

Window and Door Replacement
Merrymount Elementary School
4 Agawam Way
Quincy, MA 02169
MSBA PROJECT NO. 2013-0243-0060

ADDENDUM NO. 01
March 17, 2014

The attention of Bidders submitting proposals for the above subject project located in Quincy, MA, is called to the following Addendum to the Contract Documents. The items set forth herein, whether of omission, addition, substitution, or clarifications are all to be included in and form a part of the proposal submitted.

This Addendum consists of twelve (12) type-written pages, including a specification attachment. No Drawings are included for this Addendum.

THE NUMBER OF THIS ADDENDUM (01) MUST BE ENTERED IN THE APPROPRIATE SPACE PROVIDED ON DOCUMENT 004100 "GENERAL BID FORM".

A. Part A – Bidding Requirements. CHANGES:

1. Revise Document 000110, Table of Contents to Delete: Section 019113 – General Commissioning Requirements, and Add: Section 019110 – Building Enclosure Commissioning Requirements, Pages 019110-1 – 019110-5.

B. Part D – Specifications. CHANGES:

Division 1 – General Requirements:

Section 017000 – Execution and Closeout Requirements:

1. Add Sub-Section:
“1.06: Building Enclosure Commissioning Requirements
A. The Building Enclosure Commissioning Agent (BECxA) shall visit the project site during construction and will maintain a log of all issues and concerns. All BECxA items must be fully completed before project closeout.”
2. Delete: Section 019113 - General Commissioning Requirements in its entirety, and Add: Section 019110 – Building Enclosure Commissioning Requirements, with Pages 019110-1 thru 019110-5 in its entirety, attached as part of this addendum.

Division 2 - Existing Conditions:

Section 0241000 – Demolition:

1. Add the following to Sub-Section 1.02 – Description of Work, A. Work Included:
“10. Contractor shall provide all services necessary to maintain a watertight building and to protect existing building elements from damage throughout the construction period.”
2. Add the following to Sub-Section 3.01 – Examination, C. Survey of Existing Conditions:
“2. Any damage observed and noted in the area of work after demolition, but not recorded in the survey, will be the responsibility of the Contractor.”

Division 6 – Wood, Plastics & Composites:

Section 061000 – Rough Carpentry:

1. Add the following to Sub-Section 1.02 - Description of Work, A. Work Included:
“3. Provide fire-rated wood blocking where required by code. Refer to Section 062023 for Fire Retardant Treatment of wood.”

Division 7 – Thermal and Moisture Protection:

Section 079200 – Joint Sealants:

1. Add the following to Sub-Section 1.02 - Description of Work:
“B. The Aluminum Curtainwall installers shall perform all joint sealant work indicated in this Section for the work associated with that Section of Work.”
2. Add the following to Sub-Section 1.03 - Submittals:
“C. Submit all Product Data, MSDS, Product Samples and Test Reports for materials of this Section.

- D. Product testing and adhesion pull testing by the sealant manufacturer, including field adhesion pull testing results.”
- 3. Add Sub-Section: “1.04, Product Delivery, Storage and Handling:
 - A. Store and handle products, and all pertinent items in strict compliance with the manufacturer's instructions.
 - B. Protect products adequately against damage from the elements, construction activities and other hazards before, during and after installation.”
- 4. Add Sub-Section: “1.05, Warranty:
 - A. The contractor shall assume full responsibility and warrant for three years the satisfactory performance of sealants for the window installation which includes sealing as it relates to air and water penetration as called for in the specifications and approved shop drawings.
 - B. Sealant Warranty: Provide written warranty, signed by the Contractor and installer, agreeing to, within warranty period, to replace or repair defective materials and workmanship, defined to include: instances of significant leakage of water or air; failures in joint adhesion; material cohesion; abrasion resistance; weather resistance; extrusion-from-joint resistance; migration resistance; strain and in general appearance of deterioration in any manner not clearly specified in manufacturer’s published product literature as an inherent characteristic of the sealant material. Warranty includes responsibility for removal and replacement of other work which conceals or obstructs the replacement of sealants. Warranty covers all of the sealants provided for this project for a period of ten years.”
- 5. Add Sub-Section: “1.06, Quality Assurance:
 - A. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics. Aesthetic effects are indicated by notes and profiles of sealants as they relate to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, and field testing. To comply with performance requirements, it may be necessary to customize referenced products.
 - B. Applicator and Manufacturer Qualifications: Companies specializing in performing the work and manufacturing the products in this section with a minimum of 3 years documented experience.
 - C. Pre-installation Conferences: Conduct conferences at Project site to review methods and procedures related to sealants including, but not limited to, the following:
 - 1. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review required testing and inspection procedures.
 - D. Contractor shall confirm that all interior, exterior and fire-stop sealants are compatible with membrane flashing products and other sealants, or that products are isolated from contact with each other.”
- 6. Add the following to Sub-Section 2.01, Materials:
 - “E. Backup Material/Bond Breaker:
 - 1. Backup and bond breaker materials shall be as recommended by manufacturer of caulking and sealant material.
 - 2. Backup materials: "Ethafom Rod" by Dow, "Joint Packing" by Tremco, "Minicel" by PRC, or approved equal. Color of filler shall not be darker than caulking or sealant compound.
 - 3. Bond breaker pressure-sensitive tapes from sealant manufacturer to suit application.”
- 7. Add the following to Sub-Section 3.02 Installation:
 - “C. Adhesion Testing:
 - 1. The manufacturer shall provide field testing services to provide a minimum of 3 adhesion tests for each type of existing exterior material to be encountered on the building, at locations selected by the Building Enclosure Commissioning Agent.
 - 2. The use of primers shall be field verified during adhesion testing.
 - 3. Sealants shall be tested to fail cohesively beyond the manufacturer’s specified elongation.”

