

EXTERIOR REHABILITATION & REPAIRS/RENOVATION

**ECKERSLEY-HALL BUILDING
61 DURANT STREET
MIDDLETOWN, CT 06457
BID #2013-11**

S/P+A PROJECT NO. 11.134

DATE: August 2, 2013

The following changes to the Drawings and Project Specifications shall become a part of the Drawings and Project Specifications; superseding previously issued Drawings and Project Specifications to the extent modified by Addendum No. 2.

Requests for Information (RFIs)/Technical Questions:

- See attached RFIs. (3)

Substitution Requests:

- See attached substitution requests. (3)

New Specifications:

- Renovation:
 - SECTION 05531, METAL GRATINGS has been added and is attached as part of this addendum. (6)
 - SECTION 06610, GLASS FIBER, RESIN AND VINYL FABRICATIONS has been added and is attached as part of this addendum. (4)
 - SECTION 07190, VAPOR AND AIR BARRIERS has been added and is attached as part of this addendum. (3)
 - SECTION 07421, COMPOSITE METAL BUILDING PANELS has been added and is attached as part of this addendum. (6)
 - SECTION 09385, DIMENSIONAL STONE TILE has been added and is attached as part of this addendum. (10)
 - SECTION 12484, ENTRANCE FLOOR MATS AND FRAMES has been added and is attached as part of this addendum. (3)
 - SECTION 12485, ENTRANCE FLOOR GRILLES has been added and is attached as part of this addendum. (4)

Changes to the Specifications:

- Exterior Rehabilitation:

- SECTION 01019, CONTRACT CONSIDERATIONS, Page 2, Article 1.3.F., add the following:

“4. **Allowance No. 3 – Concrete Parging Repair:** As it is impractical to quantify the amount of concrete parging that may be deteriorated at the time of bid, the Contractor shall include the cost based on the Contractor's unit price an allowance of the total area of concrete parging at locations indicated for repair on Drawings, to match the existing parging as specified in Section 04100. The allowance will include the Contractor’s labor and material to field survey the existing concrete parging and determine the precise extent of the repair needed. Should concrete parging be encountered that at the Architect's direction requires removal, the Contractor shall do so, deducting the amount of the affected parging from the allowance amount referenced below. Removal and replacement shall include all manpower, scaffolding, tools and materials for removal, disposal and installation of concrete parging. The concrete parging repair allowance shall be five percent (5%) of the total concrete parging repair area.”

- Renovation:

- TECHNICAL SPECIFICATION TABLE OF CONTENTS:

- Page 2:

- Division 5 – Metals, add the following:

“Section 05531 Metal Gratings 6”

- Division 6 – Wood and Plastic, add the following:

“Section 06610 Glass Fiber, Resin and Vinyl Fabrications 4”

- Division 7 – Thermal and Moisture Protection:

- Section 07213, Pages, revise “2” to read “3”.
- Add the following:

“Section 07190 Vapor and Air Barriers 3
Section 07421 Composite Metal Building Panels 6”

- Page 3:

- Division 9 – Finishes:

- Section 09300, Pages, revise “15 to read “12”.
- Add the following:

“Section 09385 Dimensional Stone Tile 10”

- Division 12 – Furnishings, add the following:

“Section 12484 Entrance Floor Mats and Frames 3
Section 12485 Entrance Floor Grilles 4”.

- DRAWING LIST:

- Page 1, Civil Drawings, C100, revise to read as follows:

“Existing Conditions, Site Removals, Soil Erosion & Sediment Control Plan”

- Page 2, Mechanical Drawings:

- MD2, revise “Upper Level” to read “Second Floor”.
- M2, revise “Ductwork” to read “Mechanical”.
- M3, after “Attic” add “Level”.

- Page 3, Mechanical Drawings, M5, after “Attic” add “Level”.

- SECTION 01730, OPERATION AND MAINTENANCE DATA, Page 3:

- Article 1.9.A.4., revise “Section 08211 – Wood Doors” to read “Section 08331 – Overhead Coiling Doors”.
- Article 1.9.A., add the following:

- “7. Section 05520 – Handrails and Railings
- 8. Section 05531 – Metal Gratings
- 9. Section 05721 – Ornamental Railings
- 10. Section 06411 – Interior Architectural Casework
- 11. Section 06415 – Stone Countertops
- 12. Section 06430 – Wood Stairs and Railings
- 13. Section 06615 – Simulated Stone Countertops
- 14. Section 09300 – Ceramic Tile
- 15. Section 09385 – Dimensional Stone Tile
- 16. Section 09640 – Wood Flooring
- 17. Section 10105 – Visual Display Units
- 18. Section 10150 – Toilet Partitions
- 19. Section 10210 – Metal Louvers
- 20. Section 10522 – Fire Extinguishers, Cabinets and Accessories
- 21. Section 10652 – Folding Panel Partitions
- 22. Section 10800 – Toilet Accessories
- 23. Section 11132 – Projection Screens
- 24. Section 12484 – Entrance Floor Mats and Frames
- 25. Section 12485 – Entrance Floor Grilles

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26. Section 12494 – Roller Shades
 27. Section 14245 – Electric Traction Elevators
 28. Division 15 – Mechanical
 29. Division 16 – Electrical
 30. Section 321216 – Asphalt Paving
 31. Section 321413 – Concrete Unit Paving
 32. Section 329010 – Landscaping”
- SECTION 01740, WARRANTIES AND BONDS, Page 2, Article 1.6.A., add the following:
- “3. Section 05531 – Metal Gratings
 4. Section 05721 – Ornamental Railings
 5. Section 06411 – Interior Architectural Casework
 6. Section 06615 – Simulated Stone Countertops
 7. Section 08111 – Steel Doors
 8. Section 08112 – Standard Steel Frames
 9. Section 08211 – Wood Doors
 10. Section 08331 – Overhead Coiling Doors
 11. Section 08410 – Aluminum Entrances and Storefront Framing
 12. Section 08800 – Glazing
 13. Section 08830 – Mirrors
 14. Section 08911 – Glazed Aluminum Curtain Walls
 15. Section 09300 – Ceramic Tile
 16. Section 09385 – Dimensional Stone Tile
 17. Section 09440 – Epoxy Flooring
 18. Section 09640 – Wood Flooring
 19. Section 09650 – Resilient Flooring
 20. Section 09688 – Carpet Tile
 21. Section 10105 – Visual Display Units
 22. Section 10150 – Toilet Partitions
 23. Section 10210 – Metal Louvers
 24. Section 10260 – Wall and Door Protection
 25. Section 10522 – Fire Extinguishers, Cabinets and Accessories
 26. Section 10652 – Folding Panel Partitions
 27. Section 10800 – Toilet Accessories
 28. Section 11132 – Projection Screens
 29. Section 12484 – Entrance Floor Mats and Frames
 30. Section 12485 – Entrance Floor Grilles
 31. Section 12494 – Roller Shades
 32. Section 14245 – Electric Traction Elevators
 33. Division 15 – Mechanical
 34. Division 16 – Electrical
 35. Section 329010 – Landscaping
 36. Section 329219 – Seeding”

- SECTION 02072, DEMOLITION AND REMOVALS:
 - Page 2, Part 2, revise “Not Used” to read as follows:

“2.1 PERFORMANCE REQUIREMENTS

A. LEED Requirements for Building Reuse:

 1. Credit MR 1.2 and Credit MR 1.3: Maintain existing nonshell, nonstructural components (walls, flooring, and ceilings) not indicated to be demolished; do not demolish such existing construction beyond indicated limits.”
 - Page 3, Article 3.2, add the following:

“D. Reuse of Building Elements: Project has been designed to result in end-of-Project rates for reuse of building elements as follows. Do not demolish building elements beyond what is indicated on Drawings without Architect's approval.

 1. Nonshell Elements: Forty percent (40%).”
- SECTION 04100, MORTAR:
 - Page 2, Article 1.4, add the following:

“E. LEED Submittals:

 1. Product Certificates for Credit MR 5: For products and materials required to comply with requirements 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.”
 - Page 3, Article 2.1, add the following:

“K. Regional Materials: Aggregate for mortar and grout, cement, and lime shall be extracted, harvested, or recovered, as well as manufactured, within five hundred (500) miles of Project site.”
- SECTION 04300, UNIT MASONRY SYSTEM:
 - Page 1, Article 1.4, add the following:

“C. LEED Submittals:

1. Product Certificates for Credit MR 5: For products and materials required to comply with requirements 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.”
- Page 2, Article 2.2, add the following:
 - “C. Regional Materials: CMUs shall be manufactured within five hundred (500) miles of Project site from aggregates and cement that have been extracted, harvested, or recovered, as well as manufactured, within five hundred (500) miles of Project site.”
- SECTION 05500, METAL FABRICATIONS:
 - Page 1, Article 1.4, add the following:
 - “F. LEED Submittals:
 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.”
 - Page 2, Article 2.1, add the following:
 - “F. Recycled Content of Steel Products: Postconsumer recycled content plus one-half (1/2) of preconsumer recycled content not less than twenty-five percent (25%).”
 - SECTION 05520, HANDRAILS AND RAILINGS:
 - Page 1, Article 1.5, add the following:
 - “C. LEED Submittals:
 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.”
 - Page 2, Article 2.1, add the following:
 - “F. Recycled Content of Steel Products: Postconsumer recycled content plus one-half (1/2) of preconsumer recycled content not less than twenty-five

percent (25%).”

○ SECTION 06100, ROUGH CARPENTRY:

▪ Page 2:

□ Article 1.4, add the following:

“E. LEED Submittals:

1. Certificates for Credit MR 7: Chain-of-custody certificates indicating that composite wood products comply with forest certification requirements. Include documentation that manufacturer is certified for chain of custody by an FSC-accredited certification body. Include statement indicating cost for each certified wood product.
2. Product Data for Credit IEQ 4.1: For adhesives and glues used at Project site, documentation including printed statement of VOC content.
3. Product Data for Credit IEQ 4.4: For composite wood products, documentation indicating that product contains no urea formaldehyde.”

□ Article 2.1, add the following:

“C. Certified Wood: The following wood products shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship":

1. Interior trim.
2. Fire-rated interior door frames.
3. Interior plywood and hardboard paneling.
4. Shelving and clothes rods.
5. Interior stairs and railings.”

▪ Page 4, Article 2.1, add the following:

“N. Sound Isolation System

1. Manufacturer:

- a. Kinetics Noise Control, Inc.; **Model RIM**
- b. Substitutions: Under provisions of Section 01600.

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2. High density molded fiberglass pads individually coated with a flexible elastomeric membrane. Isolation pads shall be 2 inches thick and be spaced as recommended by the manufacturer but not greater than 16 inches centerline spacing. Pads shall be manufactured from annealed glass fibers stabilized by precompression during manufacture. Pads shall be designed to safely withstand a minimum imposed load of 75 PSF in all open areas and shall have a minimum overload capacity of one hundred percent (100%) in all high load areas.
 3. Pads shall have satisfactorily passed WMATA Section 3.49 dynamic test for isolator permanence.
 4. 1½ inch thick low-density fiberglass absorption material shall be bonded to the isolation pads and shall cover a minimum of ninety-five percent (95%) of the area between the isolation pads.
 5. Perimeter isolation shall be ¾ inch thick resilient material.”
- Page 5, Article 3.1, add the following:
 - “A. The installation of all sound isolation materials shall be in accordance with procedures submitted by the isolation material manufacturer. All sound isolation materials and building components supported by isolation materials shall be free from rigid contact with any part of the building structure.”
- SECTION 06411, INTERIOR ARCHITECTURAL CASEWORK:
 - Page 2, Article 1.5, add the following:
 - “D. LEED Submittals:
 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
 2. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regionally manufactured materials. Include statement indicating cost for each regionally manufactured material.
 - a. Include statement indicating location of manufacturer and distance to Project for each regionally manufactured material.
 3. Product Data for Credit IEQ 4.4: For adhesives and composite wood products, documentation indicating that products contain no urea formaldehyde.

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4. Certificates for Credit MR 7: Chain-of-custody certificates indicating that products specified to be made from certified wood comply with forest certification and chain-of-custody requirements. Include statement indicating cost for each certified wood product.”
- Page 4:
 - Article 2.4.B.1., add to the end the following:

“, made with adhesive containing no urea formaldehyde”
 - Article 2.5, add the following:

“H. Regional Materials: Wood cabinets for transparent finish shall be manufactured within five hundred (500) miles of Project site.

I. Certified Wood: Wood cabinets for transparent finish shall be produced from wood certified as "FSC Pure" or "FSC Mixed Credit according to FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship," and FSC STD-40-004, "FSC Standard for Chain of Custody Certification".”
 - Page 5, Article 2.6, add the following:

“J. Continuous Hinges: BHMA A156.26; minimum 0.120-inch-thick, hinge leaves with minimum overall width of 4 inches; fabricated to full length of bench and to template screw locations; with components finished after milling and drilling are complete.

K. Adjustable Shelf Standards and Supports: BHMA A156.9, B04102; with shelf brackets, B04112.”
 - SECTION 06430, WOOD STAIRS AND RAILINGS:
 - Page 1, Article 1.2.B.1., delete in its entirety.
 - Page 6, Article 3.2.D.2, revise “Section 05” to read “Drawings”.
 - SECTION 06615, SIMULATED STONE COUNTERTOPS:
 - Page 1, Article 1.4, add the following:

“D. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for

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- 2. each product having recycled content.
 - 2. Product Data for Credit IEQ 4.4: For adhesives and composite wood products, documentation indicating that product contains no urea formaldehyde.
 - 3. Certificates for Credit MR 7: Chain-of-custody certificates indicating that wood products comply with forest certification requirements. Include documentation that manufacturer is certified for chain of custody by an FSC-accredited certification body. Include statement indicating cost for each certified wood product.”
- Page 2, Article 2.2, add the following:
 - “C. Certified Wood Materials: Fabricate countertops with wood and wood-based products produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship".
 - D. Adhesives: Adhesives shall not contain urea formaldehyde.”
 - SECTION 07213, BATT AND BLANKET INSULATION has been deleted in its entirety. A new SECTION 07213, BATT AND BLANKET INSULATION has been added and is attached as part of this addendum. (3)
 - SECTION 07270, FIRESTOPPING:
 - Page 2, Article 1.5, add the following:
 - “E. LEED Submittals:
 - 1. Product Data for Credit IEQ 4.1: For penetration firestopping sealants and sealant primers, documentation including printed statement of VOC content.”
 - Page 3, Article 2.2, add the following:
 - “F. VOC Content: Penetration firestopping sealants and sealant primers shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Sealants: 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 3. Sealant Primers for Porous Substrates: 775 g/L.”
 - SECTION 07900, SEALANTS:
 - Page 2, Article 1.4, add the following:

“H. LEED Submittals:

1. Product Data for Credit IEQ 4.1: For sealants and sealant primers used inside the weatherproofing system, documentation including printed statement of VOC content.”

- Page 3, Article 2.1, add the following:

“C. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following:

1. Architectural sealants shall have a VOC content of 250 g/L or less.
2. Sealants and sealant primers for nonporous substrates shall have a VOC content of 250 g/L or less.
3. Sealants and sealant primers for nonporous substrates shall have a VOC content of 775 g/L or less.”

○ SECTION 08111, STEEL DOORS:

- Page 1, Article 1.4, add the following:

“F. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.”

- Page 3, Article 2.2, add the following:

“B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half (1/2) of preconsumer recycled content not less than twenty-five percent (25%).”

○ SECTION 08112, STANDARD STEEL FRAMES, Page 2:

- Article 1.4, add the following:

“E. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.”

- Article 2.1, add the following:

“B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half (1/2) of preconsumer recycled content not less than twenty-five percent (25%).”

○ SECTION 08211, WOOD DOORS:

- Page 1, Article 1.3, add the following:

“F. LEED Submittals:

1. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regionally manufactured materials. Include statement indicating cost for each regionally manufactured material.
 - a. Include statement indicating location of manufacturer and distance to Project for each regionally manufactured material.
2. Product Data for Credit IEQ 4.4: For adhesives and composite wood products, documentation indicating that product contains no urea formaldehyde.
3. Certificates for Credit MR 7: Chain-of-custody certificates indicating that flush wood doors comply with forest certification requirements. Include statement indicating cost for each certified wood product.”

- Page 2:

- Article 2.2, add the following:

“C. Regional Materials: Flush wood doors shall be manufactured within five hundred (500) miles of Project site.

D. Low-Emitting Materials: Fabricate doors with adhesives and composite wood products that do not contain urea formaldehyde.

E. Certified Wood: Flush wood doors shall be certified as "FSC Pure" or "FSC Mixed Credit" according to FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship," and to FSC STD-40-004, "FSC Standard for Chain of Custody Certification".”

- Article 2.3.A., revise “quality white maple” to read “select clear cherry”.

○ SECTION 08800, GLAZING:

- Page 2, Article 1.5, add the following:

“D. LEED Submittals:

1. Product Data for Credit IEQ 4.1: For field-applied glazing sealants, documentation including printed statement of VOC content.”

- Page 4, Article 2.5, add the following:

“C. Field-applied sealants shall have a VOC content of not more than 250 g/L.”

○ SECTION 09260, GYPSUM BOARD SYSTEMS:

- Page 1, Article 1.4, add the following:

“C. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
2. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regionally manufactured materials. Include statement indicating cost for each regionally manufactured material.
 - a. Include statement indicating location of manufacturer and distance to Project for each regionally manufactured material.
3. Product Data for Credit IEQ 4.1: For adhesives used to laminate gypsum board panels to substrates, documentation including printed statement of VOC content.”

- Page 2, Article 2.3, add the following:

“B. Recycled Content of Gypsum Panel Products: Postconsumer recycled content plus one-half (½) of preconsumer recycled content not less than thirty-five percent (35%).

C. Regional Materials: Gypsum panel products shall be manufactured within five hundred (500) miles of Project site.”

- Page 3, Article 2.4.D., add the following:

“1. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).”

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- SECTION 09300, CERAMIC TILE has been deleted in its entirety. A new SECTION 09300, CERAMIC TILE has been added and is attached as part of this addendum. (12)
 - SECTION 09440, EPOXY FLOORING, Page 2, Article 1.5, add the following:

“D. LEED Submittals:

1. Product Data for Credit IEQ 4.2: For liquid-applied flooring components, documentation including printed statement of VOC content.”

- SECTION 09650, RESILIENT FLOORING:

- Page 2, Article 1.5, add the following:

“E. LEED Submittals:

1. Product Data for Credit IEQ 4.1: For adhesives, documentation including printed statement of VOC contents.
2. Product Data for Credit IEQ 4.3: For adhesives, documentation including printed statement of VOC contents.
3. Product Data for Credit IEQ 4.3: For linoleum, documentation from an independent testing agency indicating compliance with the FloorScore standard.”

- Page 5:

- Article 2.2.A.1.a., revise “Roppe” to read “Johnsonite, Chagrin Falls, OH (800.899.8916)”.
- Article 2.2.A.2.a., revise “Johnsonite, Chagrin Falls, OH (800.899.8916)” to read “Roppe”.

- SECTION 09688, CARPET TILE:

- Page 1, Article 1.3, add the following:

“E. LEED Submittals:

1. Product Data for Credit EQ 4.3:
 - a. For carpet tile, documentation indicating compliance with testing and product requirements of CRI's "Green Label Plus" program.
 - b. For installation adhesive, documentation including printed statement of VOC content.”

- Page 2:

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- Article 2.1.A.1., revise to read as follows:

“Shaw Industries, Inc., Dalton, GA, (877.502.7429)”
 - Article 2.1.B.1., revise to read as follows:

“J+J/Invision”
 - Page 3:
 - Article 2.2.B., add the following:

“4. Emissions: Provide carpet tile that complies with testing and product requirements of CRI's "Green Label Plus" program.”
 - Article 2.3.B., add the following:

“1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).”
 - SECTION 09900, PAINTING:
 - Page 1, Article 1.4, add the following:

“E. LEED Submittals:

 1. Product Data for Credit EQ 4.2: For paints and coatings, including printed statement of VOC content.”
 - Page 3:
 - Article 2.2, add the following:

“D. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

 1. Flat Paints and Coatings: 50 g/L.
 2. Nonflat Paints and Coatings: 150 g/L.
 3. Primers, Sealers, and Undercoaters: 200 g/L.
 4. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
 5. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
 6. Pretreatment Wash Primers: 420 g/L.

7. Shellacs, Clear: 730 g/L.
8. Shellacs, Pigmented: 550 g/L.”

Article 3.1.D.4., delete in its entirety.

▪ Page 4:

- Article 3.2.E., after “Board” add “and Plaster”.
- Articles 3.2.H. and .M., delete in their entirety.

