

## **SECTION 07 24 20 BLOWN INSULATION**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. The pneumatic application of closed cell cellulose insulation for thermal applications, sound control for acoustical treatments, and fire control as shown on the plans.
- B. The work performed under this section shall include all materials, equipment, labor and services required to install the cellulose insulation in accordance with these specifications and as indicated on the drawings.

#### **1.02 RELATED SECTIONS**

- A. Section 01 50 50 – Construction and Demolition Waste Management.
- B. Section 05 40 00 – Cold Formed Metal Framing.

#### **1.03 REFERENCES**

- A. ASTM E-84- Test Method for Surface Burning Characteristics of Building Materials.
- B. ASTM C-518 – Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- C. ASTM C-739 – Specification for Cellulosic Fiber Loose-Fill Thermal Insulation.
- D. ASTM C-1149 – Specification for Self-Supported Spray Applied Cellulosic Thermal Insulation.
- E. ASTM E-136 – Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 deg. C.
- F. ASTM C-1015 – Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation.

#### **1.04 SUBMITTALS**

- A. Submit under provisions of Section 13 00 00.
- B. Product Data: Submit cellulose insulation product literature, samples and installation instructions for specified products and their application.
- C. Manufacturer's Certificate: Certify that Products meet or exceed specified and contract drawing requirements.

#### **1.05 QUALITY ASSURANCE**

- A. Closed cell polyurethane foam Blown Insulation system to be applied by a contractor authorized by the insulation manufacturer.

- B. Install the insulation in accordance with the manufacturer's requirements.

## 1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Material to be delivered to the site in proper order.
- B. Insulation package labels include a production code that indicates date of manufacture.
- C. Material to be handled by the proper personnel, experienced in the application of the work.
- D. Protect insulation from physical damage and from becoming wet, soiled or covered with ice or snow. Comply with the manufacturer's recommendations for handling, storage and protection during installation.

## 1.07 RELATED WORK

- A. All electrical, plumbing and mechanical penetrations must be completed prior to application.

## 1.08 LIMITATIONS

- A. Avoid heating the work area with unvented propane or kerosene space heaters. Use electric heaters, vented combustion appliances and ventilation to avoid adding excessive moisture to construction and insulation materials
- B. Do not install cellulose insulation where it may be exposed to rain or ground water.
- C. Do not allow cellulose insulation to contact any surface above 194 deg. F.
- D. Provide a minimum three inch clearance from chimneys, flues or other heat producing devices unless rated for zero-tolerance to combustibles.
- E. Cellulose insulation to comply with the Stamford Building Code and Regulations.
- F. Cellulose insulation not to contain asbestos or formaldehyde.

## **PART 2 PRODUCTS**

### 2.01 MANUFACTURERS

- A. International Cellulose Corporation, 12315 Robin Boulevard, Houston, Texas 77045; (800) 444-1252.
- B. CleanFiber LLC, 250A Lake Avenue, Blasdell, New York 14219; (888) 616-8393.
- C. Other manufacturers providing equal products shall be given equal consideration.

### 2.02 MATERIALS

- A. Surface burning characteristics:

1. Flame Spread: 15
  2. Smoke Developed Index: 5
  3. Thermal Performance: 3.75 R-Value/inch.
  4. Density: 3.5 lb/ft3.
- B. Use in fire rated wall/partition assemblies without reducing the hourly rating of the assembly.

## **PART 3 EXECUTION**

### **3.01 INSPECTION**

- A. Examine the areas and conditions under which work will be installed.
- B. Verify adjacent materials are dry and ready to receive insulation.
- C. Verify mechanical, electrical and other items in the walls, have been tested and approved for enclosure.
- D. Provide a written report to the Architect, Builder or General Contractor listing any conditions detrimental to the performance of the work of this Section.
- E. Do not proceed with installation until all unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Clean off any loose foreign material or films that may impair adhesion to the application surfaces.
- B. Verify adhesion requirements and compatibility of all surfaces to receive thermal insulation materials.
- C. Protect all nearby surfaces that are not intended to receive thermal insulation.

### **3.03 INSTALLATION**

- A. Comply with manufacturer's instructions for particular conditions of installation.
- B. Wear proper clothing and eye protection.
- C. For breathing protection, use a NIOSH approved N95 or higher disposable or reusable particulate respirator such as a 3M Model No. 8210 or equivalent (Reference ASTM C-1015).
- D. The work shall be coordinated with other trades whose work may be affected or have an effect on the installation.
- E. Installation of spray-applied insulation shall be made only by factory certified installers using approved equipment.
- F. Drying time of spray-applied cellulose insulation varies due to local climate conditions including temperature, humidity and the installed moisture. Insulation can be covered 24 hours after time of installation. Insulation should be covered

within a week of application to reduce the possibility of both mechanical damage and construction moisture migration into the material.

- G. When required, thickness and density shall be determined according to the manufacturer's instructions or ASTM E-605, if appropriate.

### 3.04 CLEAN-UP

- A. Remove sprayed material from surfaces not specifically required to be insulated.
- B. Broom-clean work area affected by the work of this Section.

### 3.05 SCHEDULE

- A. Provide a Schedule listing settled thickness, thermal values or STC values, where applicable.

**\*\* END OF SECTION \*\***

## **SECTION 07 27 10 AIR BARRIER**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Self-Adhered Vapor-permeable Air Barrier. Refer to Drawings for Details and locations.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 01 50 50 – Construction And Demolition Waste Management
- B. Section 06 10 50 – Miscellaneous Carpentry.
- C. Section 09 22 00 – Portland Cement Stucco

#### **1.03 REFERENCE STANDARDS**

- A. American Association of Textile Chemists and Colorists (AATCC): AATCC 127 - Test Method for Water Resistance: Hydrostatic Pressure Test.
- B. ASTM International (ASTM):
  - 1. ASTM D 882 - Test Method for Tensile Properties of Thin Plastic Sheeting.
  - ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.
  - ASTM E 96/E 96M - Test Methods for Water Vapor Transmission of Materials.
  - ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
  - ASTM E 2178 - Standard Test Method For Air Permeance of Building Materials.
- C. International Code Council Evaluation Service, Inc. (ICC-ES):
  - 1. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers.

#### **1.04 QUALITY ASSURANCE**

- A. Single Source: Provide air barrier and accessories that are products of or recommended for use by a single manufacturer.
- B. Manufacturer Qualifications: Approved manufacturer of products listed in this Section with minimum 5 years experience in manufacture of similar products in successful use in similar applications.
  - 1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
    - a. Product data, including certified independent test data indicating compliance with requirements.
    - b. Physical Samples of each component.
    - c. Sample warranty.
  - 2. Substitutions following award of contract are not allowed except as stipulated in Section 01 60 00- Product Requirements, paragraph 1.07.

- C. Fire Performance Characteristics: Provide air barrier with the following fire-test characteristics.
  - 1. Surface-Burning Characteristics: ASTM E 84.
    - a. Flame spread index: 25 or less.
    - b. Smoke developed index: 450 or less.

## 1.05 SUBMITTALS

- A. Product Data: Manufacturer's data sheets for specified products. Include data indicating compliance with requirements of this Section. Provide manufacturer's standard installation instructions and details for air barrier and with components and accessories.
- B. Samples: Submit physical samples of the following:
  - 1. Water-resistive air barrier sheet, minimum 10 by 10 inches (254 by 254 mm).
  - 2. Membrane flashings and tapes.
  - 3. Fasteners.
  - 4. Sealants.

## 1.06 INFORMATIONAL SUBMITTALS

- A. Evaluation Report: For air barrier, from ICC-ES.
- B. Manufacturer's warranty: Submit sample warranty.

## 1.07 WARRANTY

- A. Manufacturer's Warranty: On manufacturer's standard form, in which manufacturer agrees to provide replacement material for water-resistive barrier installed in accordance with manufacturer's instructions that fails due to material defects for the life of the building.

# PART2PRODUCTS

## 2.01 MANUFACTURER AND PRODUCT

- A. Basis of Design: WrapShieldSA; Provide basis of design product. VaproShield LLC.; Gig Harbor, WA, (866)731-7663, Email: [info@VaproShield.com](mailto:info@VaproShield.com), Website: [www.vaproshield.com](http://www.vaproshield.com) or approved equal. James McKeough; (516) 413-5494.
- B. Manufacturers of equal products will be given equal consideration.

## 2.02 AIR BARRIER

- A. Air Barrier: Air and water-resistive barrier, water-vapor-permeable, consisting of multiple layers of UV-stabilized spun-bonded polypropylene.
  - 1. Surface Burning Characteristics, ASTM E 84: Flame-spread index, less than 25; Smoke-developed index, less than 450.
  - 2. Water Vapor Permeance, ASTM E 96 Method B: 50 perms (2875 ng/(Pa\*s\*m sq.)), minimum.
  - 3. Water Resistance, AATCC 127, 550 mm hydrostatic head for 5 hours: No leakage.
  - 4. Air Permeance, ASTM E 2178: 0.0019 cfm/sq. ft. (0.009 L/s/sq. m).
  - 5. Air Leakage, ASTM E 283: 0.000034 cfm/sq. ft. (0.00017 L/s/sq. m).
  - 6. Tensile Strength, ASTM D 882: 44.8 lbf/inch (78 N/mm), machine direction; 25 lbf/inch (43.8 N/mm), cross-machine direction.
  - 7. Allowable UV Exposure Time: 270 days.
  - 8. Thickness: 0.020 inches (0.51 mm).
  - 9. Weight: 5 oz per sq. yd. (17 g/sq. m).

10. Color: Orange.

## **PART3 EXECUTION**

### **3.01 INSPECTION**

- A. Examine substrate with Installer present for compliance with requirements and other conditions that would adversely affect installation or performance of air barrier. Correct deficient conditions prior to proceeding with the water-resistive barrier installation.

### **3.02 SUBSTRATE PREPARATION**

- A. Clean and prepare substrate according to manufacturer's written recommendations. Provide clean and dry substrate for breathable membrane application.

### **3.03 AIR BARRIER INSTALLATION**

- A. General: Install air barrier in accordance with the manufacturer's instructions. Secure water-resistive barrier to substrate to prevent damage prior to installation of cladding.
- B. Window And Other Openings
1. Secure prefabricated sill pan and air barrier corners at sill of opening.
  2. Install lap strip of air barrier across sill and secure with tape or mechanical fasteners, leaving bottom of lap strip free to overlap water-resistive barrier minimum of 6 inches (150 mm).
  3. Install lap strip air barrier around jambs, extending along wall surface a minimum of 9 inches (230 mm).
  4. Secure prefabricated air barrier corners at head of opening.
  5. Install lap strip of air barrier across head of opening, extending horizontally beyond corners minimum of 6 inches (150 mm).
  6. If windows are equipped with a nailing flange, cut air barrier along leading edge of header 2 inches (50 mm) beyond jamb to allow insertion of window nailing flange behind air barrier.
- C. Door Openings
1. Install air barrier lap strip around jambs, extending along wall surface a minimum of 9 inches (230 mm).
  2. Secure prefabricated air barrier corners at head of opening.
  3. Install lap strip of air barrier across head of opening, extending horizontally beyond corners minimum of 6 inches (150 mm).
  4. If door units are equipped with nailing flange, cut air barrier along leading edge of header 2 inches (50 mm) beyond jamb to allow insertion of door nailing flange behind weather barrier.
- D. Pipe and Conduit Penetrations
1. Install manufactured penetration sleeves sized for penetration and installed as recommended by sleeve manufacturer.
  2. Prepare air barrier skirt with minimum 12 inches (300 mm) of fabric on all sides at counter-flashed penetrations. Make multiple cuts to form a star-shaped opening in fabric and place over penetration. Extend skirt fabric along penetrating item and seal to penetrating item with single-sided tape.
- E. Air Barrier
1. Begin air barrier installation at bottom of wall, self-adhered air barrier at bottom and top at 24 inches (600 mm) on centers. Seal bottom edge of air

barrier to substrate in continuous bead of non-skinning butyl sealant or butyl tape.

2. Install air barrier at overlapped lap strips and penetration skirts. Overlap at vertical laps minimum of 6 inches (150 mm) with taped joints or 12 inches (300 mm) without tape. Overlap at horizontal laps minimum of 6 inches (150 mm). Insert air barrier under bottom edge of lap strips and penetration skirts; do not tape bottom edge of skirts and lap strips.
3. Extend air barrier 6 inches (150 mm) over corners.
4. Shingle subsequent courses of air barrier. Do not place vertical laps above openings.
5. Use additional mechanical fasteners in field of sheet and tape joints if air barrier will be left exposed prior to installation of cladding.

F. Applicable Exposed Air Barrier

1. Use manufacturer's recommended UV-resistant black-surfaced air barrier material or UV-resistant black tape at open joints in cladding systems.

G. Applicable Cladding Battens at Horizontal Cladding

1. Install horizontal starter strip at base of cladding installation over top of installed air barrier. Install top vent strip along top of cladding installation. Install batten strips vertically spaced according to cladding fastening requirements, coordinated with fastening requirements to underlying structure. Use fasteners recommended by manufacturer for application.

### 3.04 FIELD QUALITY CONTROL

- A. Owner, at his discretion will engage independent inspector to inspect substrate, observe installation, and inspect and document completed air barrier prior to concealment. Submit photo documentation and written report of inspections.

### 3.05 PROTECTING AND CLEANING

- A. Protect installed air barrier from damage due to construction activities, high wind conditions, and extended exposure to weather.
- B. Inspect exposed air barrier prior to installation of cladding. Remove air barrier materials that have been damaged and replace. Patch damaged areas as recommended by manufacturer.

**\*\* END OF SECTION \*\***



## SECTION 07 54 23 THERMOPLASTIC ROOFING

### PART1GENERAL

#### 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. Roofing membrane to be applied at the flat roof area of the First Floor Roof and the Roof of the Fourth Floor. Refer to Drawings.
- C. This Section includes the following, but not limited to:
  - 1. Fully adhered membrane roofing system.
  - 2. Cover board.

#### 1.02 RELATED SECTIONS

- A. Section 01 50 50 – Construction And Demolition Waste Management
- B. Section 06 10 050 – Miscellaneous Carpentry
- C. Section 07 62 00 – Sheet Metal Flashing, Roof Flashing And Trim
- D. Section 07 90 00 – Joint Sealants
- E. Division 22 – Roof Drains & Plumbing Penetrations

#### 1.03 REFERENCE STANDARDS

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated governing codes or regulations, the recommendations, suggestions and requirements described in the referenced standards are deemed mandatory and applicable to the Work.
  - ASTM American Society for Testing and Materials, Philadelphia, PA.
  - NRCA National Roofing Contractors Association, Resemont, IL.
  - FM Factory Mutual Engineering and Research, Norwood, MA.
  - UL Underwriters Laboratories, Inc., Northbrook, IL.
  - PIMA Polyisocyanurate Insulation Manufacