, pilot shutoff, and manual shutoff all in one body.

D. Safety Controls:

1. Gas Manifold: Safety switches and controls complying with ANSI standards and FM Global.
2. Vent Flow Verification: Differential pressure switch to verify open vent or flame rollout switch.
3. High Limit: Thermal switch or fuse to stop burner.
4. Purge-period timer shall automatically delay burner ignition and bypass low-limit control.
5. Airflow Proving Switch: Differential pressure switch senses correct airflow before energizing pilot.
6. Automatic-Reset, High-Limit Control Device: Stops burner and closes main gas valve if high-limit temperature is exceeded.

7. Safety Lockout Switch: Locks out ignition sequence if burner fails to light after three tries. Controls are reset manually by turning the unit off and on.
8. Control Transformer: 24 V ac.

## 2.10 UNIT CONTROL PANEL

A. Factory-wired, fuse-protected control transformer, connection for power supply and field-wired unit to remote control panel.

B. Control Panel: Surface-mounted or recessed with trim ring, remote panel, with engraved plastic cover and the following lights and switches:

1. On-off-auto fan switch.
2. Heat-vent-off switch.
3. Supply-fan operation indicating light.
4. Heating operation indicating light.
5. Thermostat.
6. Damper position potentiometer.
7. Dirty-filter indicating light operated by unit-mounted differential pressure switch.
8. Safety-lockout indicating light.
9. Enclosure: NEMA 250, Type 3R or Type 4.

## 2.11 CONTROLS

A. Comply with requirements in Section 230923 "Direct Digital Control (DDC) System for HVAC" and Section 230993 "Sequence of Operations for HVAC DDC" for control equipment and sequence of operation.

B. Control Devices:

1. Remote Thermostat: Adjustable room thermostat with temperature readout.
2. Remote Setback Thermostat: Adjustable room thermostat without temperature readout.
3. Static-Pressure Transmitter: Nondirectional sensor with suitable range for expected input, and temperature compensated.
4. Fire-Protection Thermostats: Fixed or adjustable settings to operate at not less than 75 deg F above normal maximum operating temperature.
5. Timers, Seven Day:

    a. Programming-switch timer with synchronous-timing motor and seven-day dial.
    b. Continuously charged, nickel-cadmium-battery-driven, eight-hour, power-failure carryover.
    c. Multiple-switch trippers.
    d. Minimum of two and maximum of eight signals per day with two normally open and two normally closed output contacts.

6. Timers, Solid State:

    a. Programmable time control with four separate programs.
    b. 24-hour battery carryover.
    c. Individual on-off-auto switches for each program.
    d. 365-day calendar with 20 programmable holidays.
    e. Choice of fail-safe operation for each program.
    f. System fault alarm.

7. Ionization-Type Smoke Detectors:

    a. 24-V dc, nominal.
    b. Self-restoring.
    c. Plug-in arrangement.
    d. Integral visual-indicating light.
    e. Sensitivity that can be tested and adjusted in place after installation.
    f. Integral addressable module.
    g. Remote controllability.
    h. Responsive to both visible and invisible products of combustion.
    i. Self-compensating for changes in environmental conditions.

C. Fan Control, Interlocked: Fan to start with exhaust fan(s) to which this heating and ventilating unit is associated for makeup air.

D. Fan Control, Timer: Timer starts and stops direct-fired heating and ventilating unit and exhaust fan(s).

E. Outdoor-Air Damper Control, 100 Percent Outdoor-Air Units: Outdoor-air damper shall open when supply fan starts, and close when fan stops.

F. Temperature Control:

1. Operates gas valve to maintain discharge-air temperature with factory-mounted sensor in blower outlet.
2. Operates gas valve to maintain space temperature with wall-mounting, field-wired sensor with temperature adjustment, and adjustment on remote-control panel.
3. Burner Control, Modulating: 20 to 100 percent modulation of the firing rate. 10 to 100 percent with dual burner units.

G. Interface with DDC System for HVAC: Factory-installed hardware and software to enable the DDC system for HVAC to monitor, control, and display status and alarms of heating and ventilating unit.

1. ASHRAE 135.1 (BACnet) communication interface with the DDC system for HVAC shall enable the DDC system for HVAC operator to remotely control and monitor the heating and ventilating unit from an operator workstation. Control features and

monitoring points displayed locally at heating and ventilating unit control panel shall be available through the DDC system for HVAC.

## 2.12 ACCESSORIES

A. Electric heater with integral thermostat maintains minimum 50 deg F temperature in gas burner compartment.

B. Duplex, 115-V, ground-fault-interrupter outlet with 15-A overcurrent protection. Include transformer if required.

C. Filter differential pressure switch with sensor tubing on either side of filter. Set for final filter pressure loss.

## 2.13 MATERIALS

A. Steel:

1. ASTM A36/A36M for carbon structural steel.
2. ASTM A568/A568M for steel sheet.

B. Stainless Steel:

1. Manufacturer's standard grade for casing.
2. Manufacturer's standard type, ASTM A240/A240M for bare steel exposed to airstream or moisture.

C. Galvanized Steel: ASTM A653/A653M.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for piping, ducts, and electrical systems to verify actual locations of piping and electrical connections before equipment installation.

C. Verify cleanliness of airflow path to include inner-casing surfaces, filters, coils, turning vanes, fan wheels, and other components.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 INSTALLATION

A. Roof Curb: Install on roof structure or concrete base, level and secure, according to NRCA's "NRCA Roofing Manual: Membrane Roof Systems" or AHRI Guideline B. Install units on curbs and coordinate roof penetrations and flashing with roof construction specified in Section 077200 "Roof Accessories." Secure units to upper curb rail, and secure curb base to roof framing or concrete base with anchor bolts. Coordinate sizes and locations of roof curbs with actual equipment.

1. Comply with requirements for vibration isolation and seismic-control devices specified in Section 230548 "Vibration and Seismic Controls for HVAC."

B. Install gas-fired units according to NFPA 54, "National Fuel Gas Code."

C. Install controls and equipment shipped by manufacturer for field installation with direct-fired heating and ventilating units.

## 3.3 PIPING CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

1. Gas Piping: Comply with requirements in Section 231124 "Fuel Gas Piping." Connect gas piping with shutoff valve and union, and with sufficient clearance for burner removal and service. Make final connections of gas piping to unit with corrugated, stainless-steel tubing flexible connectors complying with ANSI LC 1/CSA 6.26 equipment connections.

B. Drain: Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for traps and accessories on piping connections to condensate drain pans under condensing heat exchangers.

C. Where installing piping adjacent to heating and ventilating units, allow space for service and maintenance.

## 3.4 DUCT CONNECTIONS

A. Duct Connections: Connect supply ducts to direct-fired heating and ventilating units with flexible duct connectors. Comply with requirements in Section 233300 "Air Duct Accessories" for flexible duct connectors.

## 3.5 ELECTRICAL CONNECTIONS

A. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

B. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

C. Install electrical devices furnished by manufacturer, but not factory mounted, according to NFPA 70 and NECA 1.

D. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.

1. Nameplate shall be laminated acrylic or melamine plastic signs, as specified in Section 260553 "Identification for Electrical Systems."
2. Nameplate shall be laminated acrylic or melamine plastic signs with a black background and engraved white letters at least 1/2 inch high.

## 3.6 CONTROL CONNECTIONS

A. Install control and electrical power wiring to field-mounted control devices.

B. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

## 3.7 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

B. Complete installation and startup checks according to manufacturer's written instructions and perform the following:

1. Inspect for visible damage to burner combustion chamber.
2. Inspect casing insulation for integrity, moisture content, and adhesion.
3. Verify that clearances have been provided for servicing.
4. Verify that controls are connected and operable.
5. Verify that filters are installed.
6. Purge gas line.
7. Inspect and adjust vibration isolators and seismic restraints.
8. Verify bearing lubrication.
9. Inspect fan-wheel rotation for movement in correct direction without vibration and binding.
10. Adjust fan belts to proper alignment and tension.

C. Start unit according to manufacturer's written instructions.

1. Complete startup sheets and attach copy with Contractor's startup report.
2. Inspect and record performance of interlocks and protective devices; verify sequences.
3. Operate unit for run-in period recommended by manufacturer.

4. Perform the following operations for both minimum and maximum firing, and adjust burner for peak efficiency:

    a. Measure gas pressure at manifold.
    b. Measure combustion-air temperature at inlet to combustion chamber.
    c. Measure supply-air temperature and volume when burner is at maximum firing rate and when burner is off. Calculate useful heat to supply air.

5. Calibrate thermostats.
6. Adjust and inspect high-temperature limits.
7. Inspect dampers, if any, for proper stroke and interlock with return-air dampers.
8. Inspect controls for correct sequencing of heating, mixing dampers, refrigeration, and normal and emergency shutdown.
9. Measure and record airflow. Plot fan volumes on fan curve.
10. Verify operation of remote panel, including pilot-operation and failure modes. Inspect the following:

    a. High-limit heat.
    b. Alarms.

11. After startup and performance testing, change filters, verify bearing lubrication, and adjust belt tension.
12. Verify drain-pan performance.
13. Verify outdoor-air damper operation.

## 3.8 ADJUSTING

A. Adjust initial temperature set points.

B. Set field-adjustable switches and circuit-breaker trip ranges as indicated.

C. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

## 3.9 CLEANING

A. After completing system installation and testing, adjusting, and balancing makeup air unit and air-distribution systems and after completing startup service, clean air-handling units internally to remove foreign material and construction dirt and dust. Clean fan wheels, cabinets, dampers, coils, and filter housings, and install new, clean filters.

3.10 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

B. Units will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

3.11 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain heating and ventilating units.

END OF SECTION 237423

# RFI FORM

**RFI NO.** 061

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/16/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Cabinet Unit Heaters & Unit Heaters

**DISCIPLINE/TRADE:** BP#15 - HVAC

**DWG./SPEC. REFERENCE:** 23 82 39.13 & 23 82 39.16

**QUESTION:**
Can Rittling, Vulcan & Sterling be added as approved manufacturers for the Cabinet Unit Heaters and Unit Heaters? There are currently quite a few manufacturers listed in the spec that cannot meet the spec or listed scheduled data. Also, Rittling is shown on the schedule but not approved in the spec?

**ANSWER:**
Rittling and Sterling are acceptable manufacturers for Cabinet Unit Heaters and Unit Heaters. Vulcan is not acceptable.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 062

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/16/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Baseboard Radiation

**DISCIPLINE/TRADE:** BP#15 - HVAC

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Please provide a spec for the baseboard radiation (BB-1) for accurate vendor pricing and please advise if Sterling & Rittling can be added as approved manufacturers?

**ANSWER:**
See new spec section 23 82 29 "Radiators". We are not aware that Rittling or Sterling manufacture flat-pipe steel radiators equivalent to the specified Runtal radiators. Provide manufacturer per 23 82 29.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# SECTION 23 8229

# RADIATORS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. Section includes flat-pipe steel radiators.

### 1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, furnished specialties, and accessories.

B. Shop Drawings:

1. Include plans, elevations, sections, and details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Indicate location and size of each field connection.
4. Indicate location and arrangement of piping valves and specialties.
5. Indicate location and arrangement of integral controls and other accessories.

C. Samples: For each exposed product and for each color and texture specified.

D. Color Samples for Initial Selection: For radiators with factory-applied color finishes.

E. Color Samples for Verification: For each type of exposed finish.

### 1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Floor plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Structural members, including wall construction, to which radiators will be attached.
2. Method of attaching radiators to building structure.
3. Penetrations of fire-rated wall and floor assemblies.

B. Field quality-control reports.

## PART 2 - PRODUCTS

### 2.1 FLAT-PIPE STEEL RADIATORS

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

1. Hydro-Air Components Inc.
2. Quincy Hydronic Technology Inc.
3. Runtal North America, Inc.

B. Heating Elements: Steel, welded and formed into flat, square, steel header with minimum thickness of 0.109 inch. Include threaded piping and air-vent connections.

1. Working Pressure: 128 psig.

C. Mounting: Wall brackets or floor pedestals with maximum spacing of 36 inches.

D. Finish: Baked-enamel finish in manufacturer's custom color as selected by Architect.

E. Accessories:

1. Steel piping covers finished to match radiator finish.
2. Flexible Expansion Compensation Hoses: Minimum 400-psig working pressure, and operating temperatures from 33 to 211 deg F.

a. Minimum Diameter: Equal to connection size.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine areas to receive radiators for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for hydronic-piping connections to verify actual locations before installation of radiators.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 INSTALLATION

A. Install units level and plumb.

B. Install expansion compensation hoses.

C. Install piping covers.

## 3.3 CONNECTIONS

A. Piping installation requirements are specified in Section 232113 "Hydronic Piping" and Section 232116 "Hydronic Piping Specialties." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect radiators and components to piping according to Section 232113 "Hydronic Piping" and Section 232116 Hydronic Piping Specialties."

1. Install shutoff valves on inlet and outlet, and balancing valve on outlet.

C. Install control valves as required by Section 230923 " Direct Digital Control (DDC) System for HVAC."

D. Install piping adjacent to radiators to allow service and maintenance.

## 3.4 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

B. Units will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION 238229

# RFI FORM

**RFI NO.** 067

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/16/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Hydronic Piping

**DISCIPLINE/TRADE:** BP#15 - HVAC

**DWG./SPEC. REFERENCE:** 23 21 13

**QUESTION:**
Please advise if Grooved Piping Systems (Victaulic, Anvil, etc.,) would be acceptable for all aboveground hydronic piping 2-1/2" and larger in lieu of welded systems? Additionally, please advise if ProPress Copper Systems (Viega, Nibco, etc.,) would be acceptable for hydronic piping systems including condensate systems for piping 2" and smaller? ProPress shown under section 2.2, but not shown as an option under the piping application section 3.1?

**ANSWER:**
No, grooved piping systems for steel and ProPress copper systems for copper piping are not acceptable. Bids to include piping as required by 23 21 13 Paragraph 3.1.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 068

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/16/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** VFD Drives

**DISCIPLINE/TRADE:** BP#15 - HVAC

**DWG./SPEC. REFERENCE:** 26 29 23

**QUESTION:**
Can Danfoss & Yaskawa be added as approved manufacturers for the VFD drives? 3 approved manufacturers are usually needed on public projects, unless this is a proprietary spec?

**ANSWER:**
ABB Low Voltage HVAC Drives are required by the building owner. Danfoss and Yaskawa are not acceptable to the owner.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 072

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/16/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** CAD Drawing Fees

**DISCIPLINE/TRADE:** BP#15 - HVAC

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Are there any associated CAD fees with signing over the release forms from the Architect to start our 3D coordination?

**ANSWER:**
No.

**RESPONSE BY:** Jon Seibert PE **DATE:** Nov. 27, 2018

# RFI FORM

**RFI NO.** 082

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/19/18

**FROM:** John
**COMPANY NAME:** Legere Group

**SUBJECT:** Cabinet Interiors

**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:** 3/A-551

**QUESTION:**
On 3/A-551 the interiors of cabinets are melamine. Spec p.839 of Volume 2,, semi-exposed surfaces will use high-pressure decorative laminate. Please advise.

**ANSWER:**
Provide high pressure decorative laminate.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 083

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/19/18

**FROM:** John
**COMPANY NAME:** Legere Group

**SUBJECT:** Accent Panels

**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:** 1/A-551

**QUESTION:**
1/A-551 mentions a "PL-4 painted accent panel." Please elaborate.

**ANSWER:**
Disregard the word “painted.”

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/28/2018

# RFI FORM

**RFI NO.** 084

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/19/18

**FROM:** John
**COMPANY NAME:** Legere Group

**SUBJECT:** Locks

**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:** 60 40 23

**QUESTION:**
Spec p.837 of Volume 2 , there are "locks on all cabinet doors and drawers." Please confirm that this is the case.

**ANSWER:**
Provide locks on all cabinet doors and drawers as specified.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/28/2018

# RFI FORM

**RFI NO.** 085

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/19/18

**FROM:** John
**COMPANY NAME:** Legere Group

**SUBJECT:** Plumbing Panels

**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:** 3/A-214

**QUESTION:**
Elevation 3/A-214 shows no plumbing panel under the sink. However, section views 1/A-551 and 5/A-551 show plumbing panels. Please advise.

**ANSWER:**
Provide panels as indicated in details.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/28/2018

# RFI FORM

**RFI NO.** 086

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/19/18

**FROM:** Doug Burdick
**COMPANY NAME:** J. Iapaluccio

**SUBJECT:** Concrete Unit Pavers

**DISCIPLINE/TRADE:** BP#17 – Site Work

**DWG./SPEC. REFERENCE:** 32 14 00

**QUESTION:**
Article 2.1(A) 'Pavers that were removed from the existing Sensory Garden and stockpiled are to be reused'
There is no 'Sensory Garden' at the existing school to salvage existing pavers. Please provide a specification for the desired product.

**ANSWER:**
Concrete unit pavers are not required for this project. Please disregard this specification section.

**RESPONSE BY:** Colleen Fowler - MMI **DATE:** 11/27/18

# RFI FORM

**RFI NO.** 089

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/19/18

**FROM:** John
**COMPANY NAME:** Legere Group

**SUBJECT:** Grommets

**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:** 06 40 23

**QUESTION:**
Specifications (Volume 2, p.837) specify Doug Mockett 3" XG5 grommets. I have not found any instances of grommets being called out. Please advise.

**ANSWER:**
Provide a minimum of 1 grommet per 72" of work surface in the following areas:

1) Reception desk in Admin Suite 101
2) Circulation/Information Desk in Media Center 124

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/30/2018

# RFI FORM

**RFI NO.** 090

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/19/18

**FROM:** Joe Puglisi
**COMPANY NAME:** The NY-Conn Corp.

**SUBJECT:** Condensate Pump Wiring

**DISCIPLINE/TRADE:** BP#16 – Electrical

**DWG./SPEC. REFERENCE:** M-604

**QUESTION:**
Drawing M-604, dated 7/27/18, includes a condensate pump schedule, which indicates that electrical services are provided at each recessed ceiling fan coil unit and at each wall mounted indoor split system unit. Please note that the electrical drawings do not indicate any circuitry for these condensate pumps, and there appears to be no details included on the mechanical or electrical drawings regarding whether they are integral to the units or fed from the same circuit as the unit being served. Please advise.

**ANSWER:**
Provide 120VAC receptacle mounted above the ceiling at every fan coil unit and wall-mounted indoor split system unit. Connect 8 fan coil units / indoor splits to one circuit and wire with 2#12, #12G, 3/4"C to local 120V panelboard to spare 20A-1P circuit breaker. Provide a 42-circuit panelboard for LP3-L in lieu of a 30-circuit panelboard. Provide a 72-circuit panelboard for LP5-L in lieu of a 60-circuit panelboard.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 091

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/19/18

**FROM:** Joe Puglisi
**COMPANY NAME:** The NY-Conn Corp.

**SUBJECT:** Fan Coil Unit Disconnect

**DISCIPLINE/TRADE:** BP#16 – Electrical

**DWG./SPEC. REFERENCE:** M-603

**QUESTION:**
The Fan Coil Schedule, found on drawing M-603, dated 7/27/18, states that the units are to be provided with "Unit Mounted Disconnects." In several instances within the electrical panel schedules, it is noted that the electrical contractor is to provide the local disconnect switch for the FCUs (see attached for a typical example) Please clarify if the FCU disconnects are to be integral to the FCUs. If they are not, please clarify who is to provide the disconnects in question.

**ANSWER:**
Mechanical contractor to provide FCU disconnect switches as a factory option / accessory.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# Branch Panel: SB2-H

**Location:** ELEC CLOSET EL136
**Supply From:** SB-DP
**Mounting:** Surface

**Volts:** 480/277 Wye
**Phases:** 3
**Wires:** 4

**A.I.C. Rating:** 25,000
**Mains Type:** MCB
**Mains Rating:** 225A

**Notes:**
PART OF INTEGRATED POWER CENTER BY SQUARE D. "PC-SB2" (1) PROVIDE LOCAL DISCONNECT THERMAL OVERLOAD SWITCH AT EACH FAN COIL UNIT

| CKT | Circuit Description | Wire Size | Trip | P | A | | B | | C | | P | Trip | Wire Size | Circuit Description | CKT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | TX-SB2 | INTEGRAL | 150 A | 3 | 15640... | 2188 VA | | | | | 3 | 15 A | 3#12,#12G,3/4"C | RTU-5 (HEATING) | 2 |
| 3 | -- | - | -- | -- | | | 15154... | 2188 VA | | | -- | -- | - | -- | 4 |
| 5 | -- | - | -- | -- | | | | | 17264... | 2188 VA | -- | -- | - | -- | 6 |
| 7 | RTU-1 (HEATING) | 3#10,#10G,3/4"C | 40 A | 3 | 6981 VA | 4100 VA | | | | | 3 | 20 A | 3#12,#12G,3/4"C | RTU-3 (HEATING) | 8 |
| 9 | -- | - | -- | -- | | | 6981 VA | 4100 VA | | | -- | -- | - | -- | 10 |
| 11 | -- | - | -- | -- | | | | | 6981 VA | 4100 VA | -- | -- | - | -- | 12 |
| 13 | FCU (1) | 2#12,#12G,3/4"C | 20 A | 1 | 2759 VA | 1163 VA | | | | | 3 | 15 A | 3#12,#12G,3/4"C | RTU-4 (HEATING) | 14 |
| 15 | FCU (1) | 2#12,#12G,3/4"C | 20 A | 1 | | | 2352 VA | 1163 VA | | | -- | -- | - | -- | 16 |
| 17 | FCU (1) | 2#12,#12G,3/4"C | 20 A | 1 | | | | | 2539 VA | 1163 VA | -- | -- | - | -- | 18 |
| 19 | Spare | | 20 A | 1 | 0 VA | 0 VA | | | | | 1 | 20 A | | Spare | 20 |
| 21 | Spare | | 20 A | 1 | | | 0 VA | 0 VA | | | 1 | 20 A | | Spare | 22 |
| 23 | Spare | | 20 A | 1 | | | | | 0 VA | 0 VA | 1 | 20 A | | Spare | 24 |
| | | **Total Load:** | | | 32831 VA | | 31938 VA | | 34235 VA | | | | | | |
| | | **Total Amps:** | | | 119 A | | 115 A | | 124 A | | | | | | |

# RFI FORM

**RFI NO.** 092

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/19/18

**FROM:** Joe Puglisi
**COMPANY NAME:** The NY-Conn Corp.

**SUBJECT:** Cabinet Unit Heater Disconnect

**DISCIPLINE/TRADE:** BP#16 – Electrical

**DWG./SPEC. REFERENCE:** M-601

**QUESTION:**
The Cabinet Unit Heater Schedule, found on drawing M-601, dated 7/27/18, states that the "Mechanical Contractor DIV 23, is to provide the local disconnect switch" for the heaters. In several instances within the electrical panel schedules, it is noted that the electrical contractor is to provide the local disconnect switch for the CUHs (see attached for a typical example). Please clarify who is to provide the CHU disconnects.

**ANSWER:**
Mechanical contractor to provide CUH disconnect switches as a factory option / accessory.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# Branch Panel: SB2-L

**Location:** ELEC CLOSET EL136
**Supply From:** TX-SB2
**Mounting:** Surface

**Volts:** 120/208 Wye
**Phases:** 3
**Wires:** 4

**A.I.C. Rating:** 10,000
**Mains Type:** MCB
**Mains Rating:** 225A

**Notes:**
PART OF INTEGRATED POWER CENTER BY SQUARE D. "PC-SB2" (1) CONTRACTOR TO WIRE INDOOR UNIT FROM OUTDOOR UNIT (2) PROVIDE LOCAL DISCONNECT THERMAL OVERLOAD SWITCH AT EACH FAN COIL UNIT OR CUH

| CKT | Circuit Description | Wire Size | Trip | P | A | | B | | C | | P | Trip | Wire Size | Circuit Description | CKT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RM T136: IT RECPT | 2#12,#12G,3/4"C | 20 A | 1 | 500 VA | 500 VA | | | | | 1 | 20 A | 2#12,#12G,3/4"C | RM T136: IT RECPT | 2 |
| 3 | RM T136: IT RECPT | 2#12,#12G,3/4"C | 20 A | 1 | | | 500 VA | 2080 VA | | | 2 | 25 A | 2#12,#12G,3/4"C | CU-1 (1) | 4 |
| 5 | CU-1 (1) | 2#12,#10G,3/4"C | 25 A | 2 | | | | | 2080 VA | 2080 VA | -- | -- | - | -- | 6 |
| 7 | -- | - | -- | -- | 2080 VA | 2080 VA | | | | | 2 | 25 A | 2#6,#6G,3/4"C | CU-1 (1) | 8 |
| 9 | CU-1 (1) | 2#6,#6G,3/4"C | 25 A | 2 | | | 2080 VA | 2080 VA | | | -- | -- | - | -- | 10 |
| 11 | -- | - | -- | -- | | | | | 2080 VA | 2080 VA | 2 | 25 A | 2#4,#4G,1"C | CU-1 (1) | 12 |
| 13 | CU-1 (1) | 2#4,#4G,1"C | 25 A | 2 | 2080 VA | 2080 VA | | | | | -- | -- | - | -- | 14 |
| 15 | -- | - | -- | -- | | | 2080 VA | 2080 VA | | | 2 | 25 A | 2#6,#6G,3/4"C | CU-1 (1) | 16 |
| 17 | CU-1 (1) | 2#10,#10G,3/4"C | 25 A | 2 | | | | | 2080 VA | 2080 VA | -- | -- | - | -- | 18 |
| 19 | -- | | -- | -- | 2080 VA | 1320 VA | | | | | 1 | 15 A | 2#12,#12G,3/4"C | RM 135: AK-08 (FRIDGE) | 20 |
| 21 | RM 135: BK-9 (FRIDGE) | 2#12,#12G,3/4"C | 15 A | 1 | | | 900 VA | 1080 VA | | | 3 | 15 A | 3#12,#12G,3/4"C | ROOF: AK-31 (COND. AK-09) | 22 |
| 23 | ROOF: AK-29 (COND. AK-08) | 3#12,#12G,3/4"C | 15 A | 3 | | | | | 720 VA | 1080 VA | -- | -- | - | -- | 24 |
| 25 | -- | - | -- | -- | 720 VA | 1080 VA | | | | | -- | -- | - | -- | 26 |
| 27 | -- | - | -- | -- | | | 720 VA | 624 VA | | | 2 | 15 A | 2#12,#12G,3/4"C | RM 135: AK-32 (EVAP AK-09) | 28 |
| 29 | RM 135: AK-32 (EVAP AK-08) | 2#12,#12G,3/4"C | 15 A | 1 | | | | | 360 VA | 624 VA | -- | -- | - | -- | 30 |
| 31 | CUH-2 (2) | 2#12,#12G,3/4"C | 20 A | 1 | 120 VA | 500 VA | | | | | 1 | 20 A | 2#12,#12G,3/4"C | CUH/ UH (2) | 32 |
| 33 | GEN. RECPT | 2#10,#10G,1"C | 20 A | 1 | | | 180 VA | 750 VA | | | 1 | 20 A | 2#10,#10G,1"C | GEN. BLOCK HEATER | 34 |
| 35 | GEN. BATT. HTR & CHARGER | 2#10,#10G,1"C | 20 A | 1 | | | | | 1500 VA | 500 VA | 1 | 20 A | 2#12,#12G,3/4"C | FUTURE MECH POWER | 36 |
| 37 | FUTURE MECH POWER | 2#12,#12G,3/4"C | 20 A | 1 | 500 VA | 0 VA | | | | | 1 | 20 A | | Spare | 38 |
| 39 | Spare | | 20 A | 1 | | | 0 VA | 0 VA | | | 1 | 20 A | | Spare | 40 |
| 41 | Spare | | 20 A | 1 | | | | | 0 VA | 0 VA | 1 | 20 A | | Spare | 42 |
| | | **Total Load:** | | | 15640 VA | | 15154 VA | | 17264 VA | | | | | | |
| | | **Total Amps:** | | | 131 A | | 126 A | | 144 A | | | | | | |

# RFI FORM

**RFI NO.** 093

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/19/18

**FROM:** John
**COMPANY NAME:** Legere Group

**SUBJECT:** Window Sills

**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:** A-321

**QUESTION:**
Section detail 1/A-321 shows a 5" deep window sill. However, floor plans show a 7" deep sill when calling out this detail. Conversely, section detail 4/A-321 shows a 7" deep sill, yet floor plans show a 5" deep sill where that detail is called out. Please advise.

**ANSWER:**
Follow dimensions as shown on the respective details. All final sill dimensions will need to be verified in field.

**RESPONSE BY:** Jon Seibert PE **DATE:** Nov. 28, 2018

# RFI FORM

**RFI NO.** 095

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/19/18

**FROM:** John
**COMPANY NAME:** Legere Group

**SUBJECT:** Cubby Units

**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Specifications (Volume 2, page 839) specify Hafele coat hooks for cubby units. I have not found cubbies in the drawings. Please clarify.

**ANSWER:**
There are no cubby units on this project.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/28//2018

# RFI FORM

**RFI NO.** 097

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Duct Mounted Smoke Detectors

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Please verify that all duct mounted smoke detectors are furnished by the Fire Alarm Contractor and installed by the HVAC Contractor?

**ANSWER:**
Duct mounted smoke detectors to be provided by electrical contractor, installed by mechanical contractor, connected to alarm system by fire alarm contractor, and connected to BMS by mechanical contractor.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 098

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Smoke Detectors, Smoke Dampers, Fire Dampers

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Please verify that all required Smoke Detectors, Smoke Dampers and Fire Dampers required for this project are shown on the drawings? If not, please update drawings to show all required dampers and detectors so our Sheet Metal and Controls subs can account for them with their bids.

**ANSWER:**
Mechanical General Note #2 on drawings M-101A, M-101B, M-102A, & M-102B applies to the entire project. HVAC General Note #7 on page M-001 applies to the entire project.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 099

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** CUH-11

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** MP-101B

**QUESTION:**
CUH-11 is shown on drawing MP-101B, but not defined on the equipment schedule? Please add to equipment schedule for vendor pricing.