Division 8 – Openings:

Section 081000 – Doors and Frames:

- 1. Add the following to Sub-Section 1.03, Submittals:

- “D. Provide all Product Data, MSDS and Test Reports from the manufacturers.”
2. Add Sub-Section: “1.05, Quality Assurance:
 - A. Installer Qualifications: An employer or workers trained and approved by the manufacturer.
 - B. Source Limitations: Obtain doors and frames from a single-source manufacturer.
 - C. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Section 013119.”
 3. Add Sub-Section: “1.06, Performance Requirements:
 - A. General: Provide door assemblies that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer's corresponding standard systems. All doors shall meet or exceed the requirements of the MA Stretch Energy Code, latest edition.
 - B. Air Infiltration: For a single door 3'-0" x 7'-0", test specimen shall be tested in accordance with ASTM E 283 at pressure differential of 6.27 psf. Door shall not exceed 0.58 cfm/ft².
 - C. Water Resistance: For a single door 3'-0" x 7'-0", test specimen shall be tested in accordance with ASTM E 331 at pressure differential of 7.50 psf. Door shall not have water leakage.
 - D. Indoor air quality testing per ASTM D 6670-01: GREENGUARD Environmental Institute Certified including GREENGUARD for Children and Schools Certification.
 - E. Hurricane Test Standards, Single Door:
 1. Uniform Static Load, ASTM E 330: Plus or minus 195 pounds per square foot.
 2. Forced Entry Test, 300 Pound Load Applied, SFBC 3603.2 (b)(5).
 3. Cyclic Load Test, SFBC PA 203: Plus or minus 53 pounds per square foot.
 4. Large Missile Impact Test, SFBC PA 201.
 - F. Hurricane Test Standards, Pair of Doors with single point latching:
 1. Uniform Static Load, ASTM E 330: Plus or minus 112.5 pounds per square foot.
 2. Forced Entry Test, 300 Pound Load Applied, AAMA 1304.
 3. Cyclic Load Test, ASTM E 1886: Plus or minus 75 pounds per square foot.
 4. Large Missile Impact Test, ASTM E 1886.
 - G. Swinging Door Cycle Test, Doors and Frames, ANSI A250.4: Minimum of 25,000,000 cycles.
 - H. Cycle Slam Test Method, NWWDA T.M. 7-90: Minimum 5,000,000 Cycles.
 - I. Swinging Door Assembly, Doors and Frames, ASTM F 476: Grade 40.
 - J. Salt Spray, Exterior Doors and Frames, ASTM B 117: Minimum of 500 hours.
 - K. Sound Transmission, Exterior Doors, STC, ASTM E 90: Minimum of 25.
 - L. Thermal Transmission, Exterior Doors, U-Value, AAMA 1503-98: Maximum of 0.29 BTU/hr x s.f. x degrees F. Minimum of 55 CRF value.
 - M. Surface Burning Characteristics, FRP Doors, ASTM E 84:
 1. Flame Spread: Maximum of 200, Class C.
 2. Smoke Developed: Maximum of 450, Class C.
 - N. Surface Burning Characteristics, Class A on Interior Faces of FRP Exterior Panels and both faces of FRP Interior Panels, ASTM E 84:
 1. Flame Spread: Maximum of 25.
 2. Smoke Developed: Maximum of 450.
 - O. Impact Strength, FRP Doors, Nominal Value, ASTM D 256: 14.0 foot-lbs per inch of notch.
 - P. Tensile Strength, FRP Doors, Nominal Value, ASTM D 638: 13,000 psi.
 - Q. Flexural Strength, FRP Doors, Nominal Value, ASTM D 790: 21,000 psi.
 - R. Water Absorption, FRP Doors, Nominal Value, ASTM D 570: 0.20 percent after 24 hours.
 - S. Indentation Hardness, FRP Doors, Nominal Value, ASTM D 2583: 55.
 - T. Gardner Impact Strength, FRP Doors, Nominal Value, ASTM D 5420: 120 in-lb.
 - U. Abrasion Resistance, Face Sheet, Taber Abrasion Test, 25 Cycles at 1,000 Gram Weight with CS-17 Wheel: Maximum of 0.029 average weight loss percentage.
 - V. Stain Resistance, ASTM D 1308.
 - W. Chemical Resistance, ASTM D 543.
 - X. Compressive Strength, Foam Core, Nominal Value, ASTM D 1621: 79.9 psi.
 - Y. Compressive Modulus, Foam Core, Nominal Value, ASTM D 1621: 370 psi.
 - Z. Tensile Adhesion, Foam Core, Nominal Value, ASTM D 1623: 45.3 psi.
 - AA. Thermal and Humid Aging, Foam Core, Nominal Value, 158 Degrees F and 100 Percent Humidity for 14 Days, ASTM D 2126.
 4. Add the following to Sub-Section 3.02, Installation:

“B. Erection:

1. Install door and frame work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer’s written instructions.

C. Frames:

1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set.
 - a. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations; attach and splice smooth with flush fasteners invisible on exposed faces.
 - b. Remove temporary braces necessary for installation only after frames have been properly set and secured.
2. Floor Anchors: Provide floor anchors for each mullion at floor, and secure with post-installed expansion anchors. Floor anchors may be set with powder-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on Shop Drawings.
3. In-Place Masonry Construction:
 - a. Secure frames in place with post-installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
4. Installation Tolerances: Shim and adjust door frames for square, alignment, twist, and plumb to the following tolerances:
 - a. Square: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumb: Plus or minus 1/16 inch, measured at jambs at floor.

D. Doors:

1. Fit doors accurately in frames, within clearances specified below. Shim as necessary.
 - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch .
 - c. Between Door Bottom and Top of Threshold: Maximum 3/8 inch.
 - d. Between Door Bottom and Top of Finish Floor (No Threshold): Maximum 3/4 inch.
5. Add the following Sub-Section: “3.03, Adjusting and Cleaning:
 - A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including door or frame work that is warped, bowed, or otherwise unacceptable.
 - B. Remove excess sealants or other bonding material from work immediately after installation.
 - C. Pre-finished Metallic Surfaces: Clean and check doors and frames for damage or abraded areas. Repairs and recoating of damaged areas shall be performed with repair paint according to manufacturer’s written instructions to the satisfaction of the manufacturer and Building Enclosure Commissioning Agent.”

Section 084113 – Aluminum-Framed Storefront:

1. Add the following to Sub-Sections:
 - 1.03, H. Performance Reports:
 - “5. Condensation Resistance Reports.”
 - 1.07, Quality Assurance:
 - “E. Installer’s and Manufacturer’s Qualifications:
 1. Manufacturing of doors, similar to type specified, with a minimum of 25 years experience.
 2. Door and frame components from same manufacturer.
 3. Installer with min. 10 years experience and certified by door and frame manufacturer.
 4. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Section 013119.
2. Revise the following in Sub-Section 1.05, Warranty, Paragraph C.:
 - C. Warranty Period Frames: Delete the word: “Three” and add the word: “Ten”.
3. Revise the following in Sub-Section 2.03, Performance Requirements, Paragraphs C, D and E:
 - C. Aluminum Entrances and Storefronts: Delete the text: “1.57” and add: “6.24”.