▪ Page 6:

Article 3.6, add the following:

“C. Stucco (Parging):

1. One (1) coat of acrylic latex primer sealer.
2. Two (2) coats of acrylic latex enamel, flat.

D. Steel – Galvanized:

1. One (1) coat galvanized primer.
2. Two (2) coats of alkyd enamel, gloss.

E. Wood – Painted:

1. One (1) coat of latex primer sealer.”

- Article 3.7.D.2., delete “solvent or” in its entirety.
- Article 3.7.E., delete in its entirety.

▪ Page 7, Article 3.7.H., delete in its entirety.

- SECTION 10105, VISUAL DISPLAY UNITS, Page 1, Article 1.4.B., delete in its entirety.
- SECTION 10441, SIGNAGE:

▪ Page 1, Article 1.4, add the following:

“D. LEED Submittals:

1. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regionally manufactured materials. Include statement indicating cost for each regionally manufactured material.

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2. Product Data for Credit IEQ 4.1: For adhesives, documentation including printed statement of VOC content.
 - a. Include statement indicating location of manufacturer and distance to Project for each regionally manufactured material.”
- Page 2, Article 2.3, add the following:

“B. Regional Materials: Panel signs shall be manufactured within five hundred (500) miles of Project site.”
 - Page 3, Article 3.2.1.a., add the following:

“1) Adhesives: As recommended by sign manufacturer and with a VOC content of 70 g/L or less for adhesives used inside the weatherproofing system and applied on-site when calculated according to 40 CFR 59, Subpart D (EPA Method 24).”
 - SECTION 10800, TOILET ACCESSORIES has been deleted in its entirety. A new SECTION 10800, TOILET ACCESSORIES has been added and is attached as part of this addendum. (4)
 - SECTION 11132, PROJECTION SCREENS, Page 3, Article 2.2.E.4., revise to read as follows:

“Size of Viewing Surface:

 - a. Dining 109: 4’-10” high x 8’-8” wide (16:9).
 - b. Classroom 210: 4’-4” high x 7’-8” wide (16:9).”
 - SECTION 14245, ELECTRIC TRACTION ELEVATORS:
 - Page 3, Articles 1.4.B.1. to .9., revise to read as follows:
 - “1. Rated Net Capacity: 3500 lbs.
 2. Rated Speed: 150 ft/min, minimum.
 3. Clear Net Platform Size: 80 x 66¼ inches.
 4. Cab Height: 96 inches clear under ceiling, minimum.
 5. Hoistway and Cab Entrance Frame Opening Sizes: 42 x 84 inches.
 6. Door Opening Type: Center opening.
 7. No. of Stops: Two (2).
 8. No. of Openings: Two (2) front and back.”
 - Page 9, Article 2.2, add the following:

“G. Plastic Laminate: NEMA LD3, high pressure type, Fire Rated, 0.050 inch General Purpose Postform Grade; smooth surface finish; in range of colors

and patterns, smooth surface finish; manufactured by Formica Corporation, Cincinnati, OH (800.367.6422), Wolf Gordon, New York, NY (800.347.0550) or approved equal.”

- Page 10:
 - Article 2.9.A., add to the end the following:

“and Room Finish Schedule on Drawing A9.1”.
 - Article 2.9.B., delete “as indicated in Section 09000,” in its entirety and revise “brushed” to read “polished”.
 - Article 2.9.C., delete in its entirety.
- Page 11:
 - Article 2.9.D., delete in its entirety.
 - Article 2.9.E., revise “Section 09000” to read “Drawings”.
 - Article 2.9.F., revise “Fluorescent panels” to read “LED”.
 - Article 2.9.H., revise “Brushed” to read “Polished”.
 - Article 2.10.A., revise “Brushed” to read “Polished” and delete last sentence in its entirety.
 - Article 2.10.B., revise “Brushed” to read “Polished”.
- Page 12, Article 2.12.D., revise “No. 4 brushed” to read “Polished”.
- SECTION 15050, BASIC MECHANICAL MATERIALS AND METHODS, Page 1, Article 1.1, add the following:

“B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
- SECTION 15110, VALVES, Page 1, Article 1.1.B., revise “General” to read “Building”.
- SECTION 15185, HYDRONIC PUMPS, Page 1, Article 1.1, add the following:

“B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
- SECTION 15495, COMMISSIONING OF PLUMBING:

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- Page 1:
 - Article 1.2.B.1., revise “General” to read “Building”.
 - Article 1.2.B.2., revise to read as follows:

“Section 15970 – Automatic Temperature Controls”
 - Article 1.3.A., revise “General” to read “Building”.
 - Article 1.4.A., revise “General” to read “Building”.
 - Article 1.5.A., revise “General” to read “Building”.
 - Article 1.7.A., revise “General” to read “Building”.

 - Page 5:
 - Article 3.2.T., revise “General” to read “Building”.
 - Article 3.3.A., revise “General” to read “Building”.
 - Article 3.4.A., revise “General” to read “Building”.
 - Article 3.5.A., revise “General” to read “Building”.

 - Page 7, Article 3.9.B., revise “Division 17 Sections “Controls and Instrumentation” and “Sequence of Operations”” to read “Section 15970”.
 - Page 8:
 - Article 3.10.A., revise “General” to read “Building”.
 - Article 3.11.A., revise “General” to read “Building”.

 - Page 9:
 - Article 3.12.A., revise “General” to read “Building”.
 - Article 3.13.B., revise “General” to read “Building”.
 - Article 3.14.A., revise “General” to read “Building”.

 - SECTION 15513, CONDENSING BOILERS, Page 1, Article 1.1, add the following:
 - “B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”

 - SECTION 15540, HVAC PUMPS, Page 1, Article 1.1, add the following:
 - “H. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
-

- SECTION 15745, WATER SOURCE HEAT PUMPS, Page 1, Article 1.1, add the following:
 - “B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
- SECTION 15761, AIR COILS, Page 1, Article 1.1, add the following:
 - “B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
- SECTION 15766, CABINET UNIT HEATERS, Page 1, Article 1.1, add the following:
 - “B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
- SECTION 15767, UNIT HEATERS, Page 1, Article 1.1, add the following:
 - “B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
- SECTION 15796, CONVECTORS, Page 1, Article 1.1, add the following:
 - “B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
- SECTION 15838, POWER VENTILATORS, Page 1, Article 1.1, add the following:
 - “B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
- SECTION 15839, KITCHEN EXHAUST, Page 1, Article 1.1, add the following:

-
- “B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
- SECTION 15841, KILN HOOD WITH BLOWER, Page 1, Article 1.1, add the following:

“B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
 - SECTION 15875, COMMERCIAL KITCHEN HOODS, Page 1, Article 1.1, add the following:

“B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
 - SECTION 15910, DUCT ACCESSORIES, Page 1, Article 1.1, add the following:

“B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
 - SECTION 15970, AUTOMATIC TEMPERATURE CONTROLS, Page 1, Part 1, add the following:

“1.0 The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
 - SECTION 15990, TESTING, ADJUSTING AND BALANCING, Page 1, Article 1.1, add the following:

“B. The Contractor, Subcontractors, and /or suppliers providing goods and services referenced in or related to this section will be required to support the commissioning effort in accordance with the requirements identified in Section 01810.”
 - SECTION 15995, COMMISSIONING OF HVAC SYSTEMS:

- Page 1:
 - Article 1.2.B.1., revise “General” to read “Building”.
 - Article 1.2.B.2., revise to read as follows:

“Section 15970 – Automatic Temperature Controls”
 - Article 1.3.A., revise “General” to read “Building”.
 - Article 1.4.A., revise “General” to read “Building”.
 - Article 1.5.A., revise “General” to read “Building”.
- Page 2, Article 1.7.A., revise “General” to read “Building”.
- Page 5:
 - Article 3.2.T., revise “General” to read “Building”.
 - Article 3.3.A., revise “General” to read “Building”.
 - Article 3.4.A., revise “General” to read “Building”.
- Page 6, Article 3.5.A., revise “General” to read “Building”.
- Page 9:
 - Article 3.10.A., revise “General” to read “Building”.
 - Article 3.11.A., revise “General” to read “Building”.
 - Article 3.12.A., revise “General” to read “Building”.
 - Article 3.13.B., revise “General” to read “Building”.
- Page 10, Article 3.14.A., revise “General” to read “Building”.

Changes to the Drawings:

- Renovation:
 - DRAWING C202, DRAINAGE & SITE UTILITY DETAILS, Typical Roof Leader Connection 7, “cast iron” notes, add “factory primed and field painted”.
 - DRAWING 7.8, CASEWORK & MILLWORK DETAILS, Reception Desk Elevations 2 and 3, delete “Prov. (2) grommets. Coord. locations with Owner” in its entirety.
 - DRAWING A8.1, DOOR SCHEDULE & DETAILS, Door Schedule, Doors 102 and 124, Saddle Detail, revise “B” to read “5/A9.2”.
 - DRAWING M1, LOWER LEVEL DUCTWORK PLAN has been deleted in its entirety. A new DRAWING M1, LOWER LEVEL DUCTWORK PLAN has been added and is attached as part of this addendum.*
 - DRAWING M2, UPPER LEVEL – MECHANICAL PLAN has been deleted in its entirety. A new DRAWING M2, UPPER LEVEL – MECHANICAL PLAN has been added and is attached as part of this addendum.*
 - DRAWING M3, ATTIC LEVEL DUCTWORK PLAN has been deleted in its entirety. A new DRAWING M3, ATTIC LEVEL DUCTWORK PLAN has been added and is

- attached as part of this addendum.*
- DRAWING M4, LOWER LEVEL PIPING PLAN has been deleted in its entirety. A new DRAWING M4, LOWER LEVEL PIPING PLAN has been added and is attached as part of this addendum.*
- DRAWING M7, DETAILS-2 has been deleted in its entirety. A new DRAWING M7, DETAILS-2 has been added and is attached as part of this addendum.*
- DRAWING M10, MECHANICAL SCHEDULE has been deleted in its entirety. A new DRAWING M10, MECHANICAL SCHEDULE has been added and is attached as part of this addendum.*

The bid date is unchanged by this addendum.

The addendum consists of eighty-four (84) pages of 8½” x 11” text and six (6) 30” x 42” drawings.

End of Addendum ‘2’

Q1: Are you, the owner, carrying builders risk for the existing structure? If the Contractor is to provide builders risks on the existing building please provide an estimated value of the structure in order for us to get builders risk quote from our insurance company.

A1. ~~If there is no new square footage being added then builders risk is not required.~~

Q2. Please confirm the 5 (five) year workman's warranty on the roofing system is required, industry standard is 1 (one) year.

A2. Confirmed, the (5) year workman's warranty is required

Q3.



TCF TL Fan
Specifications.pdf



TCF TL Fan
Drawing.pdf

Mechanical Schedule M10 of the "Middletown Senior Center / Community Center" project plans uses a Greenheck 2Q-60-VG fan for fan tag EF-6 which is a square, inline type fan. Can a Twin City TL inline/cabinet type fan be substituted? We would like to use a T100 series fan. Please see drawings and specifications above.

A3. We do not object to substituting a Twin City fan of equal performance for the scheduled Greenheck fan.

Q4: The roller shade spec does not provide any indication of the fabric, and the finish schedule is no help either. No way to know what should be provided. I also don't see any indication of which windows should receive shades. Fabric and scope description ASAP. There are windows indicated in passages, lobbies, restrooms, stairs, and closets. Need to know if they must be included for roller shades.

A4. Refer to Addendum #1 for all information regarding roller shades

Q5. I don't see A3.2 exterior elevations anywhere. Also, the interior elevation FF/A7.6, labeled for Room 210, shows a projection screen, and the RCP agrees.

A5. Drawing A3.2 was included in bid set. If drawing was missing from your printed set, please contact the City. Confirmed, there is a projection screen in Room 210 that is part of the base bid.

Q6: There is a motorized operable partition shown on page A 1.2, there is no mention of manufacturer or model and there is no specification section to refer to, please advise. Also Act-3 Calls for a 16 x 16 inch tongue and groove tile installed over a metal track.

This tile is made to be stapled to a wood furring strip or glued to the existing substrate. Will wood furring be acceptable? If not is the existing substrate in good enough condition to directly apply the tile? Is it level, cracked, or missing in areas? An alternate might be a 2 x 2 grid system. Please clarify.

- A6. Refer to Addendum #1 for motorized operable partition specification. This tile is to be installed per manufacturer's installation system (Armstrong 'Easy Up' or equal). Wood furring strips will not be accepted and existing condition of ceiling will not allow for adhesion due to existing glue daubs.
- Q7: I was told there is advantages for Middletown General Contractors, is that the case? And if so what is the percentage advantage? Is there Middletown workers requirements as well?
- A7. The City of Middletown is requesting that when the awarded Contractor has to hire subcontractors, they consider hiring those that reside in the City of Middletown. There is no set %, however it is a goal that the City of Middletown intends to meet. In addition, we highly encourage that Minority/Women's Business Enterprises participate in the project as well.
- Q8. I was going through the bid form and the list of subcontractors with dollar amounts is an impossible task to fill out during the day of the bid. We are getting numbers up to 15 minutes before the bid is going in and low bid(s) are constantly changing. I am asking if this information can be handed in the next day like other towns and entities require.
- A8. We understand pricing can change day to day, which is why we are asking for an approximate estimated \$ amount for the work that hired subcontractors would be providing. The awarded vendor would be required to submit their "final list" of subcontractors once the contract is awarded.
- Q9: In the drawings (detail B/A1.3) it refers to roll out insulation material then refers you to the specifications. No reference found of the material in the specification. Please advise to where the information could be found.
- A9. Refer to Addendum #2.
- Q10: Due to the subjective nature of the way the architect asked for repair work on parged concrete. Could there be an allowance for that work? % based work like the repointed and repaired wood trim. (8) GCs I'm sure will come up with 8 different descriptions of what damaged concrete is. Could you please clarify?

A10: Allow for 5% repair of parged concrete. This 5% is separate from the cleaning, prepping and repainting of ALL parging, which is required at 100% of the existing building.

Q11: The existing door frames on note 3 of the demolition plans call to be scraped and stained and refinished like new whereas other requirements in the spec book state that the existing wood is only to be cleaned only per LEED specifications.

A11: Existing stained wood to remain is to be cleaned per the specifications and SHPO directive. Existing painted wood to remain is to be scraped, sanded and refinished as indicated on the drawings.

Q12: On drawing S3.1 the canopy scaled to 6'-0" clear. Are these correct dimensions and if not what are the actual dimensions?

A12: Drawings should not be scaled. As indicated on S3.1 refer to Architectural Drawings for dimensioning of new entry canopy.

Q13: There is hardware listed within the door schedule on A, but there is also a hardware schedule in Section 08710. There appears to be some minor conflicts between the two. Which hardware schedule prevails?

A13: For any inconsistencies between drawings and specifications, the more costly option should prevail. Please refer to Addendum #1 for updated door hardware schedule.

Q14: On A8.1, Door 101 has power assisted operation and provisions are made for this on the electrical drawings. I do not see power assisted operation listed for hardware set HW-3 in Section 08710. Please clarify.

A14: Refer to Addendum #1 for updated door hardware schedule

Q15: The hardware schedule in Section 08710 has electric strike/access control on the majority of doors throughout this project. Part 2.2R states that the Access Control System is by others. There are no provisions shown on the electrical drawings for any door access control system. Please clarify.

A15: Refer to Addendum #1 for updated door hardware schedule.



SUBSTITUTION REQUEST
(During the Bidding Phase)

Project Middletown Senior Center & Municipal Office Space Substitution Request Number: _____
Middletown, CT

To: Bill Silver From: Direct Office Solutions

Re: Toilet Partitions Date: July 24, 2013

A/E Project Number: _____

Contract For: _____

Specification Title: Toilet Compartments Description: Toilet Compartments

Section: 10150 Page: all Article/Paragraph: _____

Proposed Substitution: Flush Metal Partitions- www.flushmetal.com

Manufacturer: Flush Metal Partitions LL Address: 260 Spagnoli Road Melville, NY 11747 Phone: (631) 768-8300

Trade Name: _____ Model No.: Phenolic OB

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

- The Undersigned certifies:
- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
 - Same warranty will be furnished for proposed substitution as for specified product.
 - Same maintenance service and source of replacement parts, as applicable, is available.
 - Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
 - Proposed substitution does not affect dimensions and functional clearances.
 - Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Terry Quinn

Signed by: Terry Quinn

Firm: Submitters Company Name

Address: 9220 JANE RD NORTH, LAKE ELMO, MN 55046

directofficenow@gmail.com

Telephone: Local (651)773-9731 - Toll Free (877)773-9740 / Fax (651)773-9738

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: R. BOUCHARD Date: 07.31.13

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

FLUSHMETAL

PARTITIONS

FLUSHITE PHENOLIC

SPECIFICATIONS

DOOR & PANELS

Doors shall be a minimum 3/4" thick solid phenolic core with high-pressure melamine matte finish surface made as an integral part of the core material. Laminated surfaces are unacceptable. All edges are to be machined smooth. Panels shall be minimum 1/2" thick solid phenolic core with high-pressure melamine matte finish surface made as an integral part of the core material. Laminated surfaces are unacceptable. All edges are to be machined smooth.

PILASTERS

The anchoring device shall consist of 3/8" x 1" steel bar mechanically fastened to bottom of pilaster and attached to floor by two 3/8" diameter steel stud bolts, nuts and expansion shields with a minimum penetration of 2" into concrete. Pilasters shall be a minimum 3/4" thick solid phenolic core with high-pressure melamine matte finish surface made as an integral part of the core material. Laminated surfaces are unacceptable. All edges are to be machined smooth.

→ STAINLESS PER 10150-3, 2.3.F.

HARDWARE

All hardware shall be heavy nonferrous chrome plated castings. Fastenings by means of thru-bolts with theft proof heads. Pilaster shoe shall be 4" high, of #302, 18-8 polished stainless steel. Includes all necessary hardware and fittings for a complete installation. Brass and Stainless Steel hardware available at additional cost.

BRUSHED ALUMIN. PER 10150-3 2.3.C.

FINISH

Finish shall be matte finish of manufacturer's standard high-pressure melamine color.

COLOR

Finish shall be laminated plastic as selected from Flush Metal's standard plastic colors and patterns.

FLUSHMETAL

PARTITIONS

Manufacturer's Warranty Terms and Conditions

Flush Metal Partitions ("Flush") warrants its products to be free from defects in material and workmanship from the date of original purchase from Flush as follows:

- Baked Enamel Steel Partitions: 1 year
- Plastic Laminate: 3 years
- Stainless Steel Partitions: 5 years
- Solid Phenolic and Plastic: 15 years

If the product is received within the warranty period and if the product is found by Flush to be defective within the terms of this warranty Flush will repair or replace the defective product at our option and cost.

This warranty does not apply to any failure or defect caused by misuse, accidental damage, abnormal or unusually heavy use, neglect, abuse, alteration, improper installation, unauthorized repair or modification, improper testing, or causes external to the product such as, but not limited to, excessive heat or humidity, power failure, power surges, or acts of God.

In the event that a product needs to be returned to Flush for service, the customer must obtain a Return Materials Authorization (RMA) number from Flush in advance, and that number must be clearly printed on the outside of the box. Flush will not accept any shipment without an RMA number.



PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Metal bar gratings.
 - 2. Metal frames and supports.
- B. Related Sections:
 - 1. Section 03300 – Concrete Work

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Gratings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
 - 1. Floors: Uniform load of 125 lbf/sq. ft. or concentrated load of 2000 lbf, whichever produces the greater stress.
 - 2. Walkways and Elevated Platforms Used as Exits: Uniform load of 100 lbf/sq. ft.
- B. Seismic Performance: Provide gratings capable of withstanding the effects of earthquake motions determined according to ASCE/SEI 7.

1.4 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Clips and anchorage devices for gratings.
- B. LEED Submittals:
 - 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
- C. Shop Drawings: Include plans, sections, details, and attachments to other work.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified professional engineer.
- B. Welding certificates.

1.6 QUALITY ASSURANCE

- A. Metal Bar Grating Standards: Comply with NAAMM MBG 531, "Metal Bar Grating Manual."
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.2, "Structural Welding Code - Aluminum."
- C. Obtain access cover assemblies through one (1) source from a single manufacturer.
 - 1. Manufacturer shall be ISO 9001:2000 Certified.
 - a. The manufacturer shall have documented management and control of the processes that influence the quality of its products and customer service.
 - 2. Manufacturer shall have a minimum of ten (10) years of experience in the fabrication of access cover assemblies.
- D. Installer: Firm with not less than three (3) years of successful experience in the installation of systems similar to those required by this project and acceptable to the manufacturer of the system.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with gratings by field measurements before fabrication.

1.8 COORDINATION

- A. Coordinate installation of anchorages for gratings, grating frames, and supports. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.9 WARRANTY

- A. Submit manufacturer's warranty that materials furnished will perform as specified for a period of not less than one (1) year when installed in accordance with manufacturer's recommendations.