**ANSWER:**
See attached sketch SKM-3 showing revised cabinet unit heater schedule from drawing M-601including CUH-11.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# CABINET UNIT HEATER SCHEDULE

| MARK | MANUFACTURER | MODEL | CAPACITY (MBH) | MOTOR AND FAN | | | | WATER | | | | | EAT °F | LAT °F | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CFM | HP | RPM | V-Ph-Hz | GPM | EWT °F | LWT °F | ROWS | MAX PD FT | | | |
| CUH-1 | RITTLING | RF-200-02 | 7.8 | 220 | 1/60 | 890 | 120-1-60 | 0.8 | 140 | 120 | 1 | 0.1 | 68 | 100.7 | |
| CUH-2 | RITTLING | RF-200-02 | 12.9 | 220 | 1/60 | 890 | 120-1-60 | 1.3 | 140 | 120 | 2 | 0.3 | 68 | 122.1 | |
| CUH-3 | RITTLING | RF-200-03 | 17.9 | 300 | 1/60 | 850 | 120-1-60 | 1.8 | 140 | 120 | 2 | 0.5 | 68 | 123.3 | |
| CUH-4 | RITTLING | RC-380-02 | 12.9 | 220 | 1/60 | 890 | 120-1-60 | 1.3 | 140 | 120 | 2 | 0.3 | 68 | 122.1 | |
| CUH-5 | RITTLING | RFRC-420-02 | 12.9 | 220 | 1/60 | 890 | 120-1-60 | 1.3 | 140 | 120 | 2 | 0.3 | 68 | 122.1 | |
| CUH-6 | RITTLING | RF-200-04 | 24.7 | 420 | 1/25 | 890 | 120-1-60 | 2.5 | 140 | 120 | 2 | 0.5 | 68 | 122.4 | |
| CUH-7 | RITTLING | RF-200-06 | 36.8 | 620 | 1/15 | 890 | 120-1-60 | 3.7 | 140 | 120 | 2 | 3.0 | 68 | 123.3 | |
| CUH-8 | RITTLING | RFRC-420-02 | 12.9 | 220 | 1/25 | 890 | 120-1-60 | 1.3 | 140 | 120 | 2 | 0.3 | 68 | 122.1 | |
| CUH-9 | RITTLING | RRW-320-06 | 36.8 | 620 | 1/15 | 890 | 120-1-60 | 3.7 | 140 | 120 | 2 | 3.0 | 68 | 122.9 | |
| CUH-10 | RITTLING | RW-260-03 | 17.9 | 300 | 1/60 | 850 | 120-1-60 | 1.8 | 140 | 120 | 2 | 0.5 | 68 | 123.3 | |
| CUH-11 | RITTLING | RF-200-06 | 36.8 | 620 | 1/15 | 890 | 277-1-60 | 3.7 | 140 | 120 | 2 | 3.0 | 68 | 123.3 | |

NOTES: 1. CONNECT UNITS TO DDC CONTROL SYSTEM.
2. CONTROL CONTRACTOR DIV. 23 PROVIDE FAN RELAY, WALL MOUNTED SENSOR
3. PROVIDE WITH FAN SWITCH.
4. MECHANICAL CONTRACTOR DIV. 23 TO PROVIDE LOCAL DISCONNECT SWITCH.

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 Whitney Avenue - Hamden Center II - Hamden CT 06518
Ph: 203 239 4200 Fax: 203 234 7376
www.learndtc.com

NOTES:

RALPH M. T. JOHNSON ELEMENTARY
SCHOOL ADDITIONS & RENOVATIONS

500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE

0

( IN FEET )

SKM-3

| | |
|---|---|
| DRAWN BY: | Author |
| CHECKED BY: | Checker |
| SCALE: | |
| DATE: | 11/27/18 |
| PROJECT NO.: | 68962 |

# CABINET UNIT HEATER SCHEDULE

| MARK | MANUFACTURER | MODEL | CAPACITY (MBH) | MOTOR AND FAN | | | | WATER | | | | | EAT °F | LAT °F | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CFM | HP | RPM | V-Ph-Hz | GPM | EWT °F | LWT °F | ROWS | MAX PD FT | | | |
| CUH-1 | RITTLING | RF-200-02 | 7.8 | 220 | 1/60 | 890 | 120-1-60 | 0.8 | 140 | 120 | 1 | 0.1 | 68 | 100.7 | |
| CUH-2 | RITTLING | RF-200-02 | 12.9 | 220 | 1/60 | 890 | 120-1-60 | 1.3 | 140 | 120 | 2 | 0.3 | 68 | 122.1 | |
| CUH-3 | RITTLING | RF-200-03 | 17.9 | 300 | 1/60 | 850 | 120-1-60 | 1.8 | 140 | 120 | 2 | 0.5 | 68 | 123.3 | |
| CUH-4 | RITTLING | RC-380-02 | 12.9 | 220 | 1/60 | 890 | 120-1-60 | 1.3 | 140 | 120 | 2 | 0.3 | 68 | 122.1 | |
| CUH-5 | RITTLING | RFRC-420-02 | 12.9 | 220 | 1/60 | 890 | 120-1-60 | 1.3 | 140 | 120 | 2 | 0.3 | 68 | 122.1 | |
| CUH-6 | RITTLING | RF-200-04 | 24.7 | 420 | 1/25 | 890 | 120-1-60 | 2.5 | 140 | 120 | 2 | 0.5 | 68 | 122.4 | |
| CUH-7 | RITTLING | RF-200-06 | 36.8 | 620 | 1/15 | 890 | 120-1-60 | 3.7 | 140 | 120 | 2 | 3.0 | 68 | 123.3 | |
| CUH-8 | RITTLING | RFRC-420-02 | 12.9 | 220 | 1/25 | 890 | 120-1-60 | 1.3 | 140 | 120 | 2 | 0.3 | 68 | 122.1 | |
| CUH-9 | RITTLING | RRW-320-06 | 36.8 | 620 | 1/15 | 890 | 120-1-60 | 3.7 | 140 | 120 | 2 | 3.0 | 68 | 122.9 | |
| CUH-10 | RITTLING | RW-260-03 | 17.9 | 300 | 1/60 | 850 | 120-1-60 | 1.8 | 140 | 120 | 2 | 0.5 | 68 | 123.3 | |
| CUH-11 | RITTLING | RF-200-06 | 36.8 | 620 | 1/15 | 890 | 277-1-60 | 3.7 | 140 | 120 | 2 | 3.0 | 68 | 123.3 | |

NOTES: 1. CONNECT UNITS TO DDC CONTROL SYSTEM.
2. CONTROL CONTRACTOR DIV. 23 PROVIDE FAN RELAY, WALL MOUNTED SENSOR
3. PROVIDE WITH FAN SWITCH.
4. MECHANICAL CONTRACTOR DIV. 23 TO PROVIDE LOCAL DISCONNECT SWITCH.

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 Whitney Avenue - Hamden Center II - Hamden CT 06518
Ph: 203 239 4200 Fax: 203 234 7376
www.learndtc.com

NOTES:

RALPH M. T. JOHNSON ELEMENTARY
SCHOOL ADDITIONS & RENOVATIONS

500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE

0

( IN FEET )

SKM-3

| | |
|---|---|
| DRAWN BY: | Author |
| CHECKED BY: | Checker |
| SCALE: | |
| DATE: | 11/27/18 |
| PROJECT NO.: | 68962 |

# RFI FORM

**RFI NO.** 100

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** CUHs

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** M-601

**QUESTION:**
CUH-1, CUH-3, CUH-4 & CUH-5 are defined on the HVAC Equipment Schedule, but none were found when reviewing the Johnson E.S. floor plans? Please verify that these unit types are not required for the Johnson E.S? If they are required, please add them to the floor plans.

**ANSWER:**
CUH-1, CUH-3, CUH-4 & CUH-5 are not required for Johnson ES.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 101

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** UH-1 & UH-2

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** M-601

**QUESTION:**
UH-2 & UH-3 are defined on the HVAC Equipment Schedule, but none were found when reviewing the Johnson E.S. floor plans? Please verify that these unit types are not required for the Johnson E.S? If they are required, please add them to the floor plans.

**ANSWER:**
UH-2 & UH-3 are not required for Johnson ES.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 102

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Pipe sizes

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** M-603

**QUESTION:**
There are some discrepancies between the pipe sizes shown feeding the FCUs on the floor plans versus the pipe sizes called out on the Fan Coil Unit Schedule? Please verify that the pipe sizes shown on the schedule can be used for pipe sizes feeding the corresponding FCUs shown on the floor plans when there are discrepancies?

**ANSWER:**
Please verify where discrepancies exist as Fan Coil Unit Schedule does not list pipe sizes. If any discrepancies exist, contractor shall install the larger pipe size.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 103

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Air Intakes & Exhaust Vents

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** 23 51 23

**QUESTION:**
Please verify that both the Air Intake and Exhaust Vents from the Condensing Boilers and Gas Water Heaters are to be furnished and installed using material spec'd under 23 51 23 Gas Vents?

**ANSWER:**
Yes, bids shall be based on requirements from 235123 Gas Vents.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 104

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Rooftop handrails

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** M-001 note #49

**QUESTION:**
"HVAC Drawings M-001, note #49, states to ""Provide handrails if equipment on the Roof located less 10 feet from roof edge (see architectural drawings)"". After reviewing the HVAC Roof drawings, the following equipment was found to be less than 10 feet from the roof:
·Johnson E.S. - EF-1 & CU-2
Please advise if these pieces of equipment will need handrails and please verify who would own this work (assuming miscellaneous metals contractor if necessary, but please verify)?"

**ANSWER:**
It is the requirement of the project to provide handrails if equipment on rooftop is less than 10’-0” from roof edge. Coordinate final installation with equipment manufacturer.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 105

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Radon System

**DISCIPLINE/TRADE:** BP#15 – HVAC, BP#14 - Plumbing

**DWG./SPEC. REFERENCE:**

**QUESTION:**
The Plumbing drawings show 3 separate Radon pits with Radon piping penetrating through the roof. There is also a Radon Evacuation Venting Diagram (Detail #9 on P502) that shows an inline Radon exhaust fan. When reviewing the HVAC drawings, there is nothing shown within the building or on the roof regarding Radon piping work, but there is a schedule for Inline Radon Fans. Please clarify if the intent for this school was for the HVAC Contractor to furnish the three radon fans and install inline, and the plumber would continue to pipe up through the roof, as shown on Detail #9 on P502, or please correct if this assumption is incorrect?

**ANSWER:**
Radon fan is an inline fan to be mounted above the roof surface. Gooseneck and bird screen to be installed downstream (above) radon fan.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 107

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Secondary Auxiliary Condensate Drain Pans

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** M-503

**QUESTION:**
Secondary Auxiliary Condensate Drain Pans are shown on M-503 and are being requested for every ducted FCU. FCU Schedule states to use Stainless Steel Drain Pans? Please advise if stainless steel is required, or if galvanized pans would be acceptable to reduce costs? Additionally, regardless of metal type required, please advise on the acceptable gauge of metal so bidding sheet metal contractors are accounting for the accurate material (20 gauge?)?

**ANSWER:**
Primary drain pans (inside FCU) to be stainless steel. Secondary auxiliary drain pans to be 20-gauge galvanized steel.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 108

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Chemical Pot Feeder

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** M-201

**QUESTION:**
One Chemical Pot Feeder is shown on the drawing M-201, but hydronic piping spec states to install bypass chemical feeders in each hydronic system where indicated? Please clarify if two chemical shot feeders are required for each school (one for HWS&R and one for CHWS&R system)?

**ANSWER:**
Two chemical shot feeders are required for each school (interior HW & CHW systems) plus one glycol feed system for the exterior CHW loop.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 109

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Demolition

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** Scope & Spec 23 00 50

**QUESTION:**
Please reaffirm the HVAC Scope of Work Item #1 which states "Demolition: disconnect and drop to the floor to be removed by Demolition Subcontractor." The HVAC specs states to remove the demoed equipment, piping ductwork, etc., which carries much more labor and costs than disconnecting & dropping. Just wanted to confirm that the scope of work trumps the specs in this case?

**ANSWER:**
HVAC Scope of Work Item #1 is correct.

**RESPONSE BY:** Susan M. Chipouras **DATE:** 11/30/18

# RFI FORM

**RFI NO.** 110

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Valves

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** 23 05 23

**QUESTION:**
The HVAC General Duty Valve Spec currently has High Performance Butterfly Valves flat spec'd for all butterfly valve applications (shutoff service and dead-end service for all HVAC systems)? Please verify that this is required, or if a less expensive yet equally effective type of butterfly valve would be acceptable in most cases to save on overall cost (for example all valves outside of the mechanical room)? If this is acceptable please provide a spec and approved manufacturer for those valves (Hammond, Milwaukee, Nibco, Crane, Stockham, etc.,)? Additionally, if an earlier RFI is accepted and Grooved Piping is deemed acceptable for hydronic systems 2-1/2" and larger, please advise if grooved valves would also be acceptable (Victaulic, Nibco, Anvil, etc.,)

**ANSWER:**
High performance butterfly valves are required.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 111

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Steam

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:**

**QUESTION:**
The Division 23 HVAC Specs bring up Steam quite often throughout the specifications? Can you please confirm that there is no Steam work required for this project by the HVAC Contractor? Nothing was spotted on the floor plans or the civil drawings, but just in case we are missing something on the civil drawings (or another bid package set) can you please let us know?

**ANSWER:**

No steam work required.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 112

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Cathodic Protection

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** 23 21 14

**QUESTION:**
UG HVAC Piping Spec states to "Install cathodic protection devices and connections for piping and conduit systems." However, with the casing piping being constructed of HDPE, can this spec item be waived? HDPE has excellent corrosion resistance, is virtually inert, and commonly used in lieu of expensive maintenance or cathodic protection. However, if it is still required, please provide locations and spec on cathodic protection, as this is not common installation practice anymore and pricing would need to be obtained by a specialty vendor, separate from the UG piping vendor.

**ANSWER:**
Cathodic protection is not required.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 113

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Richard Melo
**COMPANY NAME:** MJ Daly

**SUBJECT:** Self-Contained Breathing Apparatus Video

**DISCIPLINE/TRADE:** BP#15 – HVAC

**DWG./SPEC. REFERENCE:** 23 53 13

**QUESTION:**
Please verify that the spec requirement shown under spec 23 2513, paragraph 3.5.B, can be waived? Spec states to "Provide a 'how to-use' self-contained breathing apparatus video that details exact operating procedures of equipment." After reviewing the plans and remainder of the spec, a self-contained breathing apparatus is not requested in any of the docs and with this chillers being installed outside, this seems to not be required, correct? Please verify?

**ANSWER:**
Self-contained breathing apparatus not required.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018

# RFI FORM

**RFI NO.** 114

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Joe Puglisi
**COMPANY NAME:** The NY-CONN Corp.

**SUBJECT:** Seismic Restraint

**DISCIPLINE/TRADE:** BP#16 – Electrical

**DWG./SPEC. REFERENCE:** 26 05 8.16-2.1-B-2

**QUESTION:**
Specification Section 26 05 48.16-2.1-B-2, states that the Seismic Restraint performance requirements for the building are to be "Seismic Design Category: B." It is our understanding that Seismic Design Category B, requires no seismic restraint for mechanical and electrical systems. Please clarify if Seismic Restraints are required for the electrical system installation in the building.

**ANSWER:**

Confirmed with Structural Engineer, building is Seismic Design Category B and seismic restraints are NOT required.

**RESPONSE BY:** DTC **DATE:** 11/27/18

# RFI FORM

**RFI NO.** 115

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Sam Wilion
**COMPANY NAME:** CE Electrical Contractors

**SUBJECT:** Low Voltage Work

**DISCIPLINE/TRADE:** BP#16 – Electrical

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Please clarify the Electrical Scope for low voltage work
- Are we responsible for Communication Infrastructure wiring, wiring & terminations, or is it provided by others?
- Are we responsible for Audio Visual wiring, wiring & terminations, or is it provided by others?
- Are we responsible for Sound/Public Address System wiring, wiring & terminations, or is it provided by others?
- Are we responsible for Security System wiring, wiring & terminations, or is it provided by others?

**ANSWER:**
All systems and cabling is part of the base bid.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 118

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Joe Puglisi
**COMPANY NAME:** The NY-CONN Corp.

**SUBJECT:** Lightning Protection
**DISCIPLINE/TRADE:** BP#16 – Electrical

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Specification Section 26 41 13-3.4-B, states that the Lightning Protection contrator is to provide the surge protection devices per UL96a We are assuming that this would include low voltage surge suppression devices for incoming telecommunication services. Typically surge protection for the incoming telecommunication services is provided and installed by the service provider, and the quantity and type of surge protection devices required is typically dictated by the quantity and type of service cables installed by the telecommunications service provider. That being the case, please clarify who will be responsible for furnishing the surge suppression devices on the incoming telecommunications services. If the lightning protection contractor is to furnish them, please provide all pertinent information regarding the incoming telecommunication service cables to be installed by the service provider for bidding purposes.

**ANSWER:**
ASSUME 25 PAIR COPPER FOR BIDDING.

**RESPONSE BY:** DTC **DATE:** 11/27/18

# RFI FORM

**RFI NO.** 119

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Larry Langeway
**COMPANY NAME:** Central Conn Acoustics

**SUBJECT:** TR-1
**DISCIPLINE/TRADE:** BP#9 – Acoustical Ceilings & Panels

**DWG./SPEC. REFERENCE:**

**QUESTION:**
TR-1 on the finish schedule calls for 2" Axiom. Detail 3 on A-121 calls for 4". Please clarify.

**ANSWER:**
Provide 4”

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 120

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Larry Langeway
**COMPANY NAME:** Central Conn Acoustics

**SUBJECT:** Wood Ceiling
**DISCIPLINE/TRADE:** BP#9 – Acoustical Ceilings & Panels

**DWG./SPEC. REFERENCE:**

**QUESTION:**
WDC-1 on the interior finish schedule calls for 3" Armstrong Plank. Spec. Section 09 51 26 calls for Grille. Please clarify.

**ANSWER:**
Follow as specified in section 09 51 26.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 121

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Larry Langeway
**COMPANY NAME:** Central Conn Acoustics

**SUBJECT:** FCU Acoustical Enclosure
**DISCIPLINE/TRADE:** BP#9 – Acoustical Ceilings & Panels

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Why is the FCU acoustical enclosure in our bid package?

**ANSWER:**
BP#6 – General Trades shall furnish and install FCU enclosure. Delete from BP#9 – Acoustical Ceilings & Panels.

**RESPONSE BY:** Susan M. Chipouras **DATE:** 11/30/18

# RFI FORM

**RFI NO.** 122

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Larry Langeway
**COMPANY NAME:** Central Conn Acoustics

**SUBJECT:** Hexagon Floating Clouds

**DISCIPLINE/TRADE:** BP#9 – Acoustical Ceilings & Panels

**DWG./SPEC. REFERENCE:**

**QUESTION:**
What is the Spec for ACC-1? The hexagon floating clouds.

**ANSWER:**
Provide "Soundscapes" by Armstrong or equal.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 123

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

**FROM:** Larry Langeway
**COMPANY NAME:** Central Conn Acoustics

**SUBJECT:** Gym Panels
**DISCIPLINE/TRADE:** BP#9 – Acoustical Ceilings & Panels

**DWG./SPEC. REFERENCE:** 09 84 13

**QUESTION:**
Are the little hexagonal panels in the Gym the Tectum listed in Spec Section 09 84 13?

**ANSWER:**
Yes.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 124

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/21/18

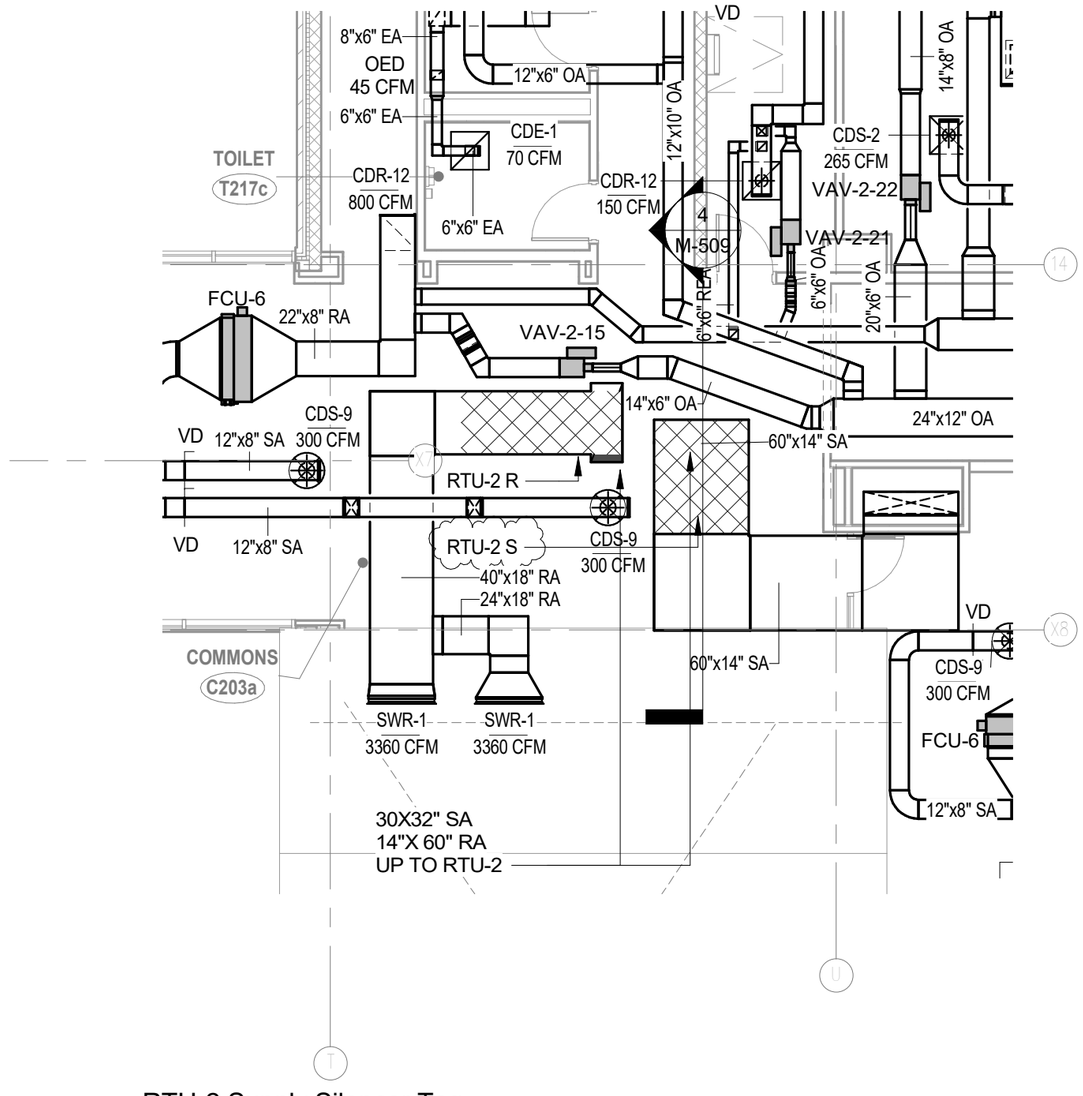
**FROM:** Arnie Jones
**COMPANY NAME:** A&B Mechanical

**SUBJECT:** Sound Attenuators
**DISCIPLINE/TRADE:** BP#15 – HVAC
**DWG./SPEC. REFERENCE:** M-102A, M-103A, M-103B, M-103C

**QUESTION:**
On drawing numbers M-102A, M-103A, M-103B, M-103C there is a grid pattern noted on the ductwork drawings. The key note symbol notes sound attenuators but there are none noted or spec'd. Please advise.

**ANSWER:**
M-602 provides a schedule for "HVAC SILENCERS". Supply-air / outdoor-air and return-air / exhaust-air silencers are designated for each unit. For example, DOAS-4 has two silencers with one supply-air / outdoor-air silencer tagged DOAS-4 S and one return-air / exhaust-air silencer tagged DOAS-4 R. Silencer labels have been revised on M-102A and M-103C. See attached sketches and spec section 23 33 00.

**RESPONSE BY:** Jesse Vose, PE **DATE:** 11/27/2018




1 RTU-2 Supply Silencer Tag
1/8" = 1'-0"

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 Whitney Avenue - Hamden Center II - Hamden CT 06518
Ph: 203 239 4200 Fax: 203 234 7376
www.teamdtc.com

NOTES:

# RALPH M. T. JOHNSON ELEMENTARY SCHOOL ADDITIONS & RENOVATIONS

500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE

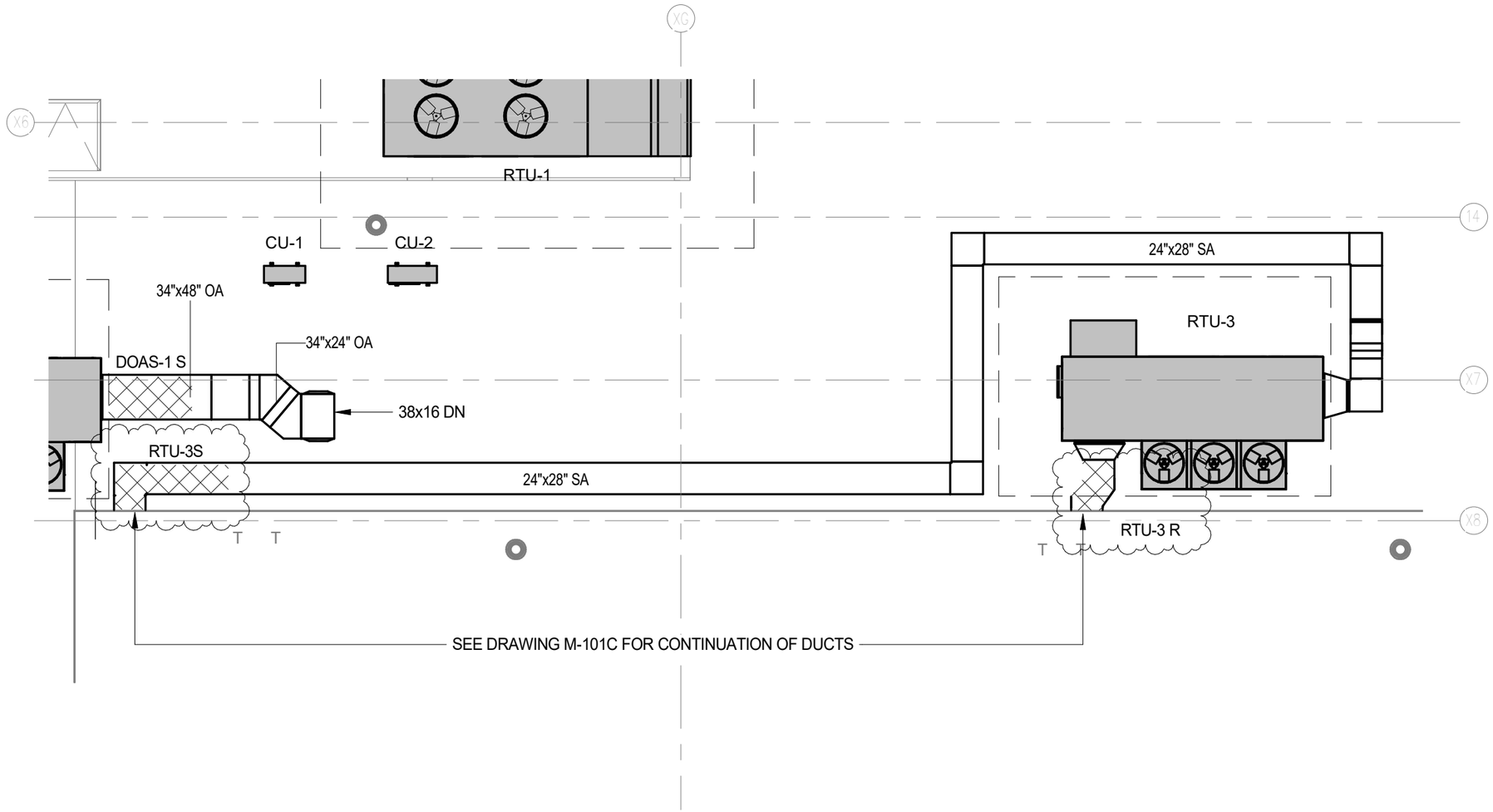
NORTH

0

( IN FEET )

SKM-1

| | |
|---|---|
| DRAWN BY: | Author |
| CHECKED BY: | Checker |
| SCALE: | 1/8" = 1'-0" |
| DATE: | 11/27/18 |
| PROJECT NO.: | 68962 |




1 RTU-3 Supply & Return Silencer Tag
1/8" = 1'-0"

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 Whitney Avenue - Hamden Center II - Hamden CT 06518
Ph: 203 239 4200 Fax: 203 234 7376
www.teamdtc.com

NOTES:

# RALPH M. T. JOHNSON ELEMENTARY SCHOOL ADDITIONS & RENOVATIONS

500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE

0

( IN FEET )

SKM-2

| | |
|---|---|
| DRAWN BY: | Author |
| CHECKED BY: | Checker |
| SCALE: | 1/8" = 1'-0" |
| DATE: | 11/27/18 |
| PROJECT NO.: | 68962 |

# RFI FORM

**RFI NO.** 128

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/28/18

**FROM:** John Legere
**COMPANY NAME:** Legere Group

**SUBJECT:** Locker Filler Panels

**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:** A-552, elevation 4

**QUESTION:**
Elevation 4, page A-552 shows a 3" locker filler panel. Material for this panel is not called out. Assuming material is metal. Please confirm.

**ANSWER:**
Confirmed.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 129

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/28/18

**FROM:** John Legere
**COMPANY NAME:** Legere Group

**SUBJECT:** Tackboard installation

**DISCIPLINE/TRADE:** BP#5 – Architectural Woodwork

**DWG./SPEC. REFERENCE:** 3/A-213

**QUESTION:**
BP5 owns the installation of the TB-4 tackboards shown at elevation 3/A-213. Please provide details of the installation method for these tackboards.

**ANSWER:**
Install per spec section 10 11 00, 3.04.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 130

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/28/18

**FROM:** Dan Steiner
**COMPANY NAME:** CT Lighting

**SUBJECT:** Shades

**DISCIPLINE/TRADE:** BP#12 – Roller Window Shades

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Are Draper Shades acceptable for these schools? Draper is a major supplier to the commercial shade market. We are not substituting anything, we are supply as per spec with Draper. You have Mecho and Lutron as acceptable suppliers. Mecho motorized shades are 110volt and Lutron shades are low voltage. Please advise.

**ANSWER:**
Provide shades as specified.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 139

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/28/18

**FROM:** Daniel Bresnahan
**COMPANY NAME:** ACV Enviro

**SUBJECT:** Fuel Tank Removal

**DISCIPLINE/TRADE:** BP#1A – Fuel Tank Removal

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Can you provide the size and material of the underground tank to be removed?

**ANSWER:**

The underground storage tank is a 10,000 gallon tank. The material of the tank is unknown.

**RESPONSE BY:** Dan Kroeber **DATE:** 11/29/18

# RFI FORM

**RFI NO.** 146

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/28/18

**FROM:** Morgan Predimano
**COMPANY NAME:** Park Roway

**SUBJECT:** Opening 101.1

**DISCIPLINE/TRADE:** BP#8 – Aluminum Doors, Frames, Etc./BP#6 – General Trades

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Opening 101.1 one is listed as a wood door with full glass, but has a note stating "Secure Vestibule. Level 4 Ballistic Entrance System" . The Bullet Resistant Entrance Spec ( 08 41 39 ) only lists Aluminum Assembly. Should this opening be treated as an aluminum entrance or a wood door? Please advise.

**ANSWER:**
Aluminum.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 147

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/28/18

**FROM:** Brenda Walker
**COMPANY NAME:** Steeltech Building Products

**SUBJECT:** Curved Canopy

**DISCIPLINE/TRADE:** BP#4 – Structural Steel & Misc. Metals

**DWG./SPEC. REFERENCE:**

**QUESTION:**
In looking at the Alternate Curved Canopy, the Structural drawings show it as straight steel tube framing S-102b, but the Arch drawings A-323 call for radiused steel framing. Please advise.

**ANSWER:**
Provide straight tube framing per structural plan.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 148

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/28/18

**FROM:** Susan Lone
**COMPANY NAME:** Ehrlich Interiors

**SUBJECT:** Shades

**DISCIPLINE/TRADE:** BP#12 – Roller Window Shades

**DWG./SPEC. REFERENCE:** A-112b

**QUESTION:**
Classrooms on drawing A-112b do not look like they receive any shades but all other classrooms do, instead of dotted lines to signify shades there are shaded in/ solid lines. Not sure if these rooms actually get shades or not.

**ANSWER:**
All exterior windows shown on A-112b (except in rooms T207a and T207b and Stair 3) shall receive WT-1 shades.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 149

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/28/18

**FROM:** Susan Lone
**COMPANY NAME:** Ehrlich Interiors

**SUBJECT:** Shades

**DISCIPLINE/TRADE:** BP#12 – Roller Window Shades

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Clarification is needed on the window types and shade types for the media center and maker space, some of the windows are not labeled and some do not have the shade type noted.

**ANSWER:**
All shades are WT-1, UNO.
Add one 6'-0" WT-1 shade at east side of eastern CW8 (A-111a)

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 150

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/28/18

**FROM:** Susan Lone
**COMPANY NAME:** Ehrlich Interiors

**SUBJECT:** Shades

**DISCIPLINE/TRADE:** BP#12 – Roller Window Shades

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Need clarification on any window treatments that are going in the ceiling/ sky lights, where do I find the sizes to those windows?

**ANSWER:**
There are no Skylights in the project.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

# RFI FORM

**RFI NO.** 151

**PROJECT:** Johnson Elementary School
Renovations and Additions
500 Whittlesey Drive
Bethel, CT 06801

**OWNER:** Town of Bethel
**ARCHITECT:** Perkins Eastman
**CONSTRUCTION MANAGER:** Rizzo Corporation

**DATE:** 11/28/18

**FROM:** Susan Lone
**COMPANY NAME:** Ehrlich Interiors

**SUBJECT:** Shades

**DISCIPLINE/TRADE:** BP#12 – Roller Window Shades

**DWG./SPEC. REFERENCE:**

**QUESTION:**
Can you confirm that the cafe, gym, maker space and media space are the only areas that get WT-2?

**ANSWER:**
Refer to Contract documents.

**RESPONSE BY:** A.Dobbertin@PE **DATE:** 11/29/2018

PERKINS EASTMAN

# ADDENDUM #4

**NOVEMBER 30, 2018**

**RALPH M. JOHNSON ELEMENTARY SCHOOL**
**State Project # 009-0059-RNV**
500 Whittlesey Drive
Bethel, CT 06801

**Bethel Public Schools**
1 School Road
Bethel, CT 06801

To All Potential Bidders:

The items and attachments set forth herein shall act to qualify, clarify, or otherwise modify the Contract Documents previously issued regarding the above referenced project. These items, whether of omission, addition, substitution, or clarification, shall be incorporated into the proposals submitted by all bidders, and receipt of this document and its attachments must be acknowledged, either in the space provided on the Bid Form or on the Contractor s Form of Proposal. Failure to do so may subject the Bidder to disqualification.

**The items and references:**

## SPECIFICATIONS

1. **06 40 23 – INTERIOR ARCHITECTURAL WOODWORK**
   Description:
   DELETE Section 06 40 23 and replace with Revised Section 06 40 23 included in this addemdum.

2. **07 53 23 – EPDM ROOFING**
   Description:
   ADD Line C.8 to Article 1.02 to read as follows:
   8. ***Division 07 Section "Rooftop Equipment Screens: roofing contractor provided and installed EPDM flashing boot for equipment screen square base support pedestal.***

   Description:
   ADD Paragraph I to Article 2.03 to read as follows:

   I. ***EPDM Flashing boot for rooftop equipment screen square base support pedestal. Field fabricated from 60 mil, white single ply EPDM sheet conforming to ASTM D 4637/D 4637M. Provide flashing that extends a minimum of 5 inches onto roof surface on all four sides. Taper riser to fit over square base support pedestal with minimum gap at top.***

**3. 08 71 00 – DOOR HARDWARE**

Description:

REVISE Article 2.22 to read as follows:

***2.22 CYLINDERS AND KEYING***

***a. Provide a new key system from the same manufacturer as the locks conforming to the following requirements:***

***b. Provide restricted patented small formant interchangeable core cylinders at all keyed items. Restriction shall control the access to the products by requiring a signed letter of authorization and/or authorization form from the Owner or authorized agent of the Owner. Patent shall protect against the unauthorized manufacturing and duplication of the products. Restricted patented cores shall not be operable by non-patented key blanks. Restricted patented cores shall incorporate a mechanism to check for the patented features on the keys. Provide construction cores with construction master keying for use during construction. The hardware supplier, accompanied by the Owner or Owner's security agent, shall install permanent keyed cores upon completion of the project. The temporary construction cores are to be returned to the hardware supplier.***

***c. Provide permanent cores and cylinders keyed by the manufacturer or authorized distributor as directed by the Owner. Provide owner with a copy of the bitting list, return receipt requested.***

***d. The hardware supplier, accompanied by a qualified factory representative for the manufacturer of the cores and cylinders, shall meet with Owner and Architect to review keying requirements and lock functions prior to ordering finish hardware. Submit a keying schedule to Architect for approval.***

***e. Provide cores and cylinders, unless noted otherwise, operated by a Grand Master Key System to be established for this project (Do not use the letter "I", "O", or "X" for any of the grand masters). Allow for twenty-four Master Keys under each Grand Master, and sixty-four changes under each master key. All cylinders shall be keyed in alike or different sets as noted by their respective key set number. Do not use the letter "I" or "O" in any of the master key sets.***

***f. Provide patented restricted keys as follows:***

***1) Ten grand master keys for each set.***
***2) Ten master keys for each set.***
***3) Three keys per core and/or cylinder.***
***4) Two construction core control keys***
***5) Two permanent core control keys***
***6) Six construction master keys for each type (Contractor is to provide one set of construction keys to Architect)***
***7) Visual key control:***
***8) Keys shall be stamped with their respective key set number and stamped "DO NOT DUPLICATE".***
***9) Grand master and master keys shall be stamped with their respective key set letters.***
***10) Do not stamp any keys with the factory key change number.***

***11) Do not stamp any cores with key set on face (front) of Core. Stamp on back or side of cores so not to be visible when core is in cylinder.***

***g. Deliver grand master keys, master keys, change keys, and/or key blanks from the factory or authorized distributor directly to the Owner in sealed containers, return receipt requested. Failure to comply with these requirements may be cause to require replacement of all or any part of the keying system that was compromised at no additional cost to the Owner.***

***h. Approved products: Dormakaba Best Cormax, Allegion Schlage Everest 29T, and ASSA Abloy Sargent Signature.***

## 4. 09 51 13 – ACOUSTIC PANEL CEILINGS

Description:
ADD Paragraph H to Article 2.01 to read as follows:

***H ACC-1: Fiberglass Acoustical Panels with fine texture. Provide acoustical panels complying with the following:***

***2. Product: "Soundscapes-Shapes", Item 5444 Hexagon, gasketed non-sag type, as manufactured by Armstrong World Industries, or approved equal products of USG Interiors or Celotex, as approved by the Architect.***
***3. Classification: Panels fitting ASTM E 1264 for Type XII, Form 2, Pattern E.***
***4. Color: As scheduled on drawings.***
***5. Surface Finish: Factory applied acrylic latex paint on DuraBrite acoustically transparent membrane.***
***6. Light Reflectance Coefficient: 0.90.***
***7. Sabin: 1.49***
***8. Edge Detail: Square.***
***9. Thickness: 7/8-inch.***
***10. Size: 48 x 48-inches.***

## 5. 09 51 26 – ACOUSTIC WOOD CEILINGS

Description:
REVISE Paragraph A of Article 2.01 to read as follows:

A. WDC-1: Armstrong World Industries "WoodWorks Grille," ~~with solid backer~~ acoustical wood planks ***with solid wood backer***, 12-inches x 96-inches plank thickness.
   ***1. Description: 2-1/4" depth, 6 slats.***
   2. Wood Species and Finish: To be selected by Architect.

## 6. 09 66 23 – EPOXY TERRAZZO

Description:
INSERT Paragraph B of Article 1.03 to read as follows:

B. ***Cleaning and sealing existing portland cement terrazzo floor surfaces.***

Description:
REVISE Paragraph D of Article 1.02 to read as follows:

C. Maintenance Data: For epoxy ***and Portland cement*** terrazzo to include in maintenance manuals.

7. **10 82 13 – ROOFTOP EQUIPMENT SCREENS**
   Description:
   REVISE Paragraph A OF Article 2.03 to read as follows:

A. Louver Panels: ***ASTM B 221, 6063-T6 extruded aluminum***. ~~24 gauge Galvalume steel sheet, AZ50, conforming to ASTM A 792.~~

   Description:
   DELETE Paragraph E from Article 2.03.

~~E. Square TPO Roof Flashing: Fabricated from 60 mil, white, single ply TPO sheet conforming to ASTM D 6878. Provide with base flange that extends a minimum of 5 inches (127 mm) onto the roof surface on all four sides. Riser shall be tapered to allow easy fit over Square Base Supports with minimal gap at top of flashing. Hot weld all seams for water tightness.~~

8. **23 74 23 – PACKAGED, DIRECT-FIRED, OUTDOOR, HEATING-ONLY, MAKEUP-AIR UNITS**
   Decription:
   Add specification section to project manual.

9. **23 82 19 – FAN COIL UNITS**
   Decription:
   ADD IEC (International Environmental Corporation); LSB Industries. to paragraphs 2.2 A and 2.3A.

10. **23 82 29 – RADIATORS**
    Decription:
    ADD specification section to project manual.

11. **23 82 39.13 – CABINET UNIT HEATERS**
    Decription:
    ADD Sterling; a Mestek Company. and Zehnder Rittling. to paragraph 2.1 A.

12. **23 82 39.13 – PROPELLER UNIT HEATERS**
    Decription:
    ADD Sterling; a Mestek Company. to paragraph 2.1 A.

13. **27 15 16 – PUBLIC ADDRESS SYSTEM**
    Decription:
    See attached Clarification.

14. **28 05 00 – SECURITY CONDUCTORS & CABLE SPECIFICATION**
    Decription:
    ADD Section 28 05 00 to Project Manual.

PERKINS EASTMAN

## DRAWINGS

1. **P-101A PLUMBING FIRST FLOOR PLAN AREA A**
   Update sanitary piping in classrooms 109, 111 and 224. Add hot & cold water piping and sanitary piping to classrooms 201 & 202. Adjust radon piping in tech/coding area 128 and classroom 222. adjust pipe placement to sinks in classrooms 127, 129, 130 & 131.

2. **P-101B PLUMBING FIRST FLOOR PLAN AREA B**
   Add sanitary piping to sinks in classrooms 110, 112 and 114.

3. **P-101C PLUMBING FIRST FLOOR PLAN AREA C**
   Add sanitary piping to sink in classroom 143, ensemble room 133 and music room 132.

4. **P-400 PLUMBING SCHEDULES**
   Revised Revise plumbing fixture / equipment schedule.

5. **P-300 PLUMBING ENLARGED KITCHEN PLAN**
   Adjust sanitary piping in kitchen area.

6. **EL-SERIES**
   Provide additional emergency relay(s) Legrand #ECLU-200 to the following rooms: 101-qty(2), 103-qty(1), 106e-qty(1), 124-qty(4), 126-qty(1), 132-qty(1), 133-qty(1), 134-qty(4), 138-qty(2), 139-qty(1), 201-qty(1), 202-qty(1), and 218-qty(1). Connect to local lighting circuit and room controllers. Refer to details for additional information.

7. **EP-SERIES**
   Provide 120VAC receptacle mounted above the ceiling at every fan coil unit. Provide junction box at every wall-mounted indoor split system unit and hard wire to condensate pump. Connect 8 fan coil units / indoor splits to one circuit and wire with 2#12, #12G, 3/4"C to local 120V panelboard to spare 20A-1P circuit breaker. Provide a 42 circuit panelboard for LP3-L in lieu of a 30 circuit panelboard. Provide a 72 circuit panelboard for LP5-L in lieu of a 60 circuit panelboard.

8. **M-102A MECHANICAL LEVEL 2 BUILDING A PLAN**
   Duct silencer annotations added per sketch SKM-1.

9. **M-102A MECHANICAL ROOF BUILDING C PLAN**
   Duct silencer annotations added per sketch SKM-2.

10. **M-601 MECHANICAL SCHEDULES**
    CUH-11 added to Cabinet Unit Heater Schedule per sketch SKM-3.

11. **M-604 MECHANICAL SCHEDULES**
    CP-1 and CP-2 revised in Condensate Pump Schedule per sketch SKM-4.

**12. S-101a STRUCTURAL PLAN LEVEL 2 PART A**

Change section 2/S-301 SIM along grid 20 to section 2/S-302 SIM.
Add section 3/S-301 SIM along grid 12 between grid M and N.
Add SKS-3 section along grid 12 between grid N and 0. See SKS-3.
See SKS-6 for location of HSS5x5 post.
Add note to section mark 1/S-301 that reads, SECTION SHOWS DEFAULT REINFORCING FOR SIMILAR SIZED FOOTINGS AND FOUNDATION WALLS UNLESS NOTED OTHERWISE
Add SKS-7 section along grid M between grid 14 and 12.

**13. S-102a STRUCTURAL PLAN LEVEL 2 PART A**

At the lobby C101 near grid X6 where existing wall is being demolished and curtainwall CW14 is being installed provide reference to typical detail, Typ. Connection From New Curtainwall to Existing Structural Member . See sketch SKS-2 for typical detail.
Change section 2/S-301 SIM AT GLASS along grid 20 to section 2/S-302 SIM.
Remove slab extensions south of grid 20.
Add section 3/S-301 SIM along grid 12 between grid M and N.
Add SKS-3 section along grid 12 between grid N and 0. See SKS-3
See SKS-6 for location of HSS5x5 post.

**14. S-103a STRUCTURAL PLAN ROOF LEVEL 3 PART A**

Add section 3/S-301 SIM along grid 12 between grid M and N.
Add SKS-3 section along grid 12 between grid N and 0. See SKS-3
See SKS-6 for location of HSS5x5 post.
At section 3/S301 and section 2/S301 add AT ROOF LEVEL under AT STUDS and AT GLASS text. These section cuts only apply for the roof level detailing.

**15. S-101c STRUCTURAL PLAN LEVEL 1 PART C**

Replace 15 wall with 8 wall along grid G between grid 2 and the start of the exterior stairs. 8 wall to align under curtainwall CW4. 8 wall to be dropped -1 -0 at door in curtain wall.

**16. S-103c STRUCTURAL PLAN ROOF LEVEL PART C**

Change W8x10 to W12x16 at exterior face of STAIR 4. Show opening in masonry and kickers for curtain wall. Provide section to connect top of curtain wall to structure. See sketch SKS-1.
At the cafeteria along grid 9 where existing wall is being demolished and curtainwall CW2a is being installed provide reference to typical detail, Typ. Connection From New Curtainwall to Existing Structural Member . See sketch SKS-2 for typical detail.

**17. S-303 SECTIONS AREA A**

Add CW clip from HSS tube to CW and callout CW clip by CW supplier.
Remove coped hole in W24 beam
Show angled plate beyond at grid 18 to support second level floor deck beyond. (To be similiar with section 3/S-302.)

**18. S-304 SECTIONS AREA A**

Adjust beam connections to correctly align with beams for clarity.
Add call out to CW clip from HSS to CW.
Detail bench and support under curtain wall to match that shown on Section 1/S-303.

**19. S-305 SECTIONS AREA A**

Replace section 2/S-305 with SKS-4.
Update left section 1/S-305 as shown in SKS-5. See SKS-6 for location of HSS5x5 post.

**20. S-501 TYPICAL STEEL DETAILS**

Change name of Typ. Roof Opening Section to Typ. Roof Opening and MAPA Utility Pedestal Frame Detail Add note 4 saying, 4. Provide frame at all MAPA Utlity Pedestals. Coordinate with Electrical drawings for quantity and location. Install per MAPA mnfr directions.

**21. T-001 TECHNOLOGY SYMBOL LEGEND & GENERAL NOTES**

Clarifications for exterior AP & Conduit Fill Schedule

**22. T-101A TECHNOLOGY LEVEL 1, PART A & BASEMENT PLANS**

Added exterior AP Cabeling.

**23. T-101B TECHNOLOGY LEVEL 1, PART B PLAN**

Added exterior AP Cabeling.

**24. T-101C TECHNOLOGY LEVEL 1, PART C PLAN**

Added exterior AP Cabeling.

# SECTION 06 40 23

# INTERIOR ARCHITECTURAL WOODWORK

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

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

### 1.02 SUMMARY

A. This Section includes the following:
1. Plastic-laminate cabinets.
2. Plastic laminate storage cubbies.
3. Solid surface countertops.
4. Solid surface interior window stools.
5. Solid surface locker tops.
6. Custom display cases.
7. ***Counter top support brackets.***
8. ***Bench seating.***

### 1.03 RELATED SECTIONS

1. Division 01 Section "High Performance Building Requirements" for sustainable strategies.
2. Division 06 Section "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.

### 1.04 DEFINITIONS

A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

### 1.05 SUBMITTALS

A. Product Data: For each type of product indicated, including cabinet hardware and accessories.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, details, attachment devices, and other components.
1. Key Plans: 1/8″ = 1′-0″.
2. Plans: 1/2″ = 1′-0".
3. Elevations: 1/2″ = 1'-0″.
4. Plan Sections: 3″ = 1′-0″.
5. Details: Full size or 3″ = 1′-0″.
6. Trim and Moulding Profiles: Full size.
7. All finish hardware, anchors, fastenings and accessories.
8. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.

9. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, and other items installed in architectural woodwork.

C. Samples for Verification:
1. Plastic laminates, 6 x 6-inches.
2. ***Solid surface material;*** Minimum 4 x 4-inch sample for each pattern of solid polymer.
***3. Fabric covering.***
***4. Veneer plywood.***

D. Maintenance Data: Submit solid polymer manufacturer's care and maintenance and cleaning instructions. Include in Project close-out documents.

E. High Performance Building Submittals:
1. Manufacturers' product data for installation adhesives, including printed statement of VOC content.
2. Composite wood manufacturer's product data for each composite wood product used indicating that the bonding agent contains no urea formaldehyde.
3. Adhesive manufacturer's product data for each adhesive used indicating that the adhesive contains no urea formaldehyde.
4. Product Data for: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content
a. Include statement indicating costs for each product having recycled content.
5. Product data for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
6. Product data for rapidly-renewable materials indicating type of material being used. Include statement indicating manufacturers' names, cost for each rapidly-renewable material and the fraction by weight that is considered rapidly-renewable.
7. Certificates for: Chain-of-custody certificates certifying that products specified to be made from certified wood comply with forest certification requirements. Include evidence that mill is certified for chain of custody by an FSC-accredited certification body.
a. Include statement indicating costs for each certified wood product.

F. Woodwork Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

1.06 QUALITY ASSURANCE

A. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production and installation of interior architectural woodwork with sequence-matched wood veneers and wood doors with face veneers that are sequence matched with woodwork.

B. Quality Standard: Unless otherwise indicated, comply with "Architectural Woodwork Standards" (AWS) adopted and published jointly by Architectural Woodwork Institute, Architectural Woodwork Manufacturers Association of Canada, and Woodwork Institute for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

1. Provide AWI Quality Certification Program labels and certificates indicating that woodwork, including shop drawings and installation, complies with requirements of grades specified.

C. Mockups: Build a mockup of one base cabinet to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

D. Forest Certification: Provide interior architectural woodwork produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria."

E. Prefabrication Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management And Coordination."

1.07 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.08 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.
   2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.09 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide materials that comply with requirements of AWS's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Provide wood and wood products and wood-substitute meeting requirements for sustainable strategies.

C. Wood Products: Comply with the following:
   1. Hardboard: AHA A135.4.
   2. Softwood Plywood: DOC PS 1
      a. Medium Density Overlay, Exterior, Grade B-B.
      b. Veneer Plywood, Exterior Marine Grade B-B.

   3. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
      a. Medium Density Fiberboard, Moisture Resistant: ANSI 208.2; Composite Panel Association (CPA) CPA-IMR-TM-01; and CPS 4-11 for ECC certification.

D. High-Pressure Decorative Laminate: PL-1, PL-2, PL-3; NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
   1. Manufacturers:
      a. Formica Corporation.
      b. Nevamar Company, LLC; Decorative Products Div.
      c. Panolam Industries International Incorporated.
      d. Wilsonart International; Div. of Premark International, Inc.
   2. Colors: As scheduled on drawings.

E. Solid Surfacing Material: SS-1, SS-2, SS-3; Homogeneous solid sheets of filled plastic resin complying with material and performance requirements in ANSI Z124.3, for Type 5 or Type 6, without a precoated finish.
   1. Provide Corian as manufactured by DuPont Polymers, or equal products of Avonite, Inc, or the Swan Corporation, and as approved by the Architect.
   2. Colors: As scheduled on drawings.

2.02 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this Article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified.
   1. Do not use treated materials that do not comply with requirements of referenced woodworking standard or that are warped, discolored, or otherwise defective.
   2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
   3. Identify fire-retardant-treated materials with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.

B. Fire-Retardant-Treated Lumber and Engineered Wood Panels by Pressure Process: Comply with performance requirements of AWPA C20 (lumber) and AWPA C27 (engineered wood panels). Use the following treatment type:

1. Interior Type A: Low-hygroscopic formulation.
2. Mill lumber before treatment and implement special procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.
3. Kiln-dry materials before and after treatment to levels required for untreated materials.

2.03 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 08 Section "Finish Hardware " Provide cabinet hardware meeting ANSI/BHMA Grade 1 requirements.

B. Cabinet Drawer and Door Pulls at Plastic Laminate Cabinetwork: Nickel plated matt “Zinc” handles, Hafele #105.49.610.

C. Cabinet and Drawer Door Lock: Pin tumbler dead lock; Yale 5591; Knape & Vogt 986/987; Russwin 0686R; or Sargent 1654. Provide locks on all cabinet doors and drawers. Provide 5 separately-keyed cylinders, with keying as determined by Owner.

D. Shelf Pins: Knape and Vogt anochrome 331 shelf support.

E. Hinges: Häfele Aximat 300 Series zinc alloy hinge at flush overlay doors, with integral adjustment screws and with internal catch. Provide special hinges from Häfele Aximat 300 Series for glass doors and for hinges at thin panel material. Hinges must be adjustable without removing screws.
1. Provide stainless steel hinges where non-magnetic hinges are required.

F. Grommets for Cable Passage through Countertops: 3-inch (75-mm) OD, black molded-plastic grommets with satin chrome plated caps with slot for wire passage.
1. Product: Subject to compliance with requirements, provide "XG5 series" by Doug Mockett & Company, Inc.

G. Lockable “Pelican” Pencil Drawer #WDPD-L by Steelcase. To be installed at Reception Desk.

H. Catches: Magnetic catches, BHMA A156.9, B03141.

I. Drawer Slides: BHMA A156.9, B05091.
1. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-extension type; zinc-plated steel ball-bearing slides.
2. Box Drawer Slides: Grade 1; for drawers not more than 6 inches (150 mm) high and 24 inches (600 mm) wide.
3. File Drawer Slides: Grade 1HD-200; for drawers more than 6 inches (150 mm) high or 24 inches (600 mm) wide.
4. Pencil Drawer Slides: Grade 2; for drawers not more than 3 inches (75 mm) high and 24 inches (600 mm) wide.
5. Keyboard Slides: Grade 1; for computer keyboard shelves.

J. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
1. Satin Stainless Steel: BHMA 630.
2. Hinges: Nickel plated, matt finish.

K. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.04 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.

B. Structural Supports: Angle steel, minimum 0.125-inch thickness and sized to provide concealed support for countertops, lavatory tops, ledges, and other woodwork fabrications. Fully weld angles and braces into a single support, and pre-drill holes for anchors into building structure and into woodwork.

C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

D. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
1. Wood Glues: 30 g/L.
2. Contact Adhesive: 250 g/L.

E. Adhesive for Bonding Plastic Laminate: Contact cement.
1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.05 PLASTIC-LAMINATE CABINETS

A. Quality Standard: Comply with AWS Section 10 requirements for laminate cabinetwork.
1. Grade: Premium.

B. AWS Type of Cabinet Construction: Style 1 flush overlay on Type A frameless cabinet body, with laminated square edges on doors and drawer fronts.

C. Panel Material: Medium density overlay, exterior type, or veneer plywood, exterior type.

D. Laminate Cladding for Exposed and Semi-exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
1. Horizontal Surfaces Other Than Tops: Grade HGS.
2. Postformed Surfaces: Grade HGP.
3. Vertical Surfaces: Grade HGS.
4. Edges, including all four edges of adjustable shelves: Grade HGS.
5. Drawer Sides and Backs: Solid-hardwood lumber.
6. Drawer Bottoms: Hardwood plywood.
7. Edge Banding: Doors and drawers; PVC edge banding, 3mm thick, matching laminate in color, pattern, and finish.

E. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL.

F. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces as scheduled.

2.06 PLASTIC LAMINATE STORAGE CUBBIES

A. Quality Standard: Comply with AWS Section 10 requirements for laminate cabinetwork.
1. Grade: Premium.

B. Cubby size and configuration as indicated on drawings.

C. Panel Material: Medium density overlay, exterior type, or veneer plywood, exterior type.

D. Laminate Cladding for Exposed and Semi-exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
1. Horizontal Surfaces Other Than Tops: Grade HGS.
2. Vertical Surfaces: Grade HGS.
3. Edge Banding: PVC edge banding, 3mm thick, matching laminate in color, pattern, and finish.

E. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL.

F. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces as scheduled.

G. Coat Hook: Single Coat Hook Häfele America Co., HEWI, Polyamide, 50 x 45 mm, white. Provide 2 coat hangers per cubby unit.

2.07 SOLID SURFACING-MATERIAL - COUNTERTOP

A. Quality Standard: Comply with AWS Section 11 requirements for solid surface countertops.
1. Grade: Premium.

B. Solid-Surfacing-Material Thickness: 1/2-inch.

C. Core Material:
1. At Dry Areas (Countertops with no sinks): Minimum 3/4-inch (19-mm) particleboard made with exterior glue.
2. At Wet Areas (Countertops with sinks): Minimum 1/2-inch (13-mm) marine type veneer core plywood, with a 24-hour thickness swell factor of 5 percent or less and a 24-hour water-absorption factor of 10 percent or less. Backsplashes shall be full height, to bottom of wall cabinet, unless shown otherwise.

D. Provide countertops and back- and side-splashes made of solid surfacing materials, eased edge. Provide built-up front edge and 1/2-inch material laminated to core material with Type II adhesive. Provide 1/2-inch thick backsplashes and side splashes. Unless shown otherwise on Drawings, provide side- and backsplashes full height from countertop to underside of upper cabinets. Provide holes for plumbing and for access grommets.

E. Fabricate tops in one (1) piece, unless otherwise indicated. Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.
   1. Fabricate tops with shop-applied edges of materials and configuration indicated.
   2. Fabricate tops with loose backsplashes for field application.
   3. Fabricate backsplash inside and outside corners with mitered edges. Sand and smooth edges so there are no rough or sharp edges.

2.08 SOLID-SURFACING-MATERIAL - WINDOW STOOL

A. Grade: Premium.

B. Solid-Surfacing-Material Thickness: 1/2-inch.

C. Colors, Patterns, and Finishes: Provide materials and products that result in colors of solid-surfacing material complying with the following requirements:
   1. As selected by Architect from manufacturer's full range.

D. Fabricate in one (1) piece for stool and one (1) piece for apron unless otherwise indicated on drawings Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.

2.09 SOLID-SURFACING-MATERIAL – LOCKER TOP

A. Grade: Premium.

B. Solid-Surfacing-Material Thickness: 1/2-inch.

C. Fabricate in one (1) piece unless otherwise indicated on drawings Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.
   1. Ease front edge of top with 1/4" radius.

2.10 FABRICATION, GENERAL

A. Interior Woodwork Grade: Unless otherwise indicated, provide Premium-grade interior woodwork complying with referenced quality standard. Provide wood veneers only within the range of the accepted samples, including providing select veneers if required to remain within that range.

B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

C. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

D. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
   1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4 inch (19 mm) Thick or Less: 1/16 inch (1.5 mm).
   2. Edges of Rails and Similar Members More Than 3/4 Inch (19 mm) Thick: 1/8 inch (3 mm).

3. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch (1.5 mm).

E. Joints Between Countertop and Backsplash and Side Splashes
1. Between Solid Surface Countertop and Solid Surface Backsplash: Horizontal butt joint, chemically sealed.

F. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.

G. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
1. Seal edges of openings in countertops with a coat of varnish.

2.11 SHOP FINISHING

A. Grade: Provide finishes of same grades as items to be finished and in accordance with AWS Section 5.

B. General: Finish architectural woodwork at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

C. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end-grain surfaces. Concealed surfaces of plastic-laminate-clad woodwork do not require backpriming when surfaced with plastic laminate, backing paper, or thermoset decorative panels.