- D. Aluminum Entrance Doors: Delete the text: "1.00" and add: "0.1"; delete: "1.57" and add: "6.24"; and delete: "ASTM E283" and add: "6.24".
- E. Basic Wind Speed: Delete the text: "95" and add: "45. Water Infiltration performance shall meet or exceed ASTM E331 at 7.50 psf pressure differential."
- 4. Revise the following in Sub-Section 2.06, Fabrication. Paragraph C.:
 - C. (Weep holes): Delete the text: "18-inch" and add: "1/8-inch", and add sentences as follows: "Provide additional weeps at sill where drainage is blocked by shims or other obstructions. Provide frame weeps and a minimum of 3 glazing pocket weeps between each setting block."
- 5. Add the following sentence to Sub-Section 3.02 Installation, Paragraph G.:

"Install self-adhering membrane flashings continuously at perimeter of rough openings to cover all new or existing wood blocking. Lap all flashing onto adjacent head, jamb and sill construction to within 1/2-inch of outermost face of framing. Flashing shall bridge all gaps in blocking and existing wall assemblies to provide a complete air barrier across existing wall cavities and between the existing wall construction and the window openings."
- 6. Add the following sentence in Sub-Section 3.03 Field Quality Control, Paragraph B. Testing Services, Sub-Paragraph 1. Testing Methodology:

Add: "Testing on operable sash shall be cyclic testing."

Section 085113 – Aluminum Windows:

- 1. Add the following to Sub-Section 1.02 Description of Work, Paragraph A.:

"5. Furnish and install colonial-profile panning at window opening head and jambs as indicated on the drawings."
- 2. Add the following to Sub-Section 1.03 Submittals, Paragraph H.:

"5. Condensation Resistance Reports."
- 3. Revise the following in Sub-Section 1.05, Warranty. Paragraph C.:
 - C. Warranty Period Frames: Delete the word: "Three" and add the word: "Ten".
- 4. Add the following to Sub-Section 1.07, Quality Assurance:

"E. Installer's and Manufacturer's Qualifications:

 - 1. Manufacturing of doors, similar to type specified, with a minimum of 25 years experience.
 - 2. Door and frame components from same manufacturer.
 - 3. Installer with min. 10 years experience and certified by door and frame manufacturer.
 - 4. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Section 013119.
- 5. Add the following to Sub-Section 2.02 Product Description, Paragraph C.:

"5. Provide exterior muntin grids in the configuration shown on the drawings."
- 6. Add the following to Sub-Section 2.02 Product Description:
 - "G. Muntin Grids: Muntin grids shall be extruded aluminum 5/8-inch wide by 3/8-inch deep with colonial-profiled edges. Grids shall be painted to exterior window finish and shall be exterior mounted to sash frame over glazing.
 - H. Panning Trim: Panning shall be extruded aluminum colonial-profile head and jamb panning enclosures at window opening perimeter with recessed reveal edge sealant receptors. Panning profile to be selected from manufacturer's standard units, and sized to approximate depth and width of existing panning and to cover existing head and jamb sealants."
- 7. Revise the following in Sub-Section 2.03 Performance Requirements, Paragraphs C, D, E and F:
 - C. Aluminum Window Air Leakage: Delete the text: "0.2" and add: "0.1"; delete: "1.57" and add: "6.24 for operable sash"; and delete: "or 0.3" and add: "and for fixed sash 0.3".
 - D. Moisture Infiltration: Delete the text: "6.75" and add: "12" (min. PSF).
 - E. Basic Wind Speed: Delete the text: "95" and add: "45".
 - F. Performance Class and Grade: Delete the text: "AP-AW95" and add: "AP-AW70".
- 8. Revise the following in Sub-Section 2.08, Fabrication. Paragraph F.:
 - F. (Weep holes): Delete the text: "18-inch" and add: "1/8-inch", and add sentences as follows: "Provide additional weeps at sill where drainage is blocked by shims or other obstructions. Provide frame weeps and a minimum of 3 glazing pocket weeps between each setting block."

