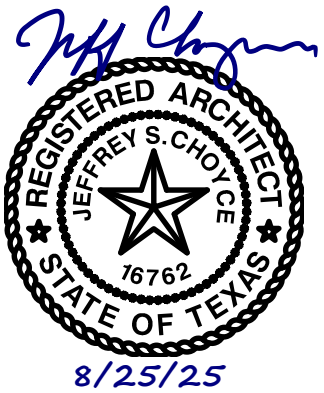
A D D E N D U M N O. 1

AUGUST 25, 2025

TIMBERWOOD MIDDLE SCHOOL IMPROVEMENTS

HUMBLE, TEXAS

BRW Project No.: 223005.00
Humble ISD No.: CSP# 2026-03



The Construction Documents for the above referenced project, dated **JUNE 13, 2025** shall be amended as follows:

CLARIFICATIONS

1.01 A Pre-Proposal Conference and Site Walk was conducted on Tuesday, AUGUST 19, 2025. For reference only, see attached Sign-In Sheet.

SPECIFICATIONS

1.02: PROJECT MANUAL COVER AND TITLE PAGES

A. Amend the CSP# to read "CSP# 2026-03"

1.03: SECTION 00 00 10 TABLE OF CONTENTS

A. Remove Section Title "07 46 46 – Mineral Fiber Cement Siding"

1.04: SECTION 00 21 16 INSTRUCTIONS TO PROPOSERS

A. Replace entire section date JUNE 13, 2025 with section dated AUGUST 25, 2025, attached hereto.

1. Section 1.02 Qualified Offers, Part B was amended.
2. Section 1.02 Qualified Offers, Part F was added.
3. Section 1.04 Discrepancies and Ambiguities, Part A was amended.

1.05: SECTION 00 42 13 BASE PROPOSAL FORM – STIPULATED SUM

A. Replace entire section date JUNE 13, 2025 with section dated AUGUST 25, 2025, attached hereto.

4. Time of Completion Paragraph has been modified.

1.04: SECTION 01 10 00 SUMMARY

A. Amend specification section dated JUNE 13, 2025, as follows.

1. Add Section 1.03 Project Information, Part F "Project Budget: $9,250,000"
2. Add Section 1.09 Phased Construction, Part C "Moving Services shall be provided by the Contractor, not exceeding 10,000SF of existing FF&E. FF&E shall be moved internal to the existing facility. Move shall include but not be limited to musical instruments, floor/table power tools, shelved power tools, classroom tables/chairs. Moves will be phased. Mobilization for moves will be dependent on approved Contractor phasing plan."
3. Add Section 1.09 Phased Construction, Part D "The project shall be substantially complete on December 1, 2026. The district is to take beneficial occupancy of the new track at the end of

February, 2026. The district is to take beneficial occupancy of the renovation scope of work at the end of July, 2026."

1.05: SECTION 07 62 00 SHEET METAL FLASHING AND TRIM

A. Section dated AUGUST 25, 2025, attached hereto, is entirely new and hereby made part of this addendum.

1.06: SECTION 08 41 13 ALUMINUM ENTRANCES AND STOREFRONT

A. Section dated AUGUST 25, 2025, attached hereto, is entirely new and hereby made part of this addendum.

DRAWINGS - N/A

END OF ADDENDUM NO. 1 *

SIGN-IN SHEET

Project Name TIMBERWOOD MIDDLE SCHOOL ADDITIONS AND RENOVATIONS

Project No.: CSP# 2026-03

Meeting: PRE-BID MEETING **Meeting Date:** AUGUST 19, 2026 **Meeting Time:** 11:00 AM

***Effective January 1, 2006, any person or entity who contracts or seeks to contract Humble Independent School District for the sale or purchase of property, goods, or services (as well as agents of such persons) (hereafter referred to as Vendors) are required to file a Conflict of Interest Questionnaire with the District. Each covered person or entity who seeks to or who contracts with Humble Independent School District is responsible for complying with any applicable disclosure requirements. ***

***Signing this Document confirms you have read, understand, and comply with Section 176.006 Disclosure Statement Requirements noted below. Form CIQ is in this proposal package and MUST be in your submitted proposal.

The Local Government Officers of the Humble Independent School District are:
Board of Trustees: Position 1 Oscar Silva – Term expires 2029; Position 2 Robert Scarfo – Term expires 2027; Position 3 Chris Parker – Term expires 2029; Position 4 Ken Kirchhofer – Term expires 2027; Position 5 Elizabeth Shaw – Term expires 2029; Position 6 Marques Holmes – Term expires 2027; Position 7 Michael Grabowski – Term expires 2027; Superintendent Dr. Roger Brown

Name	Kaydence O'Leary	Company	AFresh Vision	Email	kaydence@avecontractors.com
Name		Company		Email	
Name	Dewayne Forest	Company	Curry Medina	Email	dewayne.forest@gurrymedina.com
Name	Ryland Parker	Company	Prime Contractors	Email	estimating@primecontractors.inc.com
Name	Marshall McMurrey	Company	CMost	Email	marcmurrey@cmostTX.com
Name	Angel Duron	Company	cornerstone	Email	angel@cc
Name	Gabriel Gonzalez	Company	ICI	Email	gabriel.gonzalez@iciconstructioninc.com
Name	Felicia Chapa	Company	Apex	Email	feliciachapa@yahoo.com
Name	Luis Flores	Company	RSI	Email	luis.flores@rsitx.com
Name	Jaxson Lyness	Company	millennium	Email	Estimating@mps-team.com
Name	Bruce Reyes	Company	CMOST	Email	breyes@cmosetx.com
Name	Geoff Blanchard	Company	H&H Skylights	Email	gblanchard@hhskylights.com
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Name		Company		Email	
Name		Company		Email	

SIGN-IN SHEET

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Name	Stephanie Thomas	Company	DivisionOne	Email	bid@dlconstruction.com
Name	Nestor Gonzalez	Company	C.A. Walker	Email	bids@cawalker.net
Name	RAUL CALDERA	Company	NASH INDUSTRIES	Email	BIDS@NASHINDUSTRIESINC.COM
Name	Lorraine Olah	Company	The Mehling Group	Email	lo@mehlinggroup.com
Name	Chris Mehling	Company	The Mehling Group	Email	chris@mehlinggroup.com
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Name	Carsyn Gwinnicky	Company	The Mehling Group	Email	carsyn@mehlinggroup.com
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Name	Jeff Pearce	Company	Pogue Construction	Email	bids@pogueconstruction.com
Name		Company		Email	
Name		Company		Email	
Name		Company		Email	
Name		Company		Email	
Name		Company		Email	

