



**PROPOSED ACADEMY OF AEROSPAVE ENGINEERING  
JOHN WALLACE MIDDLE SCHOOL  
Newington, Connecticut**

**Addendum #02  
02-06-2015**

**This addendum includes clarifications to:**

**Abatement, Demolition and Reconstruction Project, #094-0104 CV  
&  
Alterations Project, #094-0102 A**

**GENERAL / CLARIFICATIONS**

1. Refer to attached Revised **Bid Form**.
2. Clarification to type of countertops and window sills

**ALL countertops and backsplashes to be solid surface with square front edge as per details on A6.0. Window sills to be solid surface with bullnose edge.**

3. On what date can demolition/construction begin? What is the date of substantial completion?

**Contractor can commence work starting February 15, 2015. Substantial Completion is on or before August 14, 2015.**

4. Clarification to north wall elevation in S.T.E.M. Exploratory #03, drawing A1.0. (Currently indicates 5/A7.0)

**Correct wall elevation is 6/A7.0**

5. Please clarify specification of Resin Wall Panels and Closet Shelving in specification section 064023-1.2 Summary.

## ADDENDUM #2 - continued

6. Section 4/A5.0 notes a ¾” window sill. The Inpro product comes in ½” thickness. Typical solid surface sheets are ½” thick. ¾” sill can be obtained at a higher cost and limited color selection. Please confirm the premium cost and limited color selection for ¾” sills are intended.

Window sills to be ¾” thick with bullnose edge. Color from manufacturer’s standard. No custom color.

7. Sections on A6.0 notes a ¾” backsplash/endsplash. Spec 123661 Para 2.2C calls for ½” backsplashes. Please clarify backsplash/endsplash thickness.

Backsplash and endsplash to be 1/2”.

8. Spec 0624023 Para 1.2A4: We find no references to closet shelving on the drawings. Please confirm there is no closet shelving.

There is no closet shelving.

9. Is this project to be LEED Certified?

No, this project will not be registered for LEED Certification. Disregard references to LEED.

10. Spec 064023 calls out for pin type shelf rest. Details indicate both pin holes type and recessed metal standards. Please clarify shelving supports.

The two display cases in Display Area #01 shall have recessed metal standards. All other casework shall have pin type shelf rest.

11. Spec 074216, 2.7 & 2.8 denote bracketed paragraphs thus [     ] with choices to be made by the specification writer. Please choose the appropriate insert or inserts shown.

Refer to attached Spec Section 074216, Insulated Core Metal Wall panels. (12-pages)

12. S.T.E.M. Exploratory #03 indicates casework on north wall above door #03A. There is no elevation of the casework.

Refer to attached SKA-01 for casework elevation.

13. Specifications for each project calls out for solid surface window sills from different manufacturers.

Solid surface window sills can be from same manufacturer.

## ADDENDUM #2 - continued

14. Project 094-0102 A. Drawing A8.0, window type "B". Is this clearstory window from CENTRIA?

No. Change clearstory window frame from aluminum to hollow metal. Same profile and dimensions as H.M. door frames.

15. Project 094-0104 CV. Drawing A8.0, Door type (STEEL-1) overhead door. Are doors aluminum or steel?

The (3) overhead doors #06B, #06D & #07A are insulated aluminum. Doors shall be primed and painted on both sides.

16. Specification section 092900 Para 2.3C specifies abuse resistant gyp. bd. Is there any abuse resistant gyp. bd. in this project.

Yes. All gyp. bd. on interior side of exterior walls within Aerospace Lab #06, up to the two movable partitions walls shall be abuse resistant. Also, all walls at Storage Room #07, both sides.

17. Currently the 094-0104 CV project indicates gyp. board on the interior side of all new exterior walls. This will not allow for utilities to be installed, electrical, etc. during the interior fit out. Should the gyp. bd. on the interior side of the exterior walls be installed in project 094-0102 A?

Yes. All gyp. bd. on interior side of new exterior walls shall be deleted from project 094-0104 CV and installed during project 094-0102 A.

18. Spec 064023 Para 1.5A and B: Please confirm the premium cost for an AWI QCP certified fabricator and installer is intended for this project, limiting the number of millwork bidders to the few certified subcontractors.

Delete this requirement from the project.

19. Drawing G1.2 Wall type D – Please clarify if interior corrugated metal wall panels get painted above ceiling.

Metal wall panels do not get painted above finished ceilings. Refer to A6.2 for a more thorough detailing of corrugated interior metal wall panels.

20. Please confirm if all exposed structure roof deck, piping, ductwork, etc. in Aerospace Lab #06 will be painted one color.

Yes, one color.

## ADDENDUM #2 - continued

21. Are suspended ceiling grids and tiles 2x4 or 2x2?

All suspended ceiling grids and tiles are 2x2.

22. Spec 101100, 2.7A.1: Please confirm the tacwall product is intended.

There is no tacwall, only two bulletin boards as indicated on elevations #8 & #10 on A7.0.

23. Drawings D1.0 & A7.1 do not call out to saw cut slab for installation of power and recessed light fixtures in concrete floor slab, Aerospace Lab #06. Which project will this work take place?

Work to take place in project 094-0102 A.  
Saw cut slab 1'-0" wide and length of light run to reach corridor wall #08 (both sides), to accommodate installation of recesses floor fixtures and power. After installation of lights and power, install dowels, vapor barrier and concrete, level with existing floor. Refer to structural detail on S-01, Typical Slab on Grade Infill Detail

24. Are the existing roof drain leaders, from roof deck to floor slab, to be left exposed?

Yes. Paint exposed cast iron to match adjacent wall.

25. There is a discrepancy with the dimension for saw cutting and removing the concrete slab at the perimeter exterior walls.

Refer to drawing HMI.2, note #6, which indicates the removal of a 6" wide section of slab.

26. Folding partition support structure:

It was noted at the pre-bid walk-thru that the folding partitions have already been removed. Are the existing steel beams, associated supports, etc. to remain or be removed during the demolition phase.

Delete the removal of the (3) folding doors from bid. Include the REMOVAL of steel beams and all associated supports, brackets, etc. Remove during the demolition/abatement phase.

27. Drawing A1.0: Detail tags 1,2 & 3/A6.4 are labeled incorrectly. Refer to A6.4.

Detail 1/A6.4 is correctly labeled. Detail 2/A6.4 on the plan is actually 3/A6.4 and 3/A6.4 is actually 2A/6.4.

28. Spec 081416, 1.2A.2 & 2.3C: We find no references to acoustically rated doors in the Door Schedule. Please confirm these are NIC.

NIC.

## ADDENDUM #2 - continued

29. Spec 081416, 2.6C.3: there are approximately 10 standard colors of stain to choose from. Can custom be eliminated? Very expensive.

Eliminate custom color.

30. Drawing A8.0 Door Schedule: Should panic hardware be eliminated from door 06B?

Yes. Delete panic hardware from Door #06B. It was meant for door #06C. ADD panic hardware to door #06C.

31. Spec 081416, 2.3A.2 specifies white maple yet A8.0 calls for oak for the wood doors. Please clarify.

Spec in incorrect. Use oak doors.

32. Detail 1 on A4.0 and A5.1: Please confirm that 'Prime and paint exposed steel, joists, conduit, etc.' to be in **Alterations** project.

Yes, Alterations Project.

33. Section 7/A6.0 calls for a gypsum soffit. Assuming this detail occurs in Room 03 north wall, the RCP does not show a soffit. Please clarify.

RCP is incorrect. Soffit is required per detail 7/A6.0

34. Spec 102226, 3.4A,B,C: The NIC rating test should be done by the owner and usually at their option and if there is a need for it. We request the test be waived from the specs.

Delete NIC rating test from bid. Contractor to supply test data for partition from manufacturer.

35. Are the roller shades only to be installed at the exterior windows?

Yes.

36. Please confirm which contractor is responsible for the removal of slab and excavation/backfill for underslab utilities. Also who is responsible for the infill of all slab removals shown on the demo drawings?

GC is responsible for slab removal concerning utilities. GC is responsible for ALL slab infill.

## ADDENDUM #2 - continued

37. Will the General Contractor and MEP Contractors be pulling the permits? Are all permit fees waived?

Yes, the GC and subs will pull permits. Fee will be waived by Town.

38. Is the site work shown on drawing L1.0 to be included in GC bid?

Yes.

39. Is there a signage spec and schedule?

Yes. Refer to attached (10) pages.

40. Drawing A1.0 & 1/A6.4: Provide a spec for the expansion joint covers.

Eliminate expansion joint covers. Use caulk with backer rod. Caulk color to match exterior metal panel.

41. Sections on A5.0 & A5.1 not a continuous angle at the top of the roof parapet. The Structural drawings do not show this. Please clarify.

Structural drawing S-4 indicates continuous steel cap plate welded to vertical angles. This is typical around new parapet. Disregard reference to angle on A5 series.

42. The PCB Abatement Specification is missing from the 094-0104 CV, spec book.

Refer to attached PCB Abatement specification – Section 028433 (9-pages)

43. The Fire Extinguisher Specification is missing from the 094-0102 A, spec book.

Refer to attached Fire Extinguisher specification – Section 10522 (3-pages)

## ADDENDUM #2 - continued

### M.E.P. CLARIFICATIONS

44. **Abatement, Demolition & Reconstruction** Drawing A1.1 note to provide new wall mounted emergency roof drain overflow spouts. We don't find this work on the P drawings in **Abatement, Demolition & Reconstruction or Alterations**. Please provide a spec for this spout.

Existing overflow spouts are to be reused. Provide temporary support of overflow piping during exterior wall demolition so that overflow drain can remain active. Extend/modify existing overflow piping and remove/reinstall overflow spouts to new locations shown on the architectural elevations. Support overflow piping from structure. Insulate existing roof drain bowls and all new and existing horizontal roof drain and overflow piping with 1" fiberglass insulation.

45. **Abatement, Demolition & Reconstruction** Drawing S-3 refers to a radon roof vent pipe. We don't find this work on the M or P drawings in **Abatement, Demolition & Reconstruction or Alterations**. Please provide a spec for this pipe and clarify which job it in.