9. Add Sub-Section 2.13, Mineral-Fiber Insulation:
 1. ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool with 6- to 12-lb/cu. ft. density; with maximum flame-spread and smoke-development indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
10. Add the following to the following Sub-Sections (to Section 085113, Aluminum Windows) for window screens:
 - 1.02, Description of Work:
 - A. Work Included:

“6. Furnish and install screens as shown on the Drawings and specified herein.”
 - 1.03, Submittals:
 - “P. Window manufacturer shall submit screen shop drawings, showing details of attachment to surround materials and elevations showing scope of the project. Submit samples of screen and frame materials including frame sections, wire cloth, fasteners, and corner section.”
 - 2.01 Manufacturers:
 - “B. Acceptable Screen Manufacturers:
 1. Kane Manufacturing Corp., Kane, PA
 2. Universal
 3. Roll-a-way”
 - 1.07 Insect Screens:
 - “B. Screen frames shall be 1” x 1-1/2” wide, “L” shape of 0.075-inch extruded 6063-T6 aluminum alloy, cleaned in a 5-step bonderizing process and finished with an 70% Kynar 500 resin-based two-coat fluoropolymer paint color to match window color selection. Coating shall meet or exceed AAMA 2603.
 - C. Wire Cloth screening shall be 12-mesh .028-inch stainless steel cleaned in a 5-step bonderizing process and finished with an electrostatically applied black, thermoplastic, polyester powder coating baked to a hard mar-resistant finish.”
 - 2.08 Fabrication:
 - “I. Screen frame corners shall be mitered, fitted with an internal tension coupling assembly and fastened. Provide integral groove in screen frame with a cushioning strip/insect shield. Provide screens with a removable concealment plate of nominal thickness of .050-inch extruded 6063-T6 aluminum alloy attached to the main frame using tamper resistant screws.
 - J. Wire cloth infill shall be retained in frame by a removable concealment plate and tamper resistant screws that penetrate the concealment plate, infill and main frame approximately 4” on center.
 - K. Each screen shall come fully assembled and tested from the factory, complete with all mounting hardware.”
 - 3.01 Examination:
 - “C. Verify that screens fit to window openings with allowable tolerances, are plumb, level, provide a solid anchoring surface and comply with approved shop drawings.”
 - 3.02 Installation:
 - “H. Install window screens in accordance with approved shop drawings and manufacturer’s installation instructions. Plumb and align faces in a single plane and erect screens square and true, adequately anchored. After completion of installation, screens shall be adjusted, in working order and clean.”
11. Add the following sentence to Sub-Section 3.02 Installation, Paragraph F.:

“Install self-adhering membrane flashings continuously at perimeter of rough openings to cover all new or existing wood blocking. Lap all flashing onto adjacent head, jamb and sill construction to within ½-inch of outermost face of panning or framing. Flashing shall bridge all gaps in blocking and existing wall assemblies to provide a complete air barrier across existing wall cavities and between the existing wall construction and the window openings.”
12. Delete the following from 3.02, Installation: Delete Paragraph ‘G.’ in its entirety.
13. Add the following to Sub-Section 3.02 Installation:
 - “I. Provide Mineral Wool insulation to fill all voids and cavities within window frame jamb extrusions for entire perimeter of window framing systems. Install insulation without compression and for full depth of frames.

- J. Provide non-expanding foam insulation to fill all voids found in masonry wall cavities at locations where existing framing or glass block masonry is removed completely from masonry opening.”
- 14. Add the following in Sub-Section 3.03 Field Quality Control, Paragraph B. Testing Services, Sub-Paragraph 1. Testing Methodology:
Add sentence: “Testing on operable sash shall be cyclic testing.”
- 15. Delete the sentence in Sub-Section 3.03 Field Quality Control, Paragraph B. Testing Services, Sub-Paragraph 2, Testing Extent., and Add the following sentence : “Testing shall occur: three times at start of construction; twice during construction and twice at completion of window installations, at locations to be selected by the Building Enclosure Commissioning Agent. Windows that fail testing shall be removed to determine leak locations and remedial work performed to prepare window opening, and retesting shall be provided until all leaks are corrected after the window reinstallation.”

