



Nabholz Construction
17300 W. 116TH
Lenexa, KS 66219

Addendum date: 05/24/2019

Job No.: 08-19-3073

Project: Warren Middle School (Music/Art) Addition
3501 N. New Lawrence Rd Leavenworth, KS

Bid Date: **June 4, 2019**

Bid Captain: Noe Turrubiarres – noe.turrubiarres@nabholz.com
Bart Butler – bart.butler@nabholz.com

ADDENDUM NOTICE

Addendum Number: 1

Acknowledgement of all addenda is a requirement of the bid process. Please acknowledge this and all addenda on ~~page 4~~ of the Form of Proposal. Should you have any questions concerning this project, please contact the Bid Captain noted above.

The following is included in Addendum #1:

PROJECT CM MANUAL

ITEM NO. 1: BID TIMES REVISED

- Bid Packages 01.0 to 12.0 will bid at 12:00 PM
- Bid Packages 21.1 to 32.6 will bid at 02:00 PM

PROJECT CM MANUAL

ITEM NO. 2: BID BOND REQUIREMENTS

- Bid Bond is not required.

PROJECT CM MANUAL

ITEM NO. 3: Bid Form Revised

- REPLACE .02 Bid Form with the enclosed, updated Bid Form. Clarification: This Bid form has been updated to include specific Unit Pricing as well as Performance and Payment Bond Percentage Rate.

CONSTRUCTION DOCUMENTS

ITEM NO. 7 Drawings, Sheet E.3 – Clarification

- Keyed Notes items 4 through 7: Devices are not to be included within this construction contract (NIC). All rough-in, wiring, to device terminations are to be included.

CONSTRUCTION DOCUMENTS

ITEM NO. 8 DLR Group ADDENDUM 001, dated May 23, 2019

- See Attached.

.02 Bid Form

Date of Bid _____

Submitting Company ("Bidder")

Company Name _____

Project State License Number _____

Company Representative

Name _____

Email Address _____

Cell Phone _____

Scope of Work

Bid Package Number _____

Bid Package Description _____

Addenda

Bidder acknowledges receipt of the following addenda:

Addendum # _____ Dated _____

Addendum # _____ Dated _____

Addendum # _____ Dated _____

Base Bid

By submitting this proposal form, bidder acknowledges receipt of and compliance with Nabholz minimum insurance requirements, Master Contract Agreement, Project Contract Agreement, Performance and Payment Bond requirements, Purchase Order, CCIP Program Addendum, and Safety Standards.

Bidder agrees to complete the Scope of Work listed below for a lump sum of:

\$ _____

Alternates

- 1. Alternate Description Add/Deduct \$ _____
- 2. Alternate Description Add/Deduct \$ _____
- 3. Alternate Description Add/Deduct \$ _____
- 4. Alternate Description Add/Deduct \$ _____

Voluntary Alternates

- 1. _____ Add/Deduct \$ _____
- 2. _____ Add/Deduct \$ _____

Work in Progress & Project Specific Qualifications

Bidder shall submit with their proposal a Work in Progress (WIP) Report that lists the ten (10) largest projects currently being constructed. Moreover, final evaluation of Bidder’s proposal shall be conditional on review of WIP Report, and Bidder’s experience with similar scope and projects.

Completion Time

All Work shall be completed within the schedules prepared by and agreed to by Nabholz. Bidder shall provide adequate manpower and submit documentation for approval necessary to work within the timeframe scheduled. Estimated time period for construction is July 1, 2019 – December 6, 2019.

Unit Pricing

Hourly rates – attach a separate sheet for all relevant labor and equipment rates that are to be used for any other change order pricing.

Provide unit prices for the following:

- a. Undercut and remove from jobsite existing soils deemed by Soils Engineer to be unsuitable for reuse, measured as in-place yardage.
 - Unit Cost: _____
- b. Import from off-site and compact structural fill with approved proctor, measured as in-place yardage.
 - Unit Cost: _____
- c. Excavate and remove from jobsite mass rock quantity, measured as in-place yardage.
 - Unit Cost: _____
- d. Excavate and remove from jobsite trench rock quantity, measured as in-place yardage.
 - Unit Cost: _____

Bonding

Bidder can provide a Performance and Payment Bond and can meet the requirements set forth in the "Project Contact". (circle one)

Yes/No

Performance and Payment Bond Rate Cost in Percent_____

Name of Surety Agent_____

Surety Agent Phone
Number_____

Acceptance of Contract Forms

Bidder acknowledges that they have reviewed and accept the Contract Performance and Administration, Sample Master Contract, Sample Project Contract, Payment and Performance Bonds, Sample Purchase Order, Contractor-Controlled Insurance Program Addendum to Master Contract and the Nabholz Safety Standards forms linked in Section 6.04. Proposed modifications must be submitted with bid.