As part of Construction Phase 1, provide 4" radon pipe from the radon pit shown on drawing S-1 and detail RPS1/S-3.

- a. Run from below floor in pit, up in southwest corner, offset at roof to clear roof edge, penetrate through roof and terminate at 18" above roof surface.
- b. Material to be as follows:
  - i. 4" pipe – PVC, schedule 40, dual marked ASTM D1785 and D2665
  - ii. Radon pit pipe guard – "Radon Supplies", model CG4-40, 4", screened opening.
  - iii. Radon exhaust cap – "Radon Supplies", model FF440, 4", capped screened opening.

46. **Alterations** – Spec 271005 describes voice and data wiring and devices.
- a. The drawings do not refer to any voice and data wiring or devices.

All voice and data wiring and devices are not in the scope of this project.

- b. Drawing E1.2 shows several black triangles but we don't find this symbol on Drawing E0.1.

This symbol represents telephone boxes with 1" EMT conduit terminated above accessible ceilings for future wiring and devices. Provide pull strings in conduit at each location.

- c. Drawing E1.2 shows several half black triangles. This symbol on Drawing E0.1 refers to providing a 1-1/2" conduit and backbox only, with NO mention of wire or devices.

## ADDENDUM #2 - continued

This symbol represents tele/data boxes with 1-1/4" EMT conduit terminated above accessible ceilings for future tele/data wiring and devices. Provide pull strings in conduit at each location.

- d. Please clarify the intent of Spec 271005. Provide supplemental drawing and risers as required to describe intent, including the exiting IT closet location.

All voice and data wiring and devices are not in the scope of this project.

### 47. Clarification to Drawing FPD1.1 and FP1.1.

The Owner has disconnected the sprinkler branch piping serving this wing from the main in the corridor north of column line A. As part of the FP1.1 scope of work contractor shall reconnect the existing branch piping to the main.

### 48. Clarification to Drawing PD1.1 and P1.1.

The Owner has removed all the existing domestic water piping indicated to remain on Drawing PD1.1. As part of the P1.1 scope of work contractor shall provide new domestic water mains and reconnect the piping to existing that remains north of column line A. Dead end branch piping indicated on PD1.1 to remain shall not be replaced.

### 49. Clarification to Drawing MD1.1.

The Owner has removed the majority of the existing ductwork. Contractor shall be responsible for the removal of all remaining ductwork.

### 50. Clarification to Drawing ED1.1.

The Owner has removed the majority of the existing electrical components. Contractor shall be responsible for the removal of all remaining components. Existing cable tray is to remain.

### 51. Clarification to Drawing E1.2.

**ADD** (1) junction box and dedicated branch circuit for future Radon fan. **RUN** 2#12.1#12G,3/4"C from junction box mounted below the roof in Storage 07 to panelboard "LV1-2" and connect to 20A-1P beaker (circuit 84). Provide circuit breaker lock in the off position. Lock shall be capable of locking breaker in the on position as well. Label junction cover with circuit source and circuit number.

**ADDENDUM #2 - continued**

NOTE: ADDITIONAL QUESTIONS HAVE BEEN SUBMITTED. THERE WILL BE ONE MORE ADDENDUM ISSUED ON MONDAY 02-09-2015.

END OF ADDENDUM #2 (Refer to attachments) Last page of attachments is SKA-01

**ACADEMY OF AEROSPACE ENGINEERING  
JOHN WALLACE MIDDLE SCHOOL ABATEMENT, DEMOLITION, RECONSTRUCTION &  
ALTERATIONS - NEWINGTON, CT  
STATE PROJECT NOS. 094-0104 CV & 094-0102 A**

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TO:  
Date:  
Mr. John L. Salomone  
Town Manager  
  
1312 Cedar Street  
Newington, CT 06111

FROM:  
  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

To Whom It May Concern:

1. The undersigned bidder, having familiarized themselves, with the local conditions affecting the cost of the work, and with the specifications, including, (The Invitation to Bidders, AIA Document A701 - Instructions to bidders, AIA Document A305 – Contractor’s Qualification Statement, AIA Document A310 - Bid Bond, this Form of Bid, AIA Document A201– General Conditions for the Contract for Construction, The Supplemental General Conditions, AIA Document A312 – Performance and Payment Bond, AIA Document A101 - Owner-Contractor Agreement, the special Conditions and the general scope of work, Technical Specifications and Drawings, Allowances and Addenda), if any therefore, as prepared by Quisenberry Arcari Architects, LLC and on file at The Town of Newington, Town Hall, hereby proposes to construct and complete all **Demolition and Hazardous Material Abatement work** and/or **Reconstruction and Alterations work** associated with the “**John Wallace Middle School Academy of Aerospace Engineering**” at 71 Halleran Drive, Newington, CT. 06111 all in accordance therewith for the sum of:

**1. Base Bid for Hazardous Materials Abatement and Demolition:**

\_\_\_\_\_ (\$ \_\_\_\_\_)  
Amount in words

**2. Combined Base Bid for Alterations State Project No: 094-01012 A and Reconstruction State Project No: 094-01014 CV:**

\_\_\_\_\_ (\$ \_\_\_\_\_)  
Amount in words

The successful Contractors for the reconstruction and alterations project must provide a bid value for each project identified in the combined bid which will be incorporated into the contract. The combined bid will be the basis of award. The successful Contractor will also be required to provide separate schedule of values for each project with the following titles:

JWMS Reconstruction State Project No: 094-01014 CV  
\_\_\_\_\_ (\$ \_\_\_\_\_)  
Amount in words

JWMS Alterations State Project No: 094-01012 A  
\_\_\_\_\_ (\$ \_\_\_\_\_)  
Amount in words

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**ALTERNATES**

1. Alternate No One - Provide all labor and material for the complete installation of metal wall panel and storefront window system in lieu of the specified system.

**Deduct** \_\_\_\_\_ (\$ \_\_\_\_\_ )  
Amount in words

2. **UNIT COSTS - None**

3. In submitting this bid, it is understood that the right is reserved by the Town of Newington to reject any and all bids. If written notice of acceptance of this bid is mailed or delivered to the undersigned after the opening thereof, or at any time thereafter before this bid is withdrawn, the undersigned agrees to execute and deliver a contract in the prescribed form and furnish the required bond within seven (7) days after the Contract is presented to him for signature.

4. Bid Bond/Security in the sum of \$ \_\_\_\_\_ Dollars, in the form of \_\_\_\_\_ is submitted herewith in accordance with the specifications.

5. Attached hereto is an affidavit in proof that the undersigned has not entered into any collusion with any person in respect to this proposal or any other proposal, or the submitting of proposals for the Contract for which this proposal is submitted.

6. The Bidder represents that he : has, : has not, participated in a previous contract or subcontract subject to the equal opportunity clause prescribed by Executive Orders 10925, 11114, or 11.246, or the secretary of Labor, that he : has, : has not, filled all required compliance reports, signed by proposed subcontractors, will be obtained prior to subcontract awards. (The above representation

need not be submitted in connection with contracts or subcontracts that are exempt for the cause.)

7. **Each bid must contain the following items:**

- a) Form of Bid (all pages) with required signatures
- b) AIA Document A305 – Contractor’s Qualification Statement
- c) State of Connecticut Department of Administrative Services Prequalification documentation - (Contractor and Subcontractor Bids of \$500,000 and greater).
- d) Bid Bond

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e) Certificate of Insurance

f) List of proposed Sub-contractors and vendors.

All required forms must be filled out completely. The Town of Newington may consider as non-responsive any bid that is incomplete or not submitted in the prescribed format.

8. The undersigned bidder agrees that this bid will remain valid for a period of 90 days after the closing date for submission of proposals and may be extended beyond that time by mutual agreement between the Owner and the Bidder.
9. The Contract award will be made to the lowest responsible bidder as outlined above. The TOWN OF NEWINGTON further reserves the right to increase or decrease the award in accordance with the alternate prices listed above, depending on the availability of funds.  
  
The TOWN OF NEWINGTON reserves the right to reject any and all bids, and to waive any formality in the bids when such action is deemed to be in the best interest of the Owner.
10. The following attached list of subcontractors is proposed by the Contractor, including individual trades; and if minority, this list must be approved by TOWN OF NEWINGTON. If a change is desired, this must be acceptable to all parties.
11. Certification of Non-Segregated Facilities. By signing this the Bidder certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, at any location, under his control where segregated facilities are maintained. He further certifies that he will not permit his employees to perform their services at any location under his control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting room, work areas, rest rooms and wash rooms, restaurant and other eating areas, time clocks, locker rooms, and other storage or dressing areas parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion or national origin, because of habit, local custom or otherwise. He further agrees that (except where he has obtained identical periods) he will obtain identical certifications from proposed subcontractors prior to the award of contracts exceeding \$10,000.00, which are not exempt from the provisions of Equal Opportunity clause, that he will forward a notice to his proposed subcontractors as provided in the instruction to Bidders.
12. Addendum Receipt: The receipt of the Addendum to Drawings and Specifications is hereby acknowledged.

Addendum No. 1 \_\_\_\_\_

Dated: \_\_\_\_\_

Addendum No. 2 \_\_\_\_\_

Addendum No. 3 \_\_\_\_\_

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**ACADEMY OF AEROSPACE ENGINEERING  
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Dated: \_\_\_\_\_

Dated: \_\_\_\_\_

Note: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Signature \_\_\_\_\_

Name \_\_\_\_\_ Date: Title \_\_\_\_\_

Official Address \_\_\_\_\_



**ACADEMY OF AEROSPACE ENGINEERING  
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NEWINGTON, CT  
STATE PROJECT NO. 094-0104 CV**

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SECTION 07 42 16 - INSULATED CORE METAL WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Foamed-insulation-core horizontal and vertical metal wall panel assembly with integral reveals and profiled panels, with related metal trim and accessories, and the following integrated components:
  - 1. Integrated window system.
  - 2. Integrated sun screen units.