PART 2 - PRODUCTS

2.1 ALUMINUM

- A. Aluminum, General: Provide alloy and temper recommended by aluminum producer for type of use indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required.
- B. Extruded Bars and Shapes: ASTM B 221, alloys as follows:
 - 1. 6061-T6 or 6063-T5, for bearing bars of gratings and shapes.
 - 2. 6061-T1, for grating crossbars.
- C. Aluminum Sheet: ASTM B 209, Alloy 5052-H32.
- D. Aluminum Plate: ASTM B 209, Alloy 6061-T651.

2.2 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
 - 1. Provide stainless-steel fasteners for fastening aluminum.

2.3 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy that is welded.
- B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.4 FABRICATION

- A. Shop Assembly: Fabricate grating and access cover sections in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch material cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form from materials of size, thickness, and shapes indicated, but not less than that needed to support indicated loads.

- D. Fit exposed connections accurately together to form hairline joints.
- E. Welding: Comply with AWS recommendations and the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
- F. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space the anchoring devices to secure gratings, frames, and supports rigidly in place and to support indicated loads.

2.5 METAL BAR GRATINGS

- A. Basis of Design:
 - 1. Ohio Gratings, Inc.; **Aluminum Lite I-Bar 7-SGLI-4**
- B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. All American Grating
 - 2. Fisher & Ludlow; Division of Harris Steel Limited
 - 3. Substitutions: Under provisions of Section 01300.
- C. Pressure-Locked, Aluminum I-Bar Grating: Fabricated by swaging crossbars between bearing bars.
 - 1. Bearing Bar Spacing: 7/16 inch o.c.
 - 2. Bearing Bar Depth: 2½ inches.
 - 3. Bearing Bar Flange Width: 3/16 inch.
 - 4. Crossbar Spacing: 4 inches maximum o.c.
 - 5. Grating Mark: As indicated.
 - 6. Aluminum Finish: Mill finish.
- D. Fabricate cutouts in grating sections for penetrations indicated. Arrange cutouts to permit grating removal without disturbing items penetrating gratings.
 - 1. Edge-band openings in grating that interrupt four or more bearing bars with bars of same size and material as bearing bars.
- E. Do not notch bearing bars at supports to maintain elevation.

2.6 FRAMES AND SUPPORTS

- A. Frames and Supports for Metal Gratings: Fabricate from metal shapes, plates, and bars of welded construction to sizes, shapes, and profiles indicated and as necessary to receive gratings and access covers. Miter and weld connections for perimeter angle frames. Cut, drill, and tap units to receive hardware and similar items.
 - 1. Unless otherwise indicated, fabricate from same basic metal as gratings or access covers.
 - 2. Equip units indicated to be cast into concrete or built into masonry with integrally welded anchors. Unless otherwise indicated, space anchors 24 inches o.c. and provide minimum anchor units in the form of steel straps 1¼ inches wide by ¼ inch thick by 8 inches long.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing gratings to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing gratings. Set units accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete or masonry.
- D. Fit exposed connections accurately together to form hairline joints.
 - 1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- E. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy

coat of bituminous paint.

3.2 INSTALLING METAL BAR GRATINGS

- A. General: Install gratings to comply with recommendations of referenced metal bar grating standards that apply to grating types and bar sizes indicated, including installation clearances and standard anchoring details.
- B. Attach nonremovable units to supporting members by welding where both materials are same; otherwise, fasten by bolting as indicated above.

3.3 CLEANING

- A. Clean exposed surfaces as recommended by the manufacturer.

3.4 ADJUSTING AND PROTECTION

- A. Inspect system components for proper fit. Adjust, repair or replace components not conforming to requirements. Repair or replacement of an individual unit shall be as approved by the Architect.
- B. Finished units shall be without damage. Units damaged during shipping or construction shall be repaired by the Contractor at the expense of the party damaging the material, in accordance with the contract requirements.
- C. Protect installation from damage by work of other Sections. Where required, remove and store access covers and install temporary protection over trench; re-install access covers prior to Substantial Completion of the work.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Cellular PVC sheet (composite board) for exterior panels

1.2 RELATED SECTIONS

- A. Section 07421 – Composite Metal Building Panels
- B. Section 07900 – Sealants
- C. Section 08911 – Glazed Aluminum Curtain Walls
- D. Section 09900 – Painting

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:

- E 84-11 Surface Burning Characteristics of Building Materials

1.4 QUALITY ASSURANCE

- A. Fabricator: Company specializing in architectural glass fiber and resin components with five (5) years documented experience.

1.5 REGULATORY REQUIREMENTS

- A. Conform to Connecticut Fire Safety Code and Building Code, with an ASTM E 84 rating of 10 or better.

1.6 SUBMITTALS

- A. Submit shop drawings indicating dimensions, adjacent construction, materials, thicknesses, fabrication details, required clearances, field jointing, tolerances, colors, finishes, methods of support, integration of electrical components and anchorages.
- B. Submit product data, samples and fabricator's installation instructions under provisions of Section 01300.
- C. Provide product data on specified component products, including manufacturer's specification product sheet.

- D. Submit two (2) samples, 6 inches long illustrating color, texture and finish.

1.7 OPERATION AND MAINTENANCE DATA

- A. Submit cleaning and maintenance data under provisions of Section 01700.
- B. Include instructions for stain removal, surface and gloss restoration.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Maintain air temperature in spaces where products will be installed for time period before, during, and after installation as recommended by manufacturer.

1.10 WARRANTY

- A. Provide manufacturer's standard warranty against defects in materials and workmanship for one (1) year.
- B. Provide manufacturer's twenty-five (25) year warranty for cellular PVC sheet against defects in manufacturing that cause the products to rot, corrode, delaminate or excessively swell from moisture.
- C. Provide manufacturer's lifetime warranty for composite columns of the original Owner.

2 PART 2 – PRODUCTS

2.1 SHEET TRIM

- A. Manufacturers
 - 1. Fypon, LLC, Maumee, OH (800.446.3040)
 - 2. Azek Building Products
 - 3. Kleer Lumber, LLC, Westfield, MA (866.553.3770)
 - 4. Substitutions: Under provisions of Section 01600.
- B. Materials

1. Free foam cellular PVC material with a small-cell microstructure and density of .55 grams/cm³.
 - a. Material shall have as a minimum the physical and performance properties specified by the manufacturer.

C. Accessories

1. Fasteners: Stainless steel designed for wood trim and siding (thinner shank, blunt point, full round head) or as recommended by manufacturer. Staples, small brads and wire nails are not acceptable.
2. Adhesive: Manufacturer's standard adhesive, moisture resistant and non-staining.
3. Sealant: Use urethane, polyurethane or acrylic based sealants without silicone.
4. Putty: Manufacturer's standard putty.

D. Shop Finishing

1. Color: White.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that substrates are ready to receive work and dimensions are as instructed by the fabricator.
- B. Beginning of installation means acceptance of substrates.

3.2 INSTALLATION

- A. Install fabrications in accordance with shop drawings and fabricator's instructions.

3.3 FINISH

- A. Composite products do not require paint for protection, but shall be painted to achieve a custom color.
- B. Finish in accordance with Section 09900 and manufacturer's recommendations.

3.4 TOLERANCES

- A. Maximum Variation from True Position: ¼ inch.
- B. Maximum Offset from True Alignment: 1/8 inch.

3.5 CLEANING

- A. Clean components of foreign material.
- B. Clean fabrications in accordance with fabricator's instructions.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Sheet and sealant materials to provide a continuous air and vapor infiltration barrier throughout the building envelope

1.2 RELATED SECTIONS

- A. Section 06100 – Rough Carpentry
- B. Section 07213 – Batt and Blanket Insulation

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:

- D 882-12 Tensile Properties of Thin Plastic Sheeting
- D 2582-09 Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting
- D 3776-09 Mass Per Unit Area (Weight) of Fabric
- D 4833-07 Index Puncture Resistance of Geomembranes and Related (R 2013) Products
- E 96-12 Water Vapor Transmission of Materials

1.4 PERFORMANCE REQUIREMENTS

- A. Materials of this Section shall provide continuity of building enclosure vapor and air barrier:
 - 1. In conjunction with materials described in Section 07900.
 - 2. To seal gaps between building enclosure components and wall and roof opening frames.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide data indicating material characteristics, performance criteria and limitations.
- C. Samples: Provide 6 inch x 6 inch samples of air and vapor barrier.

- D. Manufacturer's Installation Instructions: Indicate preparation and installation requirements and techniques.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Sheet Barrier:

- 1. Reef Industries, Inc.; **Griffolyn Type 65**
- 2. Substitutions: Under provisions of Section 01600.

2.2 MATERIALS

A. Sheet Barrier: 3-ply laminate combining two (2) layers of high-density polyethylene and one (1) high strength non-woven cord grid, 10 mil minimum, black with the following minimum performance requirements:

- 1. Weight: ASTM D 3776, 37 lb/1,000 sq. ft.
- 2. Puncture Propagation Tear: ASTM D 2582, 28 lb.
- 3. Permeance (Perm): ASTM E 96, 0.038 grains/hr-ft²-in Hg.
- 4. Tensile Strength: 3 inches, ASTM D 882, 96 lb/5,442 psi.
- 5. Puncture Strength: ASTM D 4833, 24 lb.
- 6. Usable Temperature Range: -25 to 170 degrees F (-32 to 77 degrees C).

2.3 ACCESSORIES

A. Tape: Polyethylene self-adhering type, mesh reinforced, 2 inch wide, compatible with sheet material.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify condition of substrate and adjacent materials.
- B. Verify that surfaces and conditions are ready to accept the Work.

3.2 PREPARATION

- A. Remove loose or foreign matter which might impair adhesion.

3.3 INSTALLATION

- A. Install sheet materials in accordance with manufacturer's instructions.

- B. Install sealant tape in accordance with manufacturer's instructions.

3.4 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01600.
- B. Do not permit adjacent Work to damage Work of this Section.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Preformed metal panels with insulation, backers, related flashings and accessory components

1.2 RELATED SECTIONS

- A. Section 06610 – Glass Fiber, Resin and Vinyl Fabrications
- B. Section 07900 – Sealants
- C. Section 08800 – Glazing
- D. Section 08911 – Glazed Aluminum Curtain Walls

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. Aluminum Association (AA) Publications:

- Aluminum Construction Manual: Aluminum Sheet Metal Work and Building Construction

- 2. American Society for Testing and Materials (ASTM) Publications:

- B 209-10 Aluminum and Aluminum-Alloy Sheet and Plate
 - C 481-99 Laboratory Aging of Sandwich Constructions (R 2011)
 - D 2244-11 Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
 - D 4214-07 Evaluating the Degree of Chalking of Exterior Paint Films
 - E 84-12 Surface Burning Characteristics of Building Materials
 - E 330-02 Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference (R 2010)

- 3. American Architectural Manufacturers Association (AAMA) Publications:

- 2605-11 Superior Performing Organic Coatings on Aluminum Extrusions and Panels

1.4 SYSTEM DESCRIPTION

- A. System: Pre-formed and pre-finished composite metal building panels of horizontal profile with integral rigid board insulation.

1.5 DESIGN AND PERFORMANCE REQUIREMENTS

- A. Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall as calculated in accordance with the 2003 International Building Code (IBC) for Middletown, Connecticut to prescribed design pressures as measured in accordance with ANSI/ASTM E 330.
- B. Maximum Allowable Deflection of Panel: 1/90
- C. System to accommodate, without damage to system, components or deterioration of seals, movement within system; movement between system and perimeter components, when subject to seasonal temperature cycling; dynamic loading and release of loads; deflection of structural support framing.
- D. Accommodate positive drainage for moisture entering, or condensation occurring within panel system, to exterior.
- E. System to accommodate tolerances of building structural framing.
- F. Products of this section shall provide continuity of thermal barrier at building enclosure elements.
- G. Products of this section shall provide continuity of vapor and air barrier at building enclosure elements.
- H. Fire Test Performance: ASTM E 84: Class A.
- I. Bond Test Performance: ASTM C 481-A Cyclic Aging: Pass.

1.6 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Indicate dimensions, panel layout, spans, joints, construction details, methods of anchorage and method of installation.
- C. Product Data: Provide data on assembled panel structural capabilities.
- D. Samples: Submit two (2) samples of each panel and finish, 4 x 4 inch in size illustrating finish color, sheen and texture.
- E. Design Data: Indicate panel profile characteristics, dimensions and structural properties.

- F. Manufacturer's Installation Instructions: Indicate special handling criteria, installation sequence and cleaning procedures.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with AA.
- B. Maintain one (1) copy of each document on site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three (3) years experience.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect and handle products under provisions of Section 01600.
- B. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- C. Stack pre-finished material to prevent twisting, bending or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- D. Prevent contact with materials which may cause discoloration or staining.

1.10 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.11 COORDINATION

- A. Coordinate the Work with installation of installing windows.

1.12 WARRANTY

- A. Finish Warranty: Commencing on date of Substantial Completion.
 - 1. Provide twenty (20) year written warranty with PVDF fluoropolymer finish color coated metal finish covering color fading, chalking, and film integrity.
 - 2. Finish coating shall not peel, blister, chip, crack or check.
 - 3. Chalking, fading or erosion of finish measured by the following tests:
 - a. Finish coating shall not chalk in excess of 8 numerical ratings when measured in accordance with ASTM D 4214.
 - b. Finish coating shall not change color or fade in excess of 8 NBS units as determined by ASTM D 2244.

- B. Material and Installation Warranty: Commencing on date of Substantial Completion.
 - 1. Provide five (5) year written warranty for water tightness, integrity of seals and delamination.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design:
 - 1. Laminators, Inc., Hatfield, PA (877.663.4277); Thermolite
- B. Acceptable Manufacturers:
 - 1. Centria Architectural Systems, Moon Township, PA (800.759.7474)
- C. Substitutions: Under provisions of Section 01600.

2.2 INSULATED METAL PANELS

- A. Panel Construction: Prefinished ASTM B 209 aluminum sheets over a corrugated polyallomer (CPA) stabilizers on both faces with an insulating foam core.
 - 1. Facing: Smooth face, minimum 0.021 inch thick, ASTM B 209 aluminum sheet.
 - 2. Backing: Same as face sheet except 0.013 inch thick.
 - 3. Thickness: 3 inch.
 - 4. Core: Polyisocyanurate, R-7 for 1 inch thickness.
- C. Finish: Kynar 500 – PVDF fluoropolymer paint system meeting AAMA 2605.
 - 1. Finish Colors: As selected by Architect and Owner from manufacturer's full range, including custom colors to match adjacent finishes. Both interior and exterior faces.

2.3 ACCESSORIES

- A. Gaskets: Manufacturer's standard type suitable for use with panels, permanently resilient; ultraviolet and ozone resistant; color as selected by Architect and Owner.
- B. Sealants: Specified in Section 07900.

- C. Field Touch-up Paint: As recommended by panel manufacturer.

2.4 FABRICATION

- A. Panels shall be fabricated and finished as required to provide material construction and performance as specified and as required by manufacturer to comply with warranty provisions.
 - 1. Tolerances:
 - a. Length and Width: Plus or minus 1/16 inch.
 - b. Squareness (Diagonals): Equal within 1/8 inch.
- B. Fabrication of primary component profiles on site not permitted.
- C. Form sections true to shape, accurate in size, square and free from distortion or defects.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that building framing members are ready to receive panels.
- B. Examine substrates, areas, and conditions, with substrate installer present, for compliance with requirements for structural soundness, installation tolerances, metal panel supports, and other conditions affecting performance of work.
 - 1. Examine primary and secondary wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances listed below.
 - a. ¼ inch in any 20 feet length vertically or horizontally.
 - b. ½ inch in any building elevation.
 - 2. Examine solid wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required.
 - 3. For the record, prepare written report, endorsed by panel installer and substrate installer, listing remedy for conditions detrimental to performance of work.
- C. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before metal panel installation.

- D. Proceed with installation only after all unsatisfactory conditions have been corrected.
- E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 INSTALLATION

- A. Install composite metal building panels in accordance with manufacturer's instructions.
- B. Work shall be done and completed in a thorough and workmanlike manner by mechanics skilled in their various trades.
- C. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.
- D. Caulk Installation:
 - 1. Use only approved sealants as recommended by manufacturer.
 - 2. The sealant manufacturer's instructions shall be followed in preparing and installing sealants.
 - 3. Joints to receive sealant shall be clean, dry and free from dust, grit and contaminants.
 - 4. The sealant shall completely fill the glazing pockets.

3.3 CLEANING

- A. Protect and clean work under provisions of 01700.
- B. Protection: Protect installed product and finish surfaces from damage during construction.
- C. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.
- D. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Dimension stone tile.
 - 2. Waterproofing/crack isolation membrane.
 - 3. Metal edge strips.
- B. Related Requirements:
 - 1. Section 03300 – Concrete Work
 - 2. Section 06200 – Finish Carpentry
 - 3. Section 07900 – Sealants
 - 4. Section 09300 – Ceramic Tile
 - 5. Section 09688 – Carpet Tile
 - 6. Section 10150 – Toilet Partitions
 - 7. Section 12484 – Entrance Floor Mats and Frames

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C. Dimension Stone Tile: Modular stone units less than $\frac{3}{4}$ inch thick.
- D. Module Size: Actual tile size plus joint width.
- E. Polished Finish: Smooth surface that produces sharp, mirrorlike reflections. Reflected images of overhead fluorescent tubes have straight lines without visible distortion when viewed at arm's length.

- F. Honed Finish: Smooth, nonreflective surface similar to that produced by grinding with a 400- to 1200-grit abrasive; with a gap not exceeding 0.005 inch when faces are tested for flatness with a 24-inch straightedge.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 SEQUENCING AND SCHEDULING

- A. Sequence stone tile installation with other work to minimize possibility of damage and soiling during remainder of construction period.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. LEED Submittals:

1. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regionally manufactured materials. Include statement indicating cost for each regionally manufactured material.
 - a. Include statement indicating location of manufacturer and distance to Project for each regionally manufactured material.
2. Product Data for Credit IEQ 4.1: For adhesives, documentation including printed statement of VOC content.
3. Product Data for Credit IEQ 4.3: For stone sealers, documentation indicating that products comply with requirements of FloorScore certification.

- C. Shop Drawings: Show locations of each type of stone tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in substrates and finished stone tile surfaces.

- D. Samples for Verification:

1. Full-size units of each type of stone tile in each finish required.
2. Assembled Samples with grouted joints for each type of stone tile and for each finish required, at least 36 inches square and mounted on a rigid panel. Use grout of type and in color(s) approved for completed Work.
3. Metal edge strips in 6-inch lengths.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For dimension stone tile to include in maintenance manuals.

1.9 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Dimension Stone Tile: Furnish quantity of full-size units equal to three percent (3%) of amount installed, for each type, composition, color, pattern, finish and size indicated.
 - 2. Grout: Furnish quantity of grout equal to three percent (3%) of amount installed for each type, composition, and color indicated.

1.10 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Installer employs installers recognized by the U.S. Department of Labor as Journeyman Tile Layers.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use.
- B. Store stone tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.

1.12 FIELD CONDITIONS

- A. Environmental Limitations: Do not install stone tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Stone Tile: Obtain each stone product type from single source from single producer.

1. Obtain each variety of stone from same location in a single quarry with resources to provide materials of consistent quality in appearance and physical properties.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.
1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
 2. Obtain waterproof membrane and crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:
1. Waterproof membrane.
 2. Crack isolation membrane.
 3. Metal edge strips.

2.2 STONE PRODUCTS

- A. Regionally Manufactured Materials: Stone tiles shall be manufactured within five hundred (500) miles of Project site.
- B. Abrasion Resistance of Stone Tile for Floors: Provide stone with a value of not less than 12 according to ASTM C 1353 or ASTM C 241.
- C. Provide stone products that are free of defects impairing their function for use indicated, including cracks, seams, and starts.
- D. Stone Tile Type (**SMT**):
1. Basis of Design:
 - a. Akdo
 - b. Substitutions: Under provisions of Section 01600.
 2. Size, Style, Finish, Tile Color and Grout Color: As indicated in Section 09000.
 3. Nominal Tile Thickness: 3/8 inch.
 4. Joint Width: 1/16 inch.

2.3 WATERPROOFING/CRACK ISOLATION MEMBRANES

- A. As indicated in Section 09300.

2.4 SETTING MATERIALS

- A. As indicated in Section 09300.

2.5 GROUT MATERIALS

- A. As indicated in Section 09300.

2.6 MISCELLANEOUS MATERIALS

- A. Trowelable Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Metal Edge Strips: Angle or L-shaped, height to match stone tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; satin anodized aluminum exposed-edge material.
 - 1. Basis-of-Design Product:
 - a. Schluter Systems L.P.; **Schiene AE60**
 - 2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Blanke Corporation
 - b. Ceramic Tool Company, Inc.
 - c. Substitutions: Under provisions of Section 01600.
- C. Protective Coating: Liquid grout-release coating that is formulated to protect exposed surfaces of stone tile against adherence of mortar and grout; compatible with stone, mortar, and grout products; easily removable after grouting is completed without damaging grout or stone tile; and recommended for use as temporary protective coating for stone tile.
 - 1. Floor sealer complying with "Floor Sealer" Paragraph below may be used provided it is recommended by manufacturer for use as a grout release.
- D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming stone tile and grout surfaces, specifically approved for materials and installations indicated by stone tile producers and grout manufacturers.
- E. Floor Sealer: Colorless, stain- and slip-resistant sealer, not affecting color or physical properties of stone surfaces as recommended by stone tile producers for application indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Custom Building Products
 - b. Hillyard, Inc.
 - c. HMK Stone Care System
 - d. Substitutions: Under provisions of Section 01600.
2. Sealers shall comply with requirements of FloorScore certification.

