DOCUMENT 00 90 00
ADDENDUM

ADDENDUM NO. [4] **Date: March 25, 2020**

RE: **LA CRESCENT - HOKAH PUBLIC SCHOOLS**
ELEMENTARY SCHOOL ADDITION AND RENOVATION
504 S OAK ST
LA CRESCENT, MN 55947
HSR 19014

FROM: HSR Associates, Inc
100 Milwaukee Street
La Crosse, WI 54603
(608) 784-1830

To: Prospective Bidders

This addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated March 2020. Acknowledge receipt of this Addendum in the space provided on the bid form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of [1] page.

CHANGES TO SPECIFICATIONS:

1. Section 08 45 00 TRANSLUCENT WALL AND ROOF ASSEMBLIES
    a. Add section attached hereto as part of Contract Documents.

END OF DOCUMENT 00 90 00

Page Intentionally Left Blank

SECTION 08 45 00
TRANSLUCENT WALL AND ROOF ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Self supporting aluminum framed vertical glazing system.

B. Extruded aluminum sill.

C. Perimeter sealant.

1.02 RELATED REQUIREMENTS

A. Section 04 20 00 – Masonry Assemblies: Mock-up requirements and masonry openings.

B. Section 07 62 00 - Sheet Metal Flashing and Trim

C. Section 07 92 00 - Joint Sealants: Sealing joints between perimeter frame and adjacent construction.

1.03 REFERENCE STANDARDS

A. AAMA CW-DG-1 - Aluminum Curtain Wall Design Guide Manual; 1996 (R2005).

B. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.

C. AAMA 501.1 - Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure; 2005.

D. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems; 2015.

E. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.

F. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2013.

G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.

H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.

I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.

J. ASTM C 236 – Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box.

K. ASTM C 297 – Tensile Strength of Flat Sandwich Constructions in Flatwise Plane.

L. ASTM D 395 – Rubber Property - Compression Set.

M. ASTM D 635 – Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.

N. ASTM D 865 – Rubber - Deterioration by Heating in Air (Test Tube Enclosure).

O. ASTM D 925 – Rubber Property - Staining of Surfaces (Contact, Migration, and Diffusion).

P. ASTM D 1002 – Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-To-Metal).

Q. ASTM D 1435 – Outdoor Weathering of Plastics.

R. ASTM D 2244 – Calculation of Color Differences from Instrumentally Measured Color Coordinates.

S. ASTM D 3841 – Glass-Fiber-Reinforced Polyester Plastic Panels.

T. ASTM E 72 – Conducting Strength Tests of Panels for Building Construction.

U. ASTM E 84 – Surface Burning Characteristics of Building Materials.

V. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).

W. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.

X. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).

Y. International Energy Conservation Code (IECC) 2009. Building is in Climate Zone 6.

Z. IBC 2012 and Minnesota State Building Code.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, panel configuration, internal drainage details and unit u-value, center of glass u-value, visual light transmittance and solar heat gain cooefficient.

C. Design Data: Provide framing member structural and physical characteristics, calculations, dimensional limitations.

D. Submit product test reports from a qualified independent testing agency indicating each type and class of panel system complies with the project performance requirements, based on comprehensive testing of current products. Previously completed test reports will be acceptable if for current manufacturer and indicative of products used on this project.
   1. Test reports required are:
      a. Flame Spread and Smoke Developed (UL 723) - Submit UL Card
      b. Burn Extent (ASTM D-635)
      c. Color Difference (ASTM D-2244)
      d. Abrasion/Erosion Resistance (ASTM D-4060)
      e. Impact Strength (UL 972)
      f. Bond Tensile Strength (ASTM C-297 after aging by ASTM D-1037)
      g. Bond Shear Strength (ASTM D-1002)
      h. Beam Bending Strength (ASTM E-72)
      i. Insulation U-Factor (NFRC-100)
      j. NFRC System Certification
      k. Condensation Resistance Factor (AAMA 1503)

E. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.

F. Installation Data: Standard installation requirements.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with AAMA CW-DG-1.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
   1. Panel system must be listed by the International Code Council – Evaluation Service (ICC-ES) which requires quality control inspections and fire, structural and water infiltration testing of sandwich panel systems by an approved agency.
   2. System must be certified by the National Fenestration Ratings Council and comply with all requirements for certification authorization under the NFRC PCP.

C. Installer Qualifications: Company specializing in performing the work of this section with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Handle work of this section in accordance with AAMA CW-10.

B. Protect prefinished aluminum surfaces with wrapping; do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.
   1. Puncture wrappings at ends for ventilation.

C. Store panels on the long edge, several inches above the ground, blocked and under cover in accordance with manufacturer's storage and handling instructions.

1.07 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F.