1.2 RELATED SECTIONS

- A. Division 01 Section "Sustainable Design Requirements" for related LEED general requirements.
- B. Division 05 Section "Cold-Formed Metal Framing" for support framing for insulated core metal wall panels.
- C. Division 07 air barrier section for transition and flashing components of air/moisture barrier.
- D. Division 07 Section "Sheet Metal Flashing and Trim" for sheet metal copings, flashings, reglets and roof drainage items.
- E. Division 07 Section "Joint Sealants" for field-applied joint sealants.

1.3 REFERENCES

- A. American Architectural Manufacturer's Association (AAMA):
  - 1. AAMA 501.1 - Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure.
  - 2. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtainwalls and Sloped Glazing Systems.
  - 3. AAMA 508-07 Voluntary Test Method and Specifications for Pressure Equalized Rain Screen Wall Cladding Systems.
  - 4. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance.
  - 5. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- B. Air Movement and control Association International, Inc. (AMCA):
  - 1. AMCA 500-L – Test Methods for Louvers, Dampers.
- C. American Society of Civil Engineers (ASCE):
  - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- D. ASTM International (ASTM):

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1. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  2. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
  3. ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
  4. ASTM B 117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.
  5. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  6. ASTM C 209 - Standard Test Methods for Cellulosic Fiber Insulating Board.
  7. ASTM C 645 - Specification for Nonstructural Steel Framing Members.
  8. ASTM C 754 - Specification for Installation of Steel Framing Members to Receive Screw Attached Gypsum Panel Products.
  9. ASTM C 920 - Specification for Elastomeric Joint Sealants.
  10. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus.
  11. ASTM D 968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.
  12. ASTM D 3359 - Standard Test Methods for Measuring Adhesion by Tape Tests.
  13. ASTM D 4585 - Standard Practice for Testing Water Resistance of Coatings Using Controlled Condensation.
  14. ASTM D 4587 - Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings
  15. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
  16. ASTM E 84 - Test Methods for Surface Burning Characteristics of Building Materials.
  17. ASTM E 119 - Test Methods for Fire Tests of Building Construction and Materials.
  18. ASTM E 283 - Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences across the Specimen.
  19. ASTM E 331 - Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
  20. ASTM E 1886 - Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
  21. ASTM E 1996 - Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
- E. Factory Mutual Global (FMG):
1. ANSI/FMG 4880 Standard for Evaluating Insulated Wall & Roof/Ceiling Assemblies.
- F. National Fire Protection Association (NFPA):
1. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.
- G. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA):
1. Architectural Sheet Metal Manual.
- H. Underwriters Laboratories, Inc. (UL):
1. UL 263 - Fire Tests of Building Construction and Materials.
  2. UL 723 - Test for Surface Burning Characteristics of Building Materials.

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3. UL 1040 – Fire Test of Insulated Wall Construction.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide metal wall panel system meeting performance requirements as determined by application of specified tests by a qualified testing agency on manufacturer's standard assemblies.
- B. Air Infiltration: Maximum 0.06 cfm/sq. ft. (0.3 L/s per sq. m) per ASTM E 283 at a static-air-pressure difference of 6.24 lbf/sq. ft. (300 Pa), using minimum 8-by-8 foot (2440-by-2440 mm) test panel that includes horizontal and vertical joints.
- C. Water Penetration, Static Pressure: No uncontrolled water penetration per ASTM E 331 at a minimum static differential pressure of 15 lbf/sq. ft. (718 Pa), using minimum 8-by-8 foot (2440-by-2440 mm) test panel that includes horizontal and vertical joints.
- D. Water Penetration, Static Pressure – 2 hour duration: Panel system shall demonstrate no water penetration when tested in accordance with ASTM E331 at 6.24 psf pressure differential for a two (2) hour duration to satisfy International Building Code, Section 1403.2. Panel systems unable to demonstrate compliance with this requirement will require a separate weather-resistive barrier installed behind the wall panel system to comply with International Building Code requirements.
- E. Water Penetration, Dynamic Pressure: No uncontrolled water penetration per AAMA 501.1 at a minimum static differential pressure of 15 lbf/sq. ft. (718 Pa), using minimum 8-by-8 foot (3050-by-3050 mm) test panel that includes horizontal and vertical joints.
- F. System Performance: A 3rd party test report utilizing the standard ASTM E 283, E 331 and AAMA 501 procedures following the test protocol described in AAMA 508-07 must be submitted prior to bid. Test panel must include a horizontal joint, with an imperfect air barrier.
  - 1. Bidders supplying panel systems that have not successfully passed AAMA 508-07 shall provide a backup system that meets the air and water infiltration values as listed above in sections 1.5.B – 1.5.E.
- G. Water Absorption: Maximum 1.0 percent absorption rate by volume when tested according to ASTM C 209.
- H. Structural Performance: Provide metal wall panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated, per ASTM E 72:
  - 1. Wind Loads: Determine loads based on uniform pressure, importance factor, exposure category, and basic wind speed indicated on drawings.
  - 2. Limits of Deflection: Composite wall panel system shall withstand scheduled wind pressure with the following allowable deflection:
    - a. Maximum allowable deflection limited to L/180 deflection of panel perimeter normal to plane of wall with no evidence of failure.
- 3. **Secondary Metal Framing:** Design secondary metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."
  - a. **Flashing Seal Plate & Gasket** - Provide minimum 3-inch- (76-mm-) wide bearing surface for metal wall panels at the following locations:

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1. Horizontal Panel System: At vertical joints.
    4. **Windborne-Debris-Impact-Resistance Performance:** Pass missile-impact and cyclic-pressure tests per ASTM E 1886 and ASTM E 1996 for Wind Zone indicated on Drawings.
    5. Seismic Performance: Comply with ASCE 7 Section 9, "Earthquake Loads."
  - I. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction.
  - J. Thermal Performance: Thermal-resistance (R) value indicated, per ASTM C 1363, with the following conditions:
    1. 15 mph (24.1 km/h) exterior wind speed and still air on interior.
    2. Include side joint and standard fastening.
    3. Base R value reported on performance of specified panel, taking into account integral reveals and profiling with resultant reduction in panel insulation thickness.
  - K. Fire Performance Characteristics: Provide metal composite wall systems with the following fire-test characteristics determined by indicated test standard as applied by UL or other testing and inspection agency acceptable to authorities having jurisdiction.
    1. Surface-Burning Characteristics: Provide metal composite wall system panels with the following characteristics when tested per ASTM E 84.
      - a. Flame spread index: 25 or less.
      - b. Smoke developed index: 450 or less.
    2. Intermediate Scale Multistory Fire Test: Representative mockup tested per NFPA 285.
    3. Fire Resistance Ratings: Where indicated by design designations, provide metal wall panels tested per ASTM E 119 or UL Standard 263 by a testing and inspecting agency acceptable to authorities having jurisdiction.
    4. Fire Performance of Insulated Wall: Class 1 wall panel per ANSI/FM 4880 & 4881.
- 1.5 QUALITY ASSURANCE
- A. Manufacturer/Source: Provide metal wall panel system and panel accessories from a single manufacturer.
  - B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum 10 years experience in manufacture of similar products in successful use in similar applications.
    1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
      - a. Product data, including certified independent test data indicating compliance with requirements. Include detailed data indicating compliance with AAMA 508.07 performance specified in this section.
      - b. Samples of each component.

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- c. Sample submittal from similar project.
- d. Project references: Minimum of 5 installations not less than 5 years old, with Owner and Architect contact information.
- e. Sample warranty.
  - 2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
  - 3. Approved manufacturers must meet separate requirements of Submittals Article.
- C. Wall Systems Installer Qualifications: Experienced Installer with minimum of 5 years experience with successfully completed projects of a similar nature and scope, and employing workers trained by manufacturer to install products of this Section.
- D. Testing Agency Qualifications: Qualify in accordance with requirements of ASTM E 329.
- E. Adhesion Test: Prior to delivery of composite wall panel system, perform test on adhesives and sealants per ASTM D 3359. Test each adhesive and sealant utilizing specified panel finish.
  - 1. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as specified in Division 07 Section "Joint Sealants."
- F. Mockups: Build mockup in size and location indicated. Show details of composite wall panel system. Demonstrate methods and details of installation. Show details of gasketed return vertical joints, penetrations, doors, windows, louvers, pipe openings, inside and outside corners, top and bottom of wall, horizontal and vertical joints.
  - 1. Approval of mockup does not relieve Contractor of responsibility to comply with all requirements of contract documents.
  - 2. Approved mockup may become part of installation if approved by Architect.

#### 1.6 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct preinstallation meeting at site attended by Owner, Architect, manufacturer's technical representative, and other trade contractors.
  - 1. Coordinate building framing in relation to composite wall panel system.
  - 2. Coordinate installation of building air and water barrier behind composite wall panel system.
  - 3. Coordinate window, door and louver, and other openings and penetrations of composite wall panel system.

#### 1.7 ACTION SUBMITTALS

- A. Product Data: Manufacturer's data sheets for specified products.
- B. Shop Drawings: Provide shop drawings prepared by manufacturer or manufacturer's authorized dealer. Include full elevations showing openings and penetrations. Include details of each condition of installation and attachment. Provide details at a minimum scale 1-1/2-inch per foot of all required trim and extrusions needed for a complete installation
  - 1. Indicate points of supporting structure that must coordinate with composite wall panel system installation.
- C. Samples for Initial Selection: For each product specified including sealants and gaskets. Provide representative color charts of manufacturer's full range of colors.

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- D. Samples for Verification: Provide 24-inch section of wall panel showing finishes, horizontal joinery, vertical joint return, injected core material, panel stiffener and anchoring details. Provide 12-inch long pieces of each extruded aluminum trim and gaskets.

1.8 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Indicating compliance of products with requirements, from a qualified independent testing agency.
- B. Buy American Act Certification: Submit documentation certifying that products comply with provisions of the Buy American Act 41 U.S.C 10a – 10d.
- C. Dade County Approval, Miami-Dade County Notice of Acceptance.
- D. Manufacturer's warranty: Submit sample warranty.