***2.12 COUNTERTOP SUPPORT BRACKETS***

***A. Material: Fabricate components from extruded aluminum sections complying with ASTM B221, 6063-T5 alloy and temper.***
***1. Type: Support brackets fabricated by welding miter cut extruded aluminum sections, grinding and deburring sharp edges and welds, drilling holes for field attachment, and factory finishing.***
***2. Manufacturer; Rakks Shelving Systems and Support Brackets by Rangine Corp. or approved equal by Architect.***

***B. Description: Surface mounted counter brackets with a 2" x 2" x 1/4" L-shaped vertical leg.***

1. ***Model: EH-1818.***
2. ***Model: EH-1824.***

C. ***Factory applied finishes: Exposed aluminum surfaces shall be free of scratches and other serious blemishes and be factory finished with electrostatically applied, custom color selected by Architect, powder paint coating complying with AAMA 605.2.***

## *2.13 CUSTOM DISPLAY CASE*

A. ***Custom fabricated display case.***

B. ***Wood Species and Cut for Transparent Finish at Interior Surfaces: White Maple.***
1. ***Veneer: Grade "A" Plain sliced.***
2. ***Solid Wood Trim: Quarter sawn.***
3. ***Stain: Color to be selected by Architect.***
4. ***Transparent Wood Finish:***
   a. ***AWS Finish System 3: Post-catalyzed lacquer.***
   b. ***Sheen: Satin, 30-50 gloss units measured on 60-degree gloss meter per ASTM D 523.***

C. ***Wood Products: Comply with the following:***
1. ***Softwood Plywood: DOC PS 1***
   a. ***Veneer Plywood, Exterior Marine Grade B-B.***
2. ***Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.***
3. ***Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.***
   a. ***Medium Density Fiberboard, Moisture Resistant: ANSI 208.2; Composite Panel Association (CPA) CPA-IMR-TM-01; and CPS 4-11 for ECC certification.***
4. ***Panel thickness: 3/4".***

D. ***Tackable Surface: For fabric wrapped tack surface; High density mineral fiber board. Class A flame spread rating tested per ASTM E84; UL Classified. Minimum density of 20 lb/cu. ft. (320 kg/cu. m).***
1. ***Surface Burning Characteristics:***
   a. ***Flame spread: 25***
   b. ***Smoke developed: 10***
2. ***Thickness: 5/8"***
3. ***Mounting Devices: Concealed on back of panel, recommended by manufacturer to support weight of panel, and as follows:***
   a. ***Impaling Clips: Manufacturer's standard.***

E. ***Fabric Cover: Fabric-faced tackboard panel: Nondirectional weave, 100 percent polyester; weighing not less than 15 oz./sq. yd.; with surface-burning characteristics indicated.***
1. ***Surface-Burning Characteristics: Comply with ASTM E 84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.***
   a. ***Flame-Spread Index: 25 or less.***
   b. ***Smoke-Developed Index: 250 or less.***
2. ***Color: As selected by Architect.***

***F. Glass Material: Fully Tempered Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear), Quality-Q3.***

***1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.***

***a. Glass Doors: 5/16" thick.***

***b. Glass Shelving: 1/4" thick.***

***G. Reglet: Fry Reglet millwork reveal. 1" width with clear anodized finish***

***H. Dood Hardware:***

***1. Hinges: Acceptable Manufacturer: C.R. Laurence Co., Inc.***

***a. CRL Cardif Series top and bottom mount pivot hinges #CAR01CH.***

***1) Finish: Polished chrome.***

***2. Locks: Acceptable Manufacturer: Rockler Woodworking and Hardware Co.***

***a. Keyed double swing door deadbolt lock #32389. No drill installation for 5/16" thick glass doors.***

***1) Finish: Polished chrome.***

***3. Pull Handle: Acceptable Manufacturer: C.R. Laurence Co., Inc.***

***a. CRL Single pull handle #BM6X6CH with end caps for handle #CAPF1420BS.***

***1) Finish: Polished chrome.***

***I. Adjustable Shelf Standards and Shelf Bracket Supports:***

***1. Acceptable Manufacturer: Knape & Vogt Mfg. Co.BHMA A156.9, B04102; with shelf brackets, B04112; recess mounted in rear surface. Provide standards extending full height of display case.***

***a. Bracket depth: 18"***

***b. Finish: Anochrome.***

## *2.14 BENCH SEATING*

***A. Wood Species and Cut for Transparent Finish at Interior Surfaces: White Maple.***

***1. Veneer: Grade "A" Plain sliced.***

***2. Stain: Color to be selected by Architect.***

***3. Transparent Wood Finish:***

***a. AWS Finish System 3: Post-catalyzed lacquer.***

***b. Sheen: Satin, 30-50 gloss units measured on 60-degree gloss meter per ASTM D 523.***

***B. Wood Products: Comply with the following:***

***1. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.***

***2. Panel thickness: 3/4".***

***C. Stainless Steel Support Brackets: Stainless-Steel Sheet, Strip, and Plate: ASTM A 240/A 240M or ASTM A 666, Type 304.***

***1. Finish: Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.***

***2. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.***

***a. Run grain of directional finishes with long dimension of each piece.***

3. ***Directional Satin Finish: No. 4***
4. ***When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.***

## PART 3 - EXECUTION

### 3.01 PREPARATION

A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.

B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

### 3.02 INSTALLATION

A. Installation Quality Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.

B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.

C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.

F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
   1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
   2. Maintain veneer sequence matching of cabinets with transparent finish.
   3. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches (400 mm) o.c. with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.

G. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
   1. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
   2. Caulk space between backsplash and wall with sealant specified in Division 07 Section "Joint Sealing." Where there is no backsplash or where backsplash is of a

different material from countertop, calk space between countertop and adjoining material.

H. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.

3.03 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

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END OF SECTION 06 40 23

# SECTION 23 7423

# PACKAGED, DIRECT-FIRED, OUTDOOR, HEATING-ONLY MAKEUP-AIR UNITS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. Section includes outdoor, direct, gas-fired heating-only, makeup air units, including the following components:

1. Casings.
2. Outdoor-air intake hood.
3. Roof curbs.
4. Fans, drives, and motors.
5. Air filtration.
6. Dampers.
7. Direct, gas-fired burners.
8. Unit control panel.
9. Controls.
10. Accessories.

### 1.3 ACTION SUBMITTALS

A. Product Data: For each outdoor, direct, gas-fired heating-only, makeup air unit.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
3. Include unit dimensions and weight.
4. Include cabinet material, metal thickness, finishes, insulation, and accessories.
5. Fans:

a. Include certified fan-performance curves with system operating conditions indicated.
b. Include certified fan-sound power ratings.
c. Include fan construction and accessories.
d. Include motor ratings, electrical characteristics, and motor accessories.

6. Include filters with performance characteristics.
7. Include direct, gas-fired burners with performance characteristics.
8. Include dampers, including housings, linkages, and operators.

B. Sustainable Design Submittals:

1. Product data showing compliance with ASHRAE 62.1.
2. Product Data: For air filtration performance.
3. Product Data: For adhesives, mastics, and sealants, indicating VOC content.
4. Laboratory Test Reports: For adhesives, mastics, and sealants, indicating compliance with requirements for low-emitting materials.

C. Shop Drawings: For each outdoor, direct, gas-fired, heating-only, makeup air unit.

1. Include plans, elevations, sections, and mounting or attachment details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Detail fabrication and assembly of gas-fired heating and ventilating units, as well as procedures and diagrams.
4. Include diagrams for power, signal, and control wiring.

D. Delegated-Design Submittal: For vibration isolation and seismic restraints indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Include design calculations for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.

## 1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Floor plans and other details, or BIM model, drawn to scale, showing the items described in this Section, and coordinated with all building trades.

B. Sample Warranty: For manufacturer's warranty.

C. Seismic Qualification Data: Certificates for outdoor, direct, gas-fired, heating-only, makeup air units, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
4. Restraint of internal components.

D. Product Certificates: Submit certification that specified equipment will withstand wind forces identified in "Performance Requirements" Article and in Section 230548 "Vibration and Seismic Controls for HVAC."

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculations.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of wind force and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

E. Startup service reports.

F. Field quality-control reports.

## 1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For direct, gas-fired, heating-only, makeup air units to include in emergency, operation, and maintenance manuals.

## 1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Filters: One set(s) for each unit.
2. Gaskets: One set(s) for each access door.
3. Fan Belts: One set(s) for each unit.

## 1.7 WARRANTY

A. Warranty: Manufacturer agrees to repair or replace components of direct-fired heating and ventilating units that fail in materials or workmanship within specified warranty period.

1. Warranty Period for Entire Unit: Manufacturer's standard, but not less than one year(s) from date of Substantial Completion.

2. Warranty Period for Burners: Manufacturer's standard, but not less than 10 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by an NRTL, and marked for intended location and application.

B. NFPA Compliance: Comply with NFPA 90A for design, fabrication, and installation of units and components.

C. ASHRAE 62.1 Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."

D. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."

E. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design vibration isolation and seismic restraints, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

F. Seismic Performance: Indoor, indirect gas-fired, heating and ventilating units shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
2. Component Importance Factor: 1.0.

### 2.2 MANUFACTURERS

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

1. CaptiveAire Systems.
2. Greenheck Fan Corporation.
3. RuppAir.

### 2.3 UNIT CASINGS

A. General Fabrication Requirements for Casings:

1. Forming: Form walls, roofs, and floors with at least two breaks at each joint.
2. Casing Joints: Sheet metal screws or pop rivets, factory sealed with water-resistant sealant.
3. Makeup Air Unit Mounting Frame: Formed galvanized-steel channel or structural channel supports, designed for low deflection, welded with integral lifting lugs.

B. Configuration: Horizontal unit with horizontal or bottom discharge for roof-mounting installation.

C. Double-Wall Construction:

1. Outside Casing Wall: Galvanized steel, minimum 20 gauge thick, with manufacturer's standard finish.
2. Inside Casing Wall:

    a. Inside Casing, Burner Section: Galvanized steel, solid, minimum 14-gauge- thick steel.
    b. Inside Casing, All Other Sections: Galvanized steel solid steel.

3. Floor Plate: Galvanized steel, minimum 20 gauge thick.
4. Casing Insulation:

    a. Materials: Foil faced, glass-fiber blanket or board insulation, Type I or Type II ASTM C1071.
    b. Insulation Thickness: 1 inch.
    c. Thermal Break: Provide continuity of insulation with no through-casing metal in casing walls, floors, or roof of unit.

5. Airstream Surfaces: Surfaces in contact with airstream shall comply with requirements in ASHRAE 62.1.

D. Panels and Doors:

1. Panels:

    a. Fabrication: Formed and reinforced, with same materials and insulation thickness as casing.
    b. Fasteners: Two or more camlock type for panel lift-out operation. Arrangement shall allow panels to be opened against airflow.
    c. Gasket: Neoprene, applied around entire perimeters of panel frames.
    d. Size: Large enough to allow unobstructed access for inspection and maintenance of unit's internal components.

2. Doors:

    a. Fabrication: Formed and reinforced with same materials and insulation thickness as casing.

b. Hinges: A minimum of two ball-bearing hinges or stainless steel piano hinge and two wedge-lever-type latches, operable from inside and outside. Arrange doors to be opened against airflow. Provide safety latch retainers on doors so that doors do not open uncontrollably.
c. Gasket: Neoprene, applied around entire perimeters of panel frames.
d. Size: Large enough to allow unobstructed access for inspection and maintenance of unit's internal components.

3. Locations and Applications:

a. Fan Section: Doors.
b. Access Section: Doors.
c. Gas-Fired Burner Section: Doors.
d. Damper Section: Doors.
e. Filter Section: Doors large enough to allow periodic removal and installation of filters.
f. Mixing Section: Doors.

## 2.4 OUTDOOR-AIR INTAKE HOOD

A. Type: Manufacturer's standard hood or louver.

B. Materials: Match cabinet.

C. Bird Screen: Comply with requirements in ASHRAE 62.1.

D. Filter: Aluminum, 2 inches cleanable.

E. Configuration: Designed to inhibit wind-driven rain and snow from entering unit.

## 2.5 ROOF CURBS

A. Roof curbs with vibration isolators and wind or seismic restraints are specified in Section 230548 "Vibration and Seismic Controls for HVAC."

B. Materials: Galvanized steel with corrosion-protection coating, watertight gaskets, and factory-installed wood nailer; complying with NRCA standards.

1. Curb Insulation and Adhesive: Comply with NFPA 90A or NFPA 90B.

a. Materials: ASTM C1071, Type I or Type II.
b. Thickness: 1 inch.

2. Application: Factory applied with adhesive and mechanical fasteners to the internal surface of curb.

a. Liner Adhesive: Comply with ASTM C916, Type I.
b. Mechanical Fasteners: Galvanized steel, suitable for adhesive attachment, mechanical attachment, or welding attachment to duct without damaging liner when applied as recommended by manufacturer and without causing leakage in cabinet.
c. Liner materials applied in this location shall have air-stream surface coated with a temperature-resistant coating or faced with a plain or coated fibrous mat or fabric depending on service air velocity.
d. Liner Adhesive: Comply with ASTM C916, Type I.

C. Curb Height: 20 inches.

D. Wind and Seismic Restraints: Metal brackets compatible with the curb and casing, painted to match unit, used to anchor unit to the curb, and designed for loads at Project site. Comply with requirements in Section 230548 "Vibration and Seismic Controls for HVAC" for wind-load requirements.

## 2.6 FANS, DRIVES, AND MOTORS

A. Fan and Drive Assemblies: Statically and dynamically balanced and designed for continuous operation at maximum-rated fan speed and motor horsepower.

B. Fans: Centrifugal, rated according to AMCA 210; galvanized steel; mounted on solid-steel shaft.

1. Shafts: With field-adjustable alignment.
2. Shaft Bearings: Heavy-duty with an L50 rated life of 200,000 hours according to ABMA 9.
3. Housings: Formed- and reinforced-steel panels to form curved scroll housings with shaped cutoff and spun-metal inlet bell.
4. Mounting: For internal vibration isolation and seismic control. Factory-mount fans with manufacturer's standard restrained vibration isolation mounting devices having a minimum static deflection of 1 inch.
5. Shaft Lubrication Lines: Extended to a location outside the casing.
6. Flexible Connector: Factory fabricated with a fabric strip minimum 3-1/2 inches wide, attached to two strips of minimum 2-3/4-inch-wide by 0.028-inch-thick, galvanized-steel sheet.

a. Flexible Connector Fabric: Glass fabric, double coated with neoprene. Fabrics, coatings, and adhesives shall comply with UL 181, Class 1.

C. Drives: Factory-mounted V-belt drive, with adjustable alignment and belt tensioning, and with 1.5 or 1.25 service factor based on fan motor.

1. Pulleys: Cast iron or cast steel with split, tapered bushing, dynamically balanced at the factory.

2. Belts: Oil resistant, non-sparking and nonstatic; in matched sets for multiple-belt drives.
3. Belt Guards: Comply with requirements specified by OSHA and fabricate according to SMACNA's "HVAC Duct Construction Standards"; 0.146-inch-thick, 3/4-inch diamond-mesh wire screen, welded to steel angle frame; prime coated.

D. Motors:

1. Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
2. Motor Sizes: Maximum sizes as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
3. Enclosure: Open, drip proof.
4. Motor Pulleys: Adjustable pitch for use with 5-hp motors and smaller; fixed pitch for use with motors larger than 5 hp. Select pulley size so pitch adjustment is at the middle of adjustment range at fan design conditions.

## 2.7 AIR FILTRATION

A. Panel Filters:

1. Description: Pleated factory-fabricated, self-supported, disposable air filters with holding frames.
2. Filter Unit Class: UL 900.
3. Media: Interlaced glass, synthetic or cotton fibers coated with nonflammable adhesive and antimicrobial coating.
4. Filter-Media Frame: Beverage board with perforated metal retainer, or metal grid, on outlet side.

B. Cleanable Filters:

1. Cleanable aluminum mesh.

C. Adhesive, Sustainability Projects: As recommended by air-filter manufacturer and with a VOC content of 80 g/L or less.

D. Adhesive, LEED for Schools Projects: As recommended by air-filter manufacturer and that complies with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

E. Side-Access Filter Mounting Frames:

1. Particulate Air Filter Frames: Match inner casing and outer casing material, and insulation thickness. Galvanized steel track.

a. Sealing: Incorporate positive-sealing device to ensure seal between gasketed material on channels to seal top and bottom of filter cartridge frames to prevent bypass of unfiltered air.

## 2.8 DAMPERS

A. Dampers: Comply with requirements in Section 230923.12 "Control Dampers."

B. Outdoor-Air Dampers: Low-leakage, double-skin, airfoil-blade, galvanized-steel dampers with compressible jamb seals and extruded-vinyl blade edge seals in opposed-blade or parallel-blade arrangement with zinc-plated steel operating rods rotating in sintered bronze or nylon bearings mounted in a single galvanized-steel frame, and with operating rods connected with a common linkage. Leakage rate shall not exceed 4 cfm/sq. ft. at 1-inch wg and 8 cfm/sq. ft. at 4-inch wg rated in accordance with AMCA 500D.

C. Damper Operators: Comply with requirements in Section 230923 "Direct Digital Control (DDC) System for HVAC."

D. Electronic Damper Operators:

1. Direct-coupled type designed for minimum 60,000 full-stroke cycles at rated torque.
2. Electronic damper position indicator shall have visual scale indicating percent of travel and 2- to 10-V dc, feedback signal.
3. Operator Motors:

    a. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
    b. Size to operate with sufficient reserve power to provide smooth modulating action or two-position action.
    c. Permanent Split-Capacitor or Shaded-Pole Type: Gear trains completely oil immersed and sealed. Equip spring-return motors with integral spiral-spring mechanism in housings designed for easy removal for service or adjustment of limit switches, auxiliary switches, or feedback potentiometer.

4. Nonspring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running torque of 150 in. x lbf and breakaway torque of 300 in. x lbf.
5. Spring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running and breakaway torque of 150 in. x lbf.
6. Size dampers for running torque calculated as follows:

    a. Parallel-Blade Damper with Edge Seals: 7 inch-lb/sq. ft. of damper.
    b. Opposed-Blade Damper with Edge Seals: 5 inch-lb/sq. ft. of damper.
    c. Parallel-Blade Damper without Edge Seals: 4 inch-lb/sq. ft of damper.
    d. Opposed-Blade Damper without Edge Seals: 3 inch-lb/sq. ft. of damper.

e. Dampers with 2- to 3-Inch wg of Pressure Drop or Face Velocities of 1000 to 2500 fpm: Increase running torque by 1.5.
f. Dampers with 3- to 4-Inch wg of Pressure Drop or Face Velocities of 2500 to 3000 fpm: Increase running torque by 2.0.

7. Coupling: V-bolt and V-shaped, toothed cradle.
8. Overload Protection: Electronic overload or digital rotation-sensing circuitry.
9. Fail-Safe Operation: Mechanical, spring-return mechanism with external, manual gear release on nonspring-return actuators.
10. Power Requirements (Two-Position Spring Return): 24 V dc.
11. Power Requirements (Modulating): Maximum 10 VA at 24 V ac or 8 W at 24 V dc.
12. Proportional Signal: 2 to 10 V dc or 4 to 20 mA, and 2- to 10-V dc position feedback signal.
13. Temperature Rating: Minus 22 to plus 122 deg F.
14. Run Time: 12 seconds open, 5 seconds closed.

## 2.9 DIRECT-FIRED GAS BURNER

A. Description: Factory assembled, piped, and wired; and complying with ANSI Z21.47 and with NFPA 54.

B. CSA Approval: Designed and certified by and bearing label of CSA.

C. Burners: Aluminized steel with stainless-steel inserts.

1. Rated Minimum Turndown Ratio: 30 to 1.
2. Fuel: Natural gas.
3. Ignition: Electronically controlled electric spark with flame sensor.
4. Gas Control Valve: Modulating.
5. Gas Train: Regulated, redundant, 24-V ac gas valve assembly containing pilot solenoid valve, electronic-modulating temperature control valve, pilot filter, pressure regulator, pilot shutoff, and manual shutoff all in one body.

D. Safety Controls:

1. Gas Manifold: Safety switches and controls complying with ANSI standards and FM Global.
2. Vent Flow Verification: Differential pressure switch to verify open vent or flame rollout switch.
3. High Limit: Thermal switch or fuse to stop burner.
4. Purge-period timer shall automatically delay burner ignition and bypass low-limit control.
5. Airflow Proving Switch: Differential pressure switch senses correct airflow before energizing pilot.
6. Automatic-Reset, High-Limit Control Device: Stops burner and closes main gas valve if high-limit temperature is exceeded.

7. Safety Lockout Switch: Locks out ignition sequence if burner fails to light after three tries. Controls are reset manually by turning the unit off and on.
8. Control Transformer: 24 V ac.

## 2.10 UNIT CONTROL PANEL

A. Factory-wired, fuse-protected control transformer, connection for power supply and field-wired unit to remote control panel.

B. Control Panel: Surface-mounted or recessed with trim ring, remote panel, with engraved plastic cover and the following lights and switches:

1. On-off-auto fan switch.
2. Heat-vent-off switch.
3. Supply-fan operation indicating light.
4. Heating operation indicating light.
5. Thermostat.
6. Damper position potentiometer.
7. Dirty-filter indicating light operated by unit-mounted differential pressure switch.
8. Safety-lockout indicating light.
9. Enclosure: NEMA 250, Type 3R or Type 4.

## 2.11 CONTROLS

A. Comply with requirements in Section 230923 "Direct Digital Control (DDC) System for HVAC" and Section 230993 "Sequence of Operations for HVAC DDC" for control equipment and sequence of operation.

B. Control Devices:

1. Remote Thermostat: Adjustable room thermostat with temperature readout.
2. Remote Setback Thermostat: Adjustable room thermostat without temperature readout.
3. Static-Pressure Transmitter: Nondirectional sensor with suitable range for expected input, and temperature compensated.
4. Fire-Protection Thermostats: Fixed or adjustable settings to operate at not less than 75 deg F above normal maximum operating temperature.
5. Timers, Seven Day:

    a. Programming-switch timer with synchronous-timing motor and seven-day dial.
    b. Continuously charged, nickel-cadmium-battery-driven, eight-hour, power-failure carryover.
    c. Multiple-switch trippers.
    d. Minimum of two and maximum of eight signals per day with two normally open and two normally closed output contacts.

6. Timers, Solid State:

    a. Programmable time control with four separate programs.
    b. 24-hour battery carryover.
    c. Individual on-off-auto switches for each program.
    d. 365-day calendar with 20 programmable holidays.
    e. Choice of fail-safe operation for each program.
    f. System fault alarm.

7. Ionization-Type Smoke Detectors:

    a. 24-V dc, nominal.
    b. Self-restoring.
    c. Plug-in arrangement.
    d. Integral visual-indicating light.
    e. Sensitivity that can be tested and adjusted in place after installation.
    f. Integral addressable module.
    g. Remote controllability.
    h. Responsive to both visible and invisible products of combustion.
    i. Self-compensating for changes in environmental conditions.

C. Fan Control, Interlocked: Fan to start with exhaust fan(s) to which this heating and ventilating unit is associated for makeup air.

D. Fan Control, Timer: Timer starts and stops direct-fired heating and ventilating unit and exhaust fan(s).

E. Outdoor-Air Damper Control, 100 Percent Outdoor-Air Units: Outdoor-air damper shall open when supply fan starts, and close when fan stops.

F. Temperature Control:

1. Operates gas valve to maintain discharge-air temperature with factory-mounted sensor in blower outlet.
2. Operates gas valve to maintain space temperature with wall-mounting, field-wired sensor with temperature adjustment, and adjustment on remote-control panel.
3. Burner Control, Modulating: 20 to 100 percent modulation of the firing rate. 10 to 100 percent with dual burner units.

G. Interface with DDC System for HVAC: Factory-installed hardware and software to enable the DDC system for HVAC to monitor, control, and display status and alarms of heating and ventilating unit.

1. ASHRAE 135.1 (BACnet) communication interface with the DDC system for HVAC shall enable the DDC system for HVAC operator to remotely control and monitor the heating and ventilating unit from an operator workstation. Control features and

monitoring points displayed locally at heating and ventilating unit control panel shall be available through the DDC system for HVAC.

## 2.12 ACCESSORIES

A. Electric heater with integral thermostat maintains minimum 50 deg F temperature in gas burner compartment.

B. Duplex, 115-V, ground-fault-interrupter outlet with 15-A overcurrent protection. Include transformer if required.

C. Filter differential pressure switch with sensor tubing on either side of filter. Set for final filter pressure loss.

## 2.13 MATERIALS

A. Steel:

1. ASTM A36/A36M for carbon structural steel.
2. ASTM A568/A568M for steel sheet.

B. Stainless Steel:

1. Manufacturer's standard grade for casing.
2. Manufacturer's standard type, ASTM A240/A240M for bare steel exposed to airstream or moisture.

C. Galvanized Steel: ASTM A653/A653M.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for piping, ducts, and electrical systems to verify actual locations of piping and electrical connections before equipment installation.

C. Verify cleanliness of airflow path to include inner-casing surfaces, filters, coils, turning vanes, fan wheels, and other components.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 INSTALLATION

A. Roof Curb: Install on roof structure or concrete base, level and secure, according to NRCA's "NRCA Roofing Manual: Membrane Roof Systems" or AHRI Guideline B. Install units on curbs and coordinate roof penetrations and flashing with roof construction specified in Section 077200 "Roof Accessories." Secure units to upper curb rail, and secure curb base to roof framing or concrete base with anchor bolts. Coordinate sizes and locations of roof curbs with actual equipment.

1. Comply with requirements for vibration isolation and seismic-control devices specified in Section 230548 "Vibration and Seismic Controls for HVAC."

B. Install gas-fired units according to NFPA 54, "National Fuel Gas Code."

C. Install controls and equipment shipped by manufacturer for field installation with direct-fired heating and ventilating units.

## 3.3 PIPING CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

1. Gas Piping: Comply with requirements in Section 231124 "Fuel Gas Piping." Connect gas piping with shutoff valve and union, and with sufficient clearance for burner removal and service. Make final connections of gas piping to unit with corrugated, stainless-steel tubing flexible connectors complying with ANSI LC 1/CSA 6.26 equipment connections.

B. Drain: Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for traps and accessories on piping connections to condensate drain pans under condensing heat exchangers.

C. Where installing piping adjacent to heating and ventilating units, allow space for service and maintenance.

## 3.4 DUCT CONNECTIONS

A. Duct Connections: Connect supply ducts to direct-fired heating and ventilating units with flexible duct connectors. Comply with requirements in Section 233300 "Air Duct Accessories" for flexible duct connectors.

## 3.5 ELECTRICAL CONNECTIONS

A. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

B. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

C. Install electrical devices furnished by manufacturer, but not factory mounted, according to NFPA 70 and NECA 1.

D. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.

1. Nameplate shall be laminated acrylic or melamine plastic signs, as specified in Section 260553 "Identification for Electrical Systems."
2. Nameplate shall be laminated acrylic or melamine plastic signs with a black background and engraved white letters at least 1/2 inch high.

## 3.6 CONTROL CONNECTIONS

A. Install control and electrical power wiring to field-mounted control devices.

B. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

## 3.7 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

B. Complete installation and startup checks according to manufacturer's written instructions and perform the following:

1. Inspect for visible damage to burner combustion chamber.
2. Inspect casing insulation for integrity, moisture content, and adhesion.
3. Verify that clearances have been provided for servicing.
4. Verify that controls are connected and operable.
5. Verify that filters are installed.
6. Purge gas line.
7. Inspect and adjust vibration isolators and seismic restraints.
8. Verify bearing lubrication.
9. Inspect fan-wheel rotation for movement in correct direction without vibration and binding.
10. Adjust fan belts to proper alignment and tension.

C. Start unit according to manufacturer's written instructions.

1. Complete startup sheets and attach copy with Contractor's startup report.
2. Inspect and record performance of interlocks and protective devices; verify sequences.
3. Operate unit for run-in period recommended by manufacturer.

4. Perform the following operations for both minimum and maximum firing, and adjust burner for peak efficiency:

    a. Measure gas pressure at manifold.
    b. Measure combustion-air temperature at inlet to combustion chamber.
    c. Measure supply-air temperature and volume when burner is at maximum firing rate and when burner is off. Calculate useful heat to supply air.

5. Calibrate thermostats.
6. Adjust and inspect high-temperature limits.
7. Inspect dampers, if any, for proper stroke and interlock with return-air dampers.
8. Inspect controls for correct sequencing of heating, mixing dampers, refrigeration, and normal and emergency shutdown.
9. Measure and record airflow. Plot fan volumes on fan curve.
10. Verify operation of remote panel, including pilot-operation and failure modes. Inspect the following:

    a. High-limit heat.
    b. Alarms.

11. After startup and performance testing, change filters, verify bearing lubrication, and adjust belt tension.
12. Verify drain-pan performance.
13. Verify outdoor-air damper operation.

## 3.8 ADJUSTING

A. Adjust initial temperature set points.

B. Set field-adjustable switches and circuit-breaker trip ranges as indicated.

C. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

## 3.9 CLEANING

A. After completing system installation and testing, adjusting, and balancing makeup air unit and air-distribution systems and after completing startup service, clean air-handling units internally to remove foreign material and construction dirt and dust. Clean fan wheels, cabinets, dampers, coils, and filter housings, and install new, clean filters.

3.10 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

B. Units will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

3.11 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain heating and ventilating units.

END OF SECTION 237423

# SECTION 23 8229

# RADIATORS

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

A. Section includes flat-pipe steel radiators.

### 1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, furnished specialties, and accessories.

B. Shop Drawings:

1. Include plans, elevations, sections, and details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Indicate location and size of each field connection.
4. Indicate location and arrangement of piping valves and specialties.
5. Indicate location and arrangement of integral controls and other accessories.

C. Samples: For each exposed product and for each color and texture specified.

D. Color Samples for Initial Selection: For radiators with factory-applied color finishes.

E. Color Samples for Verification: For each type of exposed finish.

### 1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Floor plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Structural members, including wall construction, to which radiators will be attached.
2. Method of attaching radiators to building structure.
3. Penetrations of fire-rated wall and floor assemblies.

B. Field quality-control reports.

## PART 2 - PRODUCTS

### 2.1 FLAT-PIPE STEEL RADIATORS

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

1. Hydro-Air Components Inc.
2. Quincy Hydronic Technology Inc.
3. Runtal North America, Inc.

B. Heating Elements: Steel, welded and formed into flat, square, steel header with minimum thickness of 0.109 inch. Include threaded piping and air-vent connections.

1. Working Pressure: 128 psig.

C. Mounting: Wall brackets or floor pedestals with maximum spacing of 36 inches.

D. Finish: Baked-enamel finish in manufacturer's custom color as selected by Architect.

E. Accessories:

1. Steel piping covers finished to match radiator finish.
2. Flexible Expansion Compensation Hoses: Minimum 400-psig working pressure, and operating temperatures from 33 to 211 deg F.

a. Minimum Diameter: Equal to connection size.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine areas to receive radiators for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for hydronic-piping connections to verify actual locations before installation of radiators.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 INSTALLATION

A. Install units level and plumb.

B. Install expansion compensation hoses.

C. Install piping covers.

## 3.3 CONNECTIONS

A. Piping installation requirements are specified in Section 232113 "Hydronic Piping" and Section 232116 "Hydronic Piping Specialties." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect radiators and components to piping according to Section 232113 "Hydronic Piping" and Section 232116 Hydronic Piping Specialties."

1. Install shutoff valves on inlet and outlet, and balancing valve on outlet.

C. Install control valves as required by Section 230923 " Direct Digital Control (DDC) System for HVAC."

D. Install piping adjacent to radiators to allow service and maintenance.

## 3.4 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

B. Units will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION 238229

# CLARIFICATION TO SPECIFICATION 275116 – PUBLIC ADDRESS SYSTEM

**Johnson Elementary School**

**ADDENDUM #4**

**11/30/18**

Specification 275116 indicates an existing Bogen Mulicom Public Address System. A Multicom system does not exist.. The existing Public Address system shall remain operational until the new system is installed. The specification basis of design is the Bogen Multicom product. Approved manufacturers remain as specified.