SIGN-IN SHEET

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ATTENDEES:

Name	Bryan Applegate	Company	Humble ISD	Email	bappleg@humbleisd.net	Initials	BA
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Name	Thomas Haggerty	Company	Humble ISD	Email	txhagger@humbleisd.net	Initials	
Name	Becky Rangel	Company	Humble ISD	Email	brangel@humbleisd.net	Initials	BNR
Name	Jason Seybert	Company	Humble ISD	Email	jseyber@humbleisd.net	Initials	JS
Name		Company	Humble ISD	Email		Initials	
Name	Jeff Choyce	Company	BRW Architects	Email	jchoyce@brwarch.com	Initials	
Name	Matthew Duggan	Company	BRW Architects	Email	mduggan@brwarch.com	Initials	
Name	Jonathan Land	Company	BRW Architects	Email	jland@brwarch.com	Initials	
Name		Company		Email		Initials	

SECTION 00 21 16 - INSTRUCTIONS TO PROPOSERS

PART 1 - GENERAL

1.01 SUMMARY

A. Contract Documents (drawings and specifications) in the form of a download link may be obtained beginning Tuesday, August 5, 2025 on Ion Wave @ https://humbleisd.ionwave.net

B. Proposer may withdraw his Proposal at any time prior to the last date and time specified for submission of Proposals. A Proposer may resubmit his Proposal at any time prior to the deadline for submission of Proposals, pursuant to the Proposal procedures requirements stated herein. Once Proposals are opened, no Proposer may modify or withdraw his Proposal within ninety (90) days after the actual date of the Proposal opening.

C. Sealed proposals in conformity with the Proposal Procedures for the project will be received electronically by the Humble Independent School District via the Ion Wave Bid Submission Portal located at https://humbleisd.ionwave.net on Thursday, September 11, 2025. Base due at 1:00 PM, Alternates due at 2:00 PM.

D. A non-mandatory Pre-Proposal Conference will occur at **11:00 AM on Tuesday, August 19, 2025**, in the Large Conference Room at the Humble ISD Maintenance and Construction facility, 1703 Wilson Road, Building B, Humble, Texas, 77396. In addition, a non-mandatory job site walk to follow immediately after pre-proposal meeting.

E. Proposal is invalid if it has not been received by Owner by the last time and date for receipt of Proposals indicated herein, or prior to any written extension thereof issued to the Proposer. Proposals received after the deadline will be returned unopened.

F. Proposal Bond: A Proposal Bond from a bonding company acceptable to the District or a certified check in the amount of equal to 5% pf the greatest amount proposal **must** accompany each Offeror's proposal.

1.02 QUALIFIED OFFERORS

A. Competitive Sealed Proposals will be accepted from qualified Offerors (General Contractors) only for the entire scope of work described in the Contract Documents. As a prerequisite to an Offeror's qualifying for the award of contract on this work, the Offeror must complete each item of the Contractor's Qualification Statement (AIA Document A305). Contractor must use the current A305 form. The Statement forms may be obtained from the Houston Chapter of the American Institute of Architects, 902 Commerce St., Houston, Texas 77002, (713) 520-0155 or at https://shop.aiacontracts.com/. In addition to the information contained in the Statement form, offerors shall also address the selection criteria issues listed under the paragraph below for Determination of Successful Respondent and Award of contract.

B. Proposers shall submit Contractor's Qualification Statement (AIA Document A305) to Humble ISD no later than 4:00 PM on Monday, August 25, 2025. Documents shall be submitted electronically via email to linda.collier2@humbleisd.net. Include with AIA Document A305 a resume for each of the Proposers team to include Project Manager, Project Superintendent, and other support staff proposed for this project. In addition, include a written summary describing the role each team member will have on the project and what percentage of time each team member will dedicate to this project on a weekly basis.

C. A PDF copy of the completed A305 document must be submitted with Proposal on the District's online bidding system.

D. The primary purposes of the evaluation process will be:
   1. Gather information for the Owner's evaluation procedure.

2. Enable the Owner and/or Architect to evaluate the Offeror's qualifications.

E. The Contract shall be awarded to the Contractor offering the "best value" to the Owner, in addition to the purchase price, based on the published selection criteria and on its ranking evaluation.

F. Each prospective proposer is to review the "References Instructions" under the Attachments section in IonWave. Proposers shall forward the link found there to their references list. When a reference survey is completed, it will go directly to Humble ISD. Reference are due end of business day on **September 11, 2025**

1.03 REJECTION OF PROPOSALS

A. The Proposer acknowledges the right of the Owner to reject any and all Proposals and to waive any informality or irregularity in any Proposal received. Owner reserves the right to accept or reject any or all Alternates, to accept any combination of Alternates, and to accept any Proposal considered advantageous. Owner shall have all other rights with regard to the Proposal provided by law.

B. In addition, the Proposer recognizes the right of the Owner to reject a Proposal if the Proposer failed to submit the data required by the Proposal Documents, or if the Proposal is in any way incomplete or irregular.

C. The Owner may reject a Proposal due to any irregularity, informality or non-responsiveness, including, but not limited to, any of the following:
   1. Proposals which are not timely submitted
   2. Proposals which are not signed.
   3. More than one Proposal for same project from an individual, firm, partnership, or corporation.
   4. Proposals containing omissions, alteration of form, additions, qualifications, or conditions not called for by the Owner, or incomplete Proposals may be considered in non-compliance and may be rejected. In any case of ambiguity or lack of clarity in the Proposal, Owner reserves the right to determine the most advantageous Proposal or to reject the Proposal
   5. Any other cause requiring or permitting rejection under applicable law.