1.9 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Protect products of composite wall panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage.
  - 1. Deliver, unload, store, and erect composite wall panel system and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.

1.11 WARRANTY

- A. Special Manufacturer's Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal wall panel assemblies, window units, and sunscreen units that fail in materials and workmanship within two years from date of Substantial Completion.
- B. Special Panel Finish Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace wall panels that evidence deterioration of finish within 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. Insulated Core Metal Wall Panel System: Factory-foamed-in-place horizontal and vertical wall panel system consisting of exterior metal face sheet with interior metal liner panel, bonded to factory foamed-in-place core in thermally-separated profile, utilizing no glues or adhesives, with factory sealed tongue-and-groove and pressure-equalized rainscreen-designed horizontal joint, attached to supports using concealed fasteners.
  - 1. System is provided complete with window units and sun screens.

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2.2 MANUFACTURERS

- A. Basis of Design: **CENTRIA, Formawall Dimension Series Insulated Core Metal Wall Panels.** Provide basis of design product, or comparable product approved by Architect prior to bid.

2.3 PANEL MATERIALS

- A. Exposed Coil-Coated Finish:

1. Fluoropolymer Two-Coat System: 0.2-mil primer with 0.8-mil 70 percent PVDF fluoropolymer color coat, AAMA [620] [621].

- a. Basis of Design: **CENTRIA Fluorofinish**

2. Color: 971 Chromium Grey.

- B. Metallic-Coated Steel Liner Sheet: Coil-coated, ASTM A 755/A 755M, 0.019 inch/26 gage (0.48 mm thick).

1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90, structural quality.  
2. Surface: Embossed planked.  
3. Interior Liner Panel Finish: 0.2 mil primer with 0.6 mil acrylic color coat.

- C. Exposed Trim and Fasteners: Match panel finish.

2.4 INSULATION FOR PANEL CORES

- A. Metal Panel Foamed-Insulation-Core: Foamed-in-place urethane or isocyanurate containing no CFC or HCFC compounds.

1. Density: Minimum 2.7 lb/cu. ft. (43.4 kg/cu. m)

2.5 FOAMED INSULATION-CORE METAL WALL PANELS

- A. Foamed-Insulation-Core Metal Wall Panels: Factory-foamed-in-place horizontal and / or vertical wall panel system consisting of an exterior metal face sheet with interior metal liner panel forming a thermally separated profile, bonded to factory foamed-in-place core, and with factory-sealed tongue-and-groove and rainscreen-designed pressure-equalized horizontal side joint, configured with weep-hole-vented chamber to maintain equalized atmospheric pressure reducing potential for moisture drive into wall assembly, attached to supports using concealed fasteners.

1. Exclusions: The following do not meet the requirements of this Section:

- a. Laminated panels.  
b. Barrier wall-designed systems.  
c. Systems relying upon venting only at vertical joints to attain pressure equalization.  
d. Systems relying upon field-installed gaskets or wet seals to meet performance requirements.

2. **Horizontal Panel - Horizontal Side Joint:** Horizontal joints with positive drip edge, sloped drain shelf and integral venting to the exterior along the panel length to permit moisture drainage

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and to allow air to enter the pressure equalization chamber. Horizontal joint shall have a 2-3/8-inch baffle interlock and shall provide effective pressure equalization as demonstrated by testing specified in 1.5.F.

3. **Horizontal Panel - Vertical Panel to Panel Joint:** Vertical joints for insulated metal panels shall be designed to allow moisture to be drained from the panel's horizontal joint. No end dam sealant is to be applied to the ends of the horizontal joint at the vertical joint location.

- a. **Flashing Seal Plate** - A continuous back-up flash behind the vertical joint is required with two beads of field applied non-curing butyl sealant between the panel and back up flashing for each panel. The field applied non-curing butyl sealant shall be married to the panel's shop applied non-curing butyl sealant within the panel's side joint.

1. **Insulated Metal Vertical Joint (IMV)** - Vertical joint shall include an integrated, insulated metal vertical joint. The insulated metal vertical joint shall be recessed 1-3/16" deep and be 5/8" wide. The insulated metal vertical joint should not add exterior sightlines, contain exposed metal edges or exposed wet seals. The insulated metal vertical joint shall be constructed of 6# density polyisocyanurate foam insulation adhered to a metal face of the same material, gage and color as the face of the panel.

4. Panel Ends: Flat Panels - Factory formed trimless ends, tabbed under panel horizontal shelf
5. Panel Width: Custom widths indicated.
6. Panel Profile: Flat locations and sizes indicated.
7. Panel Reveals:
  - a. Horizontal panels
  - a. Flat Panels: 0.5" reveal
8. Panel Thickness: 3.00 inch - T (76 mm), flat.
9. Thermal-Resistance (R) Value: 3"-T flat - R-22.

## 2.6 METAL WALL PANEL ACCESSORIES

- A. Metal Wall Panel Accessories, General: Provide complete metal wall panel assembly incorporating trim, copings, fasciae, parapet caps, soffits, sills, inside and outside corners, and miscellaneous flashings. Provide manufacturer's factory-formed clips, shims, flashings, gaskets, lap tapes, closure strips, and caps for a complete installation. Fabricate accessories in accordance with SMACNA Manual.
- B. Formed Flashing and Trim: Match material, thickness, and color of metal wall panel face sheets.
- C. Extrusion Trim: Provide manufacturer-provided extruded trim for the following locations and as indicated on Drawings:
  1. Base trim.
  2. Coping.
  3. Panel installation perimeter.
  4. Opening perimeters.

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- D. Sealants: Type recommended by metal wall panel system manufacturer for application, meeting requirements of Division 07 Section "Joint Sealants."
- E. Flashing Tape: 4-inch wide self-adhering butyl flashing tape.
- F. Panel Attachment Clips: Concealed G-90 galvanized steel clip configured to prevent overdriving of fastener and crushing of foam core, with panel fasteners engaging both face and liner elements and mechanically attaching to panel supports. Clip configured also to be utilized without removing significant portions of the foam at each clip location.
- G. Fasteners: Self-tapping screws, bolts, nuts, and other acceptable fasteners recommended by panel manufacturer. Where exposed fasteners cannot be avoided, supply corrosion-resistant fasteners with heads matching color of metal wall panels by means factory-applied coating.

## 2.7 INTEGRATED WINDOW SYSTEM

- A. Integrated Window Units: Thermally-improved fixed aluminum window units designed to integrate with metal wall panel profile and secondary support system without receptor channels or other flashing. System to be tested integrated with panels per the requirements of section 1.5 B and 1.5 C. Sash to accept 1 inch (25 mm) insulating glass units.

- 1. Basis of Design: **CENTRIA Formavue FV600 Integrated Window System.**

- a. System Depth: FV-600X 3 inch .
    - b. System Depth: 7-1/4 inch.**
    - c. Sightlines: Head: 3 inch (76 mm); Sill: 3 inch (76 mm); Mullions: 3 inch (76 mm).
  - 2. Configuration: As indicated.
  - 3. Mullions: Full.**
  - 4. Frame: Weathered joints are shop assembled; Thermally-improved 6063-T5 aluminum extrusions; Fully integrated with panel joinery; No receptors, [inside glazed].
- a. Fluoropolymer, 2-coat, AAMA 2605, custom color matching **as selected by the architect.**
  - b. Clear Anodic Finish, Architectural Class I, AAMA 611.
- 5. Glazing: 1 inch (25.4 mm insulating glass, as specified in Division 08 Section "Glazing."**

## 2.8 INTEGRATED SUN SCREENS

- A. Manufacturers/Products:
  - 1. Product: Formawall Integrated Sunshades by Construction Specialties, Inc. or architect approved equal**
- B. Integrated Sun Screens, General: Extruded aluminum blades and outriggers, designed to integrate with metal wall panel profile and secondary support system, with gasketed cast aluminum fitting connecting

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outrigger to through-tube structural supports without flashing and without penetration of wall panel interior vapor seal.

1. Configuration: [Specifier insert selection].
2. Outrigger Type: [Specifier insert selection].
3. Finish, Exterior:
  - a. Match metal wall panel finish.
  - b. Fluoropolymer, 2-coat, AAMA 2605, color as selected by Architect from manufacturer's full range.
  - c. Fluoropolymer, 2-coat, AAMA 2605, custom color matching [specifier insert color selection].
  - d. Clear Anodic Finish, Architectural Class I, AAMA 611.

## 2.9 SECONDARY METAL FRAMING

- A. Miscellaneous Framing Components, General: Cold-formed metallic-coated steel sheet, ASTM C 645, Grade 50, with ASTM A 653/A 653M, G90 (Z180) hot-dip galvanized zinc coating.
- B. Subgirts: C- or Z- shaped sections, 0.054-inch (1.37-mm) minimum.
- C. Sill Channels: 0.054-inch (1.37-mm) minimum.
- D. Hat Channels: 0.054 (1.37mm) minimum.
- E. **Steel** vertical tube structural supports for metal wall panel system, coordinated with panel system components, engineered to meet project structural design requirements, and finished to match panel interior finish, of size indicated on approved shop drawings.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine metal wall panel system substrate with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal wall panels.
- B. Framing: Inspect framing that will support metal wall panels to determine if support components are installed as indicated on approved shop drawings. Confirm presence of acceptable framing members at recommended spacing to match installation requirements of metal wall panels.
  1. Maximum deviations acceptable:
    - a. 1/4-inch in 20 feet vertically or horizontally from face plane of framing.
    - b. 1/2-inch maximum deviation from framing face plane on any building elevation.
    - c. 1/8-inch in 5 feet.
- C. Openings: Verify that window, door, louver and other penetrations match layout on shop drawings.
- D. Correct out-of-tolerance work and other deficient conditions prior to proceeding with metal wall panel system installation.

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3.2 PREPARATION

- A. Secondary Metal Framing: Install secondary metal framing components as indicated. Install secondary metal framing and other metal panel supports per ASTM C 754 and metal wall panel manufacturer's recommendations.

3.3 METAL WALL PANEL SYSTEM INSTALLATION

- A. General: Install metal wall panel system in accordance with approved shop drawings and manufacturer's recommendations. Install metal wall panels in orientation, sizes, and locations indicated. Anchor metal wall panels and other components securely in place. Provide for thermal and structural movement

- B. Attach panels to metal framing using recommended clips, screws, fasteners, sealants, and adhesives indicated on approved shop drawings.

1. Fasteners for Steel Wall Panels: Stainless-steel for exterior locations and locations exposed to moisture; carbon steel for interior use only.
2. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated or, if not indicated, as approved by manufacturer.
3. Fasten metal wall panels to supports with concealed clips at each joint at location, spacing, and with fasteners recommended by manufacturer. Install clips to supports with self-tapping fasteners.
4. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
5. Horizontal Joinery: Working from base of installation to top connect upper panel to lower panel at dry seal joinery.
6. Vertical Joinery: Provide reveal between vertical ends of panels as shown on shop drawings using hardware and gaskets furnished by manufacturer to form a weather tight seal between panels.
7. Dissimilar Materials: Where elements of metal wall panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by manufacturer.

- C. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal wall panel assemblies.

1. Seal panel end utilizing 2 beads of non-curing butyl aligning with factory-applied seal in adjacent panel pocket; apply continuously without gaps to complete panel system air barrier.
2. Seal metal wall panel end laps to supports or back-up flashing sealant, full width of panel. Seal side joints where recommended by metal wall panel manufacturer. Do not install sealant in locations that will interfere with drainage of pressure-equalized panel chambers.
3. Prepare joints and apply sealants per Division 07 Section "Joint Sealants."

3.4 ACCESSORY INSTALLATION

- A. General: Install metal wall panel accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install related flashings and sheet metal trim per requirements of Division 07 Section "Sheet Metal Flashing and Trim."
2. Install components required for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
3. Comply with performance requirements and manufacturer's written installation instructions.
4. Provide concealed fasteners except where noted on approved shop drawings.

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5. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

3.5 INTEGRATED UNIT INSTALLATION

- A. Install window units sun screens in accordance with manufacturer's recommendations and approved shop drawings. Anchor supports to structure with approved anchors. Assemble wall components using gaskets, fasteners, and trim supplied by metal wall panel manufacturer. Separate dissimilar metals with bituminous coating.

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: [Owner will engage] [Engage] an independent testing and inspecting agency acceptable to Architect to perform field tests and inspections and to prepare test reports.
- B. Water-Spray Test: After completing portion of metal wall panel assembly including accessories and trim, test 2-bay area selected by Architect for water penetration, according to AAMA 501.2.
- C. Manufacturer's Field Service: Engage a service representative authorized by metal wall panel manufacturer to inspect completed installation. Submit written report. Correct deficiencies noted in report.

3.7 CLEANING AND PROTECTION

- A. Remove temporary protective films. Clean finished surfaces as recommended by metal wall panel manufacturer. Clear weep holes and drainage channels of obstructions, dirt, and sealant. Maintain in a clean condition during construction.
- B. Replace damaged panels and accessories that cannot be repaired by finish touch-up or minor repair.

END OF SECTION



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**SECTION 028433 - PCB ABATEMENT**

**PART 1 - GENERAL**

**1.1 SUMMARY:**

- A. This section specifies the procedures for removal and disposal of walls with PCB-containing paint (>50 ppm) and the abatement of concrete floors with PCB-containing paint and sealer (<50 ppm) identified in Wing 7 at Wallace Middle School (see drawings HM1.1 through HM1.3 for material types and locations). This work is being performed as part of the renovation of Wing 7.
- B. Proper dust control measures such as the use of polyethylene sheeting around work areas/lifts, and wet techniques and HEPA filtration on power tools will be implemented to minimize dust generation. Perimeter air monitoring will be conducted.
- C. All PCB remediation workers shall have completed 40 hour OSHA HAZWOPER training with current annual 8 hour HAZWOPER refresher training. All PCB remediation workers shall also have completed an on site training session to be given by the Contractor to review the PCB hazards and proper work practices outlined in this plan.
- D. All work shall be conducted in accordance with the requirements of EPA regulations including 40 CFR Part 761, OSHA regulations, and CT DEEP Regulations as well as all other applicable codes, rules, and regulations.
- E. The Owner will engage the services of an Environmental Consultant (the Consultant) who shall serve as the Owner's Representative in regard to the performance of the PCB remediation, provide direction as required throughout the remediation work, collection verification and monitoring samples per EPA's Approval, and general recordkeeping.
- F. The Contractor shall ensure cooperation of its personnel with the Consultant for the sampling and Project Monitoring functions. The Contractor shall comply with all direction given by the Consultant during the course of the Project with regard to the PCB remediation work.
- G. The material removal dimensions provided on the contract drawings are subject to modification based on the results of verification testing to be conducted following removal of building materials and ground surfaces. The Contractor shall provide unit costs for additional building material and ground surface removal that may be necessary based on results of the verification testing.

**1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Light Tubes & Ballasts: Section 028416.
- B. Asbestos Abatement: Section 028216.
- C. Lead Abatement: Section 028233.

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1.3 REFERENCES

- A. Connecticut Department of Energy and Environmental Protection (DEEP):
  - 1. Sec. 22a-449(c)-11 Transporter Permits
  - 2. Sec. 22a-449(c)-100 through 110 Hazardous Waste Management

1.4 SUBMITTALS

- A. Prior to Commencement of Work:
  - 1. Submit certification of required insurance evidencing that the required coverages are in effect.
  - 2. Submit proof satisfactory to the Owner that all required permits, site locations, arrangements for transport and disposal of PCB-containing or contaminated materials, supplies, and the like have been obtained from DEEP and EPA.
  - 3. Submit documentation to the Owner indicating that each employee has instruction on the hazards of PCB exposure (40 hour HAZWOPER and site specific training), on use and fitting of respirators, on protective dress, on entry and exit from work areas, and on all aspects of work procedures and protective measures and understands this instruction. Also submit verification that all employees have received medical examinations as required by OSHA regulations.
  - 4. Health & Safety Plan (HASP) developed specific to the Work activities. All workers will follow applicable Federal and State regulations regarding the work activities, including but not limited to OSHA regulations, fall protection standards, respiratory protection, ladder/scaffolding safety, personal protective equipment, etc.
  - 5. Remediation Work Plan: The work plan shall include, but not be limited to, a drawing indicating the location of work areas (boundaries, signage, poly sheeting, etc.), location and details of decontamination facilities, sequencing of PCB materials removal, work procedures, types of equipment, crew size, and emergency procedures for fire and medical emergencies.
  - 6. Waste Transporter and Disposal Facility Permits and other transportation documentation.
  - 7. Project Close-out Submittals: Within 30 days after completion submit the documents listed below:
    - a. Originals of all waste disposal manifests, disposal logs, and certificates of disposal.
    - b. Daily progress log, including the entry/exit log.
    - c. Disposal Site/Landfill Permit from applicable regulatory agency.

1.5 QUALITY ASSURANCE

- A. Contractor shall provide and assure that the quality of work practices and procedures are consistent with the below listed agencies. Contractor shall utilize the latest edition, including all addenda, revisions and supplements for all regulatory agencies codes, etc., including but not limited to:
  - 1. Environmental Protection Agency (EPA).
  - 2. Occupational Safety and Health Administration.
  - 3. State of Connecticut DEEP codes and laws.
  - 4. All local codes.

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- B. Pre-Work Conference: Before the Work of this Section is scheduled to commence, a conference will be held by the Owner's Representative at the Site for the purpose of reviewing the Contract Documents, discussing requirements for the Work, and reviewing the Work procedures.
  - 1. The conference shall be attended by the Contractor, the Owner, and the testing/monitoring laboratory employed by the Owner.

**PART 2 - PRODUCTS**

**2.1 PROTECTIVE EQUIPMENT**

- A. Safety equipment (e.g., hard hats meeting the requirements of ANSI Standard Z89.1-1981, eye protection meeting the requirements of ANSI Standard Z87.1-1979, safety shoes meeting the requirements of ANSI Standard Z41.1-1967, disposable PVC gloves or other work gloves, and disposable suits), shall be provided to all workers and authorized visitors.
- B. All personnel must utilize proper Personal Protective Equipment (PPE) during all work activities. Proper PPE may vary depending on the job task, but may include disposable gloves, disposable rubber boots, steel-toe boots, disposable suits, respirators, hard hats, hearing protection, and/or eye protection.
- C. Provide sufficient quantities of protective clothing to assure that enough complete disposable outfits are available for each individual performing remediation Work each day.
- D. Authorized visitors shall be provided with suitable protective clothing, headgear, eye protection, and footwear whenever they enter the Work Area. No unauthorized visitors will be allowed to enter the Work Area.

**2.2 RESPIRATORY PROTECTION**

- A. Select respirators from those approved by the Mine Safety and Health Administration (MSHA), and/or the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.
- B. Respirators shall be individually fit-tested to personnel under the direction of an Industrial Hygienist on a yearly basis. Fit-tested respirators shall be permanently marked to identify the individual fitted, and use shall be limited to that individual. The Contractor shall maintain fit-test records for each employee using a respirator.
- C. No respirators shall be issued to personnel without such personnel participating in a respirator training program.
- D. High Efficiency Particulate Air (HEPA) respirator filters shall be approved by NIOSH and shall conform to the OSHA requirements in 29 CFR 1910.134.
- E. Provide a storage area where respirators will be kept in a clean environment.

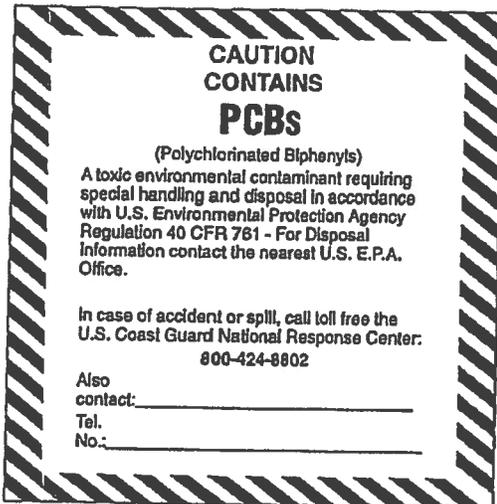
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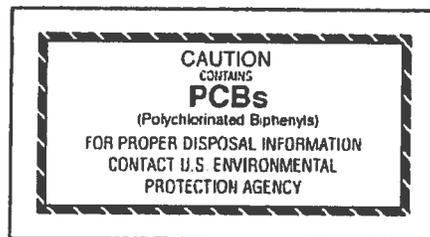
- F. Provide and make available a sufficient quantity of respirator filters so that filter changes can be made as necessary during the work day.
- G. Filters shall be removed and discarded during the decontamination process at a frequency at least as often as recommended by the manufacturer's specifications. Filters cannot be reused. Filters used with negative pressure air purifying respirators shall not be used any longer than one eight (8) hour work day.

2.3 SIGNS, LABELS & CONTAINERS

- A. Provide warning signs and barrier tapes at all approaches to PCB Work Areas. Locate signs at such distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide signage in English and Spanish.
- B. Provide the appropriate "Large PCB Marking" or "Small PCB Marking" ( $M_L$  or  $M_S$  per 40 CFR 761) as shown below, of sufficient size to be clearly legible, for display on waste containers (bags, boxes, roll-offs or drums) which will be used to contain or transport PCB contaminated material, in accordance with 40 CFR 761. In addition, U.S. Department of Transportation (DOT) 49 CFR Parts 171 and 172 requires the name and UN number of the material to be on the bags or drums, and, if shipped in bulk (roll-offs, Gaylord boxes, etc) the bulk container must also be labeled: Polychlorinated biphenyl, solid mixture UN 3432, if designated as a hazardous waste.



$M_L$



$M_S$

- C. Provide 6 mil polyethylene disposal bags with PCB caution labels.
  - 1. The "Small PCB Label" ( $M_S$  per 40 CFR 761) may be used as shown above. Bags shall also be labeled with U.S. DOT required markings per 49 CFR 172, Polychlorinated Biphenyl, solid mixture UN 3432.
  - 2. Labeled PCB waste containers or bags shall not be used for non-PCB waste or trash. Any material placed in labeled containers or bags, whether turned inside out or not shall be handled and disposed of as PCB waste.

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- D. A secure, lined, and covered waste container (roll-off or equivalent), 55-gallon DOT-approved steel containers, or equivalent will be staged for the collection of PCB wastes generated during the work activities in accordance with 40 CFR 761.65;
- E. All containers with PCB materials that are not regulated as Hazardous Waste will be properly labeled and marked in accordance with applicable State requirements and the requirements of the selected disposal facility.

2.4 MATERIALS

- A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name. Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes contaminated with PCBs shall be decontaminated or disposed of as PCB waste.
- B. All polyethylene (plastic) sheeting used on the Project (including but not limited to sheeting used for barriers, fixed objects, walls, floors, ceilings, waste containers) shall be at least 10 mil for ground and floor application and 6 mil for other applications.
- C. Tape will be used that is capable of sealing joints in adjacent plastic sheets and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions.

2.5 TOOLS & EQUIPMENT

- A. Tools used for the removal of PCB materials shall be used in a manner that minimizes dust generation, as appropriate.
- B. All dry vacuuming performed under this contract shall be performed with High Efficiency Particulate Air (HEPA) filter equipped industrial vacuums conforming to ANSI Z9.2.
- C. Any power tools used to drill, cut into, or otherwise disturb PCB material shall be cowed with HEPA filtered local exhaust ventilation.
- D. Ladders, lifts, and/or scaffolds are to be of adequate length and sufficient quantity to support work schedule.
- E. Other Materials - provide all other materials such as lumber, nails and hardware, which may be required to construct and dismantle the decontamination area and the barriers that isolate the Work Area.
- F. Vehicle Storage - No construction vehicles shall be stored, serviced, washed or flushed out in a location where leaks, spillage, waste materials, cleaners or waters will flow or be otherwise introduced into wetlands, reservoirs or watercourses.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

- A. The work of this section consists of, but is not limited to:

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1. Furnishing of all labor, materials, facilities, equipment, services, and insurance necessary to perform the work;
  2. Maintenance of work area/site security;
  3. Preparation of work area, including installation of containment and decontamination areas as required;
  4. Removal, segregation, and off-site disposal of PCB-containing materials;
  5. Clean-up and final decontamination of all work areas;
  6. Implementation of a worker protection program in compliance with all applicable regulations;
  7. Proper storage, wrapping/bagging, labeling, transportation and disposal of all waste generated as part of PCB remediation activities.
- B. Maintain the following documentation on-site during remediation activities:
1. Medical approval to wear a respirator for all workers, fit test reports, worker 40 hour HAZWOPER training certificates, worker current 8 hour HAZWOPER refresher training certificate
  2. Project documents (remediation plan, work plan, drawings, specifications, etc.)
  3. Material Safety Data Sheets
  4. List of Emergency Contact information
  5. Project logs

### 3.2 WORK AREA PREPARATION

- A. Access to the active work areas will be controlled through the use of controlled access points, polyethylene containment, and signage.
- B. Contain the PCB work area with a negative pressure containment consisting of 6 mil polyethylene sheeting on all openings and HEPA filtered fan units exhausted outdoors.
- C. Tools, equipment, and material waste receptors are to be staged prior to commencement of work.
- D. All areas will be kept free from debris and maintained in a safe condition. At the end of each work day, the work areas will be inspected and all dust and debris cleaned and placed in appropriate disposal containers.

### 3.3 WORKER DECONTAMINATION ENCLOSURE SYSTEM

- A. Establish contiguous to the Work Area, a Worker Decontamination Enclosure System consisting of Equipment Room, Shower Room and Clean Room in series. Access to the Work Area shall only be through this enclosure.
- B. Access between rooms in the Worker Decontamination Enclosure System shall be through double flap curtained openings (air locks). Other effective designs are permissible. The Clean Room, Shower Room and Equipment Room located within the Worker Decontamination Enclosure, shall be completely sealed ensuring sole source of air flow into the PCB Control Area originates from the outside uncontaminated areas.
- C. The Clean Room shall be adequately sized to accommodate workers and shall be equipped with a suitable number of hooks, lockers, shelves, etc., for workers to store per-

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sonal articles and clothing. Changing areas of the Clean Room shall be suitably screened from areas occupied by the public.

- D. The Shower Room shall be of sufficient capacity to accommodate the number of workers. Supply warm water to showers. Provide one shower for each eight workers. No worker or other person shall leave a PCB Control Area without showering. Shower water shall be collected and filtered using best available technology and dumped down an approved drain.
- E. No personnel or equipment shall be permitted to leave the PCB Control Area unless just decontaminated by showering, wet cleaning or HEPA vacuuming to remove all asbestos debris. No PCB-contaminated materials or persons shall enter the Clean Room.

### 3.4 PCB REMOVAL

- A. Removal and off-site disposal of all PCB-containing material in accordance with Drawings HM1.1 through HM1.3, as PCB waste in accordance with 40 CFR 761.62.
- B. Following the initial removal, verification samples will be collected by the Environmental Consultant to verify that the cleanup levels have been met. Depending on the results of these samples, either the task will be considered complete (i.e., cleanup levels met) or additional removal or decontamination will be needed (i.e., cleanup levels not met). Contractor shall include plans to store and identify materials represented by each verification sample in order to allow additional removals or segregation depending on verification testing. Following additional removal or decontamination, the verification process will be repeated until the cleanup levels are met. The Contractor shall provide unit pricing for additional removal or decontamination that may be required.
- C. After completion of work, clean up of all surfaces and work areas shall be conducted in accordance with Part 3.6 of this Section.
- D. If at any time during PCB removal, should the Contractor or the Owner's Consultant suspect contamination of areas outside the work area, all abatement work shall cease until the Contractor takes steps to decontaminate these areas and eliminate causes of such contamination.

### 3.5 AIR MONITORING

- A. Air monitoring activities shall be conducted by the Owner's Consultant during PCB remediation work. The air monitoring shall include, at a minimum, hourly readings within a zone perimeter to the Work Area (Support Work Zone or SWZ) so as to assure that work practices are protective of human health to persons outside of the Work Area. Air monitoring shall be conducted with a particulate aerosol monitor capable of displaying real-time concentrations of airborne particulates in a mass per volume ratio to 0.001 milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ). Prior to the active removal actions and at periodic points during the project, air monitoring readings will be recorded to document background particulate matter concentrations.
- B. If total particulate concentrations in the SWZ exceed the action limits (e.g.,  $0.1 \text{ mg}/\text{m}^3$  above background) and are sustained (i.e. greater than 5 minutes), then the work will be

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stopped and additional dust suppression techniques to mitigate fugitive dust shall be initiated.

**3.6 CLEAN-UP & CLEARANCE TESTING**

- A. Remove visible accumulations of PCB material and debris. Wet clean or HEPA vacuum all surfaces within the Work Area.
- B. Removal of PCB-containing paint and sealer on concrete floors to be considered complete based on results of visual inspection and verification wipe and bulk testing conducted by the Owner's Consultant.
- C. For verification of task completion through the collection of samples for analytical testing there may be up to a 5-7 business day turn around time prior to receiving the results of the analytical testing. Appropriate project planning and scheduling should be incorporated into the overall project plans including methods for storing and identifying waste materials represented by each verification sample to allow for additional removal if required.
- D. A visual inspection of all work areas shall be conducted by the Owner's Consultant following completion of remediation activities. The visual inspection will document incomplete work, damage caused by the abatement activity, and inadequate clean-up of the worksite, as applicable. Additional cleaning, repair work, or remediation work shall be conducted to the satisfaction of the Owner at the Contractor's expense.