B. Maintain this minimum temperature during and after installation of sealants.

1.08 WARRANTY

A. Submit manufacturer's and installer's written warranty agreeing to repair or replace panel system work, which fails in materials or workmanship within one year of the date of delivery. Failure of materials or workmanship shall include leakage, excessive deflection, deterioration of finish on metal in excess of normal weathering and defects in accessories, insulated translucent sandwich panels and other components of the work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sandwich Panel - Translucent Wall and Roof Assemblies:
   1. Kalwall: www.kalwall.com
   2. Major Industries, Inc.: www.majorskylights.com.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. System Design: Design and size components to withstand dead loads and live loads caused by snow, hail, and positive and negative wind loads acting on plane of panel without damage or permanent set.
   1. Design Loads: Calculate in accordance with applicable code.
   2. Measure performance in accordance with ASTM E330/E330M, using test load of 1.5 times the design wind pressure and 10 second duration of maximum load.

B. Wall unit U-value factors shall meet the Fenestration Product Rating in the International Energy Code 303.1.3 which requires testing and labeling in accordance with NFRC 100.

C. Deflection: Limit mullion deflection to L/60 with full recovery of glazing materials.

D. Light Transmission: 15 percent.

E. Thermal Resistance of Panel System (Excluding Vision Areas): R of 3.3/U-value 0.30.

F. Solar Heat Gain Coefficient: 0.15

G. Air Infiltration: Limit air infiltration through assembly to 0.06 cu ft/min sq ft of sloped glazed area, measured at a reference differential pressure across assembly of 1.57 psf as measured in accordance with ASTM E283.

H. Static Pressure Vapor Seal: Provide vapor seal that maintains interior static pressure of at least 1 inch water column (WC) at 72 degrees F and 40 percent relative humidity.

I. Condensation Resistance Factor (CRF): Minimum of 80 when measured in accordance with AAMA 1503.

J. Water Leakage: None, when measured in accordance with AAMA 501.1 with a test pressure difference of 2.86 lbf/sq ft.

K. Expansion/Contraction: System to provide for expansion and contraction within system components caused by a cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components.

L. System Internal Drainage: Drain water entering joints, condensation occurring in framing system, or migrating moisture occurring within system, to the exterior by a weep drainage network.

M. Fabricate to prevent vibration harmonics, thermal movement transmitted to other building elements, and loosening, weakening, or fracturing of attachments or components of system.

2.03 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Fasteners: Stainless steel.

2.04 COMPONENTS

A. Translucent Wall System: Structurally reinforced translucent panels, with supplementary support framing, shop fabricated, factory prefinished, battens, cap strips, related flashings, anchorage and attachment devices for style indicated on drawings. Frames shall be thermally broken.

B. Panels: Bonded to both sides of structural extruded aluminum grid of pattern as vertikal; exposed surfaces of exterior sheet chemically and permanently treated to protect against surface erosion and extreme weather conditions; exposed surface of interior sheets with fire retardant having flame spread index (FSI) of 50 and smoke developed index (SDI) of 250 in accordance with ASTM E84; polyvinyl fluoride film coated.
   1. Panel Length: per project drawings.
   2. Panel Width: per project drawings.
   3. Grid Pattern: Vertical
   4. Panel Thickness: 4 inches.
   5. Facing Sheets: Translucent.
   6. White color.

C. Support Framing: 0.125 inch thick extruded aluminum in profile to match system.

D. Battens, Cover Strips, Cover Plates, and Integral Flashings: Extruded aluminum, to suit location and application; sized to rigidly retain panels in place.

E. Weather Seals: To suit application; non-bleeding; non-staining.

F. Sealant for Within Translucent Assembly: As required by manufacturer.

G. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, and compatible with flashing material.

2.05 FABRICATION

A. Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, and ensure proper installation and dynamic movement of perimeter seals.

B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.

C. Prepare components to receive fabricated anchor devices.

D. Locate fasteners and attachments to ensure concealment from view.

E. Reinforce framing members for external imposed loads.

2.06 FINISHES

A. Superior Performing Organic Coatings: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride system.

B. Color: To be selected by Architect from manufacturer's full range.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify wall openings and adjoining air barrier and vapor retarder materials are ready to receive work of this section.

C. A. Metal Protection:
   1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
   2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint or method recommended by manufacturer

3.02 INSTALLATION

A. Install translucent panel system with cells vertical in accordance with manufacturer instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings.

G. Install air stop at edge of construction.

H. Coordinate attachment and seal of perimeter air and vapor barrier materials.

I. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

J. Install perimeter sealant, backing materials, and installation criteria in accordance with Section 07 92 00.

3.03 FIELD QUALITY CONTROL

A. Test installed curtain wall for water leakage in accordance with AAMA 501.2.

B. Replace wall assembly components that have failed field testing and retest until performance is satisfactory.

3.04 CLEANING

A. Remove protective material from prefinished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths; remove dirt from corners and wipe surfaces clean.

C. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

3.05 PROTECTION

A. Protect finished work from damage until Date of Substantial Completion.

END OF SECTION