2.7 FABRICATION

- A. Facial Dimensions of Stone Tiles with Polished or Honed Faces: Do not vary facial dimensions from specified dimensions by more than plus or minus 1/64 inch.
- B. Thickness of Stone Tiles with Polished or Honed Finish: Do not vary from specified thickness by more than plus or minus 1/32 inch.
- C. Joint Surfaces: Except for specified beveled or eased edges if any, dress joint surfaces square for full depth of stone tile.
- D. Backs of Tiles: Gage units by dressing backs of tiles smooth and flat. When tested with a 24-inch straightedge, gap shall not exceed 1/32 inch.

2.8 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where stone tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. Verify that substrates for setting stone tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and

- comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for stone tile floors installed with thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
 - 3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind stone tile has been completed.
 - 4. Verify that joints and cracks in stone tile substrates are coordinated with stone tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for stone tile floors installed with thinset mortar with trowelable patching compound specifically recommended by tile-setting material manufacturer.
- B. Lay out stone tile patterns by marking joint lines on substrates to verify joint placement at edges, corners, doors, and other critical elements.
 - 1. Notify Architect seven (7) days in advance of dates and times when layout will be done.
 - 2. Obtain Architect's approval of layout before starting stone tile installation.
- C. Field-Applied Temporary Protective Coating: If indicated under stone tile type or needed to prevent grout from staining or adhering to exposed stone tile surfaces, precoat stone tiles with continuous film of temporary protective coating, taking care not to coat unexposed stone tile surfaces.

3.3 STONE TILE INSTALLATION

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in stone tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods specified in stone tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing ninety-five percent (95%) mortar coverage:
 - a. Stone tile floors in wet areas.
 - b. Stone tile floors consisting of stone tiles 8 by 8 inches or larger.
- B. Wipe backs of stone tiles with a damp cloth to remove dirt and dust before units are installed.
- C. Extend stone tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- D. Accurately form intersections and returns. Perform cutting and drilling of stone tile without marring visible surfaces. Carefully grind cut edges of stone tile abutting trim, finish, or built-in items for straight aligned joints. Fit stone tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap stone tile.
- E. Finish cut stone tile edges that will not be concealed by other construction by grinding and honing cut surfaces to match factory-fabricated edges.
- F. Jointing Pattern: Lay stone tile in grid pattern unless otherwise indicated. Lay out stone tile work and center stone tile fields in both directions in each space or on each wall area. Lay out stone tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 1. Where adjoining stone tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 2. Where stone tiles are specified or indicated to be whole integer multiples of adjoining stone tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- G. Mix stone tiles to achieve a uniformly random distribution of color shadings and patterns.
- H. Metal Edge Strips: Install where exposed edge of stone tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of stone tile and no threshold is indicated.

3.4 WATERPROOFING/CRACK ISOLATION MEMBRANE INSTALLATION

- A. Install waterproofing/crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.

- B. Allow waterproofing/crack isolation membrane to cure before installing tile or setting materials over it.

3.5 INSTALLATION TOLERANCES

- A. Variation from Plumb: For vertical joints, external corners, and other conspicuous lines, do not exceed 1/8 inch in 8 ft..
- B. Variation in Level: For horizontal joints and other conspicuous lines, do not exceed 1/8 inch in 10 ft., or 1/2 inch.
- C. Variation in Surface Plane of Flooring: Do not exceed 1/8 inch in 10 ft. from level or slope indicated when tested with a 10-ft. straightedge.
- D. Variation in Plane between Adjacent Units (Lipping): Do not exceed the following differences between faces of adjacent units as measured from a straightedge parallel to stone tiled surface:
 - 1. Units with Polished Faces: 1/64 inch.
 - 2. Units with Honed Faces: 1/64 inch.
- E. Variation in Joint Width: Do not vary joint thickness more than 1/16 inch or one-fourth (1/4) of nominal joint width, whichever is less.

3.6 ADJUSTING AND CLEANING

- A. Remove and replace tile that is damaged or that does not match adjoining stone tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Cleaning: On completion of placement and grouting, clean stone tile surfaces so they are free of foreign matter.
 - 1. Remove grout residue from stone tile as soon as possible.
 - 2. Clean grout smears and haze from stone tile according to stone tile and grout manufacturer's written instructions but no sooner than ten (10) days after installation. Use only cleaners recommended by stone tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of stone tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
 - 3. Remove temporary protective coating by method recommended by coating manufacturer and acceptable to stone tile and grout manufacturer. Trap and remove coating to prevent drain clogging. Do not remove floor sealer if used as protective coating.
- C. Apply sealer to cleaned stone tile flooring according to sealer manufacturer's written instructions.

3.7 PROTECTION

- A. Protect installed stone tile floors with Kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by stone tile manufacturer, apply coat of neutral protective cleaner to completed stone tile walls and floors.
- B. Prohibit foot and wheel traffic from stone tiled floors for at least seven days after grouting is completed.
- C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from stone tile surfaces.

3.8 INTERIOR STONE TILE INSTALLATION SCHEDULE

- A. Interior Floor Installations, Concrete Subfloor:
 - 1. Stone Tile Installation (**SMT-1, SMT-2, SMT-3**): TCNA F125-Full STONE; thinset mortar on crack isolation membrane.
 - a. Thinset Mortar: Latex-Portland cement mortar.
 - b. Grout: Standard unsanded cement grout.
 - 2. Stone Tile Installation (**SMT-3**): TCNA F125-Full STONE; thinset mortar on waterproofing/crack isolation membrane.
 - a. Thinset Mortar: Latex-Portland cement mortar.
 - b. Grout: Standard unsanded cement grout.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Entrance mats.
- B. Related Requirements:
 - 1. Section 12485 – Entrance Floor Grilles for rigid floor grilles and frames.

1.3 COORDINATION

- A. Coordinate size and location of recesses in concrete to receive floor mats and frames.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for floor mats and frames.
- B. LEED Submittals:
 - 1. Product Data for Credit EQ 4.3: For installation adhesive, documentation including printed statement of VOC content.
 - 2. Product Data for Section MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
- C. Shop Drawings:
 - 1. Items penetrating floor mats, including door control devices.
 - 2. Divisions between mat sections.
 - 3. Perimeter floor moldings.
 - 4. Custom Graphics: Scale drawing indicating colors.
- D. Samples: For the following products, in manufacturer's standard sizes:
 - 1. Floor Mat: Assembled sections of floor mat.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For floor mats to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 ENTRANCE FLOOR MATS AND FRAMES, GENERAL

- A. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1.
- B. Physical properties of the entrance matting shall conform to the following minimums:
 - 1. Surface Flammability: ASTM D 2859 – Pass.
 - 2. Smoke Density: ASTM E 662 – Pass.

2.2 ENTRANCE MATS (**EM-1**)

- A. Basis-of-Design Product:
 - 1. Mats Inc.
- B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Pawling Corporation; Architectural Products Division
 - 2. Substitutions: Under provisions of Section 01300.
- C. Carpet-Type Mats: One hundred percent (100%) solution-dyed polypropylene fiber with rubber backing.
 - 1. Type, Thickness, Pattern and Color: As indicated in Section 09000.
- D. Performance Characteristics: As follows:
 - 1. Electrostatic Propensity: Less than 2.0 kV according to EN 815.
- E. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed entrance mat and is recommended by entrance mat manufacturer for releasable installation.
 - 1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.3 FABRICATION

- A. Floor Mats: Shop fabricate units to greatest extent possible in sizes indicated. Unless otherwise indicated, provide single unit for each mat installation; do not exceed manufacturer's recommended maximum sizes for units that are removed for maintenance and cleaning. Where joints in mats are necessary, space symmetrically and away from normal traffic lanes. Miter corner joints in framing elements with hairline joints or provide prefabricated corner units without joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and floor conditions for compliance with requirements for location, sizes, and other conditions affecting installation of floor mats.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install surface-type units to comply with manufacturer's written instructions at locations indicated; coordinate with entrance locations and traffic patterns.
- B. Installation Method: Glue down; install with full-spread, releasable, pressure-sensitive adhesive.

3.3 PROTECTION

- A. Perform the following operations immediately after installing entrance mat:
 - 1. Remove excess adhesive and other surface blemishes using cleaner recommended by entrance mat manufacturer.
 - 2. Remove yarns that protrude from carpet surface.
 - 3. Vacuum carpet using commercial machine with face-beater element.
- B. Protect entrance mat against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by entrance mat manufacturer.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes recessed floor grilles and frames (entry mat).
- B. Related Requirements:
 - 1. Section 12484 – Entrance Floor Mats and Frames for flexible floor mats and frames.

1.3 COORDINATION

- A. Coordinate size and location of recesses in concrete to receive floor grilles and frames.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for entrance floor grilles and foot grilles.
- B. LEED Submittals:
 - 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
- C. Shop Drawings:
 - 1. Items penetrating floor grilles and frames, including door control devices.
 - 2. Divisions between grille sections.
 - 3. Perimeter floor moldings.
- D. Samples: For the following products, in manufacturer's standard sizes:
 - 1. Floor Grille: Assembled section of floor grille.
 - 2. Frame Members: Sample of each type and color.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For floor grilles and frames to include in maintenance manuals.

1.6 FIELD CONDITIONS

- A. Field Measurements: Indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product:
 - 1. Mats Inc.; **Advanced Track**
- B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Balco, Inc.
 - 2. Pawling Corporation; Architectural Products Division
 - 3. Substitutions: Under provisions of Section 01300.

2.2 ENTRANCE FLOOR GRILLES, GENERAL

- A. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1.
- B. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than seventy-four percent (74%).

2.3 FLOOR GRILLES

- A. General: Provide manufacturer's standard floor-grille assemblies consisting of treads of type and profile indicated, interlocked or joined together by cross members, and with support legs (if any) and other components needed to produce a complete installation.
- B. Aluminum Floor Grilles: Provide manufacturer's standard floor grilles with extruded members, top-surfaced tread rails, and as follows:
 - 1. Tread Rails: Extruded-aluminum tread rails.
 - a. Aluminum Color: Mill finish.

2. Tread Rail Spacing: 1-5/16 inches o.c. with 3/16-inch-wide openings between treads.
3. Top Surface: Fusion-bonded, level-cut-pile one hundred percent (100%) nylon fiber carpet insert; ¼ inch high, 29 oz./sq. yd.
 - a. Top Surface Color: As selected by Architect and Owner from manufacturer's full range.
4. Grille Size: As indicated.

C. Lockdown: Manufacturer's standard.

2.4 FRAMES

- A. Provide manufacturer's standard frames of size and style for grille type, for permanent recessed installation in subfloor, complete with installation anchorages and accessories. Unless otherwise indicated, fabricate frame of same material and finish as grilles.

2.5 MATERIALS

- A. Aluminum Sheet: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than strength and durability properties of Alloy 5005-H15.
- B. Extruded Aluminum: ASTM B 221, Alloy 6061-T6 or Alloy 6063-T5, T6, or T52 as standard with manufacturer. Coat surface of frame in contact with cementitious materials with manufacturer's standard protective coating.

2.6 FABRICATION

- A. Shop fabricate floor grilles to greatest extent possible in sizes as indicated. Unless otherwise indicated, provide each grille as a single unit; do not exceed manufacturer's recommended maximum sizes for units that are removed for maintenance and cleaning. Where joints in grilles are necessary, space symmetrically and away from normal traffic lanes.
- B. Fabricate frame members in single lengths or, where frame dimensions exceed maximum available lengths, provide minimum number of pieces possible, with hairline joints equally spaced and pieces spliced together by straight connecting pins.

2.7 ALUMINUM FINISHES

- A. Mill finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and floor conditions for compliance with requirements for location, size, minimum recess depth, and other conditions affecting installation of floor grilles and frames.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install recessed floor grilles and frames to comply with manufacturer's written instructions at locations indicated and with top of floor grilles and frames in relationship to one another and to adjoining finished flooring as recommended by manufacturer. Set floor-grille tops at height for most effective cleaning action. Coordinate top of floor-grille surfaces with doors that swing across grilles to provide clearance under door.

3.3 PROTECTION

- A. After completing frame installations, provide temporary filler of plywood or fiberboard in floor-grille recesses and cover frames with plywood protective flooring. Maintain protection until construction traffic has ended and Project is near Substantial Completion.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Batt insulation at roof, wall and flooring assemblies
- B. Sound attenuation insulation in walls
- C. Soffit insulation baffle

1.2 RELATED SECTIONS

- A. Section 06100 – Rough Carpentry
- B. Section 07190 – Vapor and Air Barriers
- C. Section 09260 – Gypsum Board Systems

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:

- C 665-06 Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
- E 136-11 Behavior of Materials in a Vertical Tube Furnace

1.4 PERFORMANCE REQUIREMENTS

- A. Materials of this Section shall provide continuity of thermal barrier at building enclosure elements.
- B. Materials of this Section shall provide continuity of vapor and air barrier in conjunction with vapor and air barrier materials in Section 07190.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide data on product characteristics, performance criteria and limitations.
- C. LEED Submittals:
 - 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each

product having recycled content.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Owens Corning, Toledo, OH (800.438.7465)
- B. Johns Manville, Denver, CO (800.654.3103)
- C. CertainTeed Corporation, Valley Forge, PA (800.233.8990)
- D. Berger Building Products, Inc., Feasterville, PA (800.523.8852)
- E. Substitutions: Under provisions of Section 01600.

2.2 MATERIALS

- A. Batt Insulation: ASTM C 665, Type I and II, and ASTM E 136; preformed glass fiber batts; conforming to the following:
 - 1. Thermal Resistance:
 - a. R30 in roof, walls and floors.
 - b. R38 in raised floors.
 - 2. Batt Size: 15½ x 48 inches.
 - 3. Facing:
 - a. Walls: Faced on one (1) side with Kraft paper.
 - b. Roof and Floors: None.
- B. Sound Attenuation Insulation: ASTM C 665, Type I and ASTM E 136; preformed glass fiber batts; conforming to the following:
 - 1. Thickness: 3½ to 4 inches to achieve an STC rating of 50.
 - 2. Batt Size: 16 x 96 inches for walls.
 - 3. Facing: None.
- C. Recycled Content of Blankets: Postconsumer recycled content plus one-half of preconsumer recycled content not less than twenty-five percent (25%).
- D. Soffit Insulation Baffle: One hundred percent (100%) recycled PVC, flame retardant and self-extinguishing such as **Accuvent** manufactured by Berger Building Products or approved equal.
- E. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide. Mechanically staple tape to prevent delamination.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that substrate, adjacent materials and insulation are dry and ready to receive insulation.

3.2 INSTALLATION

- A. Install insulation in accordance with insulation manufacturer's instructions.
- B. Install in exterior walls without gaps or voids.
- C. Trim insulation neatly to fit spaces.
- D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation. Leave no gaps or voids.
- E. Install with factory applied membrane facing warm side of building spaces. Lap ends and side flanges of membrane between framing members.
- F. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.
- G. Coordinate vapor and air seal with Section 07190.
- H. Install sound attenuation batt insulation in a friction fit manner between studs. Fill cavity completely. Cut the lengths to friction fit against floor and ceiling tracks or stud wall headers. Supplementary support should be provided until drywall is in place on both sides of walls over 8 feet high. Fit insulation around outlets, junction boxes and other irregularities. Extend sound attenuation batts from the floor to at least 8 inches above the adjacent ceilings.
- I. Install soffit insulation baffle in accordance with manufacturer's instructions.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Quarry tile.
2. Glazed wall tile.
3. Tile backing panels.
4. Waterproofing/crack isolation membrane.
5. Metal edge strips.

B. Related Requirements:

1. Section 06100 – Rough Carpentry
2. Section 07213 – Batt and Blanket Insulation
3. Section 07900 – Sealants
4. Section 09260 – Gypsum Board
5. Section 09385 – Dimension Stone Tile
6. Section 10150 – Toilet Partitions
7. Section 10260 – Wall and Door Protection
8. Section 10800 – Toilet Accessories

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. LEED Submittals:
 1. Product Data for Credit IEQ 4.1: For adhesives, documentation including printed statement of VOC content.
 2. Product Data for Credit IEQ 4.3: For grout sealers, documentation indicating that products comply with requirements of FloorScore certification.
- C. Samples for Verification:
 1. Full-size units of each type and composition of tile and for each color and finish required.
 2. Full-size units of each type of trim and accessory for each color and finish required.
 3. Metal edge strips in 6-inch lengths.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For tile-setting and -grouting products.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Tile and Trim Units: Furnish quantity of full-size units equal to three percent (3%) of amount installed for each type, composition, color, pattern, and size indicated.
 2. Grout: Furnish quantity of grout equal to three percent (3%) of amount installed for each type, composition, and color indicated.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications:
 1. Installer employs installers recognized by the U.S. Department of Labor as Journeyman Tile Layers.
- B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and

execution.

1. Build mockup of each type of floor tile installation.
2. Build mockup of each type of wall tile installation.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.

1.10 FIELD CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Tile: Obtain tile of each type from single source or producer.
 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive and grout component from single manufacturer and each aggregate from single source or producer.
 1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
 2. Obtain waterproof membrane and crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:

1. Waterproof membrane.
2. Crack isolation membrane.
3. Cementitious backer units.
4. Metal edge strips.

2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one (1) package show same range in colors as those taken from other packages and match approved Samples.
- D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
 1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

2.3 TILE PRODUCTS

- A. Ceramic Tile Type (**QT-1**): Unglazed square-edged quarry tile.
 1. Basis-of-Design Product:
 - a. Dal-Tile Corporation
 2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Olean Corporation
 - b. Metropolitan Ceramics
 - c. Substitutions: Under provisions of Section 01600.
 3. Size, Thickness, Tile Color and Grout Color: As indicated in Section 09000.
 4. Wearing Surface: Nonabrasive, smooth.
 5. Coefficient of Friction: ASTM C 1028.
 - a. Wet: Not less than 0.60.

- b. Dry: Not less than 0.80.
 - 6. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Base: Coved with surface bullnose top edge.
 - b. Internal and External Corners: Units as required.
- B. Ceramic Tile Type (**CWT-1**): Glazed wall tile.
 - 1. Basis-of-Design Product:
 - a. Dal-Tile Corporation
 - 2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Olean Corporation
 - b. Crossville, Inc.
 - c. Substitutions: Under provisions of Section 01600.
 - 3. Thickness: 5/16 inch.
 - 4. Face: Pattern of design indicated, with manufacturer's standard edges.
 - 5. Module Size, Finish, Tile Color and Grout Color: As indicated in Section 09000.
 - 6. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. External Corners for Thinset Mortar Installations: Surface bullnose, same size as adjoining flat tile.
 - b. Internal Corners: Field-buttet square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

2.4 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 or ASTM C 1325, Type A, in maximum lengths available to minimize end-to-end butt joints.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Certainteed Corporation; **Diamondback**
 - b. National Gypsum Company; **PermaBase Brand Cement Board**
 - c. USG Corporation; **DUROCK Cement Board**

d. Substitutions: Under provisions of Section 01600.

2. Thickness: As indicated.

2.5 WATERPROOFING/CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.12 for high performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. Ardex Americas; **Ardex S 1-K One-Component Waterproofing Compound**
- b. C-Cure; **Pro-Red Waterproofing Membrane 963**
- c. Custom Building Products; **RedGard Waterproofing and Crack Prevention Membrane**
- d. TEC, H. B. Fuller Construction Products Inc.; **HydraFlex - Waterproofing Crack Isolation Membrane**
- e. Substitutions: Under provisions of Section 01600.

2.6 SETTING MATERIALS

A. Latex-Portland Cement Mortar (Thinset): ANSI A118.4.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Bostik, Inc.
- b. Custom Building Products
- c. Laticrete International, Inc.
- d. MAPEI Corporation
- e. Substitutions: Under provisions of Section 01600.

2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.

3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.7 GROUT MATERIALS

A. Standard Cement Grout: ANSI A118.6.

1. Basis-of-Design Product:
 - a. Laticrete International, Inc.
2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Bostik, Inc.
 - b. Custom Building Products
 - c. MAPEI Corporation
 - d. Substitutions: Under provisions of Section 01600.