**END OF CLARIFICATION**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

B. Related Drawings

1. “T” Drawings – Technology Plans
2. “Y” Drawings – Security Plans

C. Related Sections:

1. Division 281600 Section "Intrusion Detection" devices.
2. Division 280500 Section “Access Control” devices.

1.02 SUMMARY

A. Description

1. The awarded installation contractor of this section shall furnish and install all the cabling indicated within the architectural drawings associated with the Intrusion detection system and all access control devices associated with the secured doors. The access control devices shall be specified during the renovation phase of the High School.

B. Section Includes:

1. Pathways.
2. Security cabling.
3. Cable connecting hardware.
4. Cabling system identification products.
5. Electronic safety and security equipment coordination and installation.
6. Common electronic safety and security installation requirements.

1.03 DEFINITIONS

A. “Project Manager” shall mean the Owner’s appointed representative.

B. “As Necessary” shall mean work which is required for completed construction, but is not necessarily shown or described in the Contract Documents.

C. “As Required” shall mean work which is required for completed construction and is shown on the drawings or described in the project specification.

D. “Install” shall mean to set in place complete with all mounting facilities and connections as required ready for normal use of service

E. "Substantial Completion" shall mean that the project is sufficiently complete to be utilized for its intended use as stated in the body of this written specification.

F. "Conduit" shall include all fittings, sleeves, connections, hangers and other accessories related to such conduit.

G. "Surface Metal Raceway" shall include all fittings, sleeves, connections, hangers and other accessories related to such raceway.

H. "Concealed" shall mean hidden from sight, as in chases, furred spaces, shafts, fixed ceiling or embedded in construction.

I. "Exposed", shall mean not "concealed" as defined above.

J. "Governmental" shall mean all municipal, state and federal government agencies.

K. The words "Furnish", "Supply" and "Provide" shall mean purchase, deliver to the job site, protect and provide interim storage and install in accordance with manufacturer's specifications.

L. Words "Approved Equal" shall mean any product which in the opinion of the Technology Consultant is equal in quality, arrangement, appearance, and performance to the product specified.

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

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

O. Words in the singular shall also mean and include the plural, wherever the context so indicates, and words in the plural shall mean the singular, wherever the context so indicates.

P. "Contractor" refers to the biding/installation Contractor responsible for furnishing and installation of all work indicated within this specification.

1.04 SECURITY CABLING DESCRIPTION

A. Security cable and its connecting hardware provide the means of transporting signals between the remote security devices and the main hardware located within the communications equipment rooms.

1.05 SUBMITTALS

A. Product Data: For each type of product indicated and utilized.

B. Qualification Data: For Installer**,** qualified layout technician, installation supervisor, and field inspector.

C. Source quality-control reports.

D. Field quality-control reports.

E. Maintenance Data: For splices and connectors to include in maintenance manuals.

1.06 QUALITY ASSURANCE

A. Codes and Standards:

1. All materials and workmanship shall comply with the latest additions of all applicable Codes, Specifications, Local and State Ordinances and Industry Standards.

2. The Contractor shall promptly notify the Construction Manager in case of conflict between Building Codes, State Laws, Local Ordinances and the Contract Documents.

3. Should the Contractor perform any work that does not comply with the requirements of the applicable Building Codes, Local Ordinances and Industry Standards, they shall bear all costs arising in correcting the deficiencies.

4. The Contractor, for the work in their scope, shall give all necessary notices, obtain all permits, pay all governmental taxes, fees and other costs in connection with his work; file for necessary approvals with the jurisdiction under which the work is to be performed. The Contractor shall obtain all required Certificates of Inspection for his respective work and deliver same to the Construction Manager before request for acceptance of their work is made and before final payment.

1.07 COORDINATION

A. Coordinate layout and installation of security pathways and cabling with Owner's telecommunications and LAN equipment and Security service suppliers.

B. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping.

PART 2 - PRODUCTS

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

1. Belden CDT Inc. Electronics Division.
2. West Penn.
3. Approved Equivalent.

B. Cabling size and conductor quantities are described within the architectural drawing package.

C. All cabling shall be plenum rated.

2.02 SLEEVE SEALS

A. Sleeves shall be adequately sized for the conduits and cables to be installed, with sufficient free space to install sealing caulk or putty. All sleeves will be fabricated of 1” minimum O.D. EMT, de-burred, material with a plastic or metal collar securely fastened to each end.

B. Where penetrations are within floor slabs and fire rated partitions, pack the annular space between the sleeves and the conduit or cables with fire-retardant putty. The sealant material shall be intumescent, asbestos free and installed in accordance with UL and the manufacturer's instructions.

C. Fire-retardant sealer and system shall be UL listed for the application and meet ASTM E-84, ASTM E-814, and UL 1479 requirements. Use Nelson "FSP" or approved equal.

D. If Contractor elects to utilize any penetration which may currently exist, then it is the Contractors responsibility to properly sleeve and firestop that penetration prior to completion of project.

2.03 FIRESTOPPING

A. All conduits etc., passing through fire rated floors, walls and partitions, shall have the space between the raceways, sleeves and all penetrations filled with a reusable fire stopping material such as Firestop Putty, Adhesive Firestop Sealant or Firestop Compound as manufactured by STI or approved equal.

2.04 IDENTIFICATION PRODUCTS

A. Comply with TIA-606-B and UL 969 for labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

B. All security cabling shall be labeled at both ends.

2.05 SOURCE QUALITY CONTROL

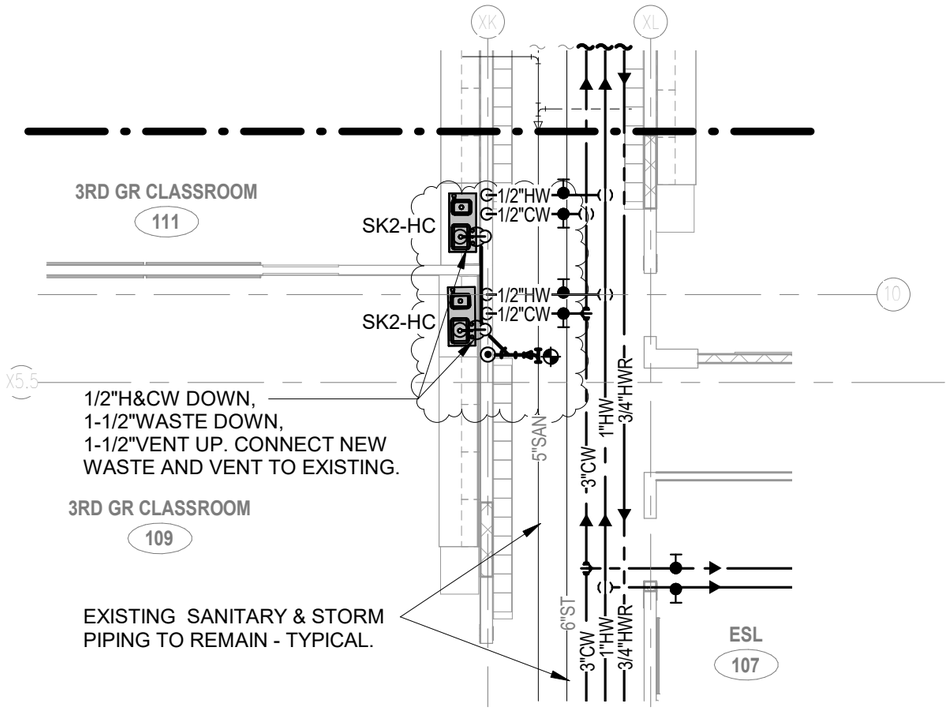
A. Testing Agency: Engage a qualified testing agency to evaluate cables.

B. Testing: Continuity of cabling shall be performed and test results submitted to the Owner.

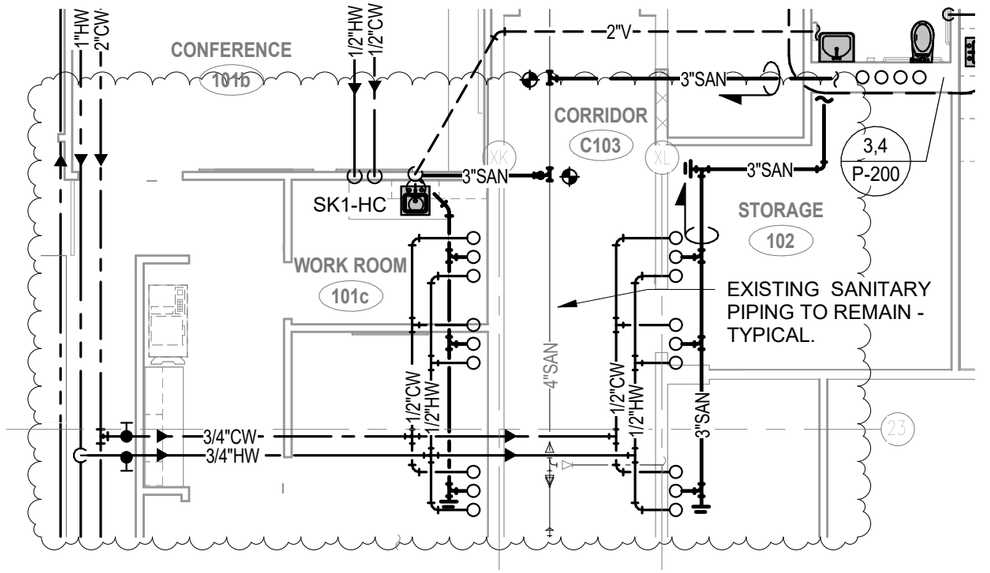
PART 3 - EXECUTION

3.01 All locations shown on the architectural drawings are for approximation purposes only and must be field verified prior to installation. 10' service loops are required to enable terminations subsequent to device installation.

END OF SECTION 28 05 00




1 3RD GRADE CLASSROOMS 109 & 111 REF. DWG P-101A
1/8" = 1'-0"




2 PIPING TO ART CLASSROOMS 201 & 202 REF. DWG P-101A
1/8" = 1'-0"

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NOTES:

# RALPH M. T. JOHNSON ELEMENTARY SCHOOL ADDITIONS & RENOVATIONS

500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE
0
( IN FEET )

PSK-1

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| CHECKED BY: | J.S. |
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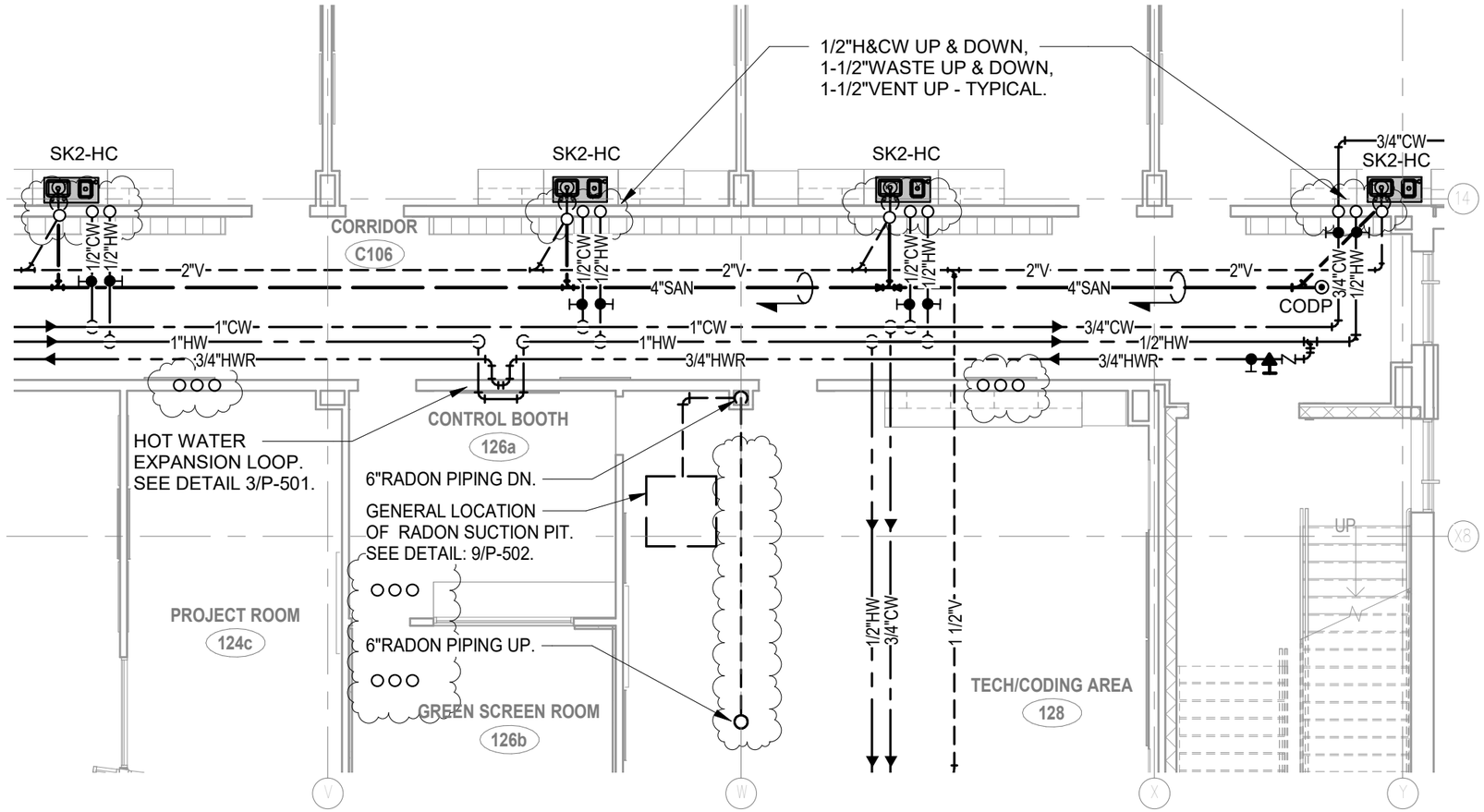
| DATE: | 11/09/18 |
| PROJECT NO.: | 68962 |




1 BUILDING A PIPING
1/8" = 1'-0"

REF. DWG P-101A

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CT 06801

GRAPHIC SCALE

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( IN FEET )

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| CHECKED BY: | J.S. |
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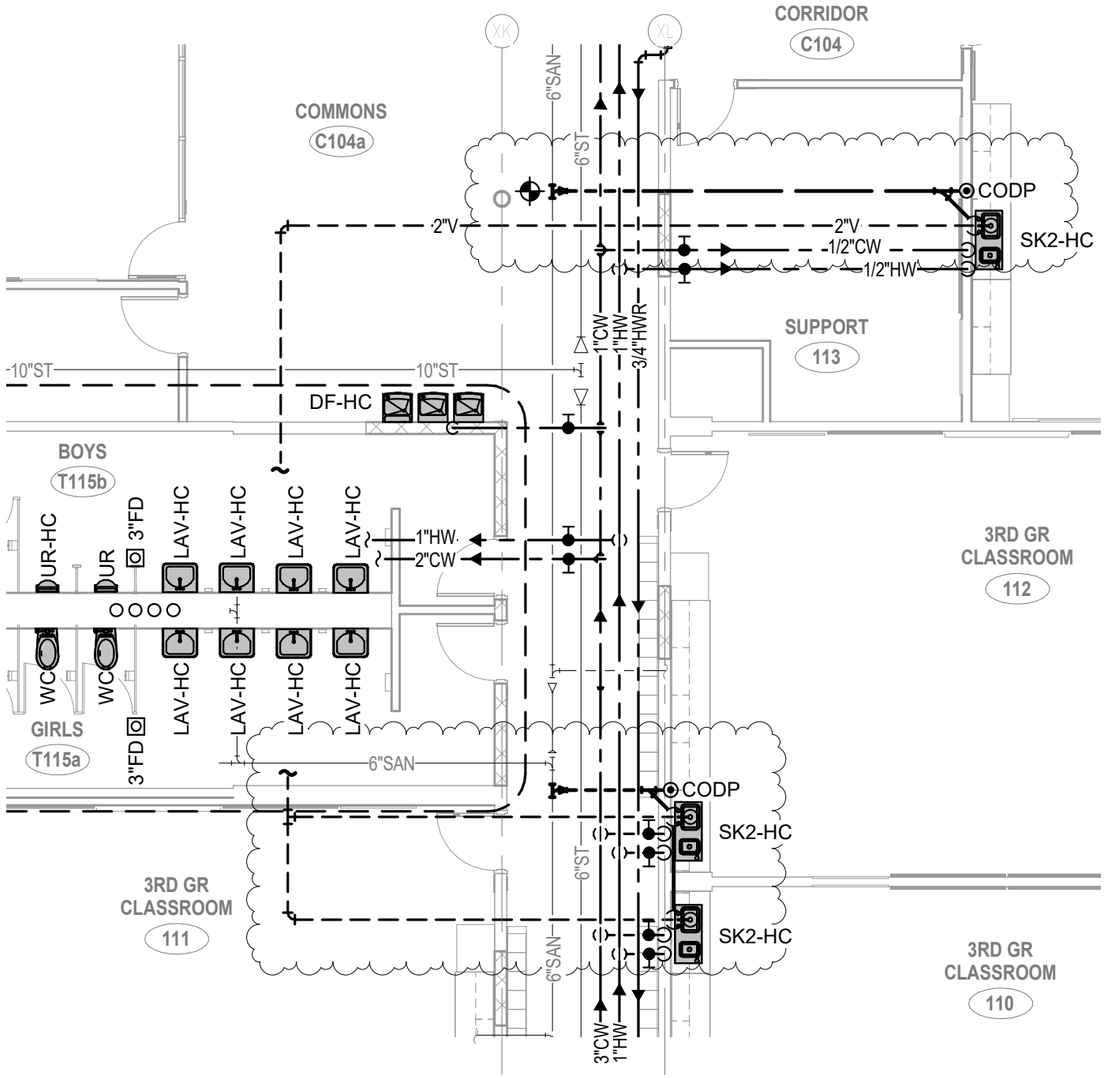
| PROJECT NO.: | 68962 |




1 BUILDING B SANITARY PIPING
1/8" = 1'-0"

REF. DWG P-101B

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CT 06801

GRAPHIC SCALE

( IN FEET )

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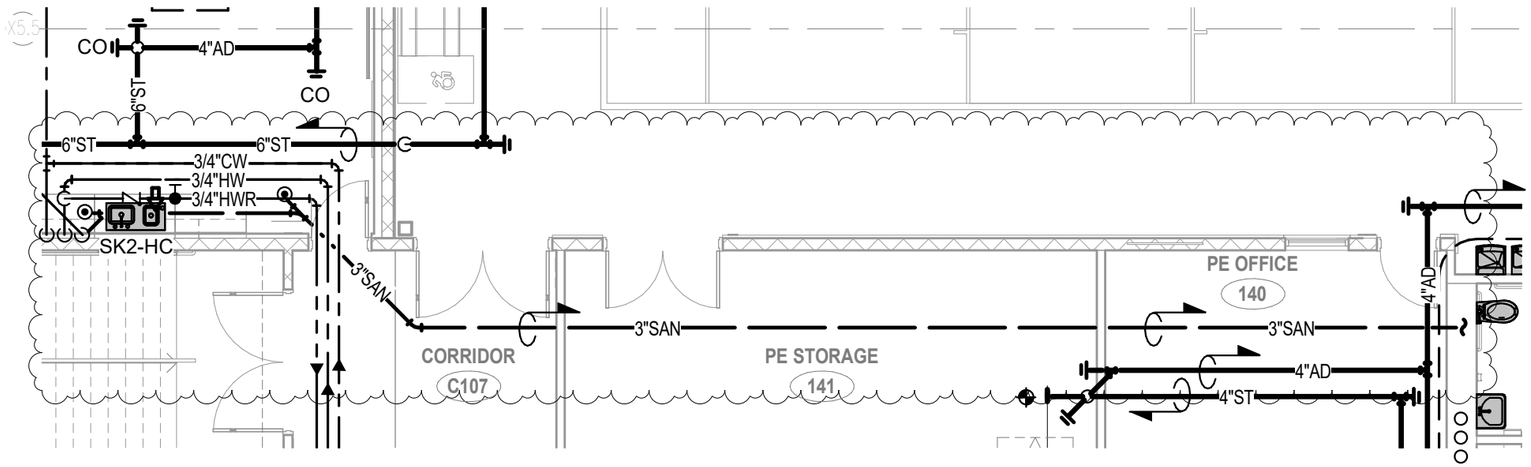


1 HEALTH CLASSROOM 143 SANITARY PIPING
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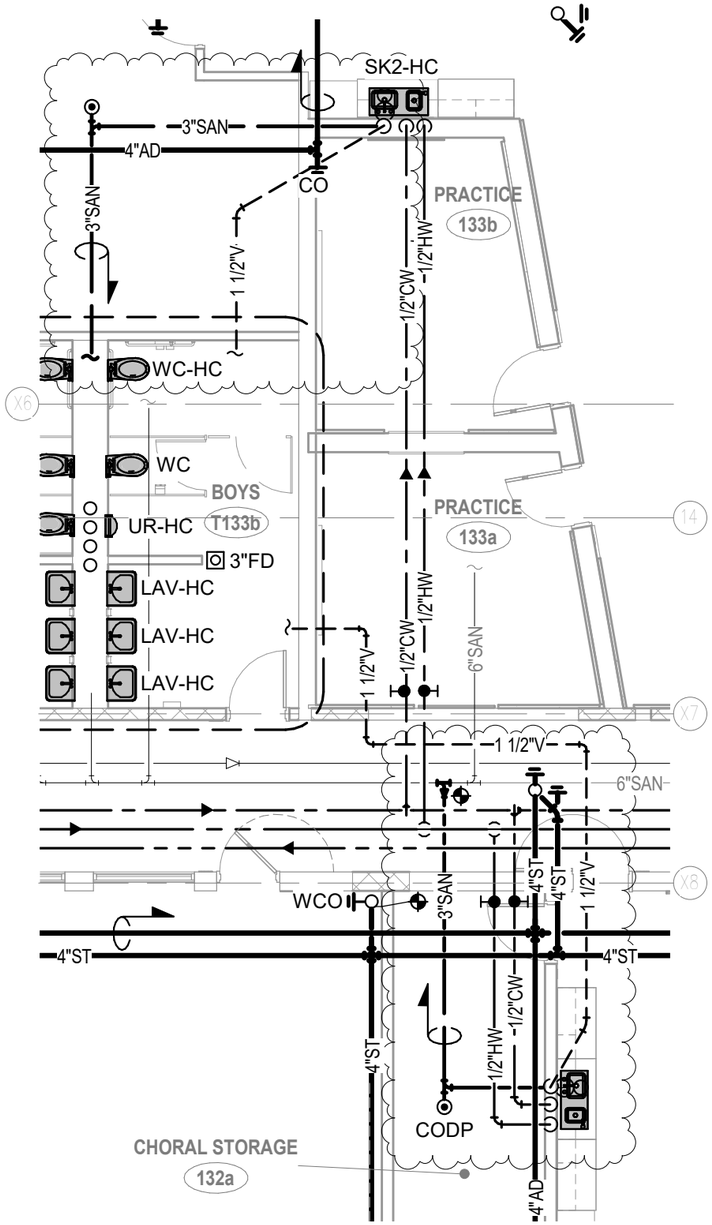


2 ENSEMBLE RM 133 & MUSIC RM 132 SAN. PIPING
1/8" = 1'-0"

REF. DWG P-101C

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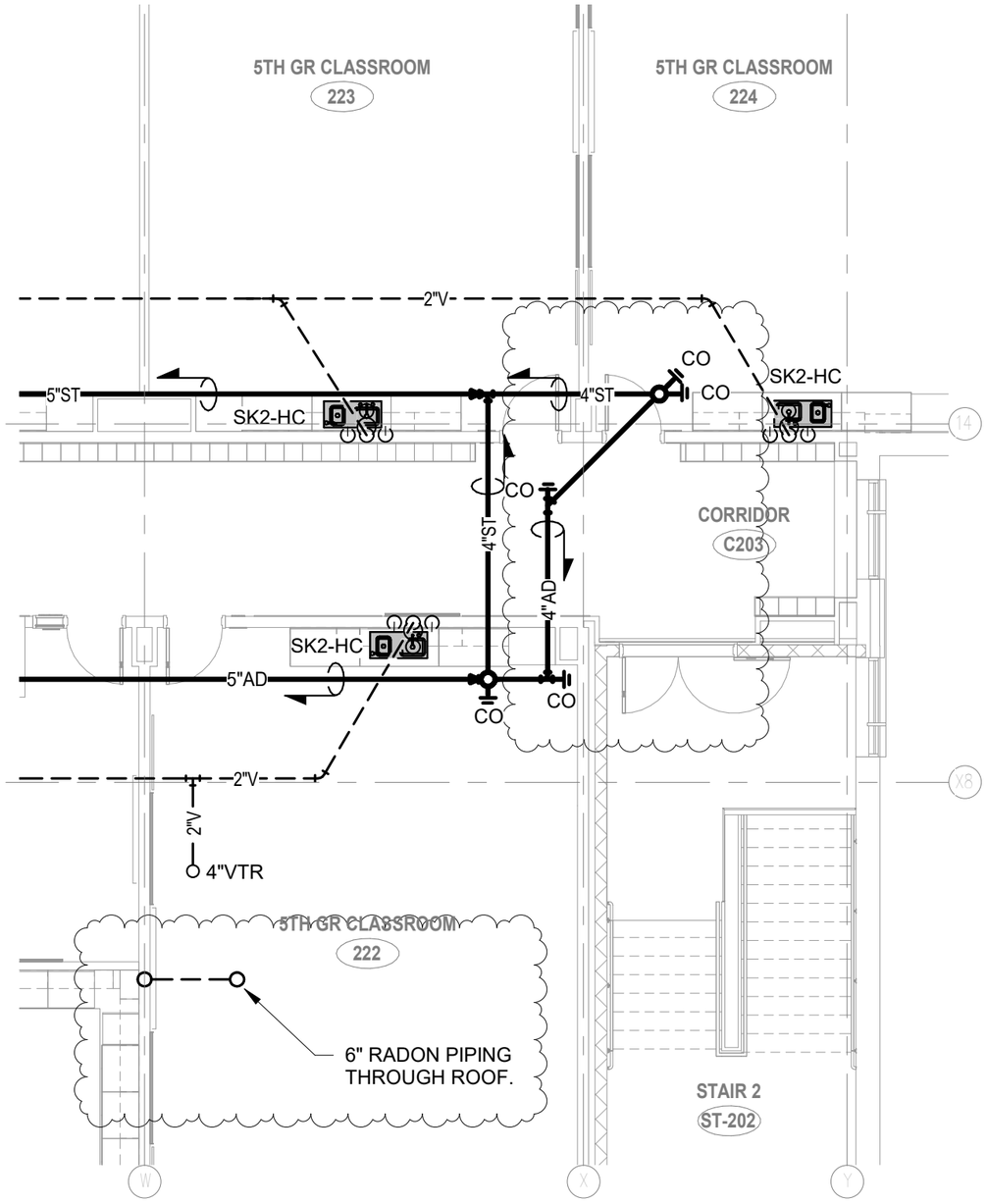


1 5TH GRADE CLASSROOM 224 SANITARY PIPING
1/8" = 1'-0"

REF. DWG P-102A

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| PROJECT NO.: | 68962 |

# PLUMBING FIXTURE/EQUIPMENT SCHEDULE

| MARK | MFR | MODEL | DESCRIPTION |
|---|---|---|---|
| GT | XERXES | GI-6-3000-UPC | UNDERGROUND EXTERIOR FIBERGLASS, SINGLE WALLED GREASE SEPARATOR, 3,000 GALLON CAPACITY, 2,401 GALLONS GREASE STORAGE, 538 GALLONS SOLIDS STORAGE, H20 FRAME AND COVER, ALARM PANEL, EXTENSION COLLAR. |
| HB | WOODFORD | 26 METAL HANDLE | CAST BRASS, CHROME FINISH, LOOSE KEY, ANTI-SIPHON ASSE RATED VACUUM BREAKER, TRIMLINE WALL HYDRANT w/ 3/4"INLET. |
| HB-2 | WOODFORD | RHY-1 | NONFREEZE ROOF HYRDANT. VALVE BODY OF ROOF HYRDANT IS DRILLED AND TAPPED WITH 1/8" DRAIN HOLE WHICH MUST BE PIPED TO A DRAIN LOCATION. |
| HT | RAYCHEM | XL-TRACE 5XL-1 | KITCHEN FREEZER CONDENSATE FREEZE PROTECTION, 5 WATTS PER FOOT, 208V. SYSTEM CONTROLLED BY AN AMBIENT SENSING THERMOSTAT #AMC-55 SET AT 40 F. |
| HT | RAYCHEM | XL-TRACE 12XL2-CT<br>C910-485 | GREASE KITCHEN WASTE HEAT TRACE CABLE, 12 WATTS PER FOOT, 208V. SYSTEM SET & CONTROLLEDBY DIGITAL TEMPERATURE CONTROLLER WITH BUILT-IN GROUND FAULT PROTECTION. |
| SK2-HC | ELKAY<br>CHICAGO FAUCETS | DRKADA-3717-L-C<br>432-ABCP | SINK AND FOUNTAIN PACKAGE: ADA COMPLIANT, TWO COMPARTMENT, 18 GAUGE, TYPE 302 STAINLESS STEEL SELF RIMMING, SINK AND FOUNTAIN PACKAGE WITH ONE-HOLE REAR DECK. LK-4122 HI-ARC FAUCET, SINGLE LEVER, TRADITIONAL SPOUT, POST MOUNT, SWING SPOUT. HI-ARC DRY CARTRIDGE, 9" OUTLET HEIGHT, 6" REACH, 1-HOLE INSTALLATION, 10" INLET TUBE, AERATOR. LK-1141 NO LEAD FLEXI-GUARD BUBBLER. PUSHBUTTON VALVE DESIGN MEETS ANSI AND ADA REQUIREMENTS. FLEXI-GUARD SAFETY BUBBLER, BUILT IN ADJUSTABLE WATER VOLUME CONTROL LK-35 DUO STRAINER IN SINK, LK-8 GRID STRAINER IN FOUNTAIN. 1-1/2" TAILPIECE, ONE-PIECE CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT PLUG AND OFFSET DRAIN. CHROME PLATED 1-1/2" NIPPLE WITH WALL FLANGE. LOOSE KEY ANGLE SUPPLY STOPS. INSULATE COVER SUPPLIES AND WASTE WITH TRUEBRO BASIN GUARD, MODEL #36 OR #42 DEPENDING ON OPENING SIZE. MOUNT AT ACCESSIBLE HEIGHT PER ARCHITECTURAL DWG. G-001. |
| | | | |
| TMV | SYMMONS | 5-110 | THERMOSTATIC MIXING VALVE - KITCHEN SINKS, 3/8" INLETS, 3/8" OUTLET. |
| TP | PROSET | TG-23 | TRAP PRIMER INSERT, AN ELASTOMERIC, NORMALLY CLOSED TRAP GUARD DEVICE UTILIZES A NORMALLY CLOSED SEAL TO PREVENT EVAPORATION OF THE TRAP SEAL AND ALSO PROTECT AGAINST SEWER GASES FROM BACKING UP INTO HABITABLE AREAS. IT OPENS WITH FLUID AND ALLOWS LIQUID DRAINAGE TO FLOW THROUGH INTO THE BUILDING DRAIN. |
| UR | KOHLER<br>SLOAN | K-4991-ER<br>8186-0.125, CP FINISH<br>.125 GPF | VITREOUS CHINA URINAL, WHITE, WALL HUNG, 3/4" I.P.S. OUTLET. LIP MOUNTED 17" A.F.F. EXPOSED, CHROME TOP SPUD FLUSH VALVE ELECTRONIC SENSOR, BATTERY OPERATED w/ANGLE STOP, VACUUM BREAKER, WALL & SPUD FLANGES. WADE 400 CARRIER. |