1.04 DISCREPANCIES AND AMBIGUITIES

A. No oral explanation regarding the meaning of the drawings and specifications will be made and no oral instructions will be given before award of the contract. Each Proposer shall examine the Proposal documents carefully and shall make written request no later than **4:00 PM on AUGUST 25, 2025,** in Ion Wave https://humbleisd.ionwave.net for interpretation or correction of any ambiguity, inconsistency, or error therein which he may discover. All written request for the project shall be submitted under the questions tab in the Alternates section of the Project in Ion Wave. Any interpretation or correction will be issued as an Addendum by the Architect. Only a written interpretation or correction by Addendum shall be binding. No Proposer shall rely upon any interpretation or correction given by any other method.

B. Prior to the receipt of Proposals, Addenda will be mailed or delivered to each person or firm recorded by the Architect as having received the Proposal documents and will be available for inspection wherever the Proposal documents are kept for that purpose. It is the obligation of each Proposer to make sure that it has received any and all addenda prior to submitting its Proposal.

1.05 SUBMISSION OF POST-BID INFORMATION

A. Upon request by the Architect/Owner, each Proposer shall, within seven days thereafter, submit any additional information required to evaluate the Proposal, including any information on subcontractors. The Architect/Owner may discuss with any Proposer any subcontractor that

Owner has reasonable objection to, or which has been disbarred from performing services for Owner.

1.06 PROPOSER'S ACCEPTANCE OF EVALUATION METHODOLOGY

A. **WAIVER OF CLAIMS: EACH PROPOSER BY SUBMISSION OF A RESPONSE TO THIS REQUEST FOR PROPOSALS ("RFP") WAIVES ANY CLAIMS IT HAS OR MAY HAVE AGAINST THE ARCHITECT, ITS CONSULTING ENGINEERS, OR ANY OTHER CONSULTANTS, AND THEIR RESPECTIVE EMPLOYEES, OFFICERS, MEMBERS, DIRECTORS AND PARTNERS, AND THE OWNER, ITS EMPLOYEES, OFFICERS, AGENTS, REPRESENTATIVES, AND THE MEMBERS OF OWNER'S GOVERNING BODY, CONNECTED WITH OR ARISING OUT OF THIS RFP, INCLUDING THE ADMINISTRATION OF THE RFP, THE RFP EVALUATION, SUBMISSION OF A PROPOSAL INDICATES PROPOSER'S ACCEPTANCE OF THE EVALUATION TECHNIQUE AND PROPOSER'S RECOGNITION THAT SOME SUBJECTIVE JUDGMENTS MUST BE MADE BY THE OWNER DURING THE EVALUATION OF PROPOSALS, WITHOUT LIMITING THE GENERALITY OF THE FOREGOING. EACH PROPOSER ACKNOWLEDGES THAT THE BASIS OF SELECTION AND THE VALUATIONS SHALL BE MADE PUBLIC AFTER THE CONTRACT IS AWARDED AND WAIVES ANY CLAIM IT HAS OR MAY HAVE AGAINST THE ABOVE-NAMED PERSONS, DUE TO INFORMATION CONTAINED IN SUCH EVALUATIONS.**

END OF SECTION 00 21 16

SECTION 00 42 13 - BASE PROPOSAL FORM - STIPULATED SUM

PROJECT: Humble ISD Timberwood Middle School Additions & Renovations

CONTRACTOR: _____

The undersigned proposer does hereby declare and stipulate that this proposal is made in good faith, without collusion or connection with any other person or persons proposing for the same work, and that it is made in pursuance of and subject to all the terms and conditions of the advertisements, proposal requirements, the proposed construction contract, and the contract documents, including the plans pertaining to the work to be done, all of which have been examined by the undersigned. The undersigned hereby declares that he has visited the site, has had sufficient time to make all tests and investigations to arrive at an intelligent estimate of the cost of doing the work, and has carefully examined the plans, specifications, and contract documents relating to the work covered by his proposal, and that he agrees to do the work, and that no representation made by the city are in any sense a warranty, but are mere estimates for guidance of the contractor.

The undersigned further agrees that he will provide all necessary tools and apparatus, do all work, furnish all materials, and do everything required to carry out the work covered by this proposal, in strict accordance with the contract documents, and the requirements pertaining thereto, for the sum of sums set forth.

TIME AND PLACE OF RECEIVING PROPOSALS:
Sealed proposals in conformity with the Proposal Procedures for the project will be received electronically by the Humble Independent School District via the Ion Wave Bid Submission Portal located at https://humbleisd.ionwave.net until 1:00 PM on Thursday, September 11, 2025**.** Alternates due at 2:00.

A non-mandatory Pre-Proposal Conference will occur at 11:00 AM on Tuesday, August 19, 2025, in the Large Conference Room at the Humble ISD Maintenance Center (MC) 1703 Wilson Road, Building B, Humble, Texas, 77396. Job site walk to follow immediately after pre-proposal meeting.

Received proposals will be read aloud in person beginning at 3:00 PM on Thursday, September 11, 2025, in the Large Conference Room at the Humble ISD Maintenance and Construction facility, 1703 Wilson Road, Building B, Humble, Texas, 77396. Can join via zoom Meeting: https://humbleisd.zoom.us/j/82975654330?pwd=VHmS4wruHzXa6cNIH7Hvw5DRWPds0h.1

Meeting ID: 829 7565 4330
Passcode: 874242

One tap mobile
+13462487799,,82975654330#,,,,*874242# US (Houston)
+12532050468,,82975654330#,,,,*874242# US

PROJECT DESCRIPTION:
Humble ISD Timberwood Middle School Additions & Renovations
Approximately 15,000 square foot addition and renovation to portions of the existing 139,000 square foot one-story occupied middle school building. See Drawings and Specifications for additional details.

LOCATION OF PROJECT:
Humble ISD Timberwood Middle School (TMS)

BONDS: Within ten days, the contractor will deliver the Contract and Performance and Payment Bonds as required in the specifications. The name and address of the corporate surety with which the proposer proposes to furnish the specific Performance and Payment bond is as follows:

Full Surety Company Name: _____
Address: _____

_____
Name of Representative: _____
Telephone: _____
Fax: _____

TIME OF COMPLETION: The undersigned Proposer agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Humble ISD, and shall fully complete the Work within 406 calendar days.

LIQUIDATED DAMAGES: Undersigned understands that liquidated damages as defined in the Supplementary Conditions will be included in the form of Agreement between Owner and Contractor and that the contractor will be bound thereto.