Section 088000 – Glazing:

- 1. Add the following to Sub-Section 1.04 Quality Assurance:
“E. Installer’s and Manufacturer’s Qualifications:
 - 1. Manufacturing of glazing, of types specified, with a minimum of 25 years experience.
 - 2. All insulated glazing components from the same manufacturer.
 - 3. Installer with min. 10 years experience and certified by glazing manufacturer.
 - 4. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Section 013119.”
- 2. Add the following to Sub-Section 1.07 Warranties:
“B. The Contractor shall provide a two year Workmanship Warranty for Glazing provided in window, door, sidelight, transom and curtainwall systems, covering damage or defects to glazing from installation operations.”
- 3. Delete sentences in Sub-Section 2.01 Glass Materials and Products, Paragraphs B, C, and D after title of paragraph, (i.e.: ‘Exterior Glass for Aluminum Windows:’, ‘Storefronts:’ and ‘Curtain Walls:’, and Add the following sentences:
“B. (Exterior Glass for Aluminum): Exterior and interior glass panes shall be clear. All glazing shall be insulated glass units designed by the Contractor or Manufacturer to meet the requirements for compliance with the MA Stretch Energy Code for U-Value of the total window, door or curtainwall assembly. The Contractor or Manufacturer shall provide documentation to support compliance. All insulated glass units shall be 1 inch thick units consisting of 2 panes of 1/4 inch thick tempered safety glass, a soft coat Low-E (SolarBan 60 or Cardinal 272) film on the #2 surface, with a low conductive spacer.”
- 4. Delete sentences in Sub-Section 2.01 Glass Materials and Products, Paragraph F and Add the following sentences:
“B. Exterior Glass for Transom Panels: Exterior and interior glass panes shall be clear. All glazing shall be insulated glass units designed by the Contractor or Manufacturer to meet the requirements for compliance with the MA Stretch Energy Code for U-Value of the total window, door or curtainwall assembly. The Contractor or Manufacturer shall provide documentation to support compliance. All insulated glass units shall be 1 inch thick units consisting of 2 panes of 1/4 inch thick tempered safety glass, a soft coat Low-E (SolarBan 60 or Cardinal 272) film on the #2 surface, and a low conductive spacer with brown-painted muntin grids provided within the glass.”
- 5. Revise the following in Sub-Section 2.01 Glass Materials and Products, Paragraphs B, C, D and E, Subparagraphs 2, in each paragraph:
“2. Glazing noted as Obscure or Obscured glazing shall be clear and located on the interior pane of insulated glass units. Obscure glazing pattern to be selected by the Owner from the Manufacturer’s standard obscure glazing patterns.
- 6. Add the following to Sub-Section 3.01 Installation, Paragraph C:
“8. Install glazing sealed into window framing with: a cap bead of sealant sloped to shed water; a pre-shimmed spacer tape; a toe bead of sealant; and a heel bead of sealant inboard of the glazing pocket weeps.

Section 089000 – Louvers and Vents

- 1. Revise the following in Sub-Section 1.05, Warranty. Paragraph A.:
Delete the word: “five” and add the word: “three”.
- 2. Add the following to Sub-Section 1.07 Quality Assurance:

“B. Installer’s and Manufacturer’s Qualifications:

1. Manufacturing of louvers, of types specified, with a minimum of 5 years experience.
2. All louver/vent and frame components from the same manufacturer.
3. Installer with min. 5 years experience.

C. DRAWING CHANGES:

No Addendum Items.

SECTION 019110

BUILDING ENCLOSURE COMMISSIONING REQUIREMENTS

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Attention is directed to the Parts A, B, and C, and all sections within Part D - Division 1 - General Requirements, as listed in Table of Contents which are hereby made a part of this Section.
- C. The requirements of this Section shall in no way relieve the Contractor, Designer of Record, and other parties to this project of their respective contractual obligations to the Owner for meeting the specified performance levels in the design and construction of this project.

1.02 SCOPE OF WORK

- A. This Section includes requirements for nonstructural commissioning of the building enclosure, including, but not limited to the following:
 - 1. Fenestration systems installed as part of the work outlined in the contract documents
 - 2. Interface conditions including flashings and sealant joints installed as part of the work outlined in the contract documents
- B. The materials, components, systems, and assemblies installed as part of the work outlined in the contract documents that comprise the building enclosure will be evaluated and performance tested as outlined in this Section. All testing specified herein shall be in accordance with each of the technical sections associated with the design and construction of the building enclosure.
- C. Testing and other work specified herein does not replace, reduce, or alter the scope of similar requirements specified in other specification divisions.
- D. An Enclosure Commissioning Plan will be created and managed by the Building Enclosure Commissioning Agent. The Enclosure Commissioning Plan shall include all requirements for commissioning of the building-envelope work.

1.03 COORDINATION AND SEQUENCING WITH RELATED WORK

- A. Refer to other Divisions of these Specifications to determine the type and extent of work therein affecting the work of this trade whether or not such work is specifically mentioned in this Section.