1 PLUMBING FIXTURE / EQUIPMENT SCHEDULE
N.T.S.

REF. DWG P-400

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500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE

NORTH

( IN FEET )

SKP-6

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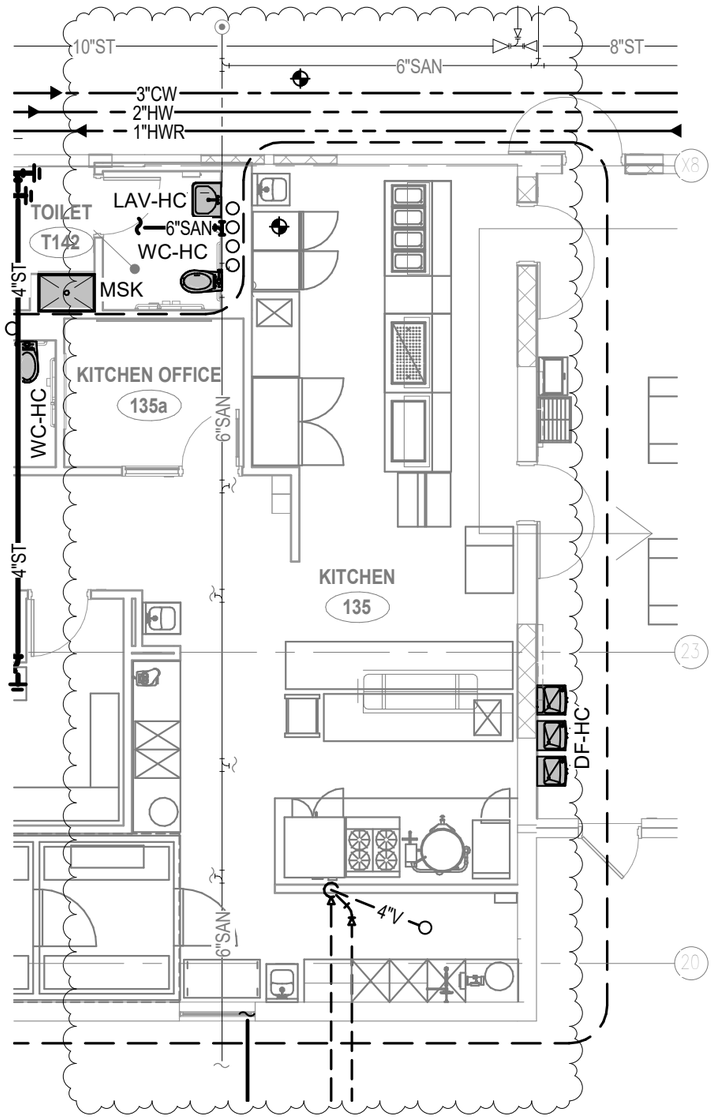
| SCALE: | N.T.S. |
| DATE: | 11/14/18 |
| PROJECT NO.: | 68962 |




1 KITCHEN AREA SANITARY PIPING REF. DWG P-300
1/8" = 1'-0"

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Ph: 203 239 4200 Fax: 203 234 7376
www.teamdtc.com

NOTES:

# RALPH M. T. JOHNSON ELEMENTARY SCHOOL ADDITIONS & RENOVATIONS

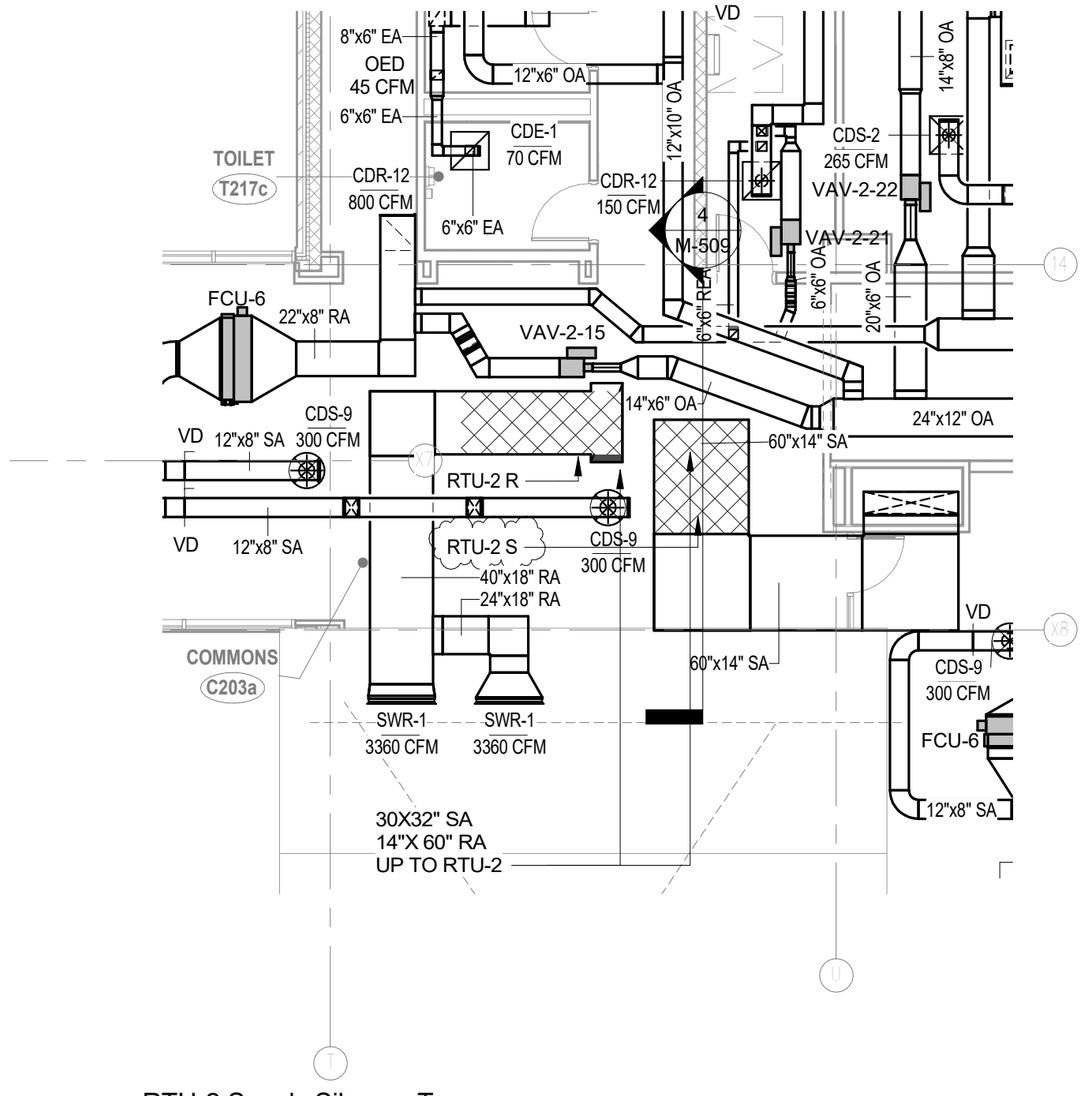
500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE

( IN FEET )

SKP-7

| | |
|---|---|
| DRAWN BY: | Author |
| CHECKED BY: | Checker |
| SCALE: | 1/8" = 1'-0" |
| DATE: | 11/19/18 |
| PROJECT NO.: | 68962 |




1 RTU-2 Supply Silencer Tag
1/8" = 1'-0"

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Ph: 203 239 4200 Fax: 203 234 7376
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NOTES:

# RALPH M. T. JOHNSON ELEMENTARY SCHOOL ADDITIONS & RENOVATIONS

500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE

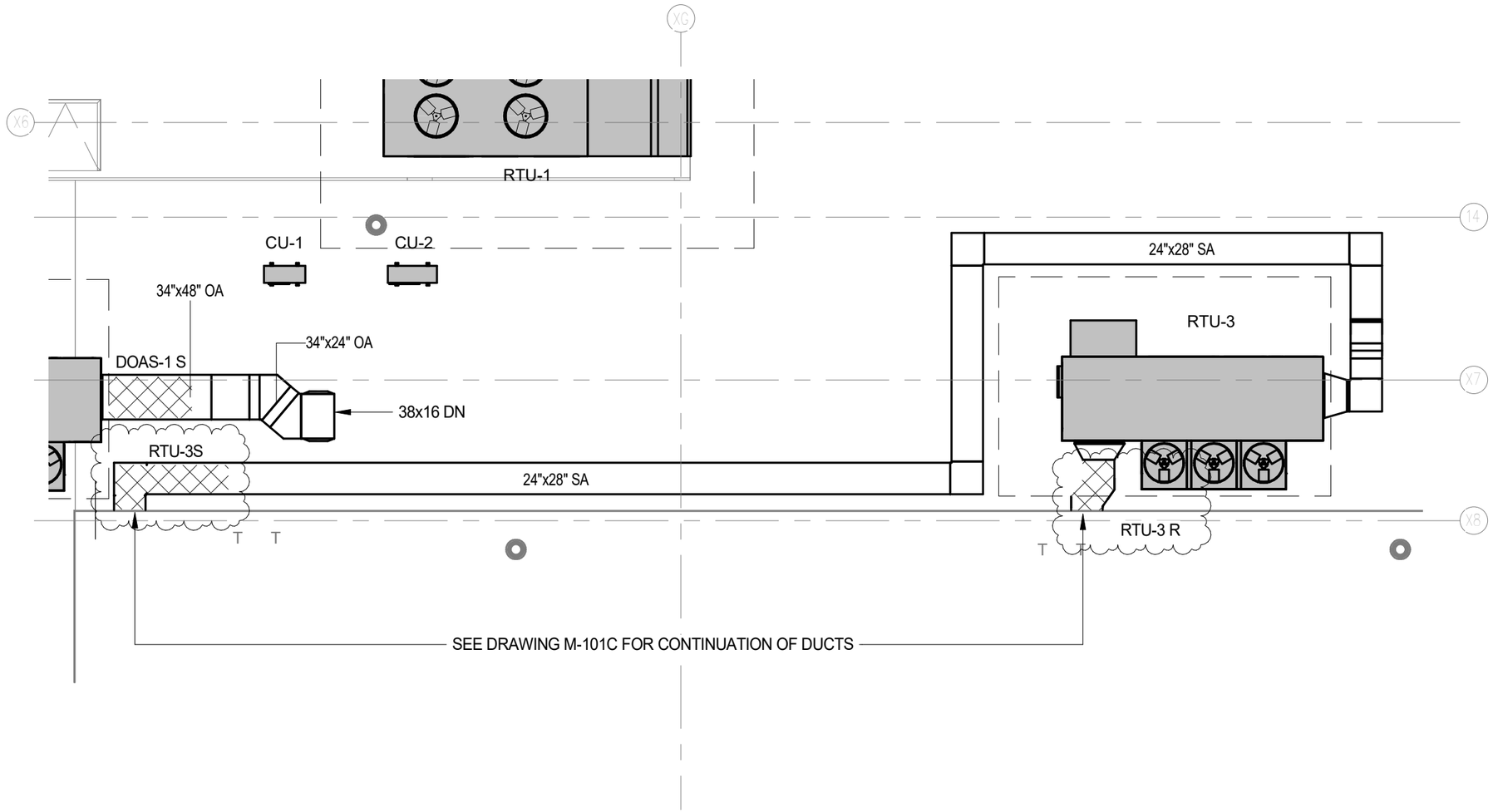
NORTH

0

( IN FEET )

SKM-1

| | |
|---|---|
| DRAWN BY: | Author |
| CHECKED BY: | Checker |
| SCALE: | 1/8" = 1'-0" |
| DATE: | 11/27/18 |
| PROJECT NO.: | 68962 |




1 RTU-3 Supply & Return Silencer Tag
1/8" = 1'-0"

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Ph: 203 239 4200 Fax: 203 234 7376
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NOTES:

# RALPH M. T. JOHNSON ELEMENTARY SCHOOL ADDITIONS & RENOVATIONS

500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE

0

( IN FEET )

SKM-2

| | |
|---|---|
| DRAWN BY: | Author |
| CHECKED BY: | Checker |
| SCALE: | 1/8" = 1'-0" |
| DATE: | 11/27/18 |
| PROJECT NO.: | 68962 |

# CABINET UNIT HEATER SCHEDULE

| MARK | MANUFACTURER | MODEL | CAPACITY (MBH) | MOTOR AND FAN | | | | WATER | | | | | EAT °F | LAT °F | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CFM | HP | RPM | V-Ph-Hz | GPM | EWT °F | LWT °F | ROWS | MAX PD FT | | | |
| CUH-1 | RITTLING | RF-200-02 | 7.8 | 220 | 1/60 | 890 | 120-1-60 | 0.8 | 140 | 120 | 1 | 0.1 | 68 | 100.7 | |
| CUH-2 | RITTLING | RF-200-02 | 12.9 | 220 | 1/60 | 890 | 120-1-60 | 1.3 | 140 | 120 | 2 | 0.3 | 68 | 122.1 | |
| CUH-3 | RITTLING | RF-200-03 | 17.9 | 300 | 1/60 | 850 | 120-1-60 | 1.8 | 140 | 120 | 2 | 0.5 | 68 | 123.3 | |
| CUH-4 | RITTLING | RC-380-02 | 12.9 | 220 | 1/60 | 890 | 120-1-60 | 1.3 | 140 | 120 | 2 | 0.3 | 68 | 122.1 | |
| CUH-5 | RITTLING | RFRC-420-02 | 12.9 | 220 | 1/60 | 890 | 120-1-60 | 1.3 | 140 | 120 | 2 | 0.3 | 68 | 122.1 | |
| CUH-6 | RITTLING | RF-200-04 | 24.7 | 420 | 1/25 | 890 | 120-1-60 | 2.5 | 140 | 120 | 2 | 0.5 | 68 | 122.4 | |
| CUH-7 | RITTLING | RF-200-06 | 36.8 | 620 | 1/15 | 890 | 120-1-60 | 3.7 | 140 | 120 | 2 | 3.0 | 68 | 123.3 | |
| CUH-8 | RITTLING | RFRC-420-02 | 12.9 | 220 | 1/25 | 890 | 120-1-60 | 1.3 | 140 | 120 | 2 | 0.3 | 68 | 122.1 | |
| CUH-9 | RITTLING | RRW-320-06 | 36.8 | 620 | 1/15 | 890 | 120-1-60 | 3.7 | 140 | 120 | 2 | 3.0 | 68 | 122.9 | |
| CUH-10 | RITTLING | RW-260-03 | 17.9 | 300 | 1/60 | 850 | 120-1-60 | 1.8 | 140 | 120 | 2 | 0.5 | 68 | 123.3 | |
| CUH-11 | RITTLING | RF-200-06 | 36.8 | 620 | 1/15 | 890 | 277-1-60 | 3.7 | 140 | 120 | 2 | 3.0 | 68 | 123.3 | |

NOTES: 1. CONNECT UNITS TO DDC CONTROL SYSTEM.
2. CONTROL CONTRACTOR DIV. 23 PROVIDE FAN RELAY, WALL MOUNTED SENSOR
3. PROVIDE WITH FAN SWITCH.
4. MECHANICAL CONTRACTOR DIV. 23 TO PROVIDE LOCAL DISCONNECT SWITCH.

DIVERSIFIED TECHNOLOGY CONSULTANTS
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Ph: 203 239 4200 Fax: 203 234 7376
www.learndtc.com

NOTES:

RALPH M. T. JOHNSON ELEMENTARY
SCHOOL ADDITIONS & RENOVATIONS

500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE

0

( IN FEET )

SKM-3

| | |
|---|---|
| DRAWN BY: | Author |
| CHECKED BY: | Checker |
| SCALE: | |
| DATE: | 11/27/18 |
| PROJECT NO.: | 68962 |

# CONDENSATE PUMP SCHEDULE

| MARK | MANUFACTURER | MODEL | PERFORMANCE GPH @ HEAD | | | | | ELECTRICAL | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0' | 1' | 5' | 10' | 20' | VAC/PH/HZ | MIN. AMPS | |
| CP-1 | LITTLE GIANT | VCC-20ULS | - | 80 | 70 | 45 | 0 | 115/1/60 | 1.5 | |
| CP-2 | ASPEN PUMPS | MINI BLANC | 2.9 | - | - | - | - | 120/1/60 | 0.17 | |

NOTES: 1. PROVIDE CP-1 FOR ALL CEILING RECESSED FAN COIL UNITS.
2. PROVIDE CP-2 FOR ALL WALL MOUNTED EXPOSED SPLIT SYSTEM UNITS.


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NOTES:

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SCHOOL ADDITIONS & RENOVATIONS

500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

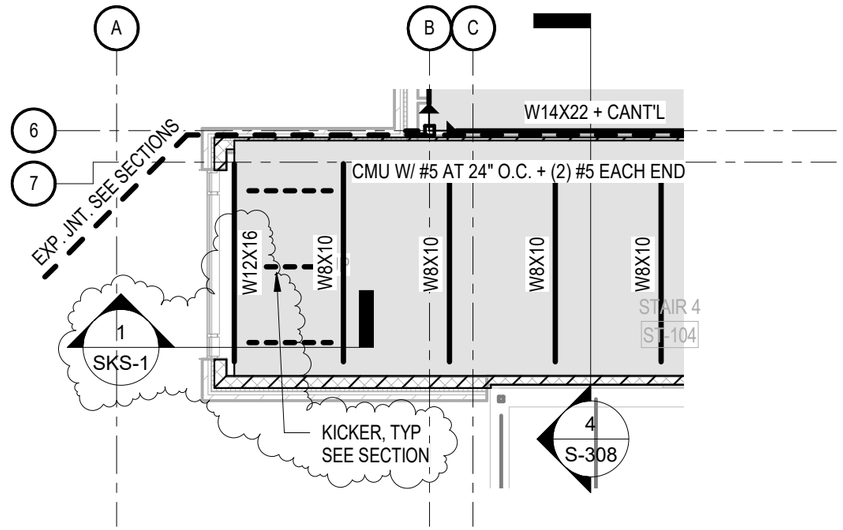
GRAPHIC SCALE

0

( IN FEET )

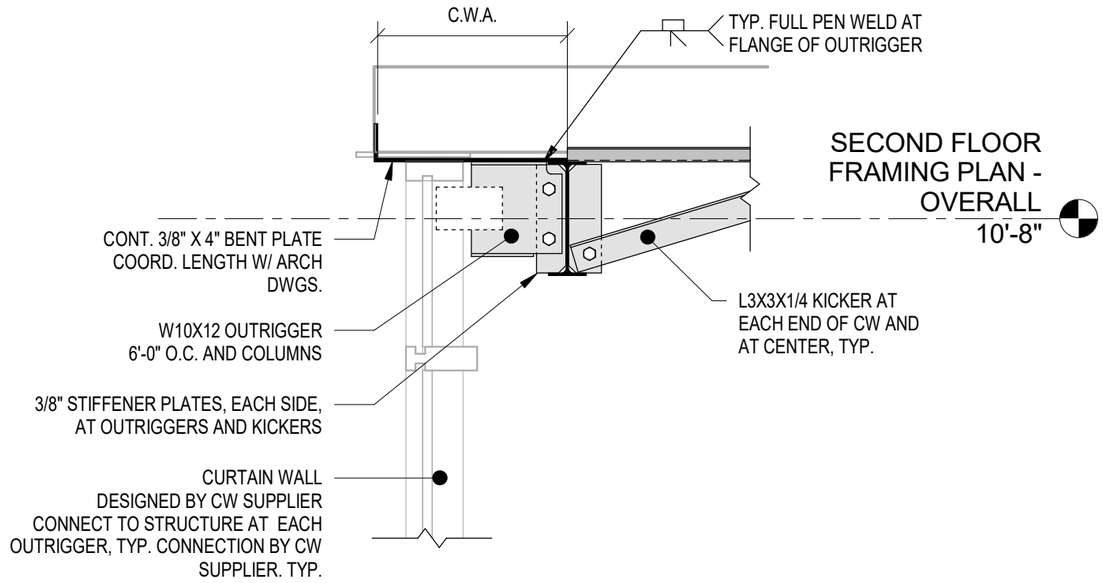
SKM-4

| |
|---|
| DRAWN BY: RF |
| CHECKED BY: JV |
| SCALE: 12" = 1'-0" |
| DATE: 11/29/18 |
| PROJECT NO.: 68962 |




## 0 ROOF FRAMING PLAN - PART C PART PLAN

1/8" = 1'-0"




## 1 SECTION

3/4" = 1'-0"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NOTES:

RALPH M. T. JOHNSON ELEMENTARY
SCHOOL ADDITIONS & RENOVATIONS

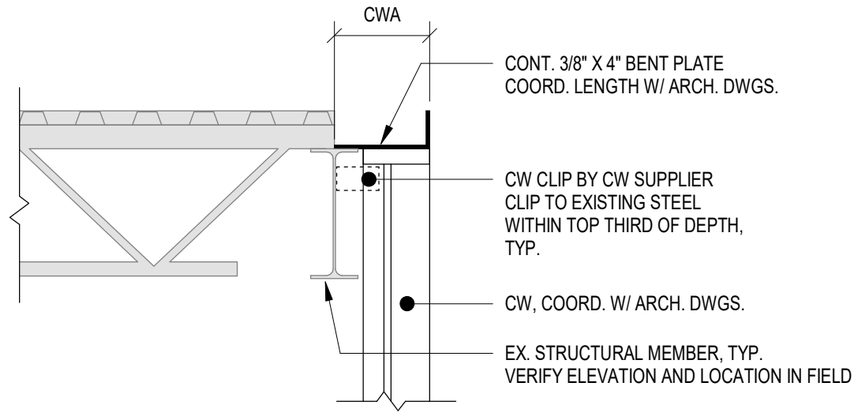
500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE

8' 4' 0 8'

SKS-1

| | |
|---|---|
| DRAWN BY: | BS |
| CHECKED BY: | RO |
| SCALE: | As indicated |
| DATE: | 11/27/18 |
| PROJECT NO. | 68962 |




TYP. CONNECTION FROM NEW CURTAINWALL TO EXISTING STRUCTURAL MEMBER

1 3/4" = 1'-0"

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NOTES:

# RALPH M. T. JOHNSON ELEMENTARY SCHOOL ADDITIONS & RENOVATIONS

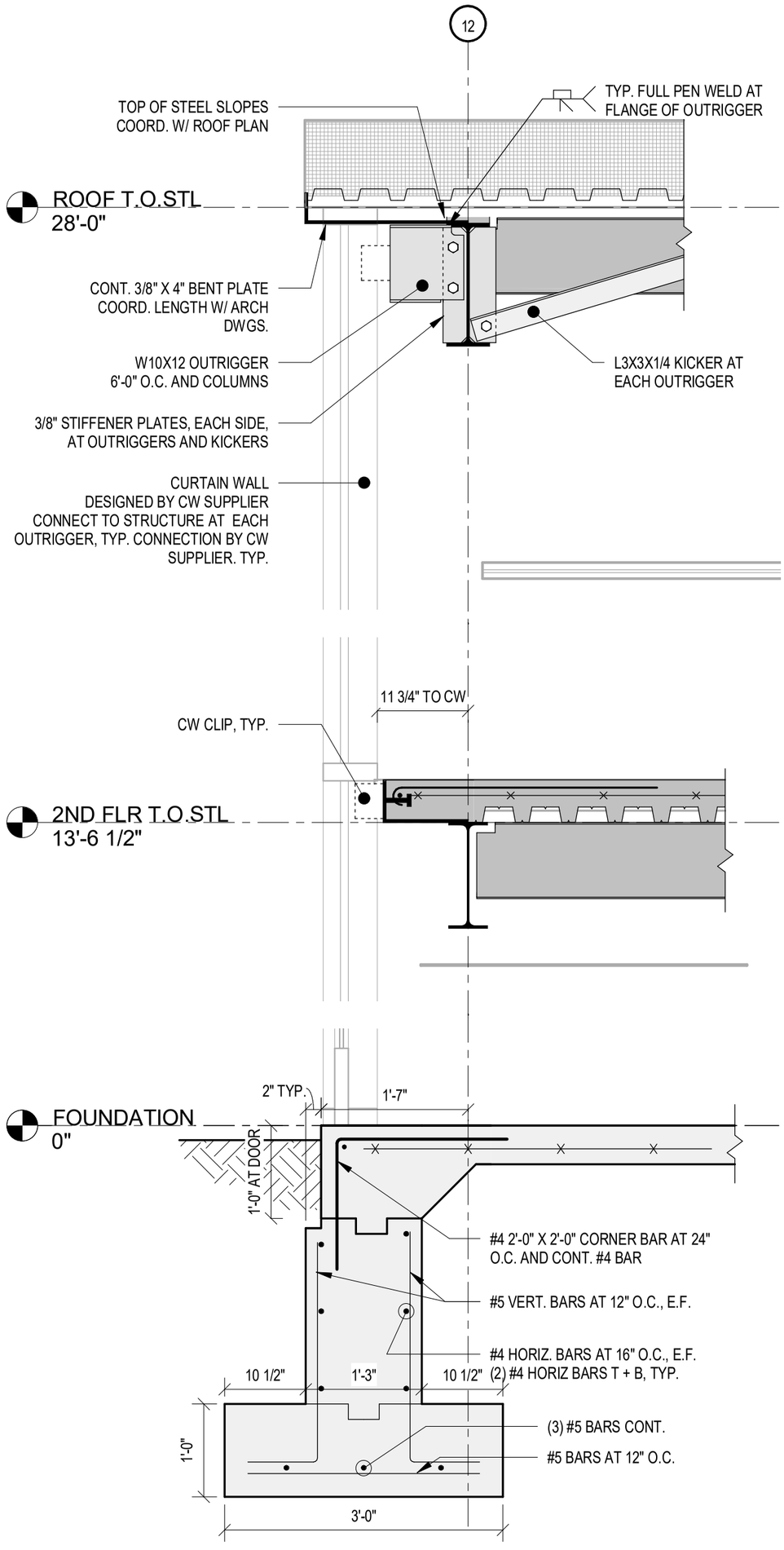
500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE

8' 4' 0 8'

SKS-2

| |
|---|
| DRAWN BY: Author |
| CHECKED BY: BS |
| SCALE: 3/4" = 1'-0" |
| DATE: 11/27/18 |
| PROJECT NO.68962 |




1 SECTION
3/4" = 1'-0"

SKS-3

DRAWN BY: BS
CHECKED BY: RO
SCALE: 3/4" = 1'-0"
DATE: 11/27/18
PROJECT NO.68962

GRAPHIC SCALE
8' 4' 0 8'

RALPH M. T. JOHNSON ELEMENTARY
SCHOOL ADDITIONS & RENOVATIONS
500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

NOTES:

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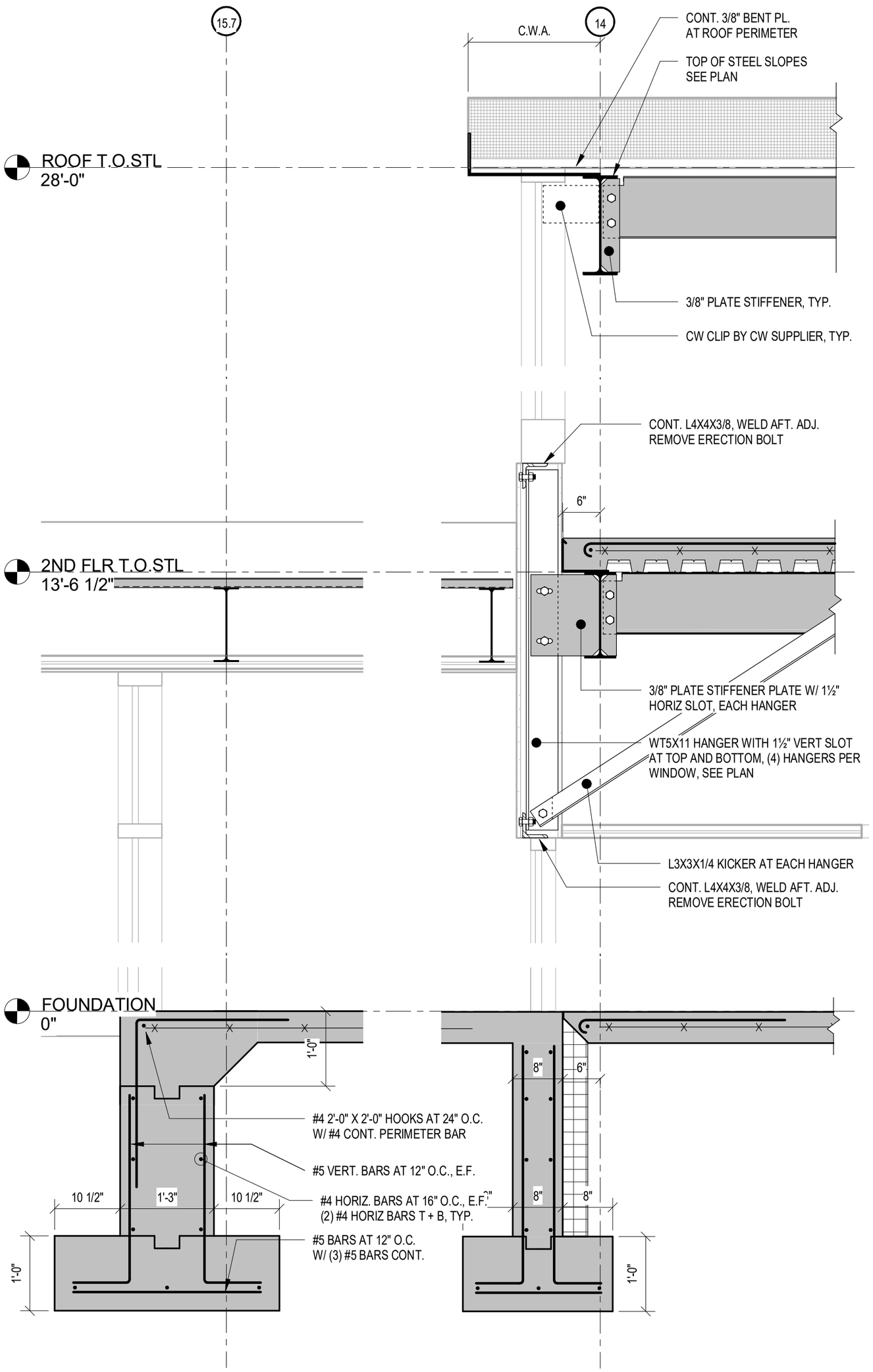
dtc
2321 Whitney Avenue - Hamden Center II, Hamden CT 06518
Ph. 203 287 4200 Fax 203 234 7376
www.dtcnet.com