Signature

Bidder agrees that this proposal remains valid for a period of 60 days. Bidder understands that Nabholz and the Owner reserve the right to reject any or all bids. Bidder acknowledges Nabholz minimum insurance requirements and understands that the Master Contract shall be the basis of any contract offered by Nabholz Construction to Bidder. Proposed modifications of Master Contract language must be submitted with bid. Attach additional sheets if necessary. Upon receipt of notice of acceptance of bid, Bidder agrees to execute and return the contract and required insurance certificates within two weeks of notification.

By _____

Title_____

Printed name of individual signing this
proposal_____

Contact phone
number_____

Date _____

END OF PROPOSAL FORM

ADDENDUM 001

TO THE

DLR Group
Architecture Engineering Design
7290 West 133rd Street
Overland Park, Kansas 66213
Telephone 913-897-7811

PROJECT MANUAL AND DRAWINGS

FOR

May 23, 2019

WARREN MIDDLE SCHOOL ADDITION – PACKAGE 1
LEAVENWORTH USD NO. 483

DLR Group Project No. 12-18101-02

FOR COMBINED CONTRACT

NOTICE TO BIDDERS: The pre-bid meeting sign-in sheets are attached for bidders' reference.

NOTICE TO BIDDERS: The Project Manual and Drawings for the above referenced project are hereby amended as follows:

PROJECT MANUAL

- | | |
|-------------------|--|
| <u>ITEM NO. 1</u> | <u>SECTION 075216 – SBS MODIFIED BITUMINOUS MEMBRANE ROOFING</u> |
| a. | Delete Section in its entirety and substitute Attachment 001 to Addendum 001 dated May 23, 2019. |
| <u>ITEM NO. 2</u> | <u>SECTION 101423 – PANEL SIGNAGE</u> |
| a. | Delete Section in its entirety and substitute Attachment 002 to Addendum 001 dated May 23, 2019. |

END OF ADDENDUM 001

SECTION 075216 - STYRENE-BUTADIENE-STYRENE (SBS) MODIFIED BITUMINOUS
MEMBRANE ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

- 1. Modified bituminous membrane roofing.
- 2. Roof insulation, taper, and cover board.

B. Related Sections:

- 1. Section 072100 "Thermal Insulation."
- 2. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
- 3. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.3 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

- 1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
- 2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

- C. FM Global Listing: Roofing, base flashings, and component materials shall comply with requirements in FM Global 4450 or FM Global 4470 as part of a roofing system, and shall be listed in FM Global's "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
1. Fire/Windstorm Classification: Class 1A-90.
 2. Hail Resistance Rating: SH.
- D. Flashings and Fastening: Comply with requirements of Section 076200 "Sheet Metal Flashing and Trim". Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:
1. FM Global 1-49: Loss Prevention Data Sheet for Perimeter Flashings.
 2. FM Global 1-29: Loss Prevention Data Sheet for Above Deck Roof Components.
 3. NRCA Roofing Manual (Sixth Edition) for construction details and recommendations.
 4. SMACNA Architectural Sheet Metal Manual (Seventh Edition) for construction details.
- E. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

1.5 PREINSTALLATION CONFERENCE:

- A. Preinstallation Roofing Conference: Conduct conference at Project Site.
1. Meet with Owner, Architect, Owner's quality assurance agent if chosen by Owner, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 5. Review structural loading limitations of roof deck during and after roofing.
 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
 7. Review governing regulations and requirements for insurance and certificates if applicable.
 8. Review temporary protection requirements for roofing system during and after installation.
 9. Review roof observation and repair procedures after roofing installation.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Field membrane and cap sheet membrane.
 - 2. Base flashing backer membrane and cap sheet if different from field membrane and cap sheet membrane.
 - 3. Field membranes adhesive and base flashing adhesive.
 - 4. Roof insulation (include taper, tapered crickets and tapered edge.
 - 5. Cover board.
 - 6. Insulation and cover board fasteners and/or adhesive.

- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work, including:
 - 1. Base flashings and membrane terminations.
 - 2. Insulation layout and tapered insulation layout, including slopes.
 - 3. Cricket, saddles, and tapered edge strips, including slopes.
 - 4. Insulation fastening and adhesive patterns for corner, perimeter, and field-of-roof locations.

- C. Samples for Verification: For the following products:
 - 1. 8-by-10-inch (254-by-254-mm) of sheet roofing materials, including base sheet membrane cap sheet and flashing sheet, of color specified.
 - 2. 8-by-10-inch (254-by-254-mm) square of roof insulation.
 - 3. 3 lb (1.5 kg) of aggregate surfacing material in gradation and color indicated.
 - 4. Six insulation fasteners of each type, length, and finish.