LUMP SUM PROPOSAL: This is a lump sum proposal. The prices in the lump sum proposal shall include all labor, equipment, materials, services, transportation, shoring, removal, de-watering, overhead, profit, insurance, bonding, etc., to cover the completed work in place.

BASE PROPOSAL: Base proposal for the stipulated lump sum of **$**_____

ADDENDA: The undersigned hereby acknowledges receipt of the following addenda to the Drawings and Specifications, all of the provisions and requirements of which addenda have been taken into consideration in the preparation of this Proposal.

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

UNIT PRICES: Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.

Unit Price No.1: Cutting and patching of concrete floor slabs _____
Unit: Square feet of concrete removal

Unit Price No.2: Miscellaneous and structural steel _____
Unit: Cost in place of pounds of fabricated steel as indicated on itemized invoice of steel supplier and verified by Architect.

Unit Price No.3: Drilled Piers _____
Unit: Liner feet of pier.

Unit Price No.4: Drilled Pier Casings _____
Unit: Liner feet of pier.

PROPOSAL DOCUMENTS

Proposal Documents Include:

- 00 21 16 Instructions to Proposers
- 00 42 10 Base Proposal Form - Stipulated Sum
- 00 43 13 Bid Bond
- 00 43 14 Alternates Proposal Form
- 00 43 46 Proposed Subcontractors Form
- 00 45 16 AIA A305-1986 Contractors Qualification Statement
- 00 45 19 Certificate of Interested Parties Form 1295
- 00 45 21 Conflict of Interest Questionnaire
- 00 45 46 W9 Request for Taxpayer Id
- 00 45 50 Asbestos-Short Term Worker Notification
- The resume of the Project Managerp
- The resume of the Superintendent
- The proposed project schedule

CORRELATION OF DOCUMENTS: Initial:_____

1. Any discrepancy in the documents shall be interpreted to include the most restrictive or costly solution. In case of discrepancy, either in figures or Drawings or Specifications, the matter must be promptly submitted by the Contractor to the Architect, who will promptly make a determination in writing. Any adjustment by the Contractor without such a determination by the Architect will be at the Contractor's own risk and expense. The Architect will furnish, as necessary, additional detailed Drawings and information for clarification.
2. If a document discrepancy is identified prior to bidding, the Architect is to be notified so a written clarification may be issued.
3. Any survey drawing documents included herein are for convenience of the Contractor and Owner. The Architect assumes no responsibility as to their completeness or accuracy.
4. Anything mentioned in the Specifications and not shown on the Drawings or shown on the Drawings and not mentioned in the Specifications, is of like effect as if shown or mentioned in both.
5. On any of the Drawings in which a portion of the work is detailed or drawn out and the remainder is shown in outline, the parts detailed or drawn out will apply also to all other like portions of the work.
6. When the word "similar" appears on Drawings, it has a general meaning and must not be interpreted as meaning identical. All details must be worked out in relation to their location and connection with other parts of the work.
7. Refer to Architectural Drawings for verification of locations, sizes and dimensions.

Respectfully Submitted,

Legal Name of Proposer Firm or Corporation

Street Address

City, State Zip

Telephone

Fax

E-Mail

WITNESS:

Name of Witness (Printed or Typed)

Signature

Address

City, State Zip

Date

Affix Seal of Corporation
(if Proposer is a Corporation)

State of Incorporation

Tax ID Number

OR

Social Security Number

Name of Officer (Typed or Printed)

Signature of Officer

Title of Officer

Date

NOTE: Fill in with ink or type and submit complete with attached papers.

END OF SECTION 00 40 10

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

B. General Coordination Procedures, (Reference Specification Section 01 31 00) General Contractor shall coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work that depend on each other for proper installation, connection, and operation.

1.02 SUMMARY

A. Section Includes:
   1. Provide all metal flashing and sheet metal work, as shown on the drawings and as herein specified.

B. Related Sections include the following:
   1. Division 04 Section - Unit Masonry for through-wall flashing.
   2. Division 06 Section - Rough Carpentry for blocking, nailers, etc.
   3. Division 07 Section - Joint Sealers.
   4. Division 07 Section - Painting.
   5. Division 07 Section - Roof Specialties for manufactured roof specialties not part of sheet metal flashing and trim.
   6. Division 07 Section - Roof Accessories for set-on-type curbs, equipment supports, vents, and other manufactured roof accessory units.
   7. Division 07 Section - Expansion Control for manufactured sheet metal expansion-joint covers.

1.03 REFERENCE STANDARDS

A. Applicable portions of SMACNA, ASTM and NAAMM,

1.04 PERFORMANCE REQUIREMENTS AND QUALITY ASSURANCE

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with the latest edition of NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
   1. Sheet Metal Standard for Copper: Comply with CDA's "Copper in Architecture Handbook." Conform to dimensions and profiles shown unless more stringent requirements are indicated.
   2. SPRI Wind Design Standard: Fabricated copings and roof edge flashings for low slope roofs shall be designed and installed for wind loads in accordance with IBC Chapter 16, including local code amendments as applicable, and tested for resistance in accordance with Test Methods RE-1, RE-2 and RE-3 of ANSI/SPRI/FM 4435/ES-1.
      a. Roof edge products shall be UL Classified by Underwriters Laboratories, Inc. or other building code approved 3rd party verification of compliance with the ANSI/SPRI/FM 4435/ES-1 Wind Design Standard.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss. Account for temperature change of 120 deg F ambient, 180 deg F material surfaces.

D. Installer: Engage an experienced installer who has completed similar work of a comparable scale with a record of successful performance.

E. All non-metallic materials shall be certified as totally asbestos-free.

1.05 GUARANTEE

A. Sheet metal applicator and General Contractor shall personally guarantee sheet metal work for a period of Two-Years after acceptance of the building by the Owner against any defects or water leaks. Guarantee shall include all labor and materials necessary to correct any defects or water leaks upon notice from the Owner.

B. Furnish manufacturer's standard 20 year warranty stating architectural fluorocarbon finish will be:
   1. Free of fading of color change in excess of 6 NBS units as measured per ASTM D 2244-68;
   2. Will not chalk in excess of numerical rating of 7 when measured in accordance with standard procedures specified in ASTM D 659-74;
   3. Will not peel, crack, chip, or de-laminate.