1 SECTION
3/4" = 1'-0"

SKS-4

DRAWN BY: BS
CHECKED BY: RO
SCALE: 3/4" = 1'-0"
DATE: 11/27/18
PROJECT NO.68962

GRAPHIC SCALE
8' 4' 0 8'

RALPH M. T. JOHNSON ELEMENTARY
SCHOOL ADDITIONS & RENOVATIONS
500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

NOTES:

DIVERSIFIED TECHNOLOGY CONSULTANTS
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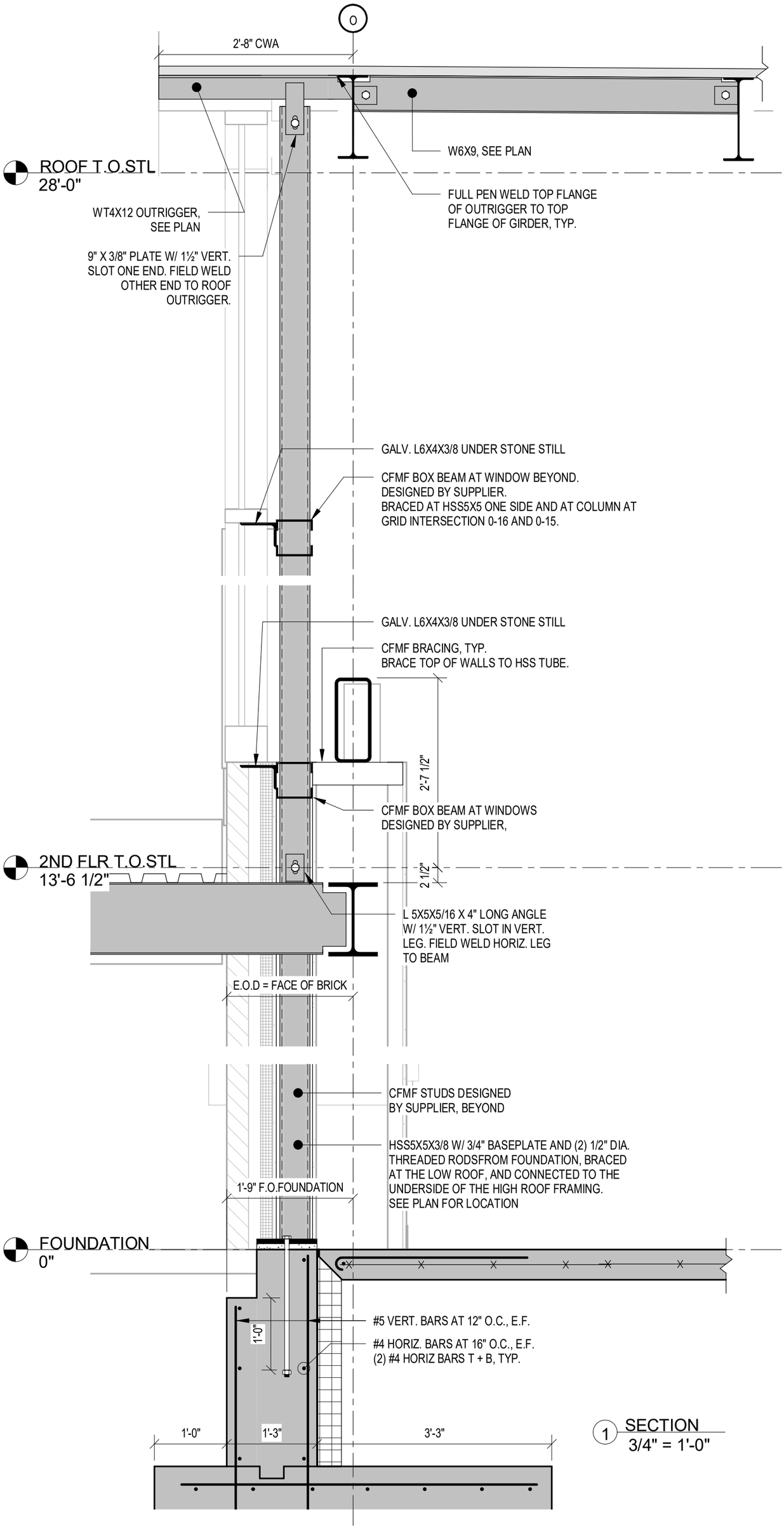
Ph. 203 287 4200 - Fax 203 234 7376




1 SECTION
3/4" = 1'-0"

SKS-5

DRAWN BY: BS
CHECKED BY: RO
SCALE: 3/4" = 1'-0"
DATE: 11/28/18
PROJECT NO.68962

GRAPHIC SCALE
8' 4' 0 8'

RALPH M. T. JOHNSON ELEMENTARY
SCHOOL ADDITIONS & RENOVATIONS
500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

NOTES:

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dtc
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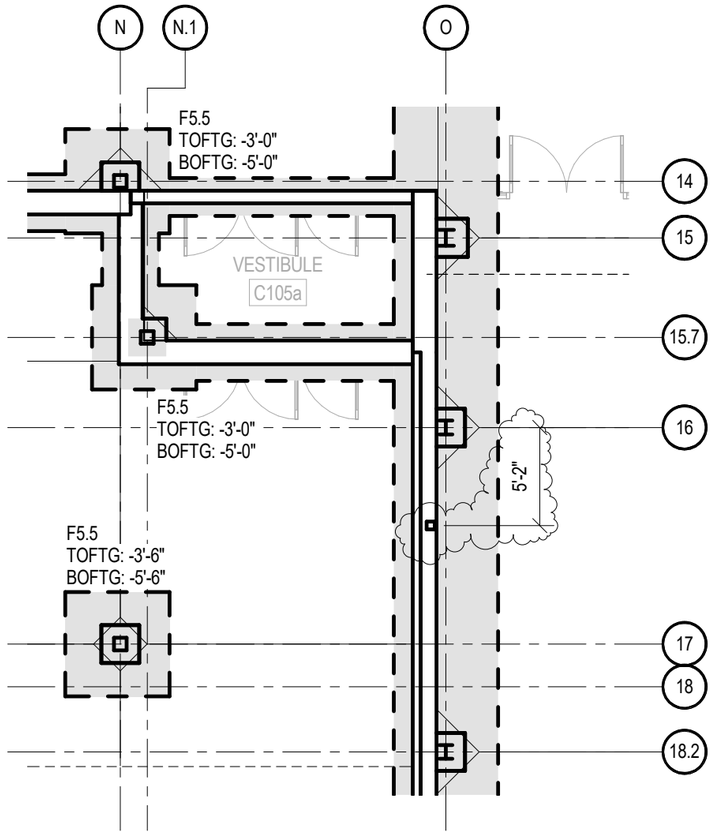
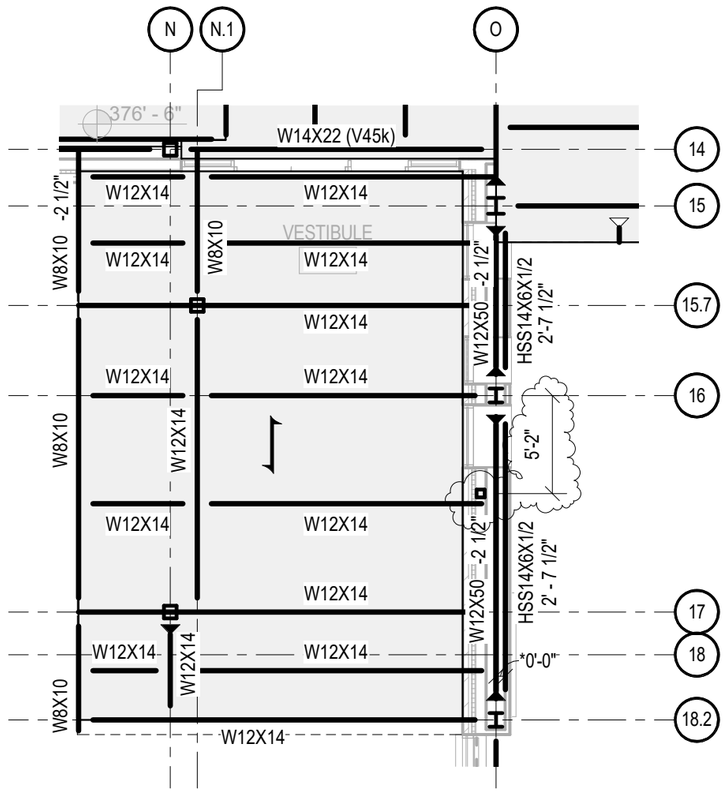
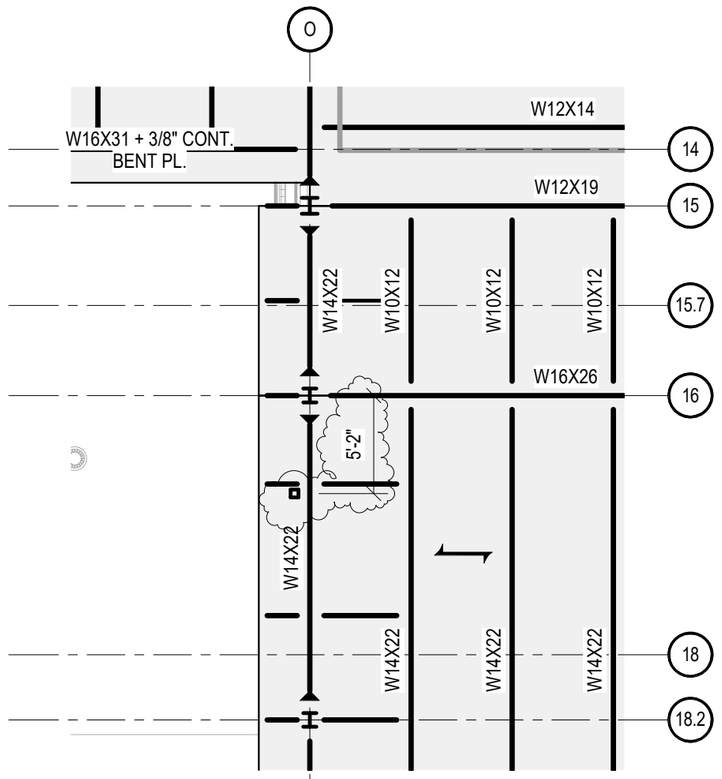



1 FOUNDATION PLAN PART A PART PLAN
1/8" = 1'-0"




2 SECOND FLOOR FRAMING PLAN - PART A PART PLAN
1/8" = 1'-0"




3 ROOF FRAMING PLAN - PART A PART PLAN
1/8" = 1'-0"

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NOTES:

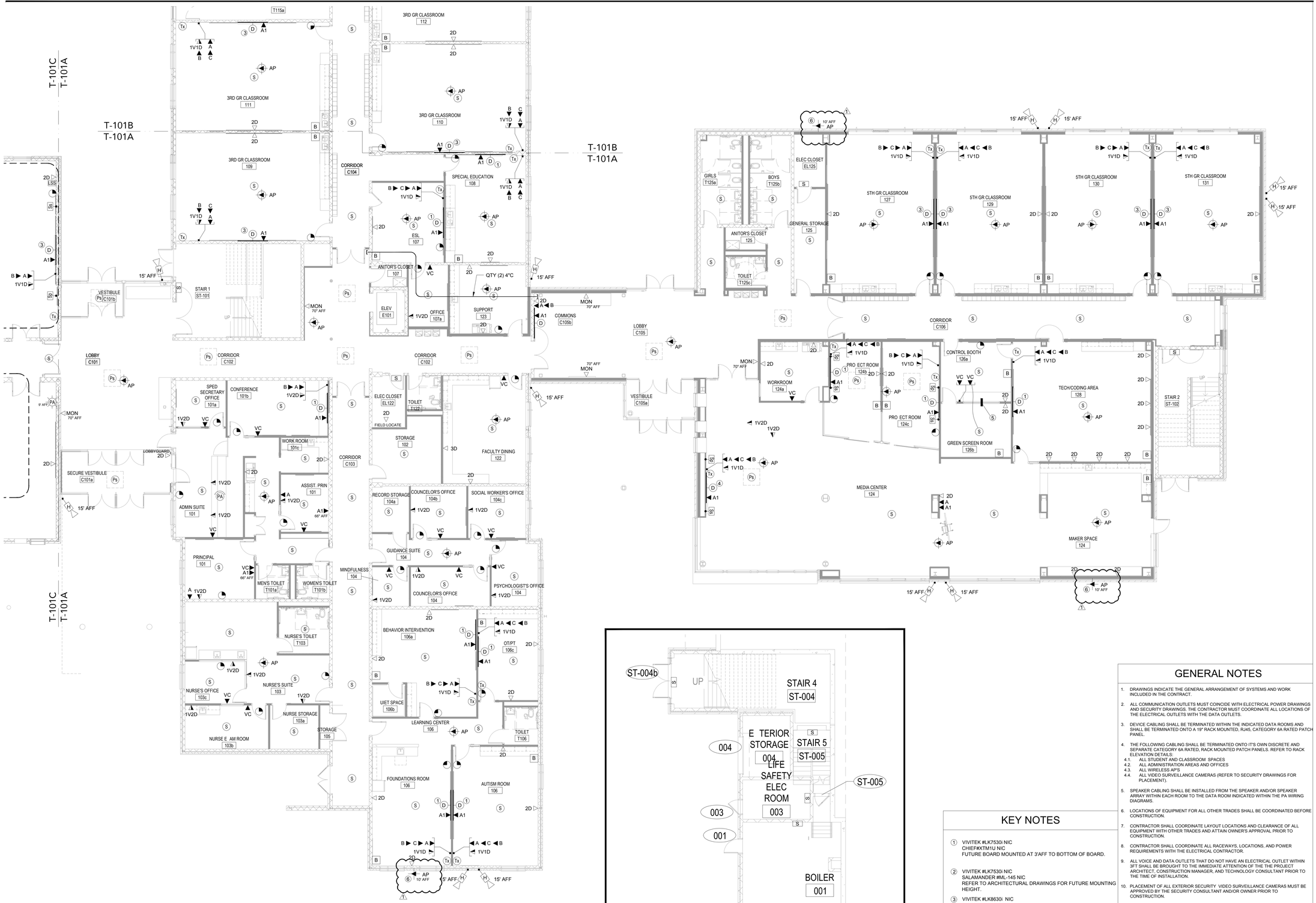
# RALPH M. T. JOHNSON ELEMENTARY SCHOOL ADDITIONS & RENOVATIONS

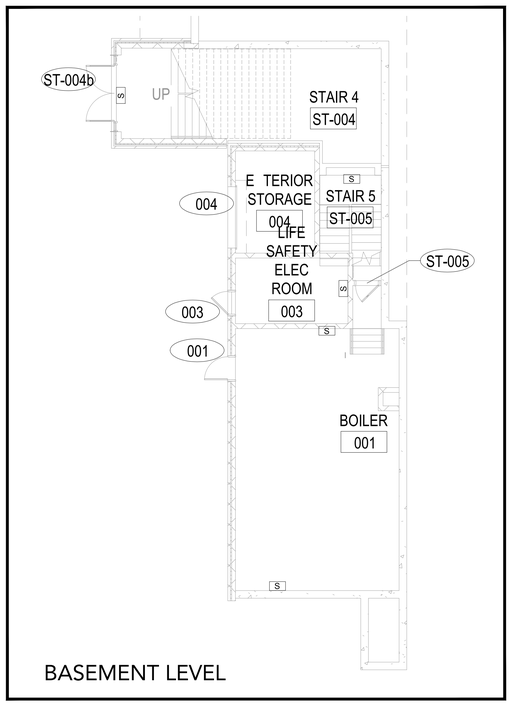
500 WHITTLESEY
DRIVE, BETHEL,
CT 06801

GRAPHIC SCALE
8' 4' 0 8'

SKS-6

| | |
|---|---|
| DRAWN BY: | BS |
| CHECKED BY: | RO |
| SCALE: | 1/8" = 1'-0" |
| DATE: | 11/28/18 |
| PROJECT NO. | 68962 |




## KEY NOTES

1. VIVITEK #LK7530i NIC
   CHIEF#XTM1U NIC
   FUTURE BOARD MOUNTED AT 3'AFF TO BOTTOM OF BOARD.
2. VIVITEK #LK7530i NIC
   SALAMANDER #ML-145 NIC
   REFER TO ARCHITECTURAL DRAWINGS FOR FUTURE MOUNTING HEIGHT.
3. VIVITEK #LK8630i NIC
   CHIEF#XTM1U NIC
   FUTURE BOARD MOUNTED AT 3'AFF TO BOTTOM OF BOARD.
4. VIVITEK #LK8630i NIC
   SALAMANDER #ML-136i NIC
   REFER TO ARCHITECTURAL DRAWINGS FOR FUTURE MOUNTING HEIGHT.
5. PROVIDE 2-GANG BRUSH THROUGH ALL LATE ON EACH SIDE OF WALL TO CREATE CABLE PATHWAY BETWEEN ROOMS. MOUNT WALL PLATES AT 18" AFF.
6. USE INDOOR / OUTDOOR RATED CABLE. PROVIDE 1" CONDUIT AND 4" SQ BOX. WEATHERPROOF SLEEVE. ADD WEATHERPROOF COVER PLATE TO BOX.

## GENERAL NOTES

1. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THE CONTRACT.
2. ALL COMMUNICATION OUTLETS MUST COINCIDE WITH ELECTRICAL POWER DRAWINGS AND SECURITY DRAWINGS. THE CONTRACTOR MUST COORDINATE ALL LOCATIONS OF THE ELECTRICAL OUTLETS WITH THE DATA OUTLETS.
3. DEVICE CABLING SHALL BE TERMINATED WITHIN THE INDICATED DATA ROOMS AND SHALL BE TERMINATED ONTO A 19" RACK MOUNTED, RJ45, CATEGORY 6A RATED PATCH PANEL.
4. THE FOLLOWING CABLING SHALL BE TERMINATED ONTO IT'S OWN DISCRETE AND SEPARATE CATEGORY 6A RATED, RACK MOUNTED PATCH PANELS. REFER TO RACK ELEVATION DETAILS:
   - 4.1. ALL STUDENT AND CLASSROOM SPACES
   - 4.2. ALL ADMINISTRATION AREAS AND OFFICES
   - 4.3. ALL WIRELESS AP'S
   - 4.4. ALL VIDEO SURVEILLANCE CAMERAS (REFER TO SECURITY DRAWINGS FOR PLACEMENT).
5. SPEAKER CABLING SHALL BE INSTALLED FROM THE SPEAKER AND/OR SPEAKER ARRAY WITHIN EACH ROOM TO THE DATA ROOM INDICATED WITHIN THE PA WIRING DIAGRAMS.
6. LOCATIONS OF EQUIPMENT FOR ALL OTHER TRADES SHALL BE COORDINATED BEFORE CONSTRUCTION.
7. CONTRACTOR SHALL COORDINATE LAYOUT LOCATIONS AND CLEARANCE OF ALL EQUIPMENT WITH OTHER TRADES AND ATTAIN OWNER'S APPROVAL PRIOR TO CONSTRUCTION.
8. CONTRACTOR SHALL COORDINATE ALL RACEWAYS, LOCATIONS, AND POWER REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
9. ALL VOICE AND DATA OUTLETS THAT DO NOT HAVE AN ELECTRICAL OUTLET WITHIN 3FT SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE PROJECT ARCHITECT, CONSTRUCTION MANAGER, AND TECHNOLOGY CONSULTANT PRIOR TO THE TIME OF INSTALLATION.
10. PLACEMENT OF ALL EXTERIOR SECURITY VIDEO SURVEILLANCE CAMERAS MUST BE APPROVED BY THE SECURITY CONSULTANT AND/OR OWNER PRIOR TO CONSTRUCTION.
11. ALL EXISTING LOW VOLTAGE TERMINATION DEVICES & CABLING SHALL BE REMOVED & DISCARDED FROM THIS FACILITY.
12. ALL DEVICES SHOWN ON THESE PLANS MUST BE COORDINATED AND APPROVED BY THE ARCHITECT. THE INSTALLATION CONTRACTOR SHALL DEPICT ALL DEVICES ONTO ELEVATION SUBMITTALS BEFORE INSTALLATION. ANY DEVICE THAT IS NOT APPROVED BY THE ARCHITECT PRIOR TO INSTALLATION MAY BE REQUIRED TO BE RELOCATED AS DIRECTED BY THE ARCHITECT AND CORRECTED BY THE CONTRACTOR WITH NO ADDITIONAL CHARGE TO THIS PROJECT.
13. ALL PATHWAYS, INCLUDING ALL WALL AND CEILING PENETRATIONS ARE REQUIRED TO INSTALL CABLING TO THE END DEVICE AND SHALL BE COORDINATED BETWEEN THE LOW VOLTAGE AND SECURITY CONTRACTOR AND THE ELECTRICAL CONTRACTOR AND SHALL BE INCLUDED AS PART OF THIS SECTION.
14. ALL CABLING SHALL BE LABELED AT BOTH ENDS.
15. SECURE ATTACHMENT OF TECHNOLOGY ITEMS:
    TO ENSURE PROPER ATTACHMENT OF FIXTURES, FURNISHINGS & EQUIPMENT ITEMS, INCLUDING AND TECHNOLOGY ITEMS, WHERE 'ITEMS' ARE ATTACHED TO WALL, CEILING, OVERHEAD STRUCTURE, AND/OR FLOOR, CONTRACTOR SHALL PROVIDE INFORMATION ADEQUATE FOR ARCHITECT TO VERIFY ITEMS, ATTACHED TO WALL, CEILING, AND/OR FLOOR ARE ATTACHED SECURELY AND PER MANUFACTURER'S RECOMMENDATIONS. ARCHITECT'S REVIEW MAY BE IMPLEMENTED DURING SUBMITTAL PROCESS. CONTRACTOR SHALL PROVIDE STRUTS, HANGERS, FASTENERS, SAFETY HARNESSES, CHANNELS, BOLTS, SCREWS, RODS, ETC. TO SECURELY ATTACH ITEMS TO EXISTING STRUCTURE AS REQUIRED TO MEET FIELD CONDITIONS AND MEET APPLICABLE CODES.

| NO. | DATE | ISSUE |
|---|---|---|
| 1 | 11/30/18 | ADDENDUM #4 |


d'agostino & ASSOCIATES
Technology ⌐ Security ⌐ Audio Visual
1266 EAST MAIN STREET SUITE 703R STAMFORD, CT 06902
1000 LAFAYETTE BLVD. SUITE 1100 BRIDGEPORT, CT 06604
TEL: 203.539.6164
FAX: 203.539.6001


SEAL

KEY PLAN


PERKINS — EASTMAN
422 Summer Street
Stamford, CT 06901
T. +1 203 251 7400
F. +1 203 251 7474


Owner:
**BETHEL PUBLIC SCHOOLS**
1 School Street, Bethel,
CT 06801 203.794.8601

Construction Manager:
**RIZZO CORPORATION**
64 Triangle St, Danbury,
CT 06810 203.731.3131

Civil / Site / Landscape:
**MILONE & MACBROOM**
99 Realty Drive
Chesire, CT 06410
203.271.1773

Structural:
**DIVERSIFIED TECHNOLOGY CONSULTANTS**
2321 Whitney Avenue, Suite 301
Hamden, CT 06518
203.239.4200

Mechanical, Electrical, Plumbing & Fire Protection:
**DIVERSIFIED TECHNOLOGY CONSULTANTS**
2321 Whitney Avenue, Suite
301 Hamden, CT 06518
203.239.4200

Food Service:
**FOODSERVICE FACILITIES INTERNATIONAL**
137 Elm Place, New
Canaan, CT 06840
203.972.1687

Technology / Security / AV:
**D'AGOSTINO & ASSOCIATES, LLC**
1266 E. Main Street
Stamford, CT 06902
203.539.6164

Acoustical Consultant:
**ACENTECH**
33 Moulton Street
Cambridge, MA 02138
617.499.8000

PROJECT TITLE:
# RALPH M. T. JOHNSON ELEMENTARY SCHOOL ADDITIONS & RENOVATIONS
400 WHITTLESEY DR, BETHEL, CT 06801
STATE PROJECT No: 009-0059-RNV

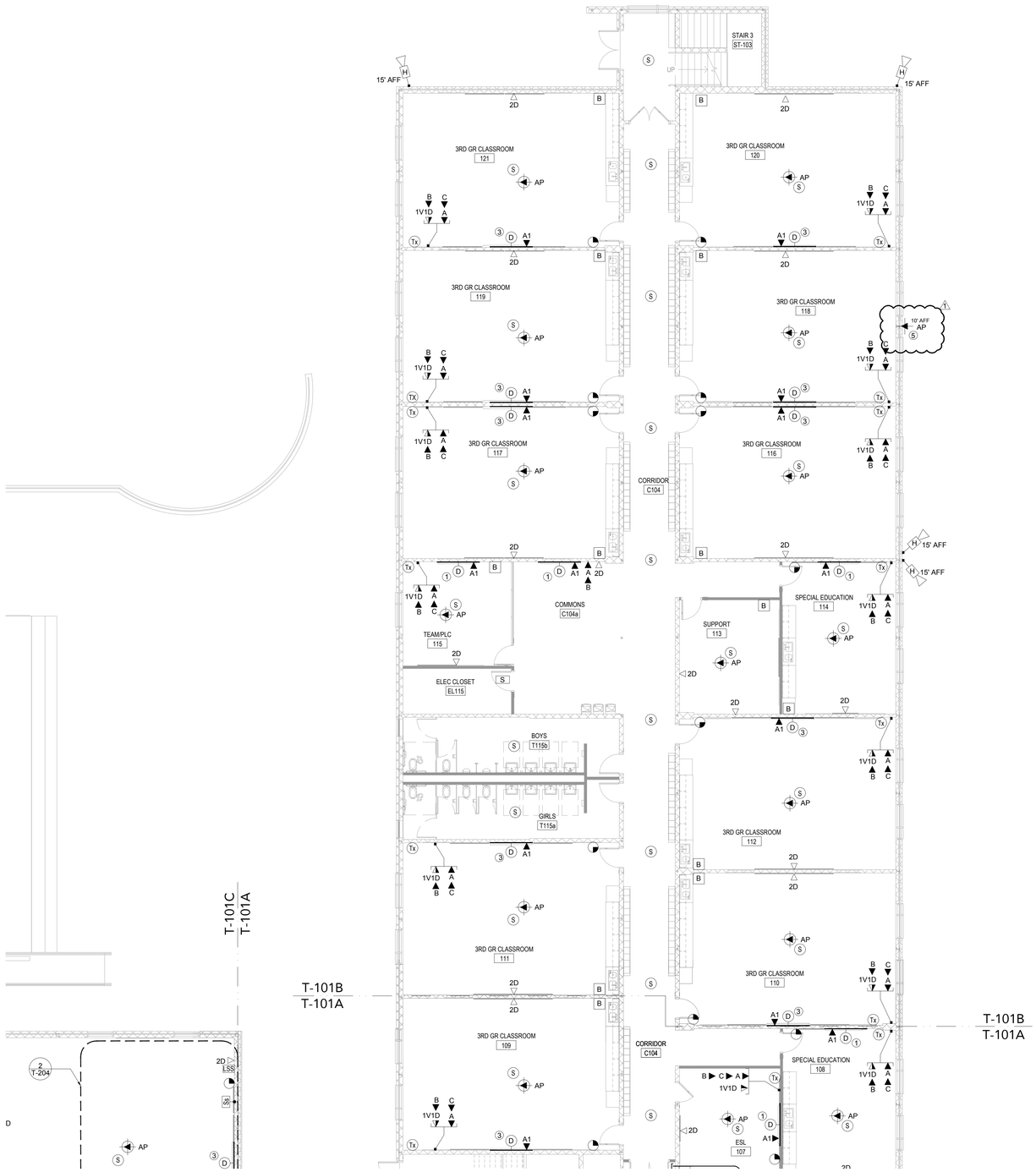
PROJECT No: 68962

DRAWING TITLE:
## TECHNOLOGY
## LEVEL 1, PART A & BASEMENT PLANS
SCALE: 1/8" 1'-0"

# T-101A

CONSTRUCTION DOCUMENTS

JULY 27, 2018




## KEY NOTES

1. VIVITEK #LK7530i NIC
   CHIEF#XTM1U NIC
   FUTURE BOARD MOUNTED AT 3'AFF TO BOTTOM OF BOARD.
2. VIVITEK #LK7530i NIC
   SALAMANDER #ML-145 NIC
   REFER TO ARCHITECTURAL DRAWINGS FOR FUTURE MOUNTING HEIGHT.
3. VIVITEK #LK8630i NIC
   CHIEF#XTM1U NIC
   FUTURE BOARD MOUNTED AT 3'AFF TO BOTTOM OF BOARD.
4. VIVITEK #LK8630i NIC
   SALAMANDER #ML-1360 NIC
   REFER TO ARCHITECTURAL DRAWINGS FOR FUTURE MOUNTING HEIGHT.
5. USE INDOOR / OUTDOOR RATED CABLE. PROVIDE 1" CONDUIT AND 4" SQ BOX. WEATHERPROOF SLEEVE. ADD WEATHERPROOF COVER PLATE TO BOX.