- D. Warranties: Sample of required warranties.

1.7 INFORMATIONAL SUBMITTALS

- A. Contractor's Product Certificate: Submit notarized certificate, indicating products intended for Work of this Section, including product names and numbers and manufacturers' names, with statement indicating that products to be provided meet the requirements of the Contract Documents.

- B. Qualification Data: For Installer, Manufacturer, and Roofing Inspector.
 - 1. Include letter from Manufacturer written for this Project indicating approval of Installer.

- C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - 1. Submit evidence of compliance with performance requirements, including FMG system approval and roofing membrane system load/strain property test report.
 - 2. Indicate that proposed system components are compatible.

- D. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of built-up roofing.
- E. Product Test Reports: For components of membrane roofing system, for tests performed by manufacturer and witnessed by a qualified testing agency.
- F. Qualification Data: For qualified installer and manufacturer.
- G. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
- H. Research/Evaluation Reports: For components of membrane roofing system, from ICC-ES.
- I. Sample Warranties: For manufacturer's special warranties.
- J. Field quality-control reports.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing system to include in maintenance manuals.
- B. Executed manufacturer warranty.
- C. Executed installer warranty.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.
- B. Manufacturer Qualifications: Approved manufacturer listed in this Section, UL listed for roofing systems identical to that specified for this Project, with minimum five years' experience in manufacture of specified products in successful use in similar applications.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.11 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.12 WARRANTY

- A. Entire installation of roofing system and flashing work shall be of quality required for acceptance by membrane manufacturer in order to obtain a Twenty-year Full Systems No Dollar Limit material and workmanship guarantee. Provide guaranty from date of substantial completion of project. Paragraphs 1-2 and 8-10 listed below should be completed by the membrane manufacturer. If paragraphs 3-7 listed below cannot be completed by the membrane manufacturer, manufacturer may solicit the services of a qualified roofing consultant to conduct those services.
 1. Includes membrane sheets, base flashings, roof insulation, fasteners, cover boards, roofing accessories, and other components of roofing system.
 2. Final inspection by membrane manufacturer's technical representative.
 3. Project start up site visit, typically first or second day of construction by membrane manufacturer's technical representative.
 4. Interim site visit for every two weeks of construction.
 5. Moisture survey conducted by membrane manufacturer's technical representative.
 6. Quality Assurance Form; completed daily and signed by roofing contractor foreman. Form is located at the end of this section.
 7. Additional 6 month, 12 month, and 18 month follow up reviews conducted by membrane manufacturer's technical representative.
 8. Standard 24 month follow-up audit by roofing membrane manufacturer's technical representative.
 9. Warranty Period: 20 years from date of Substantial Completion.
- B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, for TWO years from date of Substantial Completion. Warranty shall cover:
 1. All components of a complete roofing system such as membrane sheets, base flashing, roof insulation, roofing and insulation adhesives, fasteners, cover boards, substrate

- boards, vapor retarders, membranes placed under sheet metal components and walkway products.
2. Sheet metal components including copings, reglets, flashing, counterflashing, and related fasteners, clips and other items necessary for a complete system.
 3. Roofing installer's labor.
 4. Installation methods and techniques for compliance with manufacturer's recommended instructions.
 5. Compatibility and completeness of system components without loss of adhesion or performance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following manufacturers:
 1. Firestone Building Products.
 2. Siplast, Inc.
- B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 ROOFING SHEET MATERIALS

- A. Ply Sheet: ASTM D 2178, Type VI, asphalt-impregnated, glass-fiber felt.
 1. Net Dry Mass, ASTM D146: 8.9 lb/100 sq. ft.
 2. Bituminous Saturant, 7.0 lb/100 s.f.
 3. Breaking Strength, minimum, ASTM D146: machine direction, 65 lbf/in.
- B. Roofing Membrane Cap Sheet/Base Flashing Cap: ASTM D6164, Grade G, Type II, polyester-fiber-reinforced, SBS-modified asphalt sheet; granular surfaced.
 1. Product Thickness: ASTM D5147, 160 mil.
 2. Exterior Fire-Test Exposure, ASTM E 108: Class A.
 3. Peak Load at 0 deg. F: ASTM D5147, 105 lbf/in.
 4. Elongation at Peak Load at 0 deg. F: ASTM D5147, 30%, MD.
 5. Peak Load at 73 deg. F: ASTM D5147, 75 lbf/in.
 6. Elongation at Peak Load at 73 deg. F: ASTM D5147, 55%, MD.
 7. Tear Strength at 73 deg. F: ASTM D 5147, 75 lbf MD.
 8. Low Temperature Flex, maximum, ASTM D 5147: -15 deg. F.