1.06 SUBMITTALS

A. Division 01 Section - Submittal Procedures: Procedures for submittals.

B. Submit shop drawings for review and approval prior to ordering of materials and fabrication of the required shapes and metal flashings. Submittal for the coping system is required.

C. Secure roof system manufacturer's written endorsement of all submitted proposed flashing details. Designer approval of flashing submittals is mandatory prior to pre-roofing conference. ALL edge metals and copings shall be ES 1 certified.

D. Failure by the contractor to submit shop drawings required above shall release the Architect from any liabilities due to the negligence on the part of the Contractor to comply with the construction documents.

E. Samples: Submit samples of sheet metal flashings, trim, copings, accessory items, and prefinished items of profiles, gauge and finish to be used.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Sheet Metal:
   1. Hot-dipped Galvanized Steel for use as counterflashing's (where not visible from the ground), pitch pans and expansion joints: Minimum 24-gauge, G-90, hot-dipped galvanized metal, commercial quality, ASTM A 525.
   2. Hot-dipped Galvanized Steel for use as continuous clips: Minimum 22-gauge, G-90, hot-dipped galvanized metal, commercial quality, ASTM A 525.
   3. Elvaloy® Cladded Metal: Shall be G-90 galvanized steel with 24 mil Elvaloy® membrane lamination; width shall be four feet; length shall be eight or ten feet. Sheet metal for receivers and counter-flashings: 24 gauge or as noted on drawings galvanized sheet steel bent to required shapes.

4. Prefinished Galvanized Sheet Steel (where visible from the ground): Shall be 20-gauge flat stock, prefinished with Kynar finish meeting ASTM A 446, forty-five and one-half inches to forty-eight inches width by one hundred twenty inches in length (45-1/2" - 48" x 120") for use as new metal edge gravel guard, cover plates, downspouts, gutters, coping and miscellaneous metal. Bend to required shapes. Standard color to be selected by Architect.
5. Sheet metal for downspouts, eave flashing, copings, gravel stops, gutters, drip edges and similar exposed items shall be 20 gauge hot-dip galvanized sheet steel. Bend to required shapes.

B. Stainless Steel Sheet: ASTM A 240 / A240M or ASTM A 666, type 304, dead soft, fully annealed. Provide sheet in 18 gauge thickness for jamb flashing.

C. Lead: Weight 4 lbs. per square foot.

D. Solder: ASTM D32, Alloy gauge 58, 50% tin, 50% lead.2.01C

E. Finish for Galvanized Steel: Kynar coating in colors as selected by Architect.

F. Nails for Sheet Metal Work: 10 Gauge galvanized ring type steel of sufficient length to adequately secure sheet metal work.

G. Aluminum Trim Fasteners: Exposed fasteners shall be aluminum or stainless steel. Unexposed fasteners may be cadmium or zinc plated steel in accordance with ASTM A164-55 and 165-55. Steel anchors shall be properly insulated from aluminum.

H. Roof Penetration Flashing: Lead coated copper 16 oz./SF. Roof Penetration Flashing: Lead coated copper 16 oz. /SF.

I. Through-Wall, Door/Window Sill and Head Flashings:
1. Where embedded in masonry (not exposed to view): 3 oz. copper composite Multi-Flash 500 by York or approved equal. See Division 4 section “Unit Masonry”.
2. Where exposed to view: Prefinished 24 gauge galvanized steel with PVDF coating in color(s) as selected by Architect. Provide with drip edges hemmed 1/2” on underside.

J. Metal Jamb Flashing: Provide 18 gauge prefinished metal, with hemmed edge.

K. Reglets: Equal to Fry original metal reglet.

L. Counter Flashing. "Springlock Flashing" by Fry Reglet.

M. Sheet Metal Fasteners: Galvanized steel with washers where required.

N. Hooded Pans with Pourable Sealant: As detailed in drawings, constructed of 20 gauge galvanized sheet steel, riveted and soldered watertight. Provide hooded pans at all new pipe, conduit, refrigerant line and other similar through-roof penetrations as necessary where power / condensate do not penetrate within RTU roof curbs. Bed flanges with plastic cement (Fed. Spec. SS-C-153, Type II) on top of roofing. Caulk around penetrations. Fill pans with roofing granules to 1" from top, and fill to the top with pourable sealant. Mold sealant to cone shape sloping to outside.
1. Provide pans of adequate sizes for penetrations as indicated in Drawings, including space between penetrations within the same hooded pan.

O. Sealant: one-component polyurethane, conforming to requirements of FS TT-S-230C, non-staining and non-bleading.

P. Expansion Joint Field and AT Wall:
1. Shall be as outlined by SMACNA details, and be in full compliance with all provisions of SMACNA and FM Global requirements for attachment, installation and recommendations.

Q. Copings
   1. All coping shall be manufactured with low profile standing seam metal.
   2. Shall be minimum 24-gauge pre-finished Kynar installed in ten-foot (10') sections maximum. Incorporate low profile standing seam joints in the coping cap.
   3. Vertical fascia shall extend minimum two and one-half inches (2-1/2") or be minimum one and one-half inches (1-1/2") below bottom of nailer, whichever is greater.
   4. Shall be fabricated in accordance with all SMACNA provisions.

R. Gravel Guard/Fascia:
   1. Shall be installed with expansion joints, ten feet (10') on center, one-fourth inch (1/4") expansion leeway, with a cover plate.
   2. Shall be fabricated in accordance with all ES 1 and SMACNA provisions.

S. Bonnets/Hoods
   1. Fabricate and install metal bonnets over all pitch pans, NO EXCEPTIONS.
   2. Bonnets/Hoods shall be manufactured with metal compatible with metal to which bonnet is to be attached.
   3. On beams and other steel, weld in place bonnets fabricated from one-fourth inch (1/4") steel plate.
   4. Draw band bonnets fabricated from 22-gauge galvanized steel may be used on circular projections.

2.02 FABRICATION

A. All exposed edges shall be hemmed 1/2" on underside.

2.03 ALUMINUM FINISHES

A. General: Comply with Aluminum Association's (AA) "Designation System for Aluminum Finishes: for finish designations and application recommendations.

B. High-Performance Organic Coating Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid chromate-fluoride-phosphate conversion coating; Organic Coating; as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's instructions.
   1. Fluoropolymer 2-Coat Coating system: Manufacturer's standard 2-coat, thermo cured system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 605.2.
      a. Color and Gloss: To match Fabral New Architectural Color Palette Dark Bronze S04.