1.04 STANDARDS

- A. Comply with applicable building codes, the Contract Documents, and the following general specifications for commissioning work and procedures not otherwise specified.
 - 1. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE): Guideline 0: The Commissioning Process, 2005 Edition.
 - 2. National Institute of Building Sciences (NIBS): Guideline 3: Exterior Enclosure Technical Requirements for the Commissioning Process, 2012 Edition.

3. American Society for Testing and Materials (ASTM): E2813 – Standard Practice for Building Enclosure Commissioning, 2012 Edition.

1.05 SUBMITTALS

- A. All submittals related to the building envelope shall be forwarded by the designer of record to the Building Enclosure Commissioning Agent for review and comment after the Designer-of-Record's initial review, but before return to the Contractor. The Designer-of-Record shall review and address and/or respond to all Building Enclosure Commissioning Agent comments during their final review process.

1.06 ROLES AND RESPONSIBILITIES

- A. General Contractor's Responsibilities
 1. Coordinate and attend a construction kickoff meeting to discuss construction sequencing, trade coordination, and the General Contractor's site-specific Quality Assurance program, to be implemented during construction of the building enclosure.
 2. Provide submittals required herein and by other divisions of the Specifications.
 3. Participate in regular project meetings with the various members of the design and construction teams, including, but not limited to, the Owner, Owner's representatives, Designer of Record, Building Enclosure Commissioning Agent, suppliers, and manufacturer technical representatives. Building-enclosure commissioning requirements and progress shall be included on the agenda at each project meeting. Contractor, with the appropriate subcontractors in attendance, shall review, update, and discuss issues and concerns noted by the DOR, the Building Enclosure Commissioning Agent, the Owner, or the Owner's Project Manager that were identified during the previous week.
 4. Cooperate with the Building Enclosure Commissioning Agent including, but not limited to, providing access to work, an adequate schedule for the commissioning tasks, and assisting with commissioning tasks as specified.
 5. The Contractor shall provide all quality control and quality assurance testing and documentation outlined in the technical specification Sections. Refer to other Divisions of the Specifications to determine the type and extent of work therein affecting the work of the Enclosure Commissioning Plan, whether or not such work is specifically mentioned in the Enclosure Commissioning Plan.
- B. Building Enclosure Commissioning Agent's Responsibilities
 1. Review and provide recommendations for technical submittals and shop drawings related to the building enclosure, after review by the Designer of Record but before return to the Contractor, for conformance to the design intent, Owner's project requirements, and industry standards. Designer of Record shall review all submittal comments made by the Building Enclosure Commissioning Agent prior to distribution to the Contractor.
 2. Conduct periodic site visits to review the progress of the work and evaluate its compliance with the design documents, owner's project requirements, and industry standards. The Building Enclosure Commissioning Agent will identify non-complying work items, report them to the Owner's Project Manager and the Designer of Record, and provide a summary report of observations. The summary report will include a list of non-complying work items to serve as an ongoing punch list updated after each site visit.

3. Witness and review all enclosure commissioning testing as specified herein. For all tests, the performing entity shall provide a testing report that includes a summary of testing procedures, parameters, results, and any recommended corrective work (if applicable).
 4. The Building Enclosure Commissioning Agent is not authorized to:
 - a. Release, revoke, alter, or expand requirements of Contract Documents.
 - b. Approve or accept any portion of the work.
 - c. Perform any duties of the Contractor.
- C. Designer Of Record's Responsibilities
1. Review and approve submittals, substitutions, change requests, and other contract documents that affect the scope of the work. Designer of Record shall review Building Enclosure Commissioning Agent's comments on all submittals prior to issuing to the contractor. Designer of Record shall provide copies of all approved submittals, change orders, amendments or other contract documents affecting the scope of the work to the Building Enclosure Commissioning Agent.
 2. Conduct periodic site visits to review the progress of the work and evaluate its compliance with the design documents, owner's project requirements, and industry standards.
 3. Provide final resolution of issues and non-complying work items noted by the Building Enclosure Commissioning Agent.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 COMMISSIONING SITE OBSERVATIONS

- A. Building Enclosure Commissioning Agent will conduct periodic site visits to review the progress of the work and evaluate its compliance with the design documents, owner's project requirements, and industry standards. Contractor shall coordinate and provide access for the Building Enclosure Commissioning Agent to review the work.
- B. The Building Enclosure Commissioning Agent will identify non-complying work items, report them to the Owner's Project Manager and the Designer of Record, and provide a summary report of observations. The summary report will include a list of non-complying work items to serve as an ongoing punch list updated after each site visit. Designer of Record shall review and provide direction regarding all non-complying work items.
- C. Contractor shall notify the Designer of Record and Building Enclosure Commissioning Agent immediately after any remedial work is complete before such conditions are covered for review of the remediated work. Photographic documentation of remediated conditions shall only be acceptable for a specific condition if previously approved by the Designer of Record and Building Enclosure Commissioning Agent.