2.3 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.
 - 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
- B. Roofing Asphalt: ASTM D 312, Type IV, hot-melt asphalt.
 - 1. Softening Point, min/max, ASTM D 36: 215-225 deg. F (102–107 deg. C).
 - 2. Penetration at 77 deg. F (25 deg. C), min/max, ASTM D 5: 15-30 dmm.
 - 3. Flash point, minimum, ASTM D 92: 525 deg. F (274 deg. C).
 - 4. Ductility at 77 deg. F (25 deg. C), minimum, ASTM D 113: 2.5 cm.

2.4 BASE FLASHING SHEET MATERIALS

- A. Two-Ply Base Flashings:
- B. Backer Sheet: 120 minimum mil thick APP or SBS modified asphalt base sheet, smooth surfaced; suitable for application method specified.
- C. Granule-Surfaced Flashing Cap Sheet: 180 minimum mil thick APP or SBS modified asphalt sheet granular surfaced; suitable for application method specified.
- D. Granule Material and Color:
 - 1. Granule Material: Mineral.
 - 2. Granule Color: White.

2.5 STRIP-IN SHEET MATERIALS

- A. Granule-Surfaced Strip-in Flashings: 180 minimum mil thick APP or BSB modified asphalt fire-rated (FR) sheet granular surfaced; suitable for application method specified.
- B. Granule Material and Color:
 - 1. Granule Material: Mineral.
 - 2. Granule Color: White.

2.6 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.
- B. Asphalt Primer: ASTM D 41/D 41M.

- C. Reinforcing Fabric: Shall comply with ASTM D 1668-1.
- D. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required by roofing system manufacturer for application.
- E. Mastic Sealant: Polyisobutylene, plain or modified bitumen; non-hardening, non-migrating, non-skinning, and non-drying.
- F. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing components to substrate; tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
- G. Miscellaneous Accessories: Provide those recommended by roofing system manufacturer.
- H. Pitch Pan Filler:
 - 1. Sealant: Two component polyurethane pourable sealant as approved by the Owner's representative and manufacturer.
 - 2. Primer: Polyurethane primer as approved by the pourable sealant manufacturer.
- I. Roofing Granules: Ceramic-coated roofing granules, No. 11 screen size with 100 percent passing No. 8 sieve and 98 percent of mass retained on No. 40 sieve, color to match roofing membrane.
- J. Related Materials:
 - 1. Lead flashing for roof drains shall be 30 inches by 30 inches and minimum 4 lb. lead.
 - 2. Pipe or vent jackets shall be minimum 3 lb. lead with cap designed for use on flat roof construction.
 - 3. Flashing securement devices shall be of adequate design to achieve substantial and positive anchorage.

2.7 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Global-approved roof insulation.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
 - 1. Provide in minimum of two layers, overall thickness to achieve an R-value of 25 for the insulation only. Tapered insulation is not included in this R-value.
- C. Polyisocyanurate Board Insulation (base layer): ASTM C 1289, Type II, Class 1, Grade 2, glass-fiber mat facer on both major surfaces, 2.2 inches thick (R-12.6). For fastening to steel deck, 4' by 8' board is preferred.

- D. Polyisocyanurate Board Insulation (subsequent layer): ASTM C 1289, Type II, Class 1, Grade 2, glass-fiber mat facer on both major surfaces, 2.2 inches thick (R-12.6). For fastening to steel deck, 4' by 8' board is preferred.
- E. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches unless otherwise indicated.
- F. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.8 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
- C. Bead-Applied Polyurethane Adhesive:
 - 1. Dual component polyurethane adhesive and primer (where applicable), used to attach taper roof insulation and crickets to roof insulation.
 - 2. Regular, summer or winter formula shall be bid and installed, such that manufacturer's installation criteria are met.
- D. Roofing Asphalt: ASTM D 312, Type III as recommended by roofing system manufacturer for application used to attach taper insulation and crickets to roof insulation.
- E. Insulation Cant Strips: ASTM C 728, perlite insulation board.
- F. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- G. Modified cant strips: 1-3/4-inches by 1-3/4-inches by 2 inches.
- H. Tapered Edge Strips: ASTM C 728, perlite insulation board.
- I. Tapered Edge Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- J. Cover Board:
 - 1. ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2-inch-thick factory primed. When adhering, 4' by 4' boards are preferred.
 - a. Product: Subject to compliance with requirements, provide the following:
 - 1) Georgia-Pacific Gypsum Corp.; Dens Deck Prime.

2. ASTM C 1278/C 1278M, cellulosic-fiber-reinforced, water-resistant gypsum substrate, 3/8 inch thick. When adhering, 4' by 4' boards are preferred.
 - a. Product: Subject to compliance with requirements, provide the following:
 - 1) USG Corporation; Securock.