PART 3 - EXECUTION

3.01 INSPECTION OF SURFACES

A. Applicator responsible for inspecting substrates upon which sheet metal materials are to be placed for any defects or conditions that would impair finished installation. Application constitutes acceptance of the substrate.

3.02 APPLICATION

A. Details shown are design details, fabrication techniques, and methods as per SMACNA recommendations.

B. Proper and adequate provisions shall be made in fabrication, installing and fastening sheet metal work for expansion and contraction of metal and other materials entering into the work so that pulling, splitting, opening of joints, warpage or other failure of the work shall be prevented. Expansion joints in sheet metal placed not farther than 40 feet apart. Dissimilar

metal surfaces contacting one another, protected by bituminous coating to prevent galvanic or corrosive action from occurring.

C. Counter flashing constructed in lengths not exceeding 10 feet and installed in receiver so that flashing lays tightly against base flashing and overlaps base flashings a minimum of 4 inches. Joints between sections shall be tight and lay flat. Metal at corners continuous. Bent, crimped or warped sections are not permitted.
   1. Coordinate counterflashings with roofing installation of termination bars at top edge of roofing base flashings.

D. Use factory-fabricated corners at reglet changes in direction.

3.03 INSTALLATION

A. General: unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Anchor units of Work securely in place by method indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.
   1. All complete work shall be water and weathertight. Joints, cuts, miters, splices or other installation means made as neat as possible. Fastenings as inconspicuous as possible.

B. Install exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicate, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

C. Expansion Provisions: Provide for thermal expansion of exposed sheet metal work. Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less that 1 inch deep, filled with mastic sealant (concealed within joints).

D. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pretin edges of sheets to be soldered to a width of 1-1/2 inches, except where pretinned surface would show in finished Work.
   1. Do not solder the following metals:
      a. Aluminum.
   2. Pretinning is not required for the following metals:
      a. Lead-coated copper.
   3. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

E. Sealed Joints: Form no expansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.
   1. Use joint adhesive for nonmoving joints specified not to be soldered.

F. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.

G. Separations: Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.

1. Underlayment: Where installing stainless steel or aluminum directly on cementitious or wood substrates, install a slip sheet of red-rosin paper and a course of polyethylene underlayment.
2. Bed flanges of Work in a thick coat of roofing cement where required for waterproof performance.

H. Roof-drainage System: Install drainage items fabricated from sheet metal, with straps, adhesives, and anchors recommended by SMACNA'S Manual or the item manufacturer, to drain roof in the most efficient manner. Coordinate roof-drain flashing installation with roof-drainage system installation. Coordinate flashing and sheet metal items for steep-sloped roofs with roofing installation.

I. Roof-Penetration Flashing; Coordinate roof-penetration flashing installation with roofing and installation of items penetrating roof. Install flashing as follows:
1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.
2. Seal and clamp flashing to pipes penetrating roof, other than lead flashing on vent piping.

J. Splash Pans: Install where downspouts discharge on low-sloped roofs, unless otherwise shown. Set in roof cement or sealant compatible with roofing.

K. Equipment curb counter flashing shall be discontinuous 12" from each corner; use "L-shape" corner counter flashing pieces with 12" leg lengths.

L. Install materials to provide watertight fit, allowing for expansion & contraction without deformation.

M. Test all flashing, gutters, conductors, and downspouts for water tightness after completing installations; make repairs to deficient items as required attaining water tightness.

N. Copings: Flashing membrane shall extend under the coping and up and over the top of the wall to one inch below the outside edge of the nailer. Do not penetrate top of membrane with fasteners. Set copings with concealed front and rear cleats; do not mechanically fasten. Neatly trim away exposed-to-view excess membrane material.

O. Metal edge gravel stops: Finish ply field membrane shall extend under the metal edge gravel stop to one inch below the outside edge of the nailer prior to installation of primed metal edge gravel stop and continuous clip.

P. All outside roof metals that intersect the wall system shall be sealed at the wall to roof metal juncture.

3.04 FLASHING & COUNTERFLASHING REQUIREMENTS

A. Joints in thru-wall flashings and counter flashings shall be lapped 4" minimum with laps bedded in sealant.

B. Head and sill flashings shall not have joints and shall have sides turned up (edge dams) with all corners folded, not cut and shall extend 9" minimum beyond both sides of opening.

C. Head, sill and thru-wall flashings shall be set in a bead of sealant applied under the exterior edge of the flashing and on top of the masonry or lintel angle on which the flashing rests.

D. Penetrations in thru-wall flashing are not permitted. Vents in thru-wall flashing shall be completely flashed and water tight.

E. Metal reglets shall have a bead of sealant installed to complete system with counterflashing.

F. All thru-wall flashing shall extend through and up the interior face of exterior gypsum sheathing, as applicable.

G. Install metal jamb flashing, in material as noted, over adjacent air barrier system at jambs of curtainwall and other locations as shown on the drawings, as required to close openings to cavity wall. Mechanically attach with stainless steel fasteners and seal metal flashing to wall / air barrier with self-adhering membrane flashing as specified in Division 07 Section - Modified Bituminous Sheet Air Barriers.

3.05 CLEANING AND PROTECTION

A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

END OF SECTION 07 62 00

SECTION 08 41 13 - ALUMINUM ENTRANCES & STOREFRONT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

B. General Coordination Procedures, (Reference Specification Section 01 31 00) General Contractor shall coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work that depend on each other for proper installation, connection, and operation.

1.02 SUMMARY

A. Section Includes:
   1. Provide storefront (including aluminum doors and hardware), framing complete with glazing as shown on the drawings and as herein specified.

B. Related Sections:
   1. Division 05 Section - "Metal Fabrications".
   2. Division 06 Section - "Rough Carpentry".
   3. Division 07 Section - "Thermal Insulation".
   4. Division 07 Section - "Sheet Metal Flashing and Trim".
   5. Division 07 Section - "Joint Sealants".
   6. Division 07 Section - "Firestopping".
   7. Division 08 Section - "Aluminum Curtain Wall".
   8. Division 08 Section - "Door Hardware".
   9. Division 08 Section - "Glazing".