## GENERAL NOTES

1. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THE CONTRACT.
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   - 4.1. ALL STUDENT AND CLASSROOM SPACES
   - 4.2. ALL ADMINISTRATION AREAS AND OFFICES
   - 4.3. ALL WIRELESS AP'S
   - 4.4. ALL VIDEO SURVEILLANCE CAMERAS (REFER TO SECURITY DRAWINGS FOR PLACEMENT).
5. SPEAKER CABLING SHALL BE INSTALLED FROM THE SPEAKER AND/OR SPEAKER ARRAY WITHIN EACH ROOM TO THE DATA ROOM INDICATED WITHIN THE PA WIRING DIAGRAMS.
6. LOCATIONS OF EQUIPMENT FOR ALL OTHER TRADES SHALL BE COORDINATED BEFORE CONSTRUCTION.
7. CONTRACTOR SHALL COORDINATE LAYOUT LOCATIONS AND CLEARANCE OF ALL EQUIPMENT WITH OTHER TRADES AND ATTAIN OWNER'S APPROVAL PRIOR TO CONSTRUCTION.
8. CONTRACTOR SHALL COORDINATE ALL RACEWAYS, LOCATIONS, AND POWER REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
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14. ALL CABLING SHALL BE LABELED AT BOTH ENDS.
15. SECURE ATTACHMENT OF TECHNOLOGY ITEMS:
    TO ENSURE PROPER ATTACHMENT OF FIXTURES, FURNISHINGS & EQUIPMENT ITEMS, INCLUDING AND TECHNOLOGY ITEMS, WHERE "ITEMS" ARE ATTACHED TO WALL, CEILING, OVERHEAD STRUCTURE, AND/OR FLOOR, CONTRACTOR SHALL PROVIDE INFORMATION ADEQUATE FOR ARCHITECT TO VERIFY ITEMS, ATTACHED TO WALL, CEILING, AND/OR FLOOR ARE ATTACHED SECURELY AND PER MANUFACTURER'S RECOMMENDATIONS. ARCHITECT'S REVIEW MAY BE IMPLEMENTED DURING SUBMITTAL PROCESS. CONTRACTOR SHALL PROVIDE STRUTS, HANGERS, FASTENERS, SAFETY HARNESSES, CHANNELS, BOLTS, SCREWS, RODS, ETC. TO SECURELY ATTACH ITEMS TO EXISTING STRUCTURE AS REQUIRED TO MEET FIELD CONDITIONS AND MEET APPLICABLE CODES.

| NO. | DATE | ISSUE |
|---|---|---|
| 1 | 11/30/18 | ADDENDUM #4 |


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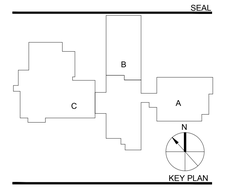
SEAL




KEY PLAN


PERKINS EASTMAN
422 Summer Street
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Owner:
**BETHEL PUBLIC SCHOOLS**
1 School Street, Bethel,
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Construction Manager:
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2321 Whitney Avenue, Suite 301
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203.239.4200

Mechanical, Electrical, Plumbing & Fire Protection:
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Food Service:
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1266 E. Main Street
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203.539.6164

Acoustical Consultant:
**ACENTECH**
33 Moulton Street
Cambridge, MA 02138
617.499.8000

PROJECT TITLE:
# RALPH M. T. JOHNSON ELEMENTARY SCHOOL ADDITIONS & RENOVATIONS
400 WHITTLESEY DR, BETHEL, CT 06801
STATE PROJECT No: 009-0059-RNV

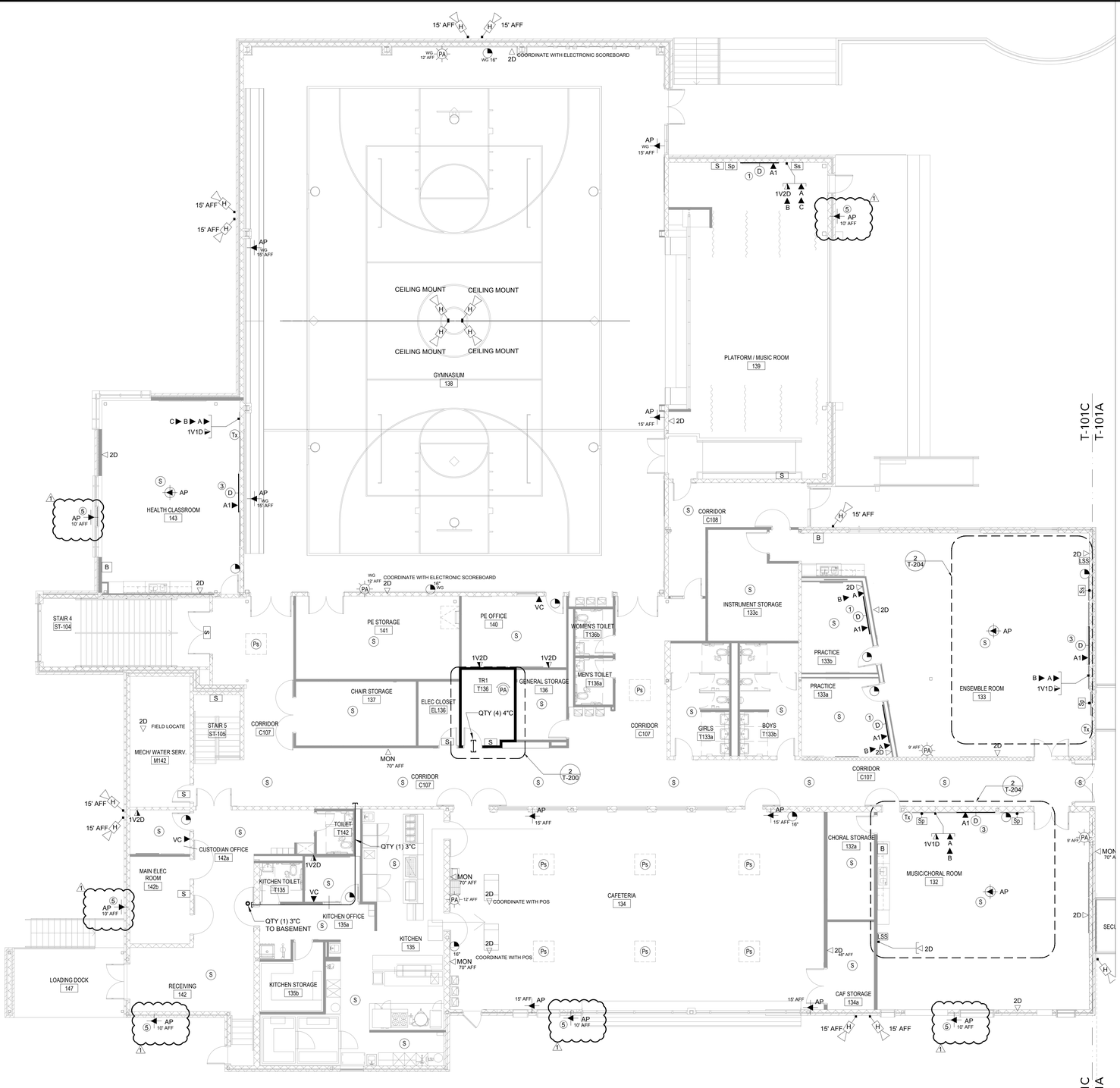
PROJECT No: 68962

DRAWING TITLE:
## TECHNOLOGY
## LEVEL 1, PART B PLAN
SCALE: 1/8" 1'-0"

# T-101B

CONSTRUCTION DOCUMENTS

JULY 27, 2018




## KEY NOTES

1. VIVITEK #LK7530i NIC
   CHIEF#XTM1U NIC
   FUTURE BOARD MOUNTED AT 3'AFF TO BOTTOM OF BOARD.
2. VIVITEK #LK7530i NIC
   SALAMANDER #ML-145 NIC
   REFER TO ARCHITECTURAL DRAWINGS FOR FUTURE MOUNTING HEIGHT.
3. VIVITEK #LK8630i NIC
   CHIEF#XTM1U NIC
   FUTURE BOARD MOUNTED AT 3'AFF TO BOTTOM OF BOARD.
4. VIVITEK #LK8630i NIC
   SALAMANDER #ML-1360 NIC
   REFER TO ARCHITECTURAL DRAWINGS FOR FUTURE MOUNTING HEIGHT.
5. USE INDOOR / OUTDOOR RATED CABLE. PROVIDE 1" CONDUIT AND 4" SQ BOX. WEATHERPROOF SLEEVE. ADD WEATHERPROOF COVER PLATE TO BOX.

## GENERAL NOTES

1. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THE CONTRACT.
2. ALL COMMUNICATION OUTLETS MUST COINCIDE WITH ELECTRICAL POWER DRAWINGS AND SECURITY DRAWINGS. THE CONTRACTOR MUST COORDINATE ALL LOCATIONS OF THE ELECTRICAL OUTLETS WITH THE DATA OUTLETS.
3. DEVICE CABLING SHALL BE TERMINATED WITHIN THE INDICATED DATA ROOMS AND SHALL BE TERMINATED ONTO A 19" RACK MOUNTED, RJ45, CATEGORY 6A RATED PATCH PANEL.
4. THE FOLLOWING CABLING SHALL BE TERMINATED ONTO IT'S OWN DISCRETE AND SEPARATE CATEGORY 6A RATED, RACK MOUNTED PATCH PANELS. REFER TO RACK ELEVATION DETAILS:
   - 4.1. ALL STUDENT AND CLASSROOM SPACES
   - 4.2. ALL ADMINISTRATION AREAS AND OFFICES
   - 4.3. ALL WIRELESS APS
   - 4.4. ALL VIDEO SURVEILLANCE CAMERAS (REFER TO SECURITY DRAWINGS FOR PLACEMENT).
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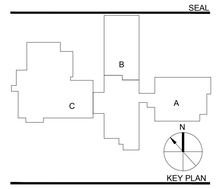


KEY PLAN


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PROJECT TITLE:
# RALPH M. T. JOHNSON ELEMENTARY SCHOOL ADDITIONS & RENOVATIONS
400 WHITTLESEY DR, BETHEL, CT 06801
STATE PROJECT No: 009-0059-RNV

PROJECT No: 68962

DRAWING TITLE:
## TECHNOLOGY

## LEVEL 1, PART C PLAN
SCALE: 1/8" 1'-0"

# T-101C

CONSTRUCTION DOCUMENTS

JULY 27, 2018

## COMMUNICATION CABLING INFRASTRUCTURE

| SYMBOL | DESCRIPTION | OUTLET BOX - CONDUIT SIZES: 1 G - 2-1/2" DP | 1G - 3-1/2" DP | 2 G - 2-1/2" DP | 2G - 3-1/2" DP | 4G - 2-1/2"DP | 4 x 4" x 2-1/8" DP | 1G DEVICE RING | 2G DEVICE RING | 4G DEVICE RING | 3/4" C | 1" C | 1-1/4" C | 1-1/2" C | CABLE - TERMINATION: CAT 6A PLENUM CABLE | RJ45 JACK - CAT 6A | RJ45 PLUG - CAT 6A | FACEPLATE - DATA | WALL PHONE MTG PLATE | COMMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W ▶ | Wall Outlet | 1 | | | | | | 1 | | | 1 | | | | 1 | 1 | | | 1 | Mounting Height 46" AFF |
| 1D ▷ | 1 Data Outlet | | | | 1 | | | 1 | | | 1 | | | | 1 | 1 | | 1 | | Mounting Height 18" AFF unless otherwise noted. |
| 2D ▷ | 2 Data Outlet | | | | 1 | | | 1 | | | 1 | | | | 2 | 2 | | 1 | | Mounting Height 18" AFF unless otherwise noted. |
| 3D ▷ | 3 Data Outlet | | | | 1 | | | 1 | | | | 1 | | | 3 | 3 | | 1 | | Mounting Height 18" AFF unless otherwise noted. |
| 4D ▷ | 4 Data Outlet | | | | 1 | | | 1 | | | | 1 | | | 4 | 4 | | 1 | | Mounting Height 18" AFF unless otherwise noted. |
| 1V1D ▶▷ | 1 Voice - 1 Data Outlet | | | | 1 | | | 1 | | | 1 | | | | 2 | 2 | | 1 | | Mounting Height 18" AFF unless otherwise noted. |
| 1V2D ▶▷ | 1 Voice - 2 Data Outlet | | | | 1 | | | 1 | | | | 1 | | | 3 | 3 | | 1 | | Mounting Height 18" AFF unless otherwise noted. |
| 2V2D ▶▷ | 2 Voice - 2 Data Outlet | | | | 1 | | | 1 | | | | 1 | | | 4 | 4 | | 1 | | Mounting Height 18" AFF unless otherwise noted. |
| 1V ▶ | 1 Voice Outlet | | | | 1 | | | 1 | | | 1 | | | | 1 | 1 | | 1 | | Mounting Height 18" AFF unless otherwise noted. |
| 2V ▶ | 2 Voice Outlet | | | | 1 | | | 1 | | | 1 | | | | 2 | 2 | | 1 | | Mounting Height 18" AFF unless otherwise noted. |
| 3V ▶ | 3 Voice Outlet | | | | 1 | | | 1 | | | | 1 | | | 3 | 3 | | 1 | | Mounting Height 18" AFF unless otherwise noted. |
| #V #D ▶▷ | Floor Box | | | | | | | | | | A/R | | | | A/R | A/R | | 1 | | Floor Box to be sized to accommodate cable & power<br># - Denotes Qty of Cables |
| AP (D) | Wireless Access Point Ceiling Mounted | | | | | | | | | | | | | | 2 | | 2 | | | |
| AP ▶ | Wireless Access Point Wall Mounted | 1 | | | | | | 1 | | | 1 | | | | 2 | | 2 | | | |

1. Ceiling mounted AP shall have a 20ft service loop and located at approximate locations shown on plans. For exterior mounted AP's sse indoor / outdoor rated cable, provide weatherproof 1" sleeve, provide 4" SQ box, provide weatherproof cover plate to box.

## AUDIO VISUAL

| SYMBOL | DESCRIPTION | DEVICE | OUTLET BOX - CONDUIT SIZES: 1 G - 2-1/2" DP | 1G - 3-1/2" DP | 2 G - 2-1/2" DP | 2G - 3-1/2" DP | 4G - 2-1/2"DP | 4" x 4" x 4" DP | 1G DEVICE RING | 2G DEVICE RING | JUNCTION BOX A/R | 3/4" C | 1" C | 1-1/4" C | 1-1/2" C | CABLE - TERMINATION: CAT 6A CABLE PLENUM | CNTRL CABLE (RS232) (PLENUM) | RJ45 JACK - CAT 6A | FACEPLATE - DATA | PLENUM RATED PUBLIC ADDRESS SPEAKER CABLE | COMMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (D) | Display Location | Display NIC<br>Ethernet by Contractor<br>Awarded this Project | | | 1 | | | | 1 | | | | 1 | | | 3 | | 3 | 1 | | This location requires a 3D outlet.<br>Refer to Detail #1, T204 for mounting requirements. |
| A ▶ | AV Outlet | AV Outlet Box | | | | | | 1 | | 1 | | | | 2 | | | AV CABLING NIC | | | | Mounting Height 18" AFF unless otherwise noted. |
| A1 ▶ | AV Outlet | AV Outlet Box | | | | | | 1 | | 1 | | | | 2 | | | AV CABLING NIC | | | | Refer to Detail #1, T204 for mounting requirements. |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| C ▶ | AV Outlet | AV Outlet Box | | | 1 | | | | | 1 | | | 1 | | | | AV CABLING NIC | | | | Mounting Height 42" AFF |
| MON ▶ | Monitor Location | Refer to T201<br>Monitor NIC | | | 1 | | | | 1 | | | | | | | 1 | | 1 | 1 | | Mounting Height 72" AFF or as Otherwise Noted.<br>See Note #2. Ethernet by contractor awarded this project. |
| B ▶ | AV Outlet | AV Outlet Box | | | 1 | | | | 1 | | | 1 | | | | | AV CABLING NIC | | | | Mounting Height 42" AFF |
| (Tx) | AV Outlet | AV Outlet Box | 1 | | | | | | | | | 1 | | | | | AV CABLING NIC | | | | Refer to Detail #1, T204 for mounting requirements. |
| E ▶ | AV Outlet | AV Outlet Box | | | | 1 | | | | 1 | | 1 | | | | | AV CABLING NIC | | | | Mount Transmitter 18" AFF |
| F ▶ | AV Outlet | AV Outlet Box | | | | 1 | | | | 1 | | 1 | | | | | AV CABLING NIC | | | | Mounting Height 42" AFF |
| Sp | Wall Mount Speaker Outlet | AV Outlet Box | 1 | | | | | | | | | 1 | | | | | SPEAKER NIC | | | | Contractor shall install public address feed off of nearby public address speaker as if to daisy-chain future public address speaker. Coil 10' worth of public address cable, label, and secure above ceiling for future speaker. Mounting Height 78" AFF Unless otherwise noted. |
| Ss | Wall Mount Speaker Outlet | AV Outlet Box | 1 | | | | | | | | | 1 | | | | | SPEAKER NIC | | | | Mounting Height 78" AFF Unless otherwise noted. |
| LSS | AV Cabinet Location | Cabinet NIC<br>AV Cabling NIC | | | | | | | | | 1 | | | 4 | | | | | | | Mounting Height 48" AFF. Unless otherwise noted.<br>Coordinate nearby power & data at this box.Contractor shall install public address feed off of nearby public address speaker as if to daisy-chain future public address speaker. Coil 10' worth of public address cable, label, and secure in flush-mount wall box. |

## PUBLIC ADDRESS - CLOCKS

| SYMBOL | DESCRIPTION | PLENUM RATED CABLE A/R | 2 G - 2-1/2" DP | 1G DEVICE RING | 3/4" C | PRODUCT | COMMMENTS |
|---|---|---|---|---|---|---|---|
| (S) | PA Speaker | 1 | | | | Corridors: 8" Speakers. Classrooms: 2'x2' Drop-in Ceiling Speakers<br>- Refer to Specifications for Product Description | Contractor shall install plenum rated speaker cable with 20' service loop to connect future priority override speakers. This is required in all classrooms and conference rooms. |
| S | PA Speaker | 1 | | | | 12' SQ., Wall Mounted Speaker<br>- Refer to Specification for Product Description | |
| (PA) | PA Master Handset<br>BOGEN #MCDS4 | 1 | 1 | 1 | 1 | Cabling A/R<br>- Refer to Specification for Product Description | |
| B | PA Call Switch<br>BOGEN #CA15C | 1 | 1 | 1 | 1 | Button Shall Activate 2-Way Conversations Between Classroom Speakers and Main Office. Cabling A/R | Mounting Height 46" AFF unless otherwise noted. |
| | Wireless Clock 1. | | | | | 12" Clock Unless Otherwise Noted on Plans<br>- Refer to Specification for Product Description | Refer to Detail 1, T204. Coordinate location with Architect. |
| VC ▶ | PA Volume Control<br>BOGEN #AT10A | 1 | 1 | 1 | 1 | Volume Control Shall Control the Speakers Shown Within the Same Room. - Refer to Specification for Product Description | Mount @ 48" AFF to center of device |
| H | PA Horn | 1 | | | 1 | Speaker / Horn - Interior / Exterior<br>- Refer to Specification for Product Description | Secure horns to structure. Exterior horns shall receive proper weather proofing assembly. |
| (PA) | PA Strobe | 1 | 1 | 1 | 1 | Public Address Strobe. Refer to written specifications for device list and configuration requirements. | Mount Strobe @ 96" AFF |
| (Ps) | PA Pendant Speaker<br>BOGEN #MPS1B | 1 | | | | Cabling A/R<br>Confirm Color With Architect<br>Install so speaker is 6" above of wood slat ceiling | Contractor awarded this project shall cut 3'7" x 3'7" square from acoustic barrier above slatted ceiling, where required, to allow sound from the speaker to travel through the slatted ceiling unimpeded. Install per manufacturer recommendations. Include main drop cable and safety cable to anchor point. |

1. *CALCULATION BASED UPON 40% FILL @ 0.28 INCH CABLE O.D.

### CONDUIT FILL SCHEDULE

| CONDUIT SIZE | MAX # OF CAT 6A CABLES ALLOWED* NO. OF BENDS 0 | 1 | 2 |
|---|---|---|---|
| 1 | 6 | 5 | 4 |
| 1 1/4 | 10 | 8 | 7 |
| 1 1/2 | 13 | 11 | 9 |
| 2 | 22 | 19 | 15 |
| 2 1/2 | 28 | 32 | 27 |
| 3 | 57 | 49 | 40 |
| 3 1/2 | 75 | 64 | 52 |
| 4 | 96 | 82 | 67 |

## TECHNOLOGY ABBREVIATIONS

(NOTE: NOT ALL ABBREVIATIONS APPLICABLE)

| | |
|---|---|
| 3.5mm | 3.5MM JACK PLUG (AUDIO) |
| AFF | ABOVE FINISH FLOOR |
| A/C | ABOVE COUNTER |
| ANSI | AMERICAN NATIONAL STANDARDS INSTITUTE |
| AWG | AMERICAN WIRE GAUGE |
| BICSI | BUILDING INDUSTRY CONSULTING SERVICE INTERNATIONAL |
| BNC | BAYONET NEIL-CONCELMAN |
| C | CONDUIT(S) |
| DEMARC | DEMARCATION |
| DPDT | DOUBLE PULL DOUBLE THROW |
| EIA | ELECTRONICS INDUSTRIES ALLIANCE |
| EMT | ELECTRICAL METALLIC TUBING |
| FACP | FIRE ALARM CONTROL PANEL |
| F | FACSIMILE (FAX) |
| HDMI | HIGH DEFINITIONS MEDIA INTERFACE |
| LAN | LOCAL AREA NETWORK |
| MER | MAIN EQUIPMENT ROOM |
| NEC | NATIONAL ELECTRIC CODE |
| NIC | NOT IN CONTRACT |
| OFE | OWNER FURNISHED EQUIPMENT |
| PA | PUBLIC ADDRESS |
| PBX | PRIVATE BRANCH EXCHANGE |
| PC | PERSONAL COMPUTER |
| PoE | POWER OVER ETHERNET |
| PP | PATCH PANEL |
| PVC | POLYVINYL CHLORIDE CONDUIT |
| QYT | QUANTITY |
| STP | SHIELDED TWISTED PAIR |
| TBB | TELECOMMUNICATIONS BONDING BACKBONE |
| TGB | TELECOMMUNICATIONS GROUNDING BUSBAR |
| TIA | TELECOMMUNICATIONS INDUSTRY ASSOCIATIONS |
| TMGB | TELECOMMUNICATIONS MAIN GROUNDING BUSBAR |
| TR | TELECOMMUNICATIONS ROOM |
| TV | TELEVISION |
| TYP | TYPICAL |
| UPS | UNINTERRUPTIBLE POWER SUPPLY |
| USB | UNIVERSAL SERIAL BUS |
| UTP | UNSHIELDED TWISTED PAIR |
| VGA | VIDEO GRAPHICS ARRAY |
| VoIP | VOICE OVER INTERNET PROTOCOL |
| W | WALL TELEPHONE (VOICE) |
| WAN | WIDE AREA NETWORK |
| WAO | WORK AREA OUTLET |
| WAP | WIRELESS (DATA) ACCESS POINT |
| WG | WIRE GUARD |
| WP | WEATHERPROOF |
| XFMR | TRANSFORMER |
| XMTR | TRANSMITTER |

## GENERAL NOTES

1. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THE CONTRACT.
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3. LABEL ALL CABLES WITHIN 12" OF FINAL TERMINATION.
4. CONTRACTOR SHALL MAINTAIN THE TWIST OF THE INDIVIDUAL PAIRS TO WITHIN 1/2" OF FINAL TERMINATION FOR ALL CATEGORY 3 OR HIGHER CABLE.
5. USE ONLY HOOK AND LOOP CABLE TIES (VELCRO) FOR CABLES RATED CATEGORY 3 OR HIGHER.
6. ALL CABLES RUN IN CEILING AREAS SHALL BE PROPERLY SUPPORTED WITH CONDUIT OR J-HOOKS MOUNTED TO SLAT AT MINIMUM OF 4' INTERVALS. NO CABLE SHALL REST OR TOUCH CEILING ASSEMBLIES. CABLES SHALL NOT BE INSTALLED EXPOSED IN OPEN CEILING AREAS.
7. ALL LABELS SHALL BE MACHINE PRINTED. NO HAND LETTERED CABLES SHALL BE USED.
8. USE ONLY PLENUM RATED CABLES.
9. DO NOT RUN TELECOMMUNICATION CABLES PARALLEL TO POWER CABLES. CROSS POWER CABLES ONLY AT RIGHT ANGLES.
10. MAINTAIN 8" DISTANCE FROM ALL LIGHTING TRANSFORMERS.
11. COLOR AND STYLE OF TELECOMMUNICATION FACE PLATES SHALL MATCH ELECTRICAL FACE PLATES AND BE COORDINATED WITH AND CONFIRMED BY THE ARCHITECT.
12. OBTAIN AND EXTEND TO OWNER ALL AVAILABLE MANUFACTURER AND SYSTEM WARRANTEES.
13. SPLICING CABLES IS NOT PERMITTED EXCEPT AS SPECIFICALLY NOTED.
14. DEVICE CABLING SHALL BE TERMINATED WITHIN THE INDICATED DATA ROOMS AND SHALL BE TERMINATED ONTO A 19" RACK MOUNTED, RJ45, 24 PORT, CATEGORY 6A RATED PATCH PANEL.
15. THE FOLLOWING CABLING SHALL BE TERMINATED ONTO IT'S OWN DISCRETE AND SEPARATE CATEGORY 6A RATED, RACK MOUNTED PATCH PANELS. REFER TO RACK ELEVATION DETAILS:
    - 15.1. ALL STUDENT AND CLASSROOM SPACES
    - 15.2. ALL ADMINISTRATION AREAS AND OFFICES
    - 15.3. ALL WIRELESS AP'S
    - 15.4. ALL VIDEO SURVEILLANCE CAMERAS (REFER TO SECURITY DRAWINGS FOR PLACEMENT)
16. SPEAKER CABLING SHALL BE INSTALLED FROM THE SPEAKER AND/OR SPEAKER ARRAY WITHIN EACH ROOM TO THE DATA ROOM INDICATED WITHIN THE PA WIRING DIAGRAMS.
17. LOCATIONS OF EQUIPMENT FOR ALL OTHER TRADES SHALL BE COORDINATED BEFORE CONSTRUCTION.
18. CONTRACTOR SHALL COORDINATE LAYOUT LOCATIONS AND CLEARANCE OF ALL EQUIPMENT WITH OTHER TRADES AND ATTAIN OWNER'S APPROVAL PRIOR TO CONSTRUCTION.
19. CONTRACTOR SHALL COORDINATE ALL RACEWAYS, LOCATIONS, AND POWER REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
20. ALL COMMUNICATION OUTLETS MUST COINCIDE WITH ELECTRICAL POWER DRAWINGS.
21. ALL VOICE AND DATA OUTLETS THAT DO NOT HAVE AN ELECTRICAL OUTLET WITHIN 3FT SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE THE PROJECT ARCHITECT/CONSTRUCTION MANAGER, AND TECHNOLOGY CONSULTANT PRIOR TO THE TIME OF INSTALLATION.
22. PLACEMENT OF ALL SECURITY VIDEO SURVEILLANCE CAMERAS MUST BE APPROVED BY THE SECURITY CONSULTANT AND/OR OWNER PRIOR TO CONSTRUCTION.
23. ALL EXISTING LOW VOLTAGE TERMINATION DEVICES & CABLING SHALL BE REMOVED & DISCARDED FROM THIS FACILITY.
24. ALL DEVICES SHOWN ON THESE PLANS MUST BE COORDINATED AND APPROVED BY THE ARCHITECT. THE INSTALLATION CONTRACTOR SHALL DEPICT ALL DEVICES ONTO ELEVATION SUBMITTALS BEFORE INSTALLATION. ANY DEVICE THAT IS NOT APPROVED BY THE ARCHITECT PRIOR TO INSTALLATION MAY BE REQUIRED TO BE RELOCATED AS DIRECTED BY THE ARCHITECT AND CORRECTED BY THE CONTRACTOR WITH NO ADDITIONAL CHARGE TO THIS PROJECT.
25. ALL PATHWAYS, INCLUDING ALL WALL AND CEILING PENETRATIONS ARE REQUIRED TO INSTALL CABLING TO THE END DEVICE AND SHALL BE COORDINATED BETWEEN THE LOW VOLTAGE AND SECURITY CONTRACTOR AND THE ELECTRICAL CONTRACTOR AND SHALL BE INCLUDED AS PART OF THIS SECTION.
26. ALL CABLING SHALL BE LABELED AT BOTH ENDS.
27. SEISMIC PERFORMANCE: ALL WALL MOUNTED DEVICES SHALL BE MOUNTED, SECURED AND INSTALLED IN ACCORDANCE WITH SEI/ASCE 7 AND SHALL ADDITIONALLY WITHSTAND THE EFFECTS OF ANY MOTIONS WITHIN THE BUILDING AS DETERMINED BY SEI/ASCE 7.
28. THE TERM 'WITHSTAND' MEANS "THE UNITS ILL REMAIN IN PLACE WITHOUT SEPARATION OF ANY PARTS FROM THE DEVICE WHEN SUBJECTED TO SEISMIC FORCES SPECIFIED AND THE UNIT WILL BE FULLY OPERATIONAL AFTER THE SEISMIC EVENT."
29. ALL CONDUIT IS TO ABOVE ACCESSIBLE CEILING UNLESS OTHERWISE NOTED.

| NO. | DATE | ISSUE |
|---|---|---|
| 1 | 11/30/18 | ADDENDUM #4 |


d'agostino & ASSOCIATES
Technology ⌐ Security ⌐ Audio Visual
1266 EAST MAIN STREET SUITE 703R STAMFORD, CT 06802
1000 LAFAYETTE BLVD. SUITE 1100 BRIDGEPORT, CT 06604
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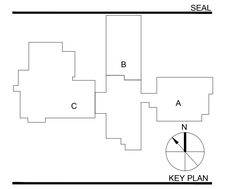
SEAL




KEY PLAN


PERKINS — EASTMAN
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F. +1 203 251 7474


Owner:
**BETHEL PUBLIC SCHOOLS**
1 School Street, Bethel,
CT 06801 203.794.8601

Construction Manager:
**RIZZO CORPORATION**
64 Triangle St, Danbury,
CT 06810 203.731.3131

Civil / Site / Landscape:
**MILONE & MACBROOM**
99 Realty Drive
Chesire, CT 06410
203.271.1773

Structural:
**DIVERSIFIED TECHNOLOGY CONSULTANTS**
2321 Whitney Avenue, Suite 301
Hamden, CT 06518
203.239.4200

Mechanical, Electrical, Plumbing & Fire Protection:
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Food Service:
**FOODSERVICE FACILITIES INTERNATIONAL**
137 Elm Place, New
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203.972.1687

Technology / Security / AV:
**D'AGOSTINO & ASSOCIATES, LLC**
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Stamford, CT 06902
203.539.6164

Acoustical Consultant:
**ACENTECH**
33 Moulton Street
Cambridge, MA 02138
617.499.8000

PROJECT TITLE:
# RALPH M. T. JOHNSON ELEMENTARY SCHOOL ADDITIONS & RENOVATIONS
400 WHITTLESEY DR, BETHEL, CT 06801
STATE PROJECT No: 009-0059-RNV

PROJECT No: 68962

DRAWING TITLE:
## TECHNOLOGY
## SYMBOL LEGEND & GENERAL NOTES

SCALE:

# T-001

CONSTRUCTION DOCUMENTS

JULY 27, 2018