**3.7 WASTE MANAGEMENT AND DISPOSAL**

- A. All wastes shall be placed in authorized leak-tight containers and kept closed and locked at all times except for adding or removing waste. All wastes shall be kept in a secure location with proper signage visible at all times.
- B. Labeled PCB waste containers or bags shall not be used for non-PCB waste or trash. Any material placed in labeled containers or bags, whether turned inside out or not shall be handled and disposed of as PCB waste.
- C. All containers with PCB materials that are not regulated as Hazardous Waste shall be properly labeled and marked in accordance with applicable State requirements and the requirements of the selected disposal facility.
- D. Temporary Storage of Waste Trailers - The Owner will make available distinct areas where waste trailers can be stored temporarily on site. The Owner's representative will verify the segregation of the waste going to the waste containers during the work and will record the number of trailers of PCB waste leaving the site and verify that the amount recorded agrees with the amount listed on the waste disposal manifest at the time of removal from the site.
- E. All PCB materials are to be placed in appropriate waste containers immediately upon removal. PCB materials may be stored within the work area until such time as the removal work in that area is complete or until the end of the working day.

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- F. All PCB waste generated shall be stored on-site in a secure, lined, and covered waste container (roll-off or equivalent), 55-gallon DOT-approved steel containers, or equivalent staged for the collection of PCB wastes generated during the work activities in accordance with 40 CFR 761.65. The staging area for PCB waste will be approved by the Owner prior to beginning the PCB remediation activities.
- G. Transporter and Disposal Site shall be approved by the Owner. Selected disposal site shall be in accordance with the requirements of 40 CFR 761.
- H. Provide twenty-four (24) hour notification prior to removing any waste from the site. Waste shall be removed from the site only during normal working hours unless otherwise specified. No waste may be taken from the site unless the Contractor is present and the Owner authorizes the release of the waste as described herein.
- I. All waste generated as part of the PCB project shall be removed from the site within 30 calendar days after successful completion of all PCB Remediation work.
- J. Upon arrival at the Project Site, the Transporter must possess and present to the Contractor a valid Waste Transporter Permit for the subject waste.
- K. The Transporter, with the Contractor shall inspect all material in the transport container prior to taking possession and signing the Manifests.
- L. Supply and complete the manifests and all other required waste disposal documentation in accordance with all applicable federal and state regulations. All manifests and other waste documentation shall be signed by the Owner or a designated representative. Allow 1 week processing time for Owner to sign waste documentation. Copies of all waste documentation shall be provided to the Owner and Owner's Consultant.

**END OF SECTION 028433**



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SECTION 10522 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
  - 2. Portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.
- B. Related Sections:
  - 1. Division 13 Section "Fire-Suppression Piping" for hose systems, racks, and valves.
  - 2. Division 16 Sections for low-voltage wiring for fire protection cabinet alarms.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire protection cabinets.
  - 1. Fire Extinguishers: For each type of product indicated. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.
- B. Maintenance Data: For fire extinguishers to include in maintenance manuals.
- C. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- C. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
  - 1. Provide fire extinguishers approved, listed, and labeled by FMG.
- D. Preinstallation Conference: Conduct conference at Project site.

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1.5 COORDINATION

- A. Coordinate size of fire protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Coordinate type and capacity of fire extinguishers to ensure fit and function.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Failure of hydrostatic test according to NFPA 10.
    - b. Faulty operation of valves or release levers.
  - 2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- B. Aluminum: Alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated, and as follows:
  - 1. Sheet: ASTM B 209 (ASTM B 209M).
  - 2. Extruded Shapes: ASTM B 221 (ASTM B 221M).
- C. Accessories:
  - 1. Mounting Bracket: of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
  - 2. Lettered Door Handle: One-piece, cast-iron door handle with the word "FIRE" embossed into face.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each fire protection cabinet and mounting bracket 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. J. L. Industries, Inc.; a division of Activar Construction Products Group; MB84.
    - b. Kidde Residential and Commercial Division; Subsidiary of Kidde plc; Pro 10.
    - c. Larsen's Manufacturing Company; Model D-10.

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- d. Or Approved Equal.
  - 2. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B and bar coding for documenting fire extinguisher location, inspections, maintenance, and recharging.
  - B. Multipurpose Dry-Chemical Type: UL-rated 4-A, 60-B:C, 10 lb. nominal capacity, with monoammonium phosphate-based dry chemical in manufacturer's standard enameled container.
- 2.3 MOUNTING BRACKETS
- A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or black baked-enamel finish.
    - 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. J. L. Industries, Inc.; a division of Activar Construction Products Group.
      - b. Larsen's Manufacturing Company.
      - c. Or Approved Equal.
  - B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
    - 1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.
      - a. Orientation: Vertical.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Examine fire extinguishers for proper charging and tagging.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 INSTALLATION**

- A. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

**3.3 ADJUSTING AND CLEANING**

- A. Remove temporary protective coverings and strippable films, if any, as fire protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

END OF SECTION 10522



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ROOM ID	ROOM NAME	TEXT	Qty	SIGN TYPE	REMARKS
<b>NOTE: FINAL ROOM ID (ROOM NAME, NUMBER AND SYMBOLS) AND MOUNTING LOCATIONS TO BE COORDINATED WITH CLIENT PRIOR TO SIGN FABRICATION</b>					
01	Display	Aerospace Academy	1	DIMENSIONAL	10" High Aluminum letters (refer to interior elevation)
002	Work Room	Work Room	2	ROOM ID	
003	STEM Exploratory	STEM Exploratory	2	ROOM ID	
004	Storage Room	Storage Room	1	ROOM ID	
005	Classroom	Classroom	1	ROOM ID	
006	Aerospace Lab	Aerospace Lab	1	ROOM ID	
007	Storage Room	Storage	1	DIMENSIONAL	6" High Aluminum letters (refer to interior elevation)
009	Classroom	Classroom	1	ROOM ID	
010	Storage Room	Storage Room	1	ROOM ID	

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SECTION 101400 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. This Section includes the following:

1. Panel signs.
2. Dimensional characters for exterior use.

- B. Related Sections include the following:

1. Division 01 Section "Temporary Facilities and Controls" for temporary Project identification signs and for temporary information and directional signs.
2. Division 26 Sections for illuminated Exit signs.

1.3 DEFINITIONS

- A. Accessible: In accordance with the accessibility standard.

1.4 ACTION SUBMITTALS

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

- B. LEED Submittals: Comply with Division 01 Section "Sustainable Design Requirements" and provide the following in addition to other action 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.

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3. Laboratory Test Reports for Credit IEQ 4.1: For adhesives, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Shop Drawings: Show fabrication and installation details for signs.
    1. Include fabrication and installation details and attachments to other work.
    2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
    3. Provide message list, timesteps, graphic elements, including tactile characters and Braille, and layout for each sign.
  - D. Samples for Initial Selection: For each type of sign material indicated that involves color selection.
    1. Include representative Samples of available timesteps and graphic symbols.
  - E. Samples for Verification: For each of the following products and for the full range of color, texture, and sign material indicated, of sizes indicated:
    1. Panel Signs: Not less than 12 inches square.
    2. Plaque: 6 inches square including border.
    3. Dimensional Characters: Full-size Samples of each type of dimensional character (letter, number, and graphic element).
  - F. Sign Schedule: Use same designations indicated on Drawings.
- 1.5 INFORMATIONAL SUBMITTALS
- A. Qualification Data: For fabricator.
  - B. Warranty: Special warranty specified in this Section.
- 1.6 CLOSEOUT SUBMITTALS
- A. Maintenance Data: For signs to include in maintenance manuals.
- 1.7 QUALITY ASSURANCE
- A. Installer Qualifications: An authorized representative of signage manufacturer.
  - B. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
  - C. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.

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- D. Handicapped Accessibility Guidelines: Comply with the handicapped accessibility requirements of the 2010 ADA Standards and ICC/ANSI A117.1.

1.8 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of signs in exterior locations to be performed according to manufacturers' written instructions and warranty requirements.

1.9 COORDINATION

- A. Coordinate placement of anchorage devices with templates for installing signs.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

- 1. Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PANEL SIGNS, GENERAL

- A. Regional Materials: Panel signs shall be manufactured within 500 miles of Project site.

2.2 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: For exterior signs, allow for thermal movements from ambient and surface temperature changes.

- 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.3 PANEL SIGNS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide **ASI Sign Systems; SignEtch I** or a comparable product by one of the following:

- 1. Advance Corporation; Braille-Tac Division.
  - 2. Best Sign Systems, Inc.
  - 3. Mohawk Sign Systems, Inc.
  - 4. Southwell Co. (The)

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- B. Interior Panel Signs (Metal): Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner, complying with the following requirements:
1. Fabricate sign of one-piece construction, photochemically etched zinc with raised letters and numbers. (Magnesium is not an acceptable material.)
  2. Edge Condition: Square cut.
  3. Edge Finish: Brushed.
  4. Mounting: Unframed.
    - a. Wall mounted with mechanical fasteners or two-face tape required by substrate.
  5. Finishes:
    - a. Color and Finish: As selected by Architect from manufacturer's full range.
    - b. Metallic finishes: As selected by Architect from manufacturer's full range.
    - c. Electroplated finishes: As selected by Architect from manufacturer's full range.
  6. Font: As selected by Architect from manufacturer's full range.
  7. Character proportion: Width to height ratio between 3:5 and 1:1, and a stroke-width-to-height ratio between 1:5 and 1:10.
  8. Size of characters and symbols:
    - a. Room numbers: 1-inch.
    - b. Room letters: 5/8-inch minimum.
  9. Pictograms: Accompanied by the equivalent verbal description placed directly below the pictogram. The border dimension of the pictogram to be no less than 6 inches in height.
  10. Finish and Contrast: Characters, symbols and background to be matte or other non-glare finish. Characters and symbols to be in contrasting color to the background; either light characters on a dark background or dark characters on a light background.
  11. Tactile Characters: Characters and Grade 2 Braille raised 1/32 inch above surface with contrasting colors. Glue-on characters or etched backgrounds are not permitted.
    - a. Manufacturer's standard process for producing text and symbols complying with the 2010 ADA Standards and ICC/ANSI A117.1. Produce precisely formed characters with squarecut edges free from burrs and cut marks; Braille dots with domed or rounded shape.
    - b. Braille to be separated from corresponding raised characters or symbols by 1/2-inch.
- C. Changeable Message Inserts: Fabricate signs to allow insertion of changeable messages in the form of transparent covers with paper inserts printed by Owner.