K. Cover Board Bead-Applied Polyurethane Adhesive:

1. Dual component polyurethane adhesive and primer (where applicable), used to attach roof cover board to roof insulation.
2. Regular, summer or winter formula shall be bid and installed, such that manufacturer's installation criteria are met.

L. Cover Board Roofing Asphalt: ASTM D 312, Type III as recommended by roofing system manufacturer for application.

2.9 WALKWAYS

- A. Walkway granule color shall contrast the field membrane color; color as selected by the Owner from manufacturer's full range.
- B. Granule-Surfaced Roofing Membrane Cap Sheet: 155 minimum mil thick SBS modified asphalt sheet (mid-reinforced with a polyester mat) or 180 minimum mil thick APP modified asphalt sheet (surface reinforced with polyester & glass mat); both SBS and APP surface sheets to be granular surfaced; fire rated (FR) suitable for application method specified.

2.10 OTHER MATERIALS

- A. All other materials not specifically described but required for a complete and proper installation of the work in this Section shall be as selected by the Contractor, approved by the manufacturer, and subject to approval by the Owner.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:
 1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
 2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."

4. Verify that deck is securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16-inch out of plane relative to adjoining deck.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 INSTALLATION, GENERAL

- A. Start installation of insulation and roofing system in presence of Owner's quality assurance agent. Failure to do so will be grounds for removal of installed materials at Contractor's expense.
- B. Comply with roofing system manufacturer's written instructions.
- C. Asphalt Heating: Heat and apply SEBS-modified roofing asphalt according to roofing system manufacturer's written instructions.
- D. Substrate-Joint Penetrations: Prevent roofing asphalt and adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.4 SUBSTRATE BOARD INSTALLATION

- A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.
 1. Fasten substrate board to top flanges of steel deck according to recommendations in FM Global's "RoofNav" and FM Global Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification.
 2. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to roofing system manufacturers' written instructions.

3.5 INSULATION INSTALLATION

- A. Comply with roofing system manufacturer's written instructions.

- B. Insulation Cant Strips: Install and secure preformed 45-degree insulation cant strips at junctures of roofing system with vertical surfaces or angle changes greater than 45 degrees.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Install insulation with long joints of insulation in a continuous straight line, with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - 1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
- E. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches.
- F. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- G. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces and at roof drains to create a 4' sump.
- H. Mechanically Fastened and Adhered Insulation System: Base layer and subsequent layers of roof insulation shall be mechanically-attached to the steel deck, penetrating the deck a minimum of 3/4-inch, and a maximum of 1-1/4-inches at Acoustical Roof Deck. Tapered insulation and insulation crickets shall be adhered in either low-rise foam adhesive or hot asphalt, at contractor's option. Asphalt adhesive to be a minimum of 20 lbs/100 square feet, and within the EVT ranges of +/- 25 degrees F to meet the I-90 load.
 - 1. Fasten base and subsequent layers of insulation according to requirements in FM Global's "Roof Nav" for specified Windstorm Resistance Classification.
 - 2. Acoustical Roof Deck: Fasteners to be installed through raised ribs of deck only. No fasteners shall protrude below bottom of acoustical roof deck. Penetrate a minimum of 3/4 inches and a maximum of 1 1/4 inches.
 - 3. Set each taper insulation and insulation crickets in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
 - 4. Set taper insulation and insulation crickets in hot asphalt, firmly pressing and maintaining insulation in place.
- I. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together. Adhere to roof insulation in either low-rise foam adhesive or hot asphalt, at contractor's option. Asphalt adhesive to be a minimum of 20 lbs/100 square feet, and within the EVT ranges of +/- 25 degrees F to meet the I-90 load. In addition, comply with the following:
 - 1. Temperature of adhesive, substrate, and ambient conditions shall be within the manufacturer's recommended ranges during installation of insulation adhesive.
 - 2. Prepare substrate to receive polyurethane adhesive as recommended by the adhesive manufacturer.

3. Seal around all penetrations and roof perimeters to ensure no adhesive drippage below the deck level.
4. The minimum application rate shall be as required to meet FM Global performance requirements.
5. Set cover board in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
6. Bead application patterns, and perimeter and corner areas shall be installed to achieve specified performance requirements.
7. Set cover board in hot asphalt, firmly pressing and maintaining insulation in place.

3.6 ROOFING INSTALLATION, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions and applicable recommendations in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing" and as follows:
 1. Adhering Method: M (mopped).
 2. Number of Glass-Fiber Base-Ply Sheets: Two.
 3. Number of SBS-Modified Asphalt Sheets: One.
 4. Surfacing Type: M (mineral-granule-surfaced cap sheet).
- B. Coordinate installation of roofing system so insulation and other components of the roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
 1. Provide tie-offs at end of each day's work to cover exposed roofing sheets and insulation with a course of coated felt set in roofing cement or hot roofing asphalt, with joints and edges sealed.
 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
 3. Remove and discard temporary seals before beginning work on adjoining roofing.

3.7 BASE-PLY SHEET INSTALLATION

- A. Install glass-fiber base-ply sheets according to roofing system manufacturer's written instructions starting at low point of roofing system. Align glass-fiber base-ply sheets without stretching. Extend sheets over and terminate beyond cants.
 1. Shingle side laps of glass-fiber base-ply sheets uniformly to ensure that required number of glass-fiber base-ply sheets cover substrate at any point. Shingle in direction to shed water.
 2. Embed each glass-fiber base-ply sheet in a continuous void-free mopping of hot roofing asphalt to form a uniform membrane without glass-fiber base-ply sheets touching.

3.8 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond eaves, installing as follows:
 - 1. Adhere to substrate in a solid mopping of hot roofing asphalt applied at not less than 425 deg F.
 - 2. Unroll roofing sheets and allow them to relax for minimum time period required by manufacturer.
- B. Laps: Accurately align roofing sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids.
 - 1. Repair tears and voids in laps and lapped seams not completely sealed.
 - 2. Apply roofing granules to cover exuded bead at laps while bead is hot.
- C. Install roofing sheets so side and end laps shed water.

3.9 FLASHING AND STRIPPING INSTALLATION

- A. Prime all masonry, concrete, wood, and metal substrates, and granular membrane surfaces with asphalt primer at the rate of 3/4 gallons per 100 square feet. Allow primer to dry prior to adhesive application. As an alternative to priming on granular surfaces, granules may be embedded into the sheet using a hot air gun and trowel.
- B. Bridge all junctures of vertical and horizontal surfaces with 45-degree cant strips, except where an existing wood cant is specified to remain or a prefabricated metal curb cant already exists. Wood cants, where shown, shall be properly fastened, fiber/perlite cants shall be fully adhered with manufacturer's recommended adhesive.
- C. Install two-ply modified bitumen base flashings in adhesive according to the manufacturer's current published application instructions, unless superseded by the requirements of this Section. Stagger laps between flashing plies.
- D. All base flashings shall be installed in 39-inch long pieces cut from the end of the roll. Flashing lap shall be bonded to the selvedge edge of the preceding flashing.
- E. Uniform coat(s) of adhesive shall be applied using a notched trowel. Flashings shall be thoroughly rubbed in. Loose or poorly bonded flashings will not be accepted. Fasten top edge of base flashing using the specified securement devices immediately after flashing installation. Masonry anchor spacing shall be 8 inches on center maximum. Nail spacing shall be 6 inches on center maximum.
- F. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
 - 1. Install bar termination at the top edge of all base flashing where the flashing is not wrapped over a curb, wall, or expansion joint.
 - 2. Flashing over 15 inches vertically shall be bar terminated.

- G. Install specified counterflashing over termination bar. Termination bar shall always be covered with counterflashing.
 - 1. Counterflashing shall extend over bar termination a minimum of 4 inches.
- H. All inside and outside corners shall be three-coursed with asphalt roof cement and reinforcing fabric with #11 granules broadcast and pressed into the asphalt roof cement while wet.
- I. Flashing height shall be a minimum of 8 inches above finished roof height.
- J. Avoid applying bituminous materials over locations to receive caulking during subsequent sheet metal work. All such materials shall be thoroughly removed to the substrate prior to caulk application.
- K. Install roofing cap-sheet stripping where metal flanges and edgings are set on roofing according to roofing system manufacturer's written instructions.

3.10 SET-ON METAL ACCESSORIES

- A. Install first layer of membrane under location to receive metal flange.
- B. Install metal flange embedded in asphalt roofing cement.
- C. Metal flanges that are required to be fastened shall be fastened with annular or ring shank nails 3 inches on center staggered.
- D. Prime top of metal flanges, then install one strip-in ply of first layer modified roof membrane in adhesive.
- E. Where flashing strip-in ply must be cut for installation around a roof penetration, the flashing shall be installed in two pieces. Pieces shall have 3-inch minimum side laps.
- F. Install top ply of field membrane over strip-in ply.
- G. Inspect edges of membrane plies and repair any loose or poorly bonded areas.
- H. Seal edge of membrane to sheet metal surface with a tooled bead of approved sealant.
- I. Pitch Pans:
 - 1. Install pitch pans only at locations where shown on the Drawings. Prior approval from the Owner's representative is required for pitch pan use at any other location.
 - 2. Pitch pans shall have a minimum depth of 4 inches and shall have a minimum clearance of 2 inches from penetration on all sides.
 - 3. Prime interior of pitch pan and penetration with polyurethane primer.
 - 4. Install stainless steel pitch pan cover, soldered, clamped and sealed to watertight condition.

3.11 ROOF DRAIN DETAILING

- A. Install first layer of modified membrane into drain under location to receive clamping ring.
- B. Install 30-inch by 30-inch lead set in asphalt roof cement under location to receive clamping ring. Prime lead flashing and allow primer to dry.
- C. Install strip-in poly of first layer membrane extending 6 inches past outer edge of lead flashing and under location to receive clamping ring.
- D. Install second layer modified membrane over strip-in ply and under location to receive clamping ring. Laps in the top ply shall be held a minimum of 12 inches away from edges of clamping rings.
- E. Set clamping ring and drain strainer.

3.12 WALKWAY INSTALLATION

- A. Walkway Strips: Install walkway cap-sheet strips over roofing membrane using manufacturer-recommended application method.
- B. Verify walkway locations with the Owner's representative prior to installation.
- C. Chalk line walkway locations prior to installation to ensure a neat appearance.
- D. Neatly prime area to receive walkway and allow primer to dry. Confine priming to areas being covered by walkways.
- E. Space panels with 2-inch gaps for drainage, granule side up.

3.13 FIELD QUALITY CONTROL

- A. Owner's roofing quality assurance agent: The Owner may, at his discretion, hire an agent to observe insulation and roofing system installation, including sheet metal fabrication, detailing and installation. Observation shall be to verify application techniques, products used, fastener patterns, application rates, and other criteria related to manufacturer's requirements and best practices to achieve a complete roof system meeting industry standards.
- B. Test Cuts: Remove test specimens to evaluate problems observed during quality-assurance inspections of roofing membrane as follows:
 - 1. Determine approximate quantities of components within roofing membrane according to ASTM D 3617.
 - 2. Examine test specimens for interply voids according to ASTM D 3617 and to comply with criteria established in Appendix 3 of ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing."
 - 3. Repair areas where test cuts were made according to roofing system manufacturer's written instructions.

- C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
 - 1. Notify Architect and Owner 48 hours in advance of date and time of inspection.
- D. Roofing system will be considered defective if it does not pass tests and inspections.
 - 1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.14 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.15 ROOFING INSTALLER'S WARRANTY

- A. See document on following page.

ROOFING INSTALLER'S WARRANTY

- A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
1. Owner: _____
 2. Address: _____
 3. Building Name/Type: _____
 4. Address: _____
 5. Area of Work: _____
 6. Acceptance Date: _____
 7. Warranty Period: Two Years.
 8. Expiration Date: _____
- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.
- D. This Warranty is made subject to the following terms and conditions:
1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
 - a. lightning;
 - b. peak gust wind speed exceeding 115 mph;
 - c. fire;
 - d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
 - e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
 - f. vapor condensation on bottom of roofing; and
 - g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
 2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.

3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

END OF SECTION 075216

SECTION 101423 - PANEL SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Panel signs.

1.3 DEFINITIONS

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

1.4 COORDINATION

- A. Furnish templates for placement of sign-anchorage devices embedded in permanent construction by other installers.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For panel signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
 - 3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size.
- C. Sign Schedule: Use same designations as specified.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and manufacturer.
- B. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

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

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.9 FIELD CONDITIONS

- A. Field Measurements: Verify locations of anchorage devices embedded in permanent construction by other installers by field measurements before fabrication and indicate measurements on Shop Drawings.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of finishes beyond normal weathering.
 - b. Deterioration of embedded graphic image.
 - c. Separation or delamination of sheet materials and components.
 - 2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for signs.

2.2 PANEL SIGNS

- A. Product: Subject to compliance with requirements, provide the following or approved equal.
 - 1. Master Mark II; Vista System.
- B. Interior Panel Signs: Provide modular curved frame, complying with the following requirements:

1. Extruded aluminum with clear anodized finish.
 2. Laminated, Etched Photopolymer: Raised graphics with Braille 1/32 inch (0.8 mm) above surface with contrasting colors in finishes and color combinations indicated and laminated to acrylic back.
 3. Edge Condition: Manufacturer's standard.
 4. Corner Condition: Manufacturer's standard.
 5. Mounting: Framed, as indicated.
 - a. Wall mounted with two-face tape and silicone adhesive.
 - b. Manufacturer's standard anchors for substrates encountered.
 6. Color: As selected by the Architect from manufacturer's full range of colors.
 7. Tactile Characters: Characters and Grade 2 Braille raised 1/32 inch (0.8 mm) above surface with contrasting colors.
 - a. Color: Black.
- C. Brackets: Fabricate brackets and fittings for bracket-mounted signs from extruded aluminum to suit panel sign construction and mounting conditions indicated. Factory paint brackets in color matching Architect's sample.
- D. Panel Sign Frames:
1. Extruded-Aluminum Frames: With concealed anchors.
 - a. Product: Subject to compliance with requirements, provide Vista Signs; V200-WFP42 or approved equal.
 - 1) Color: Clear anodized aluminum with gray molded plastic end caps.
 - 2) Size: 7.87 inches wide by 5 inches high.
 - 3) Profile: Curved.
 - 4) Corner Condition: Square.
 - 5) Mounting: As indicated.
 - a) Wall mounted with two-face tape and silicone adhesive.
 - b. Product: Subject to compliance with requirements, provide Vista Signs; V150-WFP33 or approved equal.
 - 1) Color: Clear anodized aluminum with gray molded plastic end caps.
 - 2) Size: 5.90 inches wide by 8 inches high.
 - 3) Profile: Curved.
 - 4) Corner Condition: Curved.
 - 5) Mounting: As indicated.
 - a) Wall mounted with two-face tape and silicone adhesive.
- E. Changeable Message Inserts: Fabricate signs to allow insertion of changeable messages in the form of paper inserts.

- F. Tactile and Braille Sign: Manufacturer's standard process for producing text and symbols complying with ADA-ABA Accessibility Guidelines and with ICC/ANSI A117.1. Text shall be accompanied by Grade 2 Braille. Produce precisely formed characters with square-cut edges free from burrs and cut marks; Braille dots with domed or rounded shape.
 - 1. Panel Material: Photopolymer.
 - 2. Raised-Copy Thickness: Not less than 1/32 inch (0.8 mm).
- G. Colored Coatings for Photopolymer Sheet: For copy and background colors, provide colored coatings, including inks, dyes, and paints, that are recommended by photo polymer manufacturers for optimum adherence to acrylic surface and are UV and water resistant for five years for application intended.
 - 1. Color: As selected by the Architect from manufacturer's full range of colors.
- H. Panel Sign Schedule:
 - 1. Sign Size: 3 inches by 5 inches.
 - 2. Message Panel Material: As indicated in schedule.
 - 3. Message Panel Finish/Color: As selected by the Architect from manufacturer's full range of colors.
 - 4. Background Finish/Color: As selected by the Architect from manufacturer's full range of colors.
 - 5. Character Finish/Color: As selected by the Architect from manufacturer's full range of colors.

2.3 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:
 - 1. Use concealed fasteners and anchors unless indicated to be exposed.
- B. Adhesives: As recommended by sign manufacture.
- C. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch (1.14 mm) thick, with adhesive on both sides.
- D. Opaque sheet: Manufacturer's standard opaque backing sheet for mounting on glass to conceal fasteners and back side of sign. Match sign material and finish.

2.4 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 - 1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly

mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.

2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.

2.5 GENERAL FINISH REQUIREMENTS

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 2. Install signs so they do not protrude or obstruct according to the accessibility standard.
 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.

- B. Wall Mounted Signs: Install in locations on walls and adjacent to doors according to accessibility standard
- C. Mounting Methods:
 - 1. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
 - 2. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position and push to engage tape adhesive.
- D. Signs Mounted on Glass: Provide opaque sheet matching sign material and finish onto opposite side of glass to conceal back of sign.

3.3 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

3.4 SIGNAGE SCHEDULE

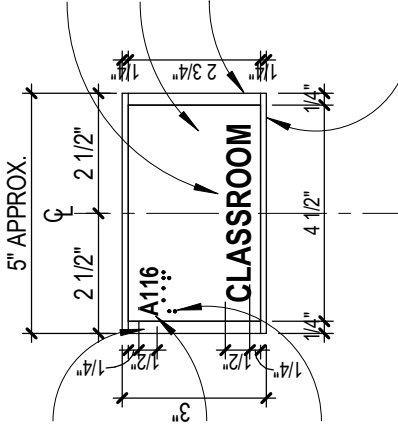
- A. Art Classroom: Sign Type D; number to be determined by Owner.
- B. Music Classroom: Sign Type D; number to be determined by Owner.
- C. Storage: Sign Type D; number to be determined by Owner.
- D. Kiln: Sign Type D; number to be determined by Owner.

END OF SECTION 101423

ROOM NAME PRINTED ON
PAPER INSERT BEHIND
PHOTOPOLYMER LENS INSERT,
5/8" ARIAL

CLEAR .040 GAUGE PHOTOPOLYMER
LENS INSERT
CLEAR ANODIZED ALUMINUM

BLACK PLASTIC END CAP



ALUMINUM
FINISH

TACTILE ROOM NUMBER;
5/8" ARIAL RAISED 1/32",
COLOR BLACK.

GRADE II BRAILLE,
RAISED 1/32"

ROOM NAME AND NUMBER SIGN