2.8 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, Portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; satin anodized aluminum exposed-edge material.
 1. Basis-of-Design Product:
 - a. Schluter Systems L.P.; **Reno-U AEU125**
 2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Blanke Corporation
 - b. Ceramic Tool Company, Inc.
 - c. Substitutions: Under provisions of Section 01600.
- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- D. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Bonsal American, an Oldcastle company; **Grout Sealer**

- b. Custom Building Products; **Grout Sealer**
- c. TEC, H. B. Fuller Construction Products Inc.; **Guard All Invisible Penetrating Sealer**
- d. Substitutions: Under provisions of Section 01600.

2.9 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for tile floors installed with thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - b. Verify that protrusions, bumps and ridges have been removed by sanding or grinding.
 - 3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 - 4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes and depressions in concrete substrates for tile floors installed with thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped ¼ inch per foot toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 CERAMIC TILE INSTALLATION

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.
- F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - 1. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.

2. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
1. Quarry Tile: 3/8 inch.
 2. Glazed Wall Tile: 1/16 inch.
- H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
- J. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.
- K. Grout Sealer: Apply grout sealer to grout joints according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 TILE BACKING PANEL INSTALLATION

- A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-Portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

3.5 WATERPROOFING/CRACK ISOLATION MEMBRANE INSTALLATION

- A. Install waterproofing/crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.
- B. Allow waterproofing/crack isolation membrane to cure before installing tile or setting materials over it.

3.6 ADJUSTING AND CLEANING

- A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove grout residue from tile as soon as possible.
 - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than ten (10) days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.7 PROTECTION

- A. Protect installed tile work with Kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- B. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.8 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

- A. Interior Floor Installations, Concrete Subfloor:
 - 1. Ceramic Tile Installation (**QT-1**): TCNA F125; thinset mortar on crack isolation membrane.
 - a. Thinset Mortar: Latex-Portland cement mortar.
 - b. Grout: Standard sanded cement grout.
- B. Interior Wall Installations, Wood or Metal Studs or Furring:
 - 1. Ceramic Tile Installation (**CWT-1**): TCNA W244C or TCNA W244F; thinset mortar on cementitious backer units or fiber-cement backer board.
 - a. Thinset Mortar: Latex-Portland cement mortar.
 - b. Grout: Standard unsanded cement grout.
- C. Bathtub/Shower Wall Installations, Wood or Metal Studs or Furring:

1. Ceramic Tile Installation (**CWT-1**): TCNA B412; thinset mortar on cementitious backer units or fiber-cement backer board on waterproofing/crack isolation membrane.
 - a. Thinset Mortar: Latex-Portland cement mortar.
 - b. Grout: Standard unsanded cement grout.

END OF SECTION

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Toilet accessories
- B. Wall mirror
- C. Attachment hardware

1.2 RELATED SECTIONS

- A. Section 04300 – Unit Masonry System
- B. Section 06100 – Rough Carpentry
- C. Section 10150 – Toilet Partitions

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
 - 1. American National Standards Institute (ANSI) Publications:
 - A117.1-03 Accessible and Usable Buildings and Facilities
 - 2. American Society for Testing and Materials (ASTM) Publications:
 - A 123-02 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - A 167-99 Stainless and Heat-Resisting Chromium-Nickel Steel Plate, (R 2004) Sheet and Strip
 - A 269-04 Seamless and Welded Austenitic Stainless Steel Tubing for General Service
 - A 1008-05 Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened and Bake Hardenable
 - B 456-03 Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium

1.4 SUBMITTALS

- A. Submit product data and manufacturer's installation instructions under provisions of Section 01300.
- B. Provide product data on accessories describing size, finish, details of function and attachment methods. Provide rough in dimensions for blocking.

1.5 REGULATORY REQUIREMENTS

- A. Conform to the Americans with Disabilities Act for installing work in conformance with ANSI A117.1.

1.6 SEQUENCING AND SCHEDULING

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

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Bobrick Washroom Equipment, Inc., Clifton Park, NY (518.877.7444)
 - 1. Material standards and model number specifications without a manufacturer prefix are based on Bobrick Washroom Equipment and can be interchangeable with other approved manufacturers as long as the products are equal.
- B. American Specialties, Inc., Yonkers, NY (914.476.9000)
- C. Substitutions: Under provisions of Section 01600.

2.2 MATERIALS

- A. Sheet Steel: ANSI/ASTM A 1008.
- B. Stainless Steel Sheet: ASTM A 167, Type 304.
- C. Tubing: ASTM A 269, stainless steel.
- D. Adhesive: Two-component epoxy type, waterproof.
- E. Fasteners, Screws and Bolts: Hot dip galvanized, tamperproof.
- F. Expansion Shields: Fiber, lead or rubber as recommended by accessory manufacturer for component and substrate.
- G. Mirrors: Class 2, Tilt Mirror, size as indicated. Provide with a back of the type standard with the manufacturer. **#B-293-1836 and -2436**
- H. Grab Bars: **#B-6806.99x18, x24, x36, x42 and x48**
- I. Swing Up Grab Bar: **#B-4998.99**

- J. Combination Paper Towel Dispenser/Waste Receptacle: **#B-3909 and -3944**
- K. Soap Dispenser: **#B-2111**
- L. Toilet Paper Dispenser: **#B-2888**
- M. Sanitary Napkin Disposals: **#B-254 and -353**
- N. Sanitary Napkin Dispenser: **#B-2800 and -3500**
- O. Soap Dish: **#B-4390**
- P. Robe Hook: **#B-6717**
- Q. Shower Curtain Rod: **#B-6047**
- R. Shower Curtain: **#B-204-3**
- S. Shower Curtain Hooks: **#B-204-1**
- T. Mop Rack: **#B-239** (in Janitor's Closet)

2.3 FABRICATION

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

2.4 FACTORY FINISHING

- A. Galvanizing: ANSI/ASTM A 123 1.25 oz/sq yd.
- B. Chrome/Nickel Plating: ANSI/ASTM B 456, Type SC 2 satin finish.
- C. Stainless Steel: No. 4 satin luster finish.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that site conditions are ready to receive work and dimensions are as instructed by the manufacturer.
- B. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Deliver inserts and rough-in frames to site at appropriate time for building-in.
- B. Provide templates and rough-in measurements as required.
- C. Verify exact location of accessories for installation.

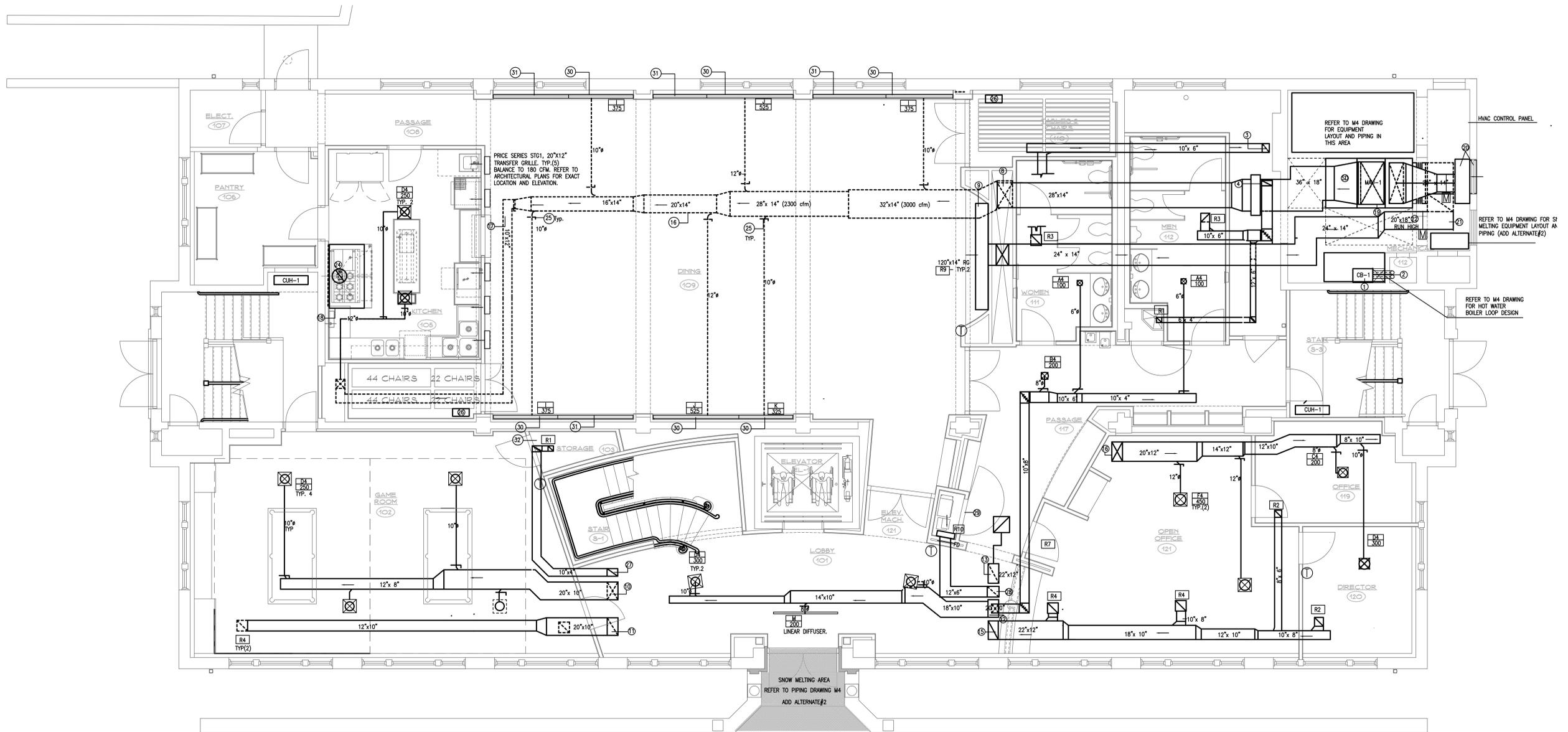
3.3 INSTALLATION

- A. Install fixtures, accessories and items in accordance with manufacturers' instructions.
- B. Install plumb and level, securely and rigidly anchored to substrate.

3.4 SCHEDULE

- A. See Drawings for toilet accessory schedule.

END OF SECTION

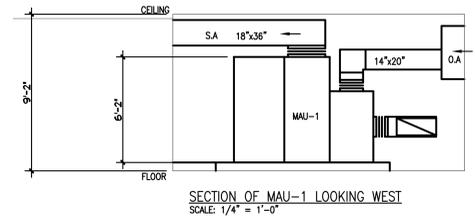


LOWER LEVEL DUCTWORK PLAN
SCALE: 1/4" = 1'-0"



HVAC PLAN NOTES

- ① INSTALL BOILER, FLOOR MOUNTED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. MAINTAIN MINIMUM CLEARANCE REQUIREMENTS IN ACCORDANCE WITH CODE AND MANUFACTURER'S REQUIREMENTS. INSTALL HOT WATER PUMPS AND SYSTEM ACCESSORIES. RUN 1" CONDENSATE DRAIN TO THE FLOOR DRAIN. COORDINATE WITH PLUMBING CONTRACTOR.
- ② RUN BOILER VENT AND COMBUSTION AIR PIPES THROUGH EXISTING CHIMNEY. REFER TO DRAWING M3 FOR CONTINUATION.
- ③ 10x6 EXHAUST DUCT UP THROUGH THE CEILING TO EF-3 IN ATTIC. AVOID INTERFERENCE WITH BEAM.
- ④ 12x6 EXHAUST DUCT UP THROUGH THE CEILING TO EF-4 IN ATTIC. AVOID INTERFERENCE WITH BEAM.
- ⑤ 36x14 SUPPLY DUCT DN IN CHASE WITH TRANSITION TO 28x14 AND TURNING VANES TO RAISED FLOOR.
- ⑥ INSTALL SIDE WALL RETURN GRILLE, E.H. PRICE, MODEL 5300 (2) 60"x14" SIZE AS INDICATED. GRILLE SHALL BE PAINTED WITH COLOR AS SELECTED BY ARCHITECT. REFER TO ARCHITECT PLANS FOR EXACT ELEVATION.
- ⑦ 20x10 SUPPLY DUCT DN TO GAME ROOM FROM HP-3 IN ATTIC. RUN DUCT IN GIVEN CHASE.
- ⑧ 20x10 RETURN DUCT UP IN CHASE TO HP-3 IN ATTIC.
- ⑨ 20x10 SUPPLY DUCT DN TO WAITING AREA FROM HP-2 IN ATTIC. RUN DUCT IN CHASE.
- ⑩ 22x12 RETURN DUCT UP IN CHASE TO HP-2 IN ATTIC.
- ⑪ 20x12 SUPPLY DUCT DN TO OFFICE AREA FROM HP-1 IN ATTIC. RUN DUCT IN GIVEN CHASE.
- ⑫ 22x12 RETURN DUCT UP IN CHASE TO HP-1 IN ATTIC.
- ⑬ INSTALL SUPPLY DUCT WORK UNDER THE FLOOR. INSTALL LINEAR BAR GRILLE AS SHOWN ON SCHEDULE WITH PLENUM AND OPPOSED BLADE DAMPER.
- ⑭ 10x12 SUPPLY DUCT RUNNING UNDER THE FLOOR UP TO THE CHASE IN KITCHEN STORAGE. DUCT RISES UP IN THE CHASE TO SUPPLY AIR IN THE KITCHEN. DUCT RUNS UNDERSIDE THE CEILING.
- ⑮ PROVIDE FACTORY FABRICATED GREASE EXHAUST HOOD LISTED FOR ZERO CLEARANCE TO COMBUSTIBLE AS LISTED ON EQUIPMENT SCHEDULE. INSTALL HOOD PER NFPA 96.
- ⑯ INSTALL MAU-1, FLOOR MOUNTED ON HOUSEKEEPING PADS IN ACCORDANCE WITH DIVISION 3. MAINTAIN MINIMUM CLEARANCE REQUIREMENTS IN ACCORDANCE WITH CODE AND MANUFACTURER'S REQUIREMENTS. INSTALL 1" CONDENSATE TRAP AND DRAIN FROM THE UNIT TO NEAREST FLOOR DRAIN FOR CONDENSATE REMOVAL. COORDINATE WITH THE MANUFACTURER FOR SUPPLY, OUTSIDE AIR AND RETURN DUCT CONNECTION SIZES. CONNECT ALL DUCTS TO UNIT WITH INSULATED FLEXIBLE CONNECTORS. ALL DUCT WORK FROM UNIT SHALL HAVE (10) OF ACOUSTICAL LINING.
- ⑰ OUTSIDE AIR DUCTWORK CONNECT TO PLENUM. PROVIDE WITH MOTORIZED DAMPER. CONNECT PLENUM TO OUTSIDE AIR INTAKE LOUVER. FREE AREA OF 4 SQFT AT 500 FPM. PROVIDE WITH INSULATED PLENUM. REFER TO ARCHITECTURAL PLAN FOR EXACT LOCATION AND ELEVATION.
- ⑱ RETURN AIR DUCTWORK CONNECT TO RETURN AIR PLENUM. PROVIDE WITH MOTORIZED DAMPER.
- ⑳ PROVIDE DUCT MOUNTED SMOKE DETECTOR
- ㉑ PROVIDE ROOM SENSOR WITH ADJUSTABLE SLIDERS IN THE ROOM.
- ㉒ PROVIDE 12" FACTORY FABRICATED GREASE EXHAUST DUCT RATED FOR ZERO CLEARANCE TO COMBUSTIBLE (METALFAB, MODEL 30) UP IN CHASE TO EXHAUST FAN REF-1, COORDINATE OPENING SIZE WITH STRUCTURE. PROVIDE DUCT CONNECTION TO HOOD PER NFPA 96.
- ㉓ PROVIDE Model : H6-1-3 REMOTE CONTROL POWER BALANCE RECTANGULAR DAMPER BY UNITED ENERTECH OR EQUAL WITH APPROPRIATE NO OF PORTS AND WALL MOUNTED REMOTE PLATE/PLATES. COORDINATE LOCATION OF REMOTE PLATE IN FIELD. REFER TO DETAILS FOR REMOTE ACTUATED BALANCING DAMPER ON DRAWING M6.
- ㉔ GENERAL LOCATION OF REMOTE PLATE. COORDINATE NUMBER OF PORTS AND NO. OF WALL MOUNTED REMOTE PLATES IN FIELD.
- ㉕ 10"x4" EXHAUST DUCT FROM IT STORAGE TO EF-7 IN ATTIC VIA CHASE.
- ㉖ 12"x6" EXHAUST DUCT WITH (FIRE DAMPER AND ACCESS DOOR) FROM SERVER ROOM TO EF-8 IN ATTIC VIA CHASE.
- ㉗ DOOR LOUVER WITH FIRE RATING, 0.4 SQFT OF FREE AREA REQUIRED. FOR DETAILS AND SIZING ON LOUVER REFER TO ARCHITECT PLANS.
- ㉘ INSTALL FIVE (5) CONTINUOUS LINEAR BAR GRILLE 13"x4" (E.H. PRICE MODEL LBMH, CORE 16A, BORDER 500 OR EQUIVALENT) BETWEEN COLUMNS AS SHOWN ON THE PLAN. REFER TO ARCHITECTURAL PLAN FOR FURTHER DETAILS. AS INDICATED PART OF THE GRILLE WILL BE REQUIRED TO BE INSTALLED WITH OPPOSED BLADE DAMPER AND PLENUM. REFER TO SCHEDULE.
- ㉙ PROVIDE SHEET METAL BLANK-OFF FOR INACTIVE SECTION OF GRILLE, PAINT FLAT BLACK. NO DUCT CONNECTION.
- ㉚ DOOR LOUVER WITH FIRE RATING, 0.2 SQFT OF FREE AREA REQUIRED. FOR DETAILS AND SIZING ON LOUVER REFER TO ARCHITECT PLANS.



Project Title:
Eckersley-Hall Renovations For
Middletown Senior / Community Center
61 Durant Terrace
Middletown, Connecticut 06457



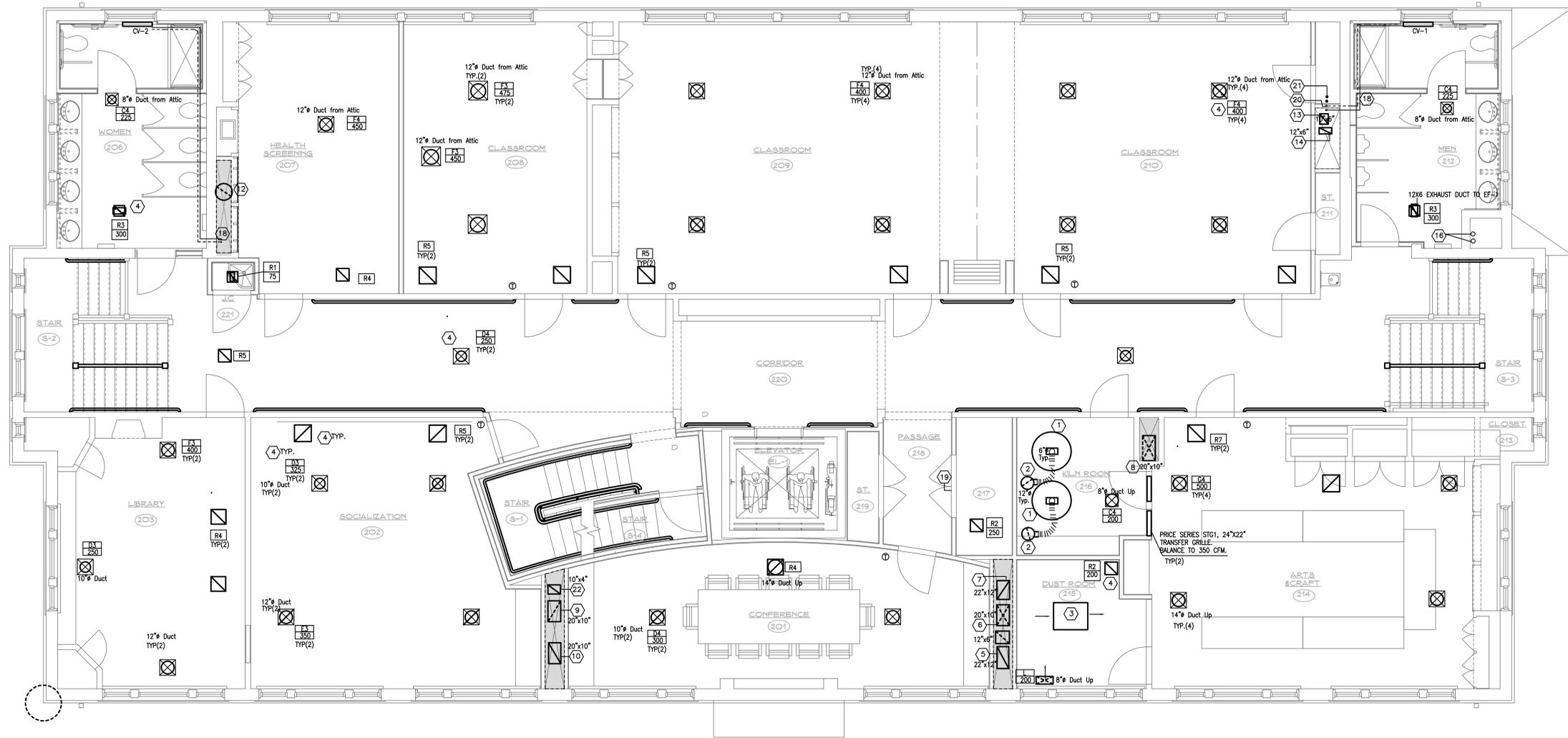
SILVER / PETRUCELLI + ASSOCIATES
Architects / Engineers / Interior Designers
3190 Whitney Avenue, Hamden, CT 06518-2340
Tel. 203 230 9007 Fax. 203 230 8247
silverpetrucelli.com