1.03 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design aluminum-framed systems, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. General Performance: Aluminum-framed systems shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:
   1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
   2. Dimensional tolerances of building frame and other adjacent construction.
   3. Failure includes the following:
      a. Deflection exceeding specified limits.
      b. Thermal stresses transferring to building structure.
      c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
      d. Glass breakage.
      e. Noise or vibration created by wind and by thermal and structural movements.
      f. Loosening or weakening of fasteners, attachments, and other components.
      g. Sealant failure.
      h. Failure of operating units.

C. Structural Loads:
   1. Wind Loads: As required by authorities having jurisdiction.
   2. Other Design Loads: As indicated on Drawings.

D. Deflection of Framing Members:
   1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane shall not exceed L/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
   2. Deflection Parallel to Glazing Plane: Limited to L/360 of clear span or 1/8 inch, whichever is smaller.
      a. Operable Units: Provide a minimum 1/16 inch clearance between framing members and operable units.

E. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:
   1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
   2. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
   3. Test Durations: As required by design wind velocity, but not fewer than 10 seconds.

F. Air Infiltration:
   1. Fixed Framing: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 6.24 psf.
   2. Entrance Doors: Maximum air leakage of 1.0 cfm/sq. ft. for pair of doors, and maximum of 0.5 cfm/sq. ft. for a single door, at a static air pressure differential of 6.24 psf.

G. Water Penetration under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 8 psf.

H. Energy Performance: Certify and label energy performance according to NFRC as follows:
   1. Thermal Transmittance (U-factor): Fixed glazing and framing areas shall have U-factor of not more than 0.50 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
   2. Solar Heat Gain Coefficient: Fixed glazing and framing areas shall have a solar heat gain coefficient of no greater than 0.25 as determined according to NFRC 200.

I. Thermal Movements: Provide aluminum-framed systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
   2. Interior Ambient-Air Temperature: 75 deg F.

J. brake metal oil canning that may be caused by design wind loads. Additionally, thickness may be greater but shall not be less than minimum thicknesses as specified elsewhere in these specifications, or minimum thicknesses as indicated in Drawings. Contractor shall include necessary thicknesses in his bid.Brake Metal: Provide in thicknesses as required to prevent oil canning, including for exterior

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Delegated-Design Submittal: For aluminum-framed entrances and storefronts indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Shop drawings and details based on the Contract Documents submitted to the Architect for review. Include plans, elevations, sections, full-size details, and attachments to other work. Show connection to and continuity with adjacent thermal, weather, and air barriers.

D. Samples for verification:
   1. Submit three samples of each required aluminum finish on aluminum plates or extrusions.

E. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, door hardware, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware. Submit for concurrent review with other door and hardware submittals.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the jurisdiction in which Project is located.

C. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.
   1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront. Compliant with local code requirements and as specified herein, whichever is more stringent.

D. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by manufacturer and witnessed by a qualified testing agency, or by a qualified testing agency.

E. Sample Warranties: For special warranties.

1.06 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

1.07 QUALITY ASSURANCE

A. Fabricator and Installer: Shall have a minimum of 5 years experience on projects of similar size and scope. Installer shall be approved by Manufacturer.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate typical construction and waterproofing details, and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
   1. Build mockups at typical wall locations as located by Architect. Approved mockups may become part of the final work if undisturbed at Substantial Completion.
   2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

B. Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle material and components to avoid damage. Protect curtain wall material against damage from elements, construction activities, and other hazards before, during and after curtain wall installation.

1.09 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.

1.10 GUARANTEE AND WARRANTY

A. Installer shall submit a written guarantee to the Owner, guaranteeing storefront system for a period of 2 years against leaks and defects in the system.

B. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:
   1. Structural failures including, but not limited to, excessive deflection.
   2. Noise or vibration caused by thermal movements.
   3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   4. Water leakage through fixed glazing and framing areas.
   5. Failure of operating components.
   6. Warranty Period: Five years from date of Substantial Completion.

C. Door manufacturer's warranty shall provide for a period of 5 years from date of Substantial Completion. All hardware installed by manufacturer shall be covered by warranty.

D. Manufacturer's Finish Warranty: Manufacturer's standard limited warranty against fade, chalk, crack, check, peel, and failure of coatings to adhere to metal. Warranty duration as follows:
   1. Anodic Finish: 5 years from date of delivery.

1.11 MAINTENANCE MATERIALS

A. Entrance Door Hardware:
   1. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of entrance door hardware.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Product: 2" x 4-1/2" storefront glazing system, thermally broken at exterior. Subject to compliance with requirements, provide TRIFAB VG451T system as manufactured by Kawneer Company, or comparable product by one of the following:
   1. EFCO Corporation.
   2. Oldcastle Building Envelope.
   3. CRL - US Aluminum.

4. YKK AP America.

2.02 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
   1. Sheet and Plate: ASTM B 209.
   2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
   3. Extruded Structural Pipe and Tubes: ASTM B 429.
   4. Structural Profiles: ASTM B 308/B 308M.
   5. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.

B. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer, complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
   1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
   2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
   3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.03 FRAMING SYSTEMS

A. Framing Members and Brake Metal Fillers: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.
   1. Construction: Thermally broken at exterior framing, non-thermal broken at building interior.
   2. Glazing Plane: Center.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
   1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
   2. Reinforce members as required to receive fastener threads.
   3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system, fabricated from stainless steel.

D. Aluminum subsills: Provide Manufacturer’s subsills where framing sits on slab, and other locations as required by Manufacturer. Manufacturer’s subsill does not constitute a substitute for the continuous aluminum sill flashing with end dams as indicated in Drawings.

E. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts, complying with ASTM A 123/A 123M or ASTM A 153/A 153M.

F. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

G. Framing System Gaskets and Sealants: Manufacturer's standard, recommended by manufacturer for joint type.

2.04 GLAZING SYSTEMS

A. Glazing: As specified in Division 8 Section "Glazing."

B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, molded or extruded, of profile and hardness required to maintain watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

2.05 ENTRANCE DOOR SYSTEMS

A. Thermally Broken Entrance Doors (Exterior Doors): Basis of Design – Kawneer 500T Insulpour Thermal Entrance doors for manual-swing operation.
   1. Door Construction: Minimum of 1-3/4-inch overall thickness, with minimum 0.125-inch thick, extruded-aluminum tubular rail and stile members, with glazing pockets sized for specified insulated glazing. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
   2. Door Design: Wide stile; 5-inch nominal width.
   3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
      a. Provide nonremovable glazing stops on outside of door.