#### 2.4 DIMENSIONAL CHARACTERS

- A. Regional Materials: Dimensional letter signs shall be manufactured within 500 miles of Project site.
- B. Basis of Design Products: Subject to compliance with requirements, provide products by **ASI Sign Systems** or comparable product by one of the following:

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1. Gemini Incorporated.
  2. Southwell Co. (The).
- C. Aluminum Castings: ASTM B 26/B 26M, of alloy and temper recommended by sign manufacturer for casting process used and for use and finish indicated.
- D. Cutout Characters: Provide characters with square-cut, smooth edges. Comply with the following requirements:
1. Aluminum Sheet: 1- inch thick.
    - a. Finish: Anodized.
    - b. Color: TBD.
  2. Product: Subject to compliance with requirements, provide **ASI Sign Systems; LPS Series**.
- E. Dimensional Character Schedule:
1. Character Size: As indicated.
  2. Font: As selected by Architect from manufacturer's full range.
  3. Text/Message: As indicated.
  4. Location: Exterior

## 2.5 ACCESSORIES

- A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors.
- B. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.
- C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

## 2.6 FABRICATION

- A. General: Provide manufacturer's standard signs of configurations indicated.
- B. Dimensional Characters: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
  1. Design, fabricate, and install sign assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners.
  2. Mill joints to a tight, hairline fit. Form joints exposed to the weather to exclude water penetration.
  3. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.
  4. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

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5. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.
6. Create signage to required sizes and layout.

2.8 FINISHES, GENERAL

- A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.9 ALUMINUM FINISHES

- A. Color Anodic Finish: Manufacturer's standard Class 1 integrally colored or electrolytically deposited color anodic coating, 0.018 mm or thicker, in color as selected applied over a satin (directionally textured) mechanical finish, complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.
- B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated. C. Verify that anchor inserts are correctly sized and located to accommodate signs.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.
  1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
  2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
  3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
  4. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls.

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- a. Locate top of sign edge at 60-inches above the finish floor with baseline of tactile characters 48" minimum above finish floor.
  - b. Locate signs so that clear floor area 18 inches minimum by 18 inches minimum centered on the tactile character, is provided beyond the arc of any door swing between the closed position and 45 degree open position.
  - c. At double doors with two active leafs, mount sign on wall to the right hand side of the door. At double doors with one inactive leaf, mount sign on inactive leaf unless otherwise indicated.
- B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.
1. Mechanical Fasteners: Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
  2. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.
    - a. Mount signs to glass only. Do not use this method for any other substrate.
  3. Signs Mounted on Glass: Provide matching opaque plate on opposite side of glass to conceal mounting materials.
- C. Dimensional Characters: Mount characters using standard fastening methods to comply with manufacturer's written instructions for character form, type of mounting, wall construction, and condition of exposure indicated. Provide heavy paper template to establish character spacing and to locate holes for fasteners.
1. Projecting Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
    - a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place spacers on studs, place sign in position, and push until spacers are pinched between sign and substrate, embedding the stud ends in holes. Temporarily support sign in position until adhesive fully sets.
    - b. Thin or Hollow Surfaces: Place spacers on studs, place sign in position with spacers pinched between sign and substrate, and install washers and nuts on stud ends projecting through opposite side of surface, and tighten.

### 3.3 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.

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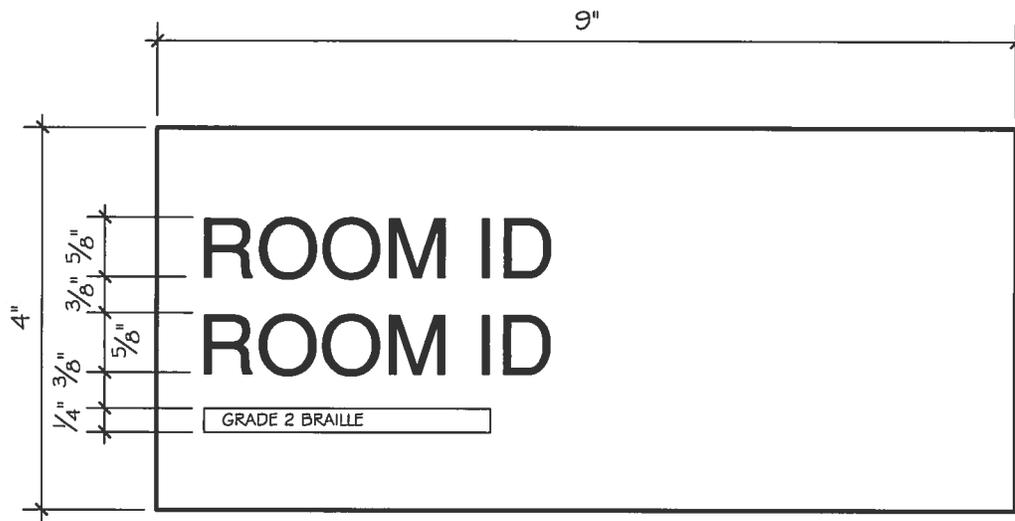
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- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

3.4 SIGNAGE SCHEDULE

- A. Refer to Signage Schedule and sketches attached at the end of this Section.

END OF SECTION 101400



NOTES:

SEE SCHEDULE FOR ROOM NAMES.

SIGN WIDTH MAY BE REDUCED BY 1" IF NOT  
REQUIRED FOR MULTI-LINE TEXT.

**SIGN SKETCH - ROOM ID (MULTI-LINE)**

Scale: 6" = 1'-0"

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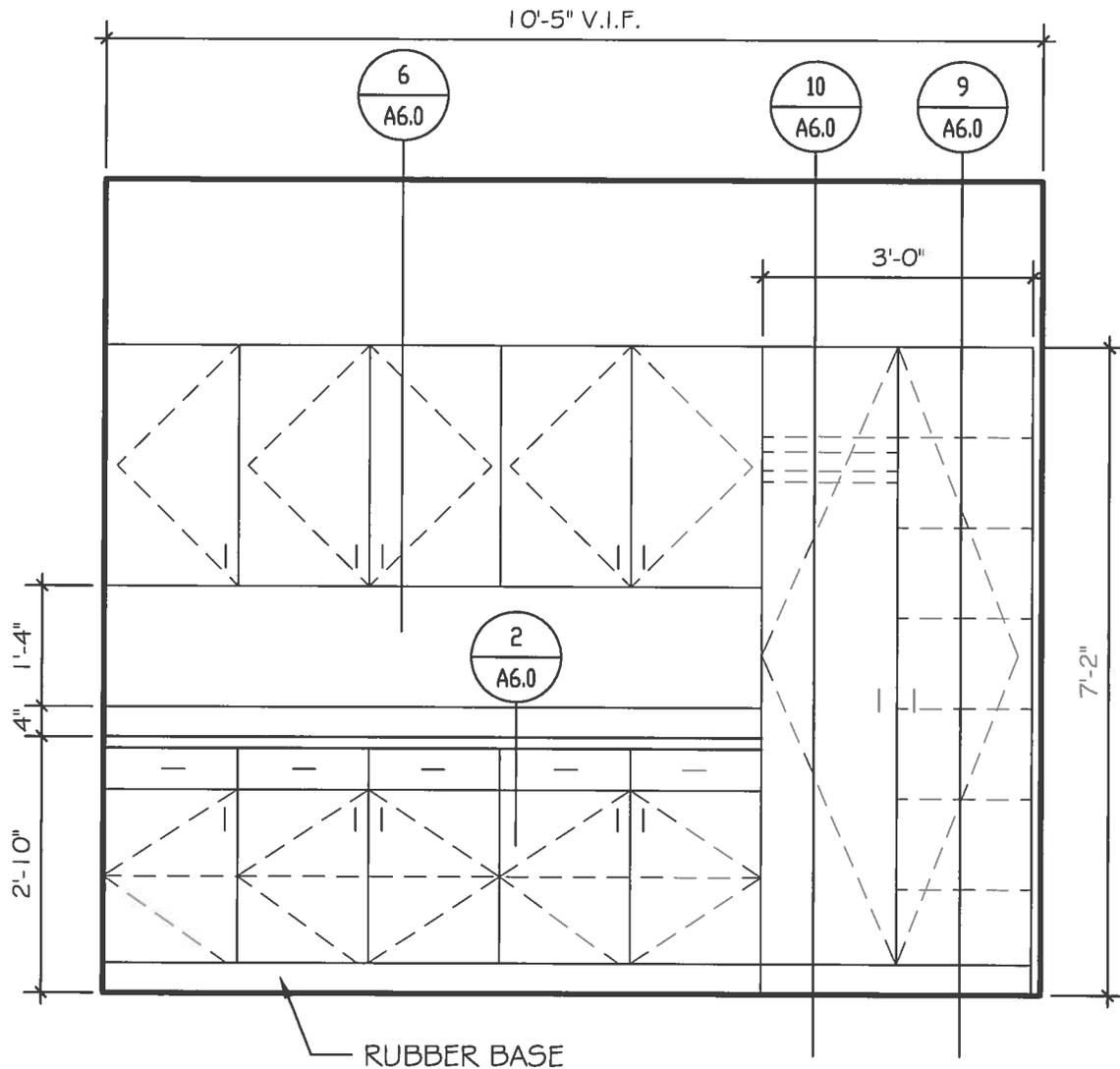
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Project #:

QA 1247

Drawn By:

RAS



**Casework in S.T.E.M. Exploratory**

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

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Addendum #2

Project #:

1319

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JH