Revision	Description	Date	Revised By
ADDENDUM #2		8/2/13	JP

Drawing Title:
Lower Level Ductwork Plan

Date:
JUNE 12, 2013
Scale:
AS NOTED
Drawn By:
VHS
Printed Number:
11/134

M1



UPPER LEVEL MECHANICAL PLAN

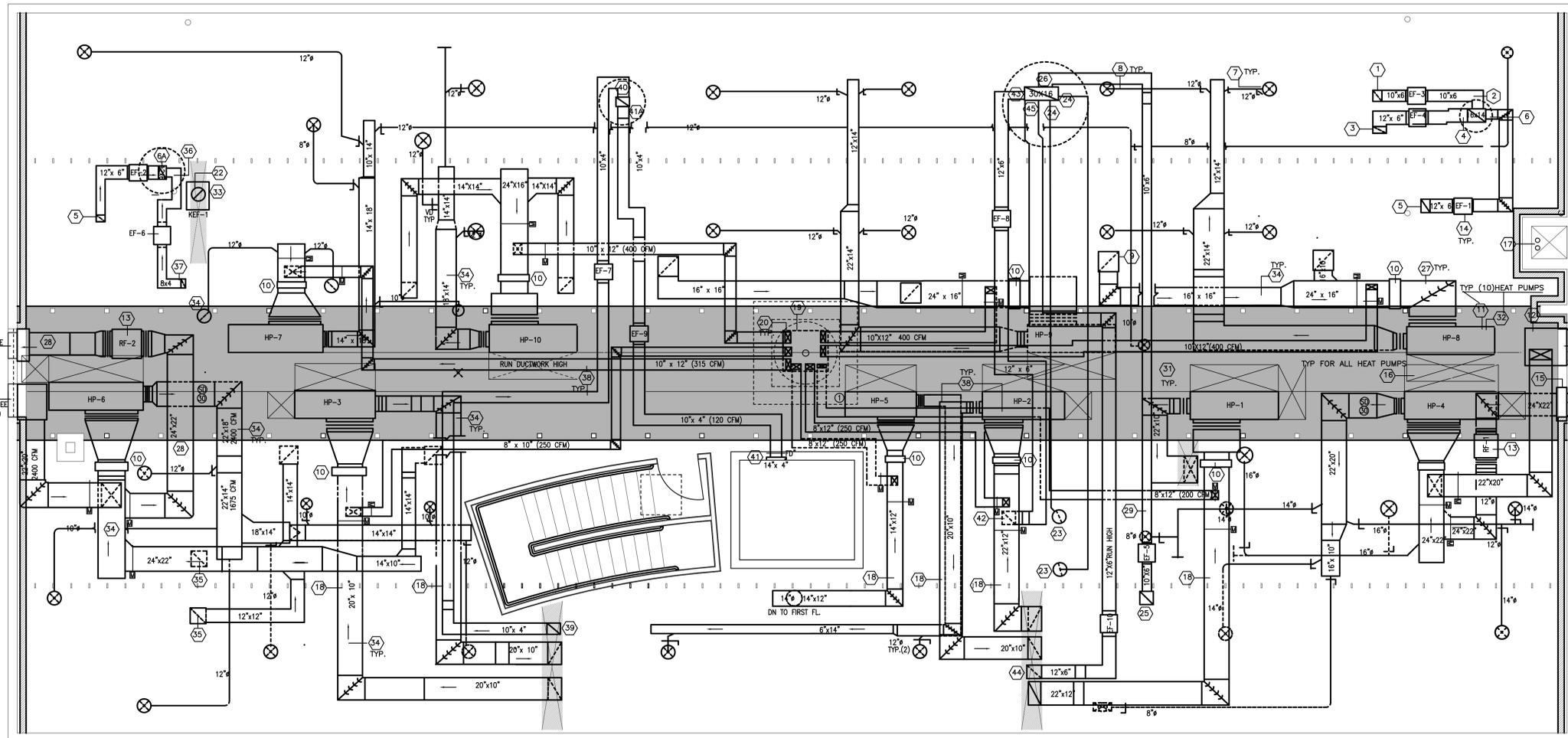
SCALE: 1/4" = 1'-0"



HVAC PLAN NOTES

- 1) INSTALL VENT-A-KILN VENTILATION SYSTEM WITH EXHAUST FAN MODEL: 1437-500 OR EQUAL FOR ELECTRIC KILN. INSTALL IT ABOVE THE KILN. COMPLETE WITH OVERHEAD PULLEYS, PULLEY SAFETY STRAP, SLIDE BRACKETS, CABLE AND COUNTERWEIGHT AS SUPPLIED WITH THE SYSTEM. CONTRACTOR SHALL PROVIDE ADDITIONAL COMPONENTS AND MECHANICALS, AS REQUIRED, FOR A COMPLETE FUNCTIONAL SYSTEM. INSTALLATION SHALL CONFORM WITH THE MANUFACTURER'S REQUIREMENTS.
- 2) 12" EXHAUST AIR DUCTWORK UP THROUGH CEILING TO WEST SIDE OF ROOF. TERMINATE DUCT WITH GREENHECK VENT, MODEL: GRSR-15 OR EQUIVALENT. PROVIDE DUCTWORK WITH OFFSETS AND TRANSITION AS REQUIRED. COORDINATE ROUTING IN FIELD.
- 3) INSTALL AIR CLEANER, MAKE: JET AFS-1000B, 3 SPEED WITH REMOTE CONTROL AIR CLEANER SYSTEM OR EQUIVALENT. SUSPEND IT FROM THE CEILING. PROVIDE MOUNTING BRACKET OR REQUIRED SUPPORTS AS REQUIRED. COORDINATE WITH ELECTRICAL AND OTHER TRADES. MOUNT REMOTE CONTROL ON THE WALL TO OPERATE THE MACHINE. SET UNIT TO OPERATE AT LOW SPEED SETTING.
- 4) PROVIDE VOLUME DAMPERS ON ALL SUPPLY, RETURN, OUTSIDE AIR AND EXHAUST DIFFUSERS, REGISTERS AND GRILLES. AT INACCESSIBLE LOCATION DIFFUSER/GRILLE DAMPER SHALL BE SUBSTITUTED WITH REMOTE DAMPER. COORDINATE LOCATION WITH CEILING PLAN. REFER TO REMOTE DAMPER DETAIL ON DRAWING MB.
- 5) 22x12 RETURN DUCT UP IN CHASE TO HP-1. PROVIDE APPROPRIATE TRANSITION AND FLEXIBLE CONNECTION AT THE HEAT PUMP.
- 6) 20x10 SUPPLY DUCT FROM HP-2 DN IN CHASE.
- 7) 22x12 RETURN DUCT UP IN CHASE TO HP-2. PROVIDE APPROPRIATE TRANSITION AND FLEXIBLE CONNECTION AT THE HEAT PUMP.
- 8) 22x10 SUPPLY DUCT FROM HP-1 DN IN CHASE.
- 9) 20x10 SUPPLY DUCT FROM HP-3 DN IN CHASE.
- 10) 22x12 RETURN DUCT UP IN CHASE TO HP-3. PROVIDE APPROPRIATE TRANSITION AND FLEXIBLE CONNECTION AT THE HEAT PUMP.
- 11) PROVIDE FACTORY FABRICATED GREASE EXHAUST HOOD LISTED FOR ZERO CLEARANCE TO COMBUSTIBLE AS LISTED ON EQUIPMENT SCHEDULE.
- 12) PROVIDE 12" FACTORY FABRICATED GREASE EXHAUST DUCT RATED FOR ZERO CLEARANCE TO COMBUSTIBLE (METALFAB, MODEL 3G) UP IN CHASE TO EXHAUST FAN KEF-1. COORDINATE OPENING SIZE WITH STRUCTURE.
- 13) 10x6 EXHAUST DUCT UP TO EF-3. DUCT TO BE ROUTED BETWEEN EXISTING FRAMING ABOVE.
- 14) 12x6 EXHAUST DUCT UP TO EF-4. DUCT TO BE ROUTED BETWEEN EXISTING FRAMING ABOVE.
- 15) CONNECT ALL RETURN EXHAUST GRILLE. SUPPLY DIFFUSER, SUPPLY REGISTER TO THEIR RESPECTIVE DUCT CONNECTIONS IN ATTIC. PROVIDE FLEXIBLE CONNECTORS AND APPROPRIATE TRANSITIONS. PROVIDE REMOTE DAMPER AT EACH OUTLET IF THE LOCATION IS INACCESSIBLE. COORDINATE GRILLE/DIFFUSER LOCATION WITH ARCHITECTURAL CEILING PLAN.
- 16) BOILER VENT AND COMBUSTION PIPE UP IN EXISTING FLUE.
- 17) PROVIDE ROOM SENSOR WITH ADJUSTABLE SLIDER
- 18) 3/4" HWS & HWR PIPING TO CV-1.
- 19) FIRE RATED DOOR LOUVER (0.5) SOFT OF FREE AREA. REFER TO ARCHITECT'S PLAN FOR MORE DETAILS.
- 20) 2-1/2" HWS & HWR PIPING UP TO ATTIC. ROUTE PIPING BETWEEN EXISTING FRAMING ABOVE.
- 21) 3-1/2" GWS & GWR PIPING UP TO ATTIC. ROUTE PIPING BETWEEN EXISTING FRAMING ABOVE.
- 22) 10x4 DUCT UP IN CHASE TO EF-7.





ATTIC DUCTWORK PLAN

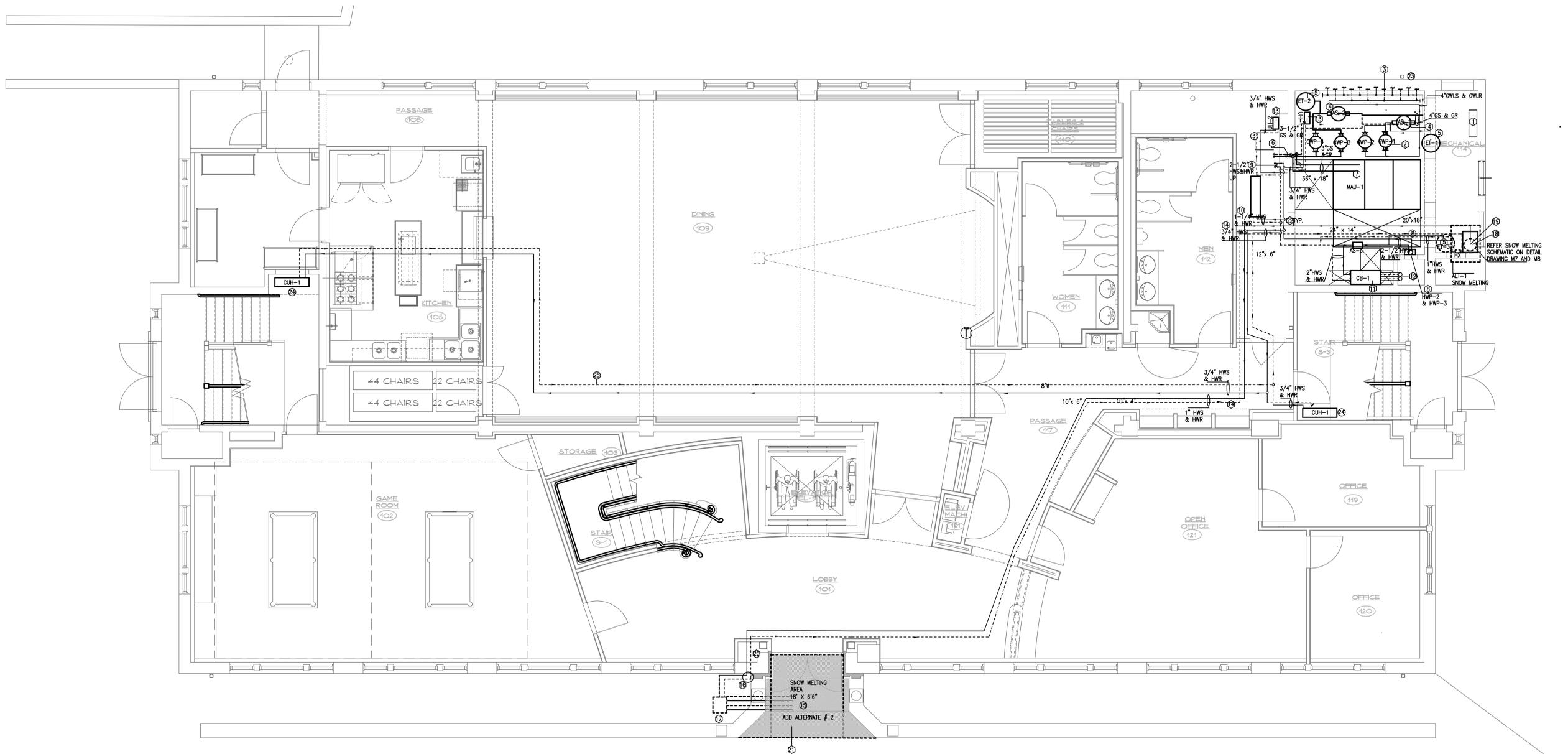
SCALE: 1/4" = 1'-0"



HVAC PLAN NOTES

- 1 10x6 EXHAUST DUCT FROM BELOW. CONNECT TO EF-3.
- 2 EXHAUST DUCT CONNECTED TO MAIN 16X14 DUCT. 16X14 DUCT IS GOING UP THROUGH ROOF. TERMINATING WITH GREENHECK MODEL: GRSR-16 GRAVITY VENT OR EQUIVALENT, WHICH IS SERVING 3 EXHAUST FANS AS SHOWN ON THE PLAN. FLASH AND SEAL THE ROOF PENETRATION WEATHER TIGHT. REFER TO ARCHITECT'S ROOF PLAN FOR FURTHER DETAILS.
- 3 12x6 EXHAUST DUCT FROM BELOW. CONNECT TO EF-4.
- 4 12X6 DUCT, CONNECTED TO MAIN 16X14 DUCT. 16 X14 DUCT IS GOING UP THROUGH ROOF. TERMINATING WITH GREENHECK MODEL: GRSR-16 GRAVITY VENT OR EQUIVALENT, WHICH IS SERVING 3 EXHAUST DUCTS AS SHOWN ON THE PLAN. FLASH AND SEAL THE ROOF PENETRATION WEATHER TIGHT.
- 5 12x6 EXHAUST DUCT FROM BELOW. CONNECT TO EF-1/EF-2.
- 6 EXHAUST DUCT CONNECTED TO MAIN 16X14 DUCT. 16 X14 DUCT IS GOING UP THROUGH ROOF. TERMINATING WITH GREENHECK MODEL: GRSR-16 GRAVITY VENT OR EQUIVALENT, WHICH IS SERVING 3 EXHAUST DUCTS AS SHOWN ON THE PLAN. FLASH AND SEAL THE ROOF PENETRATION WEATHER TIGHT.
- 6A CONNECT EXHAUST DUCT TO MAIN 12X6 DUCT. 12 X6 DUCT UP THROUGH ROOF. TERMINATING WITH GREENHECK MODEL: GRSR-8 GRAVITY VENT OR EQUIVALENT. FLASH AND SEAL THE ROOF PENETRATION WEATHER TIGHT.
- 7 PROVIDE VOLUME DAMPER AT EACH BRANCH TAKEOFF. COORDINATE LOCATION WITH CEILING PLAN. PROVIDE VOLUME DAMPERS ON ALL SUPPLY, RETURN, EXHAUST AND OUTSIDE AIR DIFFUSERS, GRILLES & REGISTERS.
- 8 DUCT DROP ON TO DIFFUSER. PROVIDE APPROPRIATE TRANSITION AND FLEXIBLE CONNECTOR TO THE DIFFUSER. PROVIDE DAMPER AT EACH DIFFUSER.
- 9 PROVIDE VOLUME DAMPER AT RETURN GRILLE. (TYP.)
- 10 REFER TO HEATING COIL DETAIL ON DRAWING MB.
- 11 INSTALL HEAT PUMPS ON STRUCTURAL FRAME SUPPORT ATTACHED WITH VIBRATION ISOLATORS (KINETICS CONTROL MODEL: SFB OR EQUIVALENT) IN ACCORDANCE WITH REQUIRED LENGTH AND WIDTH OF THE HEAT PUMP UNIT. THE FRAME SHOULD BE A MINIMUM OF 6" HIGH FROM THE FINISH FLOOR OF ATTIC. COORDINATE WITH STRUCTURAL AND OTHER TRADES. MAINTAIN MINIMUM CLEARANCE REQUIREMENTS IN ACCORDANCE WITH CODE AND MANUFACTURER'S REQUIREMENTS. PROVIDE WITH SECONDARY DRAIN PAN BELOW UNIT. SECONDARY DRAIN PAN SHALL HAVE FLOAT SWITCH. COORDINATE WITH THE MANUFACTURER FOR SUPPLY AND RETURN DUCT CONNECTION SIZES. CONNECT ALL DUCTS TO UNIT WITH INSULATED FLEXIBLE CONNECTORS. ALL DUCT WORK FROM UNIT SHALL HAVE 15' OF ACOUSTICAL LINING.
- 12 INSULATED OUTSIDE AIR PLENUM. CONNECT TO OUTSIDE AIR LOUVER.
- 13 RELIEF FAN SUSPENDED FROM THE STRUCTURE. PROVIDE WITH SEISMIC BRACING. PROVIDE WITH FLEXIBLE CONNECTIONS, INSTALL IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
- 14 EXHAUST FAN SUSPENDED FROM THE STRUCTURE. PROVIDE WITH SEISMIC BRACING. PROVIDE WITH FLEXIBLE CONNECTIONS, INSTALL IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
- 15 INSULATED RETURN AIR PLENUM. CONNECT TO RELIEF AIR LOUVER.
- 16 HEAT PUMP SERVICE ACCESS AREA. DO NOT RUN ANY PIPING, DUCT WORK OR CONDUIT IN FRONT OF UNIT ACCESS.
- 17 BOILER VENT AND COMBUSTION AIR PIPES UP THROUGH EXISTING CHIMNEY TO TERMINATIONS ABOVE TOP OF EXISTING CHIMNEY. INSTALL IN ACCORDANCE WITH BOILER MANUFACTURER'S REQUIREMENTS AND TERMINATE WITH RETURN BENDS. PROVIDE STAINLESS STEEL COVER AT TOP OF EXISTING CHIMNEY WITH NEW VENT AND COMBUSTION AIR PENETRATIONS. FLASH AND SEAL WEATHER-TIGHT.
- 18 RUN DUCTWORK PER GIVEN SIZES. DO NOT ALTER THE DUCTWORK SIZES. STRUCTURAL DRAWINGS WILL PROVIDE ADEQUATE OPENING FOR GIVEN SIZE DUCTWORK TO PASS THROUGH THE POSTS. COORDINATE WITH STRUCTURAL DRAWINGS.
- 19 INSTALL OUTSIDE AIR LOUVER AT CUPOLA. 4.5 SQFT OF FREE AREA REQUIRED. PROVIDE WITH INSULATED OUTSIDE AIR PLENUM. REFER TO ARCHITECTURAL PLANS FOR EXACT SIZE AND ELEVATION.
- 20 OUTSIDE AIR DUCT CONNECTED TO OUTSIDE AIR PLENUM. PROVIDE WITH MOD AS SHOWN ON DRAWING.
- 21 PROVIDE 12" FACTORY FABRICATED GREASE EXHAUST DUCT RATED FOR ZERO CLEARANCE TO COMBUSTIBLE (METAL-FAB, MODEL 30) FROM KITCHEN HOOD CONNECTED TO EXHAUST FAN KEF-1. COORDINATE OPENING SIZE WITH STRUCTURE.
- 22 12" DIA. FACTORY FABRICATED ZERO CLEARANCE EXHAUST AIR DUCT (METAL-FAB, MODEL 30) UP THROUGH ROOF. REFER DETAILS FOR DUCT TERMINATION.
- 23 12" DIA. EXHAUST AIR DUCT FROM VENT-O-KILN HOOD.
- 24 12" DIA. EXHAUST DUCT CONNECTED TO 30X16 MAIN DUCT. 30X16 DUCT UP THROUGH ROOF AND TERMINATES WITH GREENHECK MODEL: GRSR-24 GRAVITY VENT OR EQUIVALENT. FIVE EXHAUST FAN DUCTS ARE CONNECTED TO MAIN DUCT. FLASH AND SEAL THE ROOF PENETRATION WEATHER TIGHT. REFER ARCHITECTURAL ROOF PLANS FOR MORE INFO.
- 25 10X6 EXHAUST AIR DUCT FROM DUST ROOM. CONNECT WITH EF-5.
- 26 10X6 EXHAUST DUCT CONNECTED TO 30X16 MAIN DUCT. 30X16 DUCT GOES UP THROUGH ROOF AND INSTALL WITH GREENHECK MODEL: GRSR-24 GRAVITY VENT OR EQUIVALENT. FLASH AND SEAL THE ROOF PENETRATION WEATHER TIGHT.
- 27 PROVIDE DUCT LINING ON FIRST 10 FEET OF SUPPLY AND RETURN DUCTS OF ALL HEAT PUMPS (SUPPLY AND RETURN) AND EXHAUST FANS.
- 28 RUN DUCTWORK HIGH TO AVOID INTERFERENCE WITH THE REQUIRED ACCESS SPACE OF HEAT PUMPS AND PIPING, AND OTHER DUCTWORK.
- 30 PROVIDE DUCT MOUNTED SMOKE DETECTORS.
- 31 PROVIDE UNOBSTRUCTED PASSAGEWAY LARGE ENOUGH TO ALLOW REMOVAL OF THE LARGEST APPLIANCE PER CODE IT SHOULD HAVE CONTINUOUS FLOORING.
- 32 PROVIDE ALL CONTROL VALVES/DEVICES/DAMPERS/WIRING AS REQUIRED TO COMPLETE SEQUENCE OF OPERATION.
- 33 INSTALL KEF-1 EXHAUST FAN SUSPENDED FROM THE STRUCTURE VERTICAL MOUNT WITH SEISMIC BRACING AND 18" CLEARANCE TO COMBUSTIBLES IN ACCORDANCE WITH NFPA 96.
- 34 SUPPORT ALL DUCTWORK FROM THE ATTIC CEILING WITH REQUIRED HANGERS AND SUPPORTS. DO NOT RUN ANY DUCTWORK ON THE FLOOR. (TYP. FOR ALL DUCT WORK RUNNING IN ATTIC) AFTER THE DUCT CONNECTION TO HEAT PUMP RUN DUCTWORK AT LEAST 2' ABOVE THE FLOOR.
- 35 12X12 DUCT CONNECT TO RETURN GRILLE IN LIBRARY ON UPPER LEVEL.
- 36 CONNECT 8X4 EXHAUST AIR DUCT TO COMMON 12X6 DUCT. COMMON 12X6 DUCT DUCT UP THROUGH ROOF. INSTALL WITH GREENHECK MODEL: GRSR-8. VENT OR EQUIVALENT. FLASH AND SEAL THE ROOF PENETRATION WEATHER TIGHT. COORDINATE OPENING WITH STRUCTURAL.
- 37 8X4 EXHAUST AIR DUCT FROM JANITOR CLOSET. CONNECT TO EF-6.
- 38 RUN DUCTWORK MINIMUM 5' ABOVE THE ACCESS SPACE. COORDINATE DUCTWORK ROUTING WITH PIPING, ELECTRICAL AND OTHER TRADES TO AVOID INTERFERENCES.
- 39 10X4 EXHAUST AIR DUCT FROM IT CLOSET. CONNECT TO EF-7.
- 40 CONNECT 10x4 EXHAUST AIR DUCT TO MAIN 10 X 8 DUCT. MAIN 10X8 DUCT UP THROUGH ROOF AND INSTALL WITH GREENHECK MODEL: GRSR-10 GRAVITY VENT OR EQUIVALENT. FLASH AND SEAL THE ROOF PENETRATION WEATHER TIGHT. COORDINATE OPENING WITH STRUCTURAL.
- 41 10X4 EXHAUST AIR DUCT TO EF-9. PROVIDE FIRE DAMPER WITH ACCESS DOOR AT RATED WALL PENETRATIONS.
- 41A CONNECT 10x4 EXHAUST AIR DUCT TO MAIN 10 X 8 DUCT. MAIN 10X8 DUCT UP THROUGH ROOF AND INSTALL WITH GREENHECK MODEL: GRSR-10 GRAVITY VENT OR EQUIVALENT. FLASH AND SEAL THE ROOF PENETRATION WEATHER TIGHT. COORDINATE OPENING WITH STRUCTURAL.
- 42 12X6 EXHAUST AIR DUCT FROM SERVER ROOM. CONNECT TO EF-8.
- 43 12x6 EXHAUST AIR DUCT CONNECT TO MAIN DUCT 30X16. MAIN DUCT 30X16 UP THROUGH ROOF AND INSTALL WITH GREENHECK MODEL: GRSR-24. VENT OR EQUIVALENT. FLASH AND SEAL THE ROOF PENETRATION WEATHER TIGHT. REFER TO ARCHITECTURAL ROOF PLANS.
- 44 12X6 EXHAUST AIR DUCT UP IN CHASE FROM ELEVATOR M/C ROOM. CONNECT TO EF-10.
- 45 12x6 EXHAUST AIR DUCT CONNECT TO MAIN DUCT 30X16. MAIN DUCT 30X16 UP THROUGH ROOF AND INSTALL WITH GREENHECK MODEL: GRSR-24. VENT OR EQUIVALENT. FLASH AND SEAL THE ROOF PENETRATION WEATHER TIGHT. REFER ARCHITECTURAL ROOF PLANS.





LOWER LEVEL PIPING PLAN
 SCALE: 1/4" = 1'-0"
 PROJECT NORTH

HVAC PLAN PIPING NOTES:

- 1 REFER TO ELECTRICAL DRAWINGS FOR HVAC CONTROL PANEL LOCATION. DO NOT RUN ANY DUCTWORK OR PIPING DIRECTLY ABOVE ELECTRICAL PANELS. KEEP MINIMUM 3 FEET DISTANCE FROM ANY EQUIPMENT.
- 2 GEOTHERMAL PUMPS GWP-1, GWP-2, GWP-3, GWP-4. MOUNT ON HOUSEKEEPING PAD AS PROVIDED BY DIVISION 3. REFER TO FLOW DIAGRAM FOR PIPING ARRANGEMENT. PROVIDE REQUIRED SERVICE CLEARANCE IN ACCORDANCE TO MANUFACTURER'S REQUIREMENTS.
- 3 4" GROUND LOOP SUPPLY AND RETURN MANIFOLD. POSITION RETURN MANIFOLD BELOW THE SUPPLY MANIFOLD. REFER TO GEOTHERMAL CONSULTANT PIPING LAYOUT FOR GEOTHERMAL SUPPLY AND RETURN PIPING PENETRATIONS. REFER MANIFOLD DETAILS ON DRAWING M7.
- 4 SUPPORT AIR SEPARATOR SEISMICALLY FROM STRUCTURE. TYPICAL FOR ALL AIR SEPARATORS.
- 5 MOUNT EXPANSION TANK ON A HOUSEKEEPING PAD. COORDINATE CONNECTION SIZES WITH THE MANUFACTURER. TYPICAL FOR ALL EXPANSION TANKS.
- 6 3-1/2" GS & GR RISERS UP IN THE CHASE TO ATTIC. AVOID INTERFERENCE WITH BEAMS. COORDINATE LOCATION AND CONNECTION SIZES IN FIELD.
- 7 3" GS & GR PIPING TO MAU-1. COORDINATE LOCATION AND CONNECTION SIZES IN FIELD.
- 8 HOT WATER PUMPS HWP-2 & HWP-3. MOUNT STAGGERED AND SUPPORT ON THE WALL. REFER TO FLOW DIAGRAM FOR PIPING ARRANGEMENT. PROVIDE REQUIRED SERVICE CLEARANCE IN ACCORDANCE TO MANUFACTURER'S REQUIREMENTS.
- 9 2-1/2" HWS & HWR RISERS UP IN THE CHASE TO ATTIC. COORDINATE LOCATION AND CONNECTION SIZES IN FIELD.
- 10 1" HWS & HWR PIPING TO DUCT MOUNTED HOT WATER COIL IN MAU-1. COORDINATE LOCATION AND CONNECTION SIZES IN FIELD.
- 11 INSTALL BOILER CB-1 ON HOUSEKEEPING PAD IN ACCORDANCE WITH DIVISION 3. MAINTAIN MINIMUM CLEARANCE REQUIREMENTS IN ACCORDANCE WITH CODE AND MANUFACTURER'S REQUIREMENTS. INSTALL HOT WATER PUMPS AND SYSTEM ACCESSORIES PER SHOWN ON DETAILS. RUN 1" CONDENSATE DRAIN TO CLOSEST FLOOR DRAIN. REFER TO BOILER PIPING DIAGRAM AND DETAILS, DRAWING M7.
- 12 BOILER VENT AND COMBUSTION AIR PIPES UP THROUGH EXISTING CHIMNEY. REFER TO DRAWING M8.
- 13 SUSPEND UNIT HEATER FROM STRUCTURE. SEISMICALLY SUPPORT MOUNT BOTTOM OF UNIT AT MINIMUM 7'6" AFF. COORDINATE WITH ELECTRICAL.
- 14 3/4" HWS & HWR PIPING TO CABINET UNIT HEATERS ON THE STAIRS.
- 15 REFER TO ALTERNATE -1, SNOW MELTING SCHEMATIC ON DETAIL DRAWING M7 & M8 FOR FURTHER DETAILS.
- 16 1" UNDERGROUND PRE-INSULATED PEX TUBING WITH CONNECTIONS. REFER TO DETAILS ON DRAWING M8.
- 17 VALVE BOX. PROVIDE SUPPLY AND RETURN MANIFOLD. COORDINATE IN FIELD.
- 18 PUMPS SMP-2 & SMP-3. IN-LINE PUMPS. SEISMICALLY SUPPORT FROM THE STRUCTURE. PROVIDE SERVICE CLEARANCE TO ACCESS PUMPS.
- 19 MOUNT EXPANSION TANK ON THE HOUSEKEEPING PAD.
- 20 1" HWS & HWR DOWN IN CHASE TO PEX TUBING BELOW GRADE. PEX TUBING BELOW GRADE SHALL BE ENCLOSED IN PVC SCHEDULE 80. COORDINATE FOOTINGS IN FIELD.
- 21 AREA COVERED BY 2 LOOPS. CONTRACTOR SHALL PROVIDE LAYOUT AND DETAILS SHOWING ROUTING OF PEX TUBING BEFORE INSTALLATION.
- 22 RUN PIPING TIGHT TO UNDERSIDE OF THE CEILING. COORDINATE WITH DUCT ROUTING, ELECTRICAL CABLES, AND PLUMBING AND SPRINKLER PIPING ROUTES IN THE FILED BEFORE INSTALLATION.
- 23 PREFABRICATED GEO-EXCHANGE MANIFOLD BY BLAKE COMPANY OR EQUIVALENT. SEE DETAILS ON DRAWING M7 AND REFER TO SPECIFICATION SECTION 15083 FOR FURTHER DETAILS.
- 24 INSTALL CONNECTOR UNIT HEATER PER SCHEDULE. COORDINATE LOCATION WITH ARCHITECT PLANS.
- 25 HOT WATER PIPING TO RUN BETWEEN EXISTING FLOOR JOISTS ABOVE AND THROUGH NEW DRILLED OPENINGS IN STEEL BEAMS. CONTROL SIZE, LOCATION AND SPACING OF BEAM DRILLING WITH STRUCTURAL ENGINEER.

Project Title:
 Eckersley-Hall Renovations For
 Middletown Senior / Community Center
 61 Durant Terrace
 Middletown, Connecticut 06457

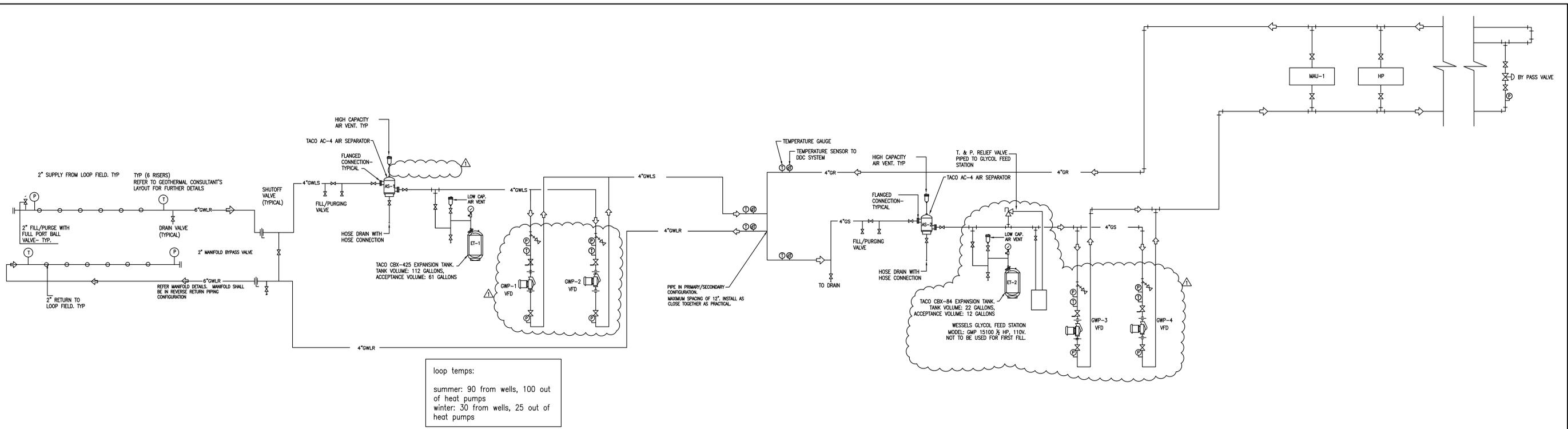


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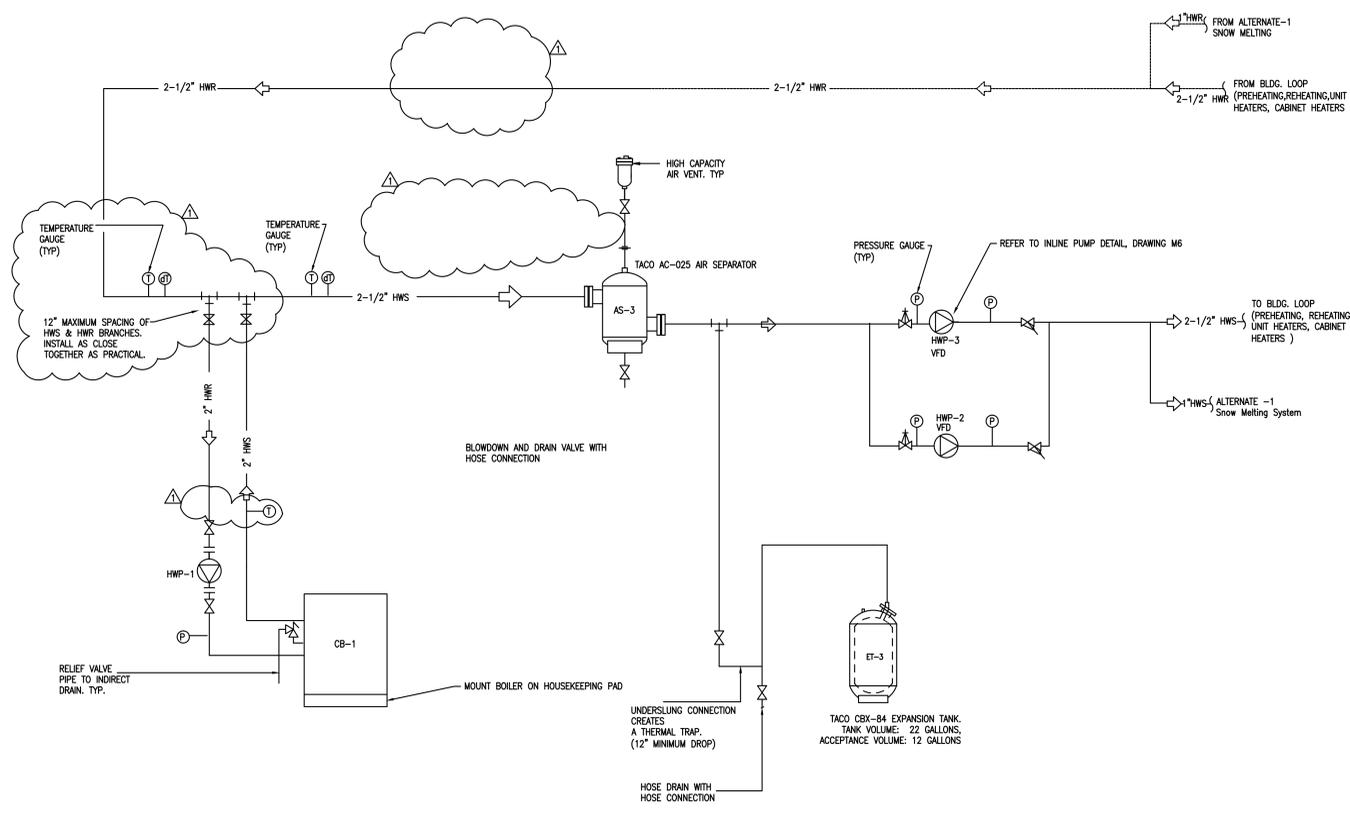
Revision	Description	Date	Revised By
ADDENDUM #2		6/2/13	JP

Drawing Title:
Lower Level Piping Plan
 Date: JUNE 12, 2013
 Scale: AS NOTED
 Drawn By: VHS
 Project Number: 11134

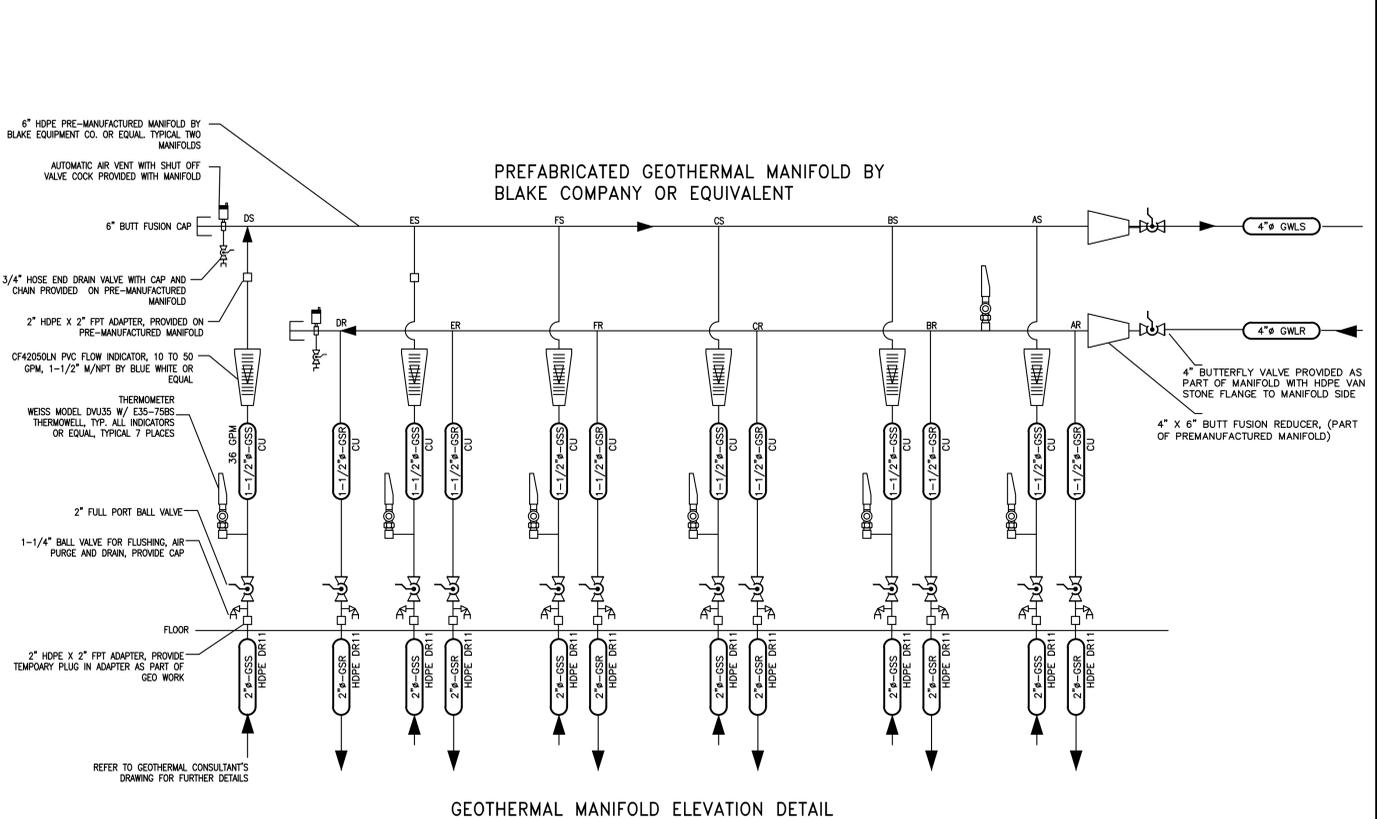
M4



GEOTHERMAL PIPING SCHEMATIC
 NOT TO SCALE



HOT WATER BOILER PIPING SCHEMATIC
 NOT TO SCALE



GEOTHERMAL MANIFOLD ELEVATION DETAIL



Revision	Description	Date	Revised By
Δ	ADDENDUM #2	6/2/13	JP

WATER SOURCE HEAT PUMPS

TAG	AREA SERVED	MFR/MODEL	V/#	MCA/MOCP	SA CFM	OA CFM	ESP (IN WG)	GPM	WPD (FT)	COOLING					HEATING					SUPPLEMENTAL HOT WATER COIL								
										EWT (F)	LWT (F)	EDB (F)	EWB (F)	LDB (F)	LWB (F)	SC (MBH)	TC (MBH)	EER	EWT (F)	LWT (F)	EDB (F)	LDB (F)	CAP (MBH)	EWT/LWT	CAP (MBH)	GPM	EAT	LAT
HP-1	AGENT, DIRECTOR & OPEN OFFICE	MCQUAY WGH0441	208/1	29.7/45	1400	200	0.70	5.97	90.0	99.9	77.0	63.0	55.1	52.5	33.3	41.0	14.3	30.0	25.5	70.0	90.5	31.4	180/160	9.0	0.9	64	70.0	
HP-2	WAITING AREA/LC	MCQUAY WGH0381	208/1	24.1/35	1250	250	0.70	9.0	11.22	90.0	100.0	78.0	63.0	55.5	30.4	35.6	14.4	30.0	25.3	70.0	90.1	27.6	180/160	15.0	1.5	60	70.0	
HP-3	GAME ROOM	MCQUAY WGH0381	208/1	24.1/35	1000	250	0.70	9.0	11.22	90.0	99.8	79.0	63.0	53.6	51.4	30.1	35.1	14.6	30.0	25.3	70.0	92.7	27.0	180/160	15.0	1.5	58	70.0
HP-4	ARTS & CRAFTS/KILN RM./DUST RM.	MCQUAY WGH0721	208/1	46.5/60	2400	500	0.70	18.0	17.46	90.0	99.3	77.0	63.0	55.9	53.4	55.0	65.2	13.2	30.0	25.4	70.0	91.0	54.8	180/160	22.0	2.2	63	70.0
HP-5	CONFERENCE ROOM	MCQUAY WGH0261	208/1	17.6/25	600	240	0.70	6.0	6.35	90.0	99.8	84.0	63.0	48.2	48.3	23.3	23.3	14.6	30.0	25.2	70.0	96.3	17.1	180/160	17.0	1.7	46	70.0
HP-6	LIBRARY/SOCIALIZATION RM.	MCQUAY WGH0721	208/1	46.5/60	2400	350	0.70	18.0	17.46	90.0	99.3	77.0	63.0	55.9	53.4	55.0	65.2	13.2	30.0	25.5	70.0	91.0	54.8	180/160	20.0	2.0	64	70.0
HP-7	CORRIDOR/HEALTHSCREENING/W.R.	MCQUAY WGH0441	208/1	29.7/45	1450	350	0.70	10.50	5.97	90.0	100.0	79.0	63.0	57.0	53.6	37.8	41.6	14.2	30.0	25.2	70.0	89.0	31.6	180/160	18.0	1.8	60	70.0
HP-8	MULTIPURPOSE RM. 1	MCQUAY WGH0491	208/1	33.8/50	1600	400	0.70	12.0	7.65	90.0	99.5	79.0	63.0	55.5	52.9	40.7	45.0	13.8	30.0	25.4	70.0	90.0	34.5	180/160	25.0	2.5	57	70.0
HP-9	MULTIPURPOSE RM. 2	MCQUAY WGH0491	208/1	33.8/50	1600	400	0.70	12.0	7.65	90.0	99.5	79.0	63.0	55.5	52.9	40.7	45.0	13.8	30.0	25.4	70.0	90.0	34.5	180/160	25.0	2.5	57	70.0
HP-10	MULTIPURPOSE RM. 3	MCQUAY WGH0491	208/1	33.8/50	1400	400	0.70	12.0	7.65	90.0	99.3	80.0	63.0	53.8	51.6	39.7	44.1	14.0	30.0	25.4	70.0	92.4	31.1	180/160	25.0	2.5	55	70.0

PROVIDE SECONDARY CONDENSATE DRAIN PAN WITH FLOAT ALARM FOR ALL HEAT PUMPS.
 RATE HEAT PUMPS FOR 15% GLYCOL.
 PROVIDE RETURN DUCT MOUNTED SUPPLEMENTAL HOT WATER COIL, RATED FOR GLYCOL.
 PROVIDE WITH ECM MOTORS.
 PROVIDE WITH SOUND ATTENUATION PACKAGE.
 PROVIDE CONDENSATE HOSE KIT.
 MOUNT UNITS ON 4" NEOPRENE ISOLATION PAD.
 PROVIDE CO2 CONTROL FOR OUTSIDE AIR MODULATION.
 PROVIDE COMPARATIVE ENTHALPY ECONOMIZER CONTROLS.
 CONTRACTOR SHALL FABRICATE FILTER SECTION TO PROTECT PREHEAT COIL.

EQUIPMENT MANUFACTURERS SHALL COORDINATE WITH DDC CONTRACTOR TO PROVIDE
 REQUIRED COMMUNICATIONS EQUIPMENT AS NECESSARY FOR DDC SYSTEM TO
 MONITOR AND CONTROL BUILDING EQUIPMENT.

SNOWMELTING SCHEDULE

BASIS: RATE OF SNOWFALL (IN/HR)	0.75
TOTAL AREA WITH SNOWMELTING	150 SF
HEAT INPUT/ SF (BTU/HR-SF)	165
WATER SUPPLY TEMPERATURE (°F)	137
Δ TEMPERATURE (°F)	25
PROPYLENE GLYCOL (%)	40
PIPE DIAMETER (IN)	5/8
SPACING (IN)	6
LOOP LENGTH (FT)	190
NUMBER OF LOOPS	2
FLOW RATE / LOOP (GPM/LOOP)	2.6

NOTES:
 INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
 PROVIDE INSULATION BELOW SLAB IN ACCORDANCE WITH THE
 MANUFACTURER'S REQUIREMENTS.

TO BE SUPPLIED WITH MANUFACTURER PROVIDED GROUND SENSOR
 CAPABLE OF SENSING MOISTURE AND GROUND TEMPERATURE AND
 OUTDOOR SENSOR FOR AIR TEMPERATURE SENSOR. COORDINATE
 EXACT LOCATION IN FIELD. RUN CONTROL WIRING IN A CONDUIT
 FOR EASY SERVICING.

WATER SOURCE HEAT PUMP (MAKE UP AIR UNIT)

TAG	AREA SERVED	MFR/MODEL	V/#	MCA/MOCP	HP	SA CFM	OA CFM	ESP (IN WG)	GPM	PD (FT)	COOLING					HEATING					SUPPLEMENTAL HOT WATER COIL						
											EWT (F)	LWT (F)	EDB (F)	EWB (F)	LDB (F)	LWB (F)	SC (MBH)	EGT (F)	LGT (F)	EDB (F)	LDB (F)	CAP (MBH)	EWT/LWT	CAP (MBH)	GPM	LAT	
MAU-1	DINING ROOM & KITCHEN (LL)	AMON SB-018	208/3	78/125	4.0	3000	2000	1.5	43.2	4.8	90.0	101.5	88.33	71.0	50.25	49.12	124.14	190.29	31.0	24.3	25.3	75.8	163.5	180/160	55.0	5.5	92.0

PROVIDE FLOAT ALARM
 RATE UNIT FOR 15% GLYCOL.
 PROVIDE SUPPLY DUCT MOUNTED SUPPLEMENTAL HOT WATER COIL, RATED FOR GLYCOL.
 PROVIDE WITH SOUND ATTENUATION PACKAGE.
 MOUNT UNITS ON 4" NEOPRENE ISOLATION PAD.
 PROVIDE CO2 CONTROL FOR OUTSIDE AIR MODULATION.
 PROVIDE COMPARATIVE ENTHALPY ECONOMIZER CONTROLS.
 PROVIDE MIXING BOX WITH DAMPER CONTROLLER.

REGISTERS, GRILLES AND DIFFUSERS

TAG	SIZE	TYPE	NECK #	CFM	MAX TOTAL PRESSURE (IN. WG)	MAX NC	MANUFACTURER & MODEL NO.
A	6X6	CEILING DIFFUSER	6"	0-120	0.131	21	PRICE 4 WAY ADJUSTABLE SUPPLY DIFFUSER
B	9X9	CEILING DIFFUSER	6"	121-155	0.103	21	PRICE 4 WAY ADJUSTABLE SUPPLY DIFFUSER
C	12X12	CEILING DIFFUSER	8"	156-245	0.080	21	PRICE 4 WAY ADJUSTABLE SUPPLY DIFFUSER
D	12X12	CEILING DIFFUSER	10"	246-325	0.092	21	PRICE 4 WAY ADJUSTABLE SUPPLY DIFFUSER
E	12X12	CEILING DIFFUSER	12"	326-391	0.092	19	PRICE 4 WAY ADJUSTABLE SUPPLY DIFFUSER
F	15X15	CEILING DIFFUSER	12"	392-471	0.085	22	PRICE 4 WAY ADJUSTABLE SUPPLY DIFFUSER
G	18X18	CEILING DIFFUSER	14"	472-641	0.080	22	PRICE 4 WAY ADJUSTABLE SUPPLY DIFFUSER
H	18X18	CEILING DIFFUSER	16"	642-840	0.080	21	PRICE 4 WAY ADJUSTABLE SUPPLY DIFFUSER
I	4X72	LINEAR BAR GRILLE		375	0.027	18	PRICE LINEAR BAR GRILLE LBMH, 16A MODEL
J	4X96	LINEAR BAR GRILLE		525	0.027	18	PRICE LINEAR BAR GRILLE LBMH, 16A MODEL
K	4X60	LINEAR BAR GRILLE		325	0.027	18	PRICE LINEAR BAR GRILLE LBMH, 16A MODEL
L	4X14	SUPPLY REGISTER		300	0.030	18	PRICE SERIES 500, 510D MODEL
M	60"	LINEAR SLOT DIFF.	8"	200	0.055	17	PRICE SERIES SDB, 1" SLOT (2 SLOTS= MODEL100)
R1	6X6	RETURN GRILLE		0-115	0.054	20	PRICE EGG CRATE RETURN/EXHAUST GRILLE
R2	8X8	RETURN GRILLE		116-259	0.073	20	PRICE EGG CRATE RETURN/EXHAUST GRILLE
R3	10X10	RETURN GRILLE		260-354	0.054	20	PRICE EGG CRATE RETURN/EXHAUST GRILLE
R4	12X12	RETURN GRILLE		355-528	0.054	20	PRICE EGG CRATE RETURN/EXHAUST GRILLE
R5	14X14	RETURN GRILLE		529-735	0.054	20	PRICE EGG CRATE RETURN/EXHAUST GRILLE
R6	16X16	RETURN GRILLE		736-972	0.054	20	PRICE EGG CRATE RETURN/EXHAUST GRILLE
R7	18X18	RETURN GRILLE		973-1242	0.054	20	PRICE EGG CRATE RETURN/EXHAUST GRILLE
R8	20X20	RETURN GRILLE		1286-1570	0.054	20	PRICE EGG CRATE RETURN/EXHAUST GRILLE
N	24X24	VAV DIFFUSER	8"	200	0.03	17	PRICE VARITHERM SERIES VPD-HC MODEL VAV DIFF.
O	24X24	VAV DIFFUSER	12"	450	0.086	26	PRICE VARITHERM SERIES VPD-HC MODEL VAV DIFF.

- PROVIDE BORDER FOR LAY-IN OR SURFACE MOUNT AS REQUIRED.
 - DUCT RUNOUTS SHALL BE AS INDICATED ON PLAN.
 - AIR PATTERN INDICATED ON PLAN.
- DIFFUSER LEGEND:
- | | |
|--|----------------|
| | PATTERN: 1-WAY |
| | 2-WAY |
| | 3-WAY |
| | 4-WAY |
- GRILLE LEGEND: TAG NO PATTERN ON RETURN GRILLES
 NO PATTERN ON SIDEWALL GRILLES
- PROVIDE MFR'S SQUARE TO ROUND TRANSITION FOR DIFFUSERS, FLEX DUCT SHALL NOT EXCEED 5'. PROVIDE 2" PLENUM & DUCT CONNECTION BEHIND RETURNS UNLESS OTHERWISE NOTED.
 - PROVIDE AIR VOLUME DAMPERS FOR EACH SUPPLY, AS REQUIRED.
 - PROVIDE ADDITIONAL STRUCTURAL SUPPORT AS REQUIRED FOR LINEAR BAR GRILLES.
 - FURNISH ALL SUPPLY DIFFUSERS, REGISTERS & GRILLES WITH FACE OPERATED DAMPERS IN ADDITION TO VOLUME DAMPERS INDICATED ON PLANS.
 - PROVIDE BORDER FOR SURFACE MOUNT. COORDINATE LOCATION WITH ARCHITECTURAL PLAN.
 - PROVIDE MANUFACTURER'S PLENUM TO GO WITH LINEAR SLOT DIFFUSER. COORDINATE WITH ARCHITECTURAL PLAN.
 - PROVIDE PRESSURE CONTROL VALVE WITH VAV DIFFUSER.

RELIEF FANS

TAG	AREA SERVED	MFR/MODEL	CFM	SP(IN WG)	V/#	HP
RF-1	ARTS, KILN & DUST RM.	GREENHECK SQ-160-VG	2400	0.5	115/1	3/4
RF-2	LIBRARY & SOCIALIZATION	GREENHECK SQ-160-VG	2400	0.5	115/1	3/4

PROVIDE INLINE FANS WITH:
 ECM MOTOR
 MOTORIZED DAMPER
 DISCONNECT SWITCH
 ALUMINUM RUB RING
 INSULATED HOUSING
 BAKED ENAMEL COATING

ALTERNATE #1- SNOW MELTING PUMPS SCHEDULE (BASED ON BELL & GOSSETT)

TAG	SERVICE	MODEL	GPM	HEAD FT	V/#	HP	RPM	REMARKS
SMP-1,2	SNOWMELTING LOOP	PL-55	3	35	120/1	0.4	3250	1, 2

REMARKS
 1. PUMPS PIPED IN ONE ACTIVE/ONE STAND-BY CONFIGURATION.
 2. GPM BASED ON 100% OF FULL FLOW.

UNIT HEATERS

TAG	AREA SERVED	CFM	MBH	GPM	EWT	LWT	EAT WPD (FT)	VOLTS/PH	HP	MODEL
UH-1	MECHANICAL ROOM	670	21.7	2.3	180	160	60	0.2	115/1	1/25 WSC33501-AIRDALE
UH-2	SPRINKLER AREA	340	12.6	1.3	180	160	60	0.5	115/1	1/60 WSC18501-AIRDALE
UH-3,4,5	ATTIC	340	12.6	1.3	180	160	60	0.5	115/1	1/60 WSC18501-AIRDALE

- SEISMICALLY SUPPORT
- FURNISH MOTOR WITH INTERNAL OVERLOAD PROTECTOR
- DISCONNECT SWITCH SHALL BE PROVIDED.
- CONTROL VALVE AND VALVE SENSOR AS PROVIDED BY THE ATC CONTRACTOR.

CABINET UNIT HEATERS

TAG	AREA SERVED	MBH	V/PH	MOTOR	CFM	GPM	MAX. P.D. FT	MODEL	REMARKS
CUH-1 & 2	LOWER LEVEL STAIRS	10.7	115/1	1/20	250	0.5	0.1	AIRDALE-FC, SIZE 02	1,2,3

- FURNISH WITH MOTOR WITH INTERNAL OVERLOAD 4) PROVIDE WITH FACTORY FAN CONTROL BY AIR TEMPERATURE. PROTECTION
- DISCONNECT SWITCH SHALL BE PROVIDED
- PROVIDE WITH SOLID STATE SPEED CONTROLLER
- FLOOR MOUNTED. PROVIDE WITH WALL SEAL.
- PROVIDE WITH FACTORY INSTALLED INTERNAL INSULATION.
- PROVIDE WITH FACTORY INSTALLED INTERNAL INSULATION.

KITCHEN EXHAUST HOOD

TAG	APPROX SIZE (L x W X H)	TYPE	CFM	STATIC PRESSURE (IN. WG)	DUCT CONNECTION	FILTERS	MANUFACTURER & MODEL NO.	NOTES
KEH-1	72" x 38"x12"	TYP. 1. Baffle Filter WALL MOUNTED CANOPY	1500	.447	14 x 10	REMOVABLE ALUMINUM Baffle	GREENHECK MODEL GHEW	

- FURNISH WITH FACTORY PIPED ANUL FIRE SUPPRESSION SYSTEM. PROVIDE INTERLOCK TO SHUT-OFF POWER TO COOKING EQUIPMENT IN THE EVENT OF SYSTEM ACTIVATION.
- STAINLESS STEEL CONSTRUCTION, WITH LIGHT FIXTURE.
- HOOD SHALL BE UL LISTED AND ALSO LISTED FOR ZERO CLEARANCE TO COMBUSTIBLE. IT SHALL MEET THE REQUIREMENTS OF NFPA 96.
- HOOD MANUFACTURER SHALL VERIFY SELECTION BASED ON ACTUAL COOKING EQUIPMENT INSTALLED.

HOT WATER BOILER

SYMBOL	OUTPUT (MBH)	NATURAL GAS INPUT (MBH)	GPM	EWT (F)	LWT (F)	MIN AFUE	ELECTRICAL VOLTS/PHS	AMPS	BURNER	TYPE	MANUFACTURER & MODEL	OPER. WEIGHT (LBS)	NOTES
B-1	466.5	500	26	145	180	94%	120/1	1.7	MODULATING 5:1 TURNDOWN	HIGH EFFICIENCY CONDENSING	LOCHINVAR KB-501	310	

- INCLUDE OUTSIDE AIR SENSOR FOR RESET CONTROL.
- BOILER SHALL BE APPROVED FOR DIRECT VENT AND DIRECT COMBUSTION AIR CONNECTIONS WITH PVC PIPE.
- PROVIDE WITH ACID NEUTRALIZATION TREATMENT

HVAC PUMP SCHEDULE

SYMBOL	SERVICE	GPM	FT. HD.	MOTOR			TYPE	FLUID	MANUFACTURER & MODEL
				RPM	HP	VOLTS/#			
HWP-1	BOILER PRIMARY LOOP	26	15	1725	0.33	120/1	INLINE	WATER	BELL & GOSSETT SERIES 90 1-1/2AA
HWP-2 & 3	BUILDING LOOP	45	35	1750	1.5	208/3	INLINE	WATER	BELL & GOSSETT SERIES 90 1-1/2A1-1/2XB

- FURNISH WITH VARIABLE FREQUENCY DRIVE AND COMPATIBLE MOTOR.
- PUMPS PIPED IN ONE ACTIVE/ONE STANDBY CONFIGURATION.

GEOTHERMAL WATER PUMPS

SYMBOL	TYPE	GPM	FT. HD.	MOTOR			SERVICE	MANUFACTURER & MODEL
				RPM	HP	VOLTS/#		
GWP-1 & 2	VERTICAL IN-LINE	216	80	1750	10	208/3	GEOTHERMAL MAIN LOOP	BELL & GOSSETT SERIES 90 3X3X9-12B
GWP-3 & 4	VERTICAL IN-LINE	160	65	1750	7.5	208/3	GEOTHERMAL BLDG. LOOP	BELL & GOSSETT SERIES 90 3X3X9-12B

- FURNISH WITH VARIABLE FREQUENCY DRIVE AND COMPATIBLE MOTOR.
- PUMPS PIPED ONE ACTIVE/ONE STANDBY.

SUPPLY/EXHAUST FANS

TAG	AREA SERVED	MFR/MODEL	CFM	SP(IN WG)	V/#	HP	NOTES
EF-1	MEN'S W.R UPPER LVL	GREENHECK SQ-70-VG	225	0.25	115/1	1/6	③ ④
EF-2	WOMEN'S W.R UPPER LVL	GREENHECK SQ-70-VG	225	0.25	115/1	1/6	③ ④
EF-3	WOMEN'S W.R. LOWER LVL	GREENHECK SQ-80-VG	225	0.75	11		