B. Entrance Doors (Interior Doors): Manufacturer's standard glazed entrance doors for manual-swing operation.
   1. Door Construction: Minimum of 1-3/4-inch overall thickness, with minimum 0.125-inch thick, extruded-aluminum tubular rail and stile members, with glazing pockets sized for specified glazing. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
   2. Door Design: Wide stile; 5-inch nominal width.
   3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.

C. Entrance Door Hardware: Factory install entrance door hardware provided by Manufacturer to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes
   1. Weather-stripping / gasketing: Manufacturer's standard replacement stripping of molded neoprene gaskets complying with ASTM D-2000. At exterior doors, provide compression weather stripping. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
   2. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.
   3. At double doors specified to receive removeable mullions, provide filler blocks as required for complete support above removable mullion top brackets.
   4. Refer to Division 08, Section "Door Hardware" for more information.
   5. Reinforce doors as required for installing entrance door hardware.

2.06 ACCESSORY MATERIALS

A. Aluminum Trim: Provide brake metal trim in locations specifically shown in Drawings and other locations as required for complete installation. Thicknesses indicated in Drawings and specifications are minimum thicknesses regardless of minimum thickness to prevent oil canning. Provide greater thickness than indicated minimum thicknesses where required to prevent oil canning. Contractor is responsible to determine required thicknesses per delegated design requirements (refer to Part 1 of these specifications).

B. Aluminum Sills: Where indicated in Drawings, (or where sill dimension is too small for solid surface, quartz), provide interior aluminum window sills with nominal 2” vertical return at inside face of wall, hemmed bottom edge, and hemmed and closed ends. Match finish of adjacent window.

C. Anchoring Devices: Provide plates, angles, steel frame bracing, wind bracing, spacers, clips and other devices necessary to support aluminum framing and glass. Design of connections shall be fabricator's responsibility. Submit shop drawing for approval.

D. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 7 Section "Joint Sealants."

1. Provide sealants for use inside of the weatherproofing system that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

E. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30-mil thickness per coat.

F. Security Screens: Refer to Division 08, Section "Security Screens".

2.07 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
1. Profiles that are sharp, straight, and free of defects or deformations.
2. Profiles with solid back extrusions, or with filler plates, as required to receive membrane flashings at jamb flashings (locations where metal jamb flashing is not otherwise indicated).
3. Accurately fitted joints with ends coped or mitered.
4. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
5. Physical and thermal isolation of glazing from framing members.
6. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
7. Provisions for field replacement of glazing from exterior.
8. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.08 ALUMINUM FINISHES

A. Clear or Color Anodic Finish: AA-M12C22A31/A32/A34, AAMA 611, Architectural Class I Clear Anodic Coating. Class II for interior storefront.
1. Color: Clear, Dark bronze, and Black anodized. Arcitect to indicate specific color.

B. Miscellaneous Steel Bracing (Concealed): One (1) shop coat of red oxide primer.

C. Source Quality Control: Representative samples of color anodized finish shall meet or exceed following tests: ASTM B224, thickness of coating; and ASTM B117, neutral salt spray.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General:
   1. Comply with manufacturer's written instructions.
   2. Do not install damaged components.
   3. Fit joints to produce hairline joints free of burrs and distortion.
   4. Rigidly secure nonmovement joints.
   5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
   6. Seal joints watertight unless otherwise indicated.

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

C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Set continuous sill members and flashing in full sealant bed as specified in Division 7 Section "Joint Sealants" to produce weathertight installation.

E. Install components plumb and true in alignment with established lines and grades, and without warp or rack.

F. Install glazing as specified in Division 8 Section "Glazing."

G. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.
   1. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

H. Install perimeter joint sealants as specified in Division 7 Section "Joint Sealants" to produce weathertight installation.

I. Prepare windows for installation of security screen.

3.03 ERECTION TOLERANCES

A. Install aluminum-framed systems to comply with the following maximum erection tolerances:
   1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet; 1/4 inch over total length.
   2. Alignment:
      a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch.
      b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.

B. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch.

3.04 FIELD QUALITY CONTROL

A. A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Field Quality-Control Testing: Perform the following test on mockups and representative areas of glazed aluminum curtain walls.

1. Air Infiltration: ASTM E 783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.09 cfm/sq. ft. at a static-airpressure differential of 1.57 lbf/sq. ft.
    a. Mockups: Test mockups.
    b. Representative Areas: For each system type, perform a minimum of three tests in areas as directed by Architect.
    c. Failed Tests: Perform one additional test at location selected by Architect for each failed test.
2. Water Penetration: ASTM E 1105 at a minimum uniform and cyclic static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing in "Performance Requirements" Article, but not less than 6.24 lbf/sq. ft., and shall not evidence water infiltration to the building interior; any water intrusion to the building interior is a test failure.
    a. Locations: Same areas as air infiltration tests.
    b. Failed Tests: Perform one additional test at location selected by Architect for each failed test.

C. Structural-Sealant Adhesion: Test structural sealant according to recommendations in ASTM C 1401, Destructive Test Method A, "Hand Pull Tab (Destructive)," Appendix X2.
    1. Test a minimum of five areas on each building facade as directed by Architect.
    2. Repair installation areas damaged by testing.

D. Glazed aluminum curtain walls will be considered defective if they do not pass tests and inspections.
    1. Submit reports for each inspection, describing problems observed and corrections made.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.05 ADJUSTING

A. Adjust operating entrance door hardware to function smoothly as recommended by manufacturer.
    1. For entrance doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches from the latch, measured to the leading door edge.

3.06 PROTECTION AND CLEANING

A. Protect aluminum framing and/or doors during construction by masking members with approved cardboard and paper as recommended by manufacturer. Take particular care in protecting openings and doors from damage during construction.

B. Upon completion, remove trimmings and other debris. Replace broken, scratched, chipped or other damaged glazing. Remove excessive sealant, mastic and other marks from adjacent surfaces, and wash with clean water. Cleaning of glazing must be done in strict compliance with manufacturer's recommendations.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.

END OF SECTION 08 41 13