3.02 BUILDING ENCLOSURE PERFORMANCE TESTING

- A. General Building Enclosure Testing Requirements
 1. Contractor shall provide a representative to be present and have a representative present from each trade and/or subcontractor associated with installing the system during building enclosure performance testing.

2. Contractor shall provide a written protocol and a timeline for repair of any deficiencies noted during the performance testing and/or a written report from the third-party agency performing the tests indicating what repairs are required.
3. Contractor shall provide a repair and remediation protocol for any systematic failures identified by the Building Enclosure Commissioning Agent, including a timeline for repair of all affected elements. Repaired elements shall not be covered up without review by the Building Enclosure Commissioning Agent.
4. If tests cannot be completed because of a deficiency outside the scope of the work of this project, the deficiency shall be documented and reported to the Owner and the Designer of Record. Deficiencies shall be resolved and corrected by appropriate parties and the test rescheduled.
5. If a specimen fails testing, the failed specimen shall be remediated and that specimen plus two additional specimens of similar installation with similar repairs made shall be tested for compliance with the specification at the Contractor's expense.

B. Sealant Adhesion Testing

1. Contractor shall coordinate for a manufacturer's technical representative to perform on-site sealant adhesion testing of all approved sealants on all prepared substrates at the site to ensure that the materials are suitable for installation and that the optimum primers are selected. The Contractor shall schedule the testing; notify the Designer of Record, Owner's Project Manager, and Building Enclosure Commissioning Agent 48 hrs in advance and provide a written test report.
2. Methodology: Sealant adhesion testing shall follow the procedures outlined in ASTM C1521 – Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints, using the "tail method," except as modified herein and by Specification Section Sections 084113 – Aluminum-Framed Storefront and Curtainwall and 085113 – Aluminum Windows. Contractor shall allow a minimum of twenty-one days or time period required by the manufacturer, whichever is less, for sealant to cure with full adhesion prior to testing.
3. Frequency of Tests: Supply number of tests and locations required by Specification Sections 084113 – Aluminum-Framed Storefront and Curtainwall and 085113 – Aluminum Windows.
4. Acceptance Criteria: Cohesive failure of sealant after an elongation of at least twice the manufacturer's reported design elongation shall be acceptable for this project. Cohesive failure prior to an elongation of at least twice the manufacturer's reported design elongation or adhesive failure at any elongation shall constitute a failure.

C. Fenestration Water Penetration Resistance Testing

1. Building Enclosure Commissioning Agent will observe water testing of installed windows in accordance with ASTM E1105 – Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference, and the parameters specified in Section 084113 – Aluminum-Framed Storefronts and Curtainwall and Section 085113 – Aluminum Windows. The Building Enclosure Commissioning Agent will include a summary of the water test procedures, results, and any recommended corrective work in the site visit reports. The testing agency is required to submit a report documenting the tests.

2. Methodology: Water penetration testing shall follow the procedures outlined in ASTM E1105 – Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference, and the parameters and procedures specified in Section 084113 – Aluminum-Framed Storefronts and Curtainwall and Section 085113 – Aluminum Windows. Air pressure chambers shall be installed such that water leakage through the window perimeter condition can be evaluated.
3. Frequency of Tests: Frequency of tests shall comply with frequency specified in Section 084113 – Aluminum-Framed Storefronts and Curtainwall and Section 085113 – Aluminum Windows.
4. Acceptance Criteria: Windows shall not allow any water to penetrate the window assembly throughout the duration of testing at the specified pressure(s). Any uncontrolled water leakage through the window assembly, including receptor frames, shall constitute a failure of the window. Uncontrolled water leakage shall be defined as water that accumulates at any location within or around the fenestration that is not designed to accommodate, control, and direct such water to the building exterior.

END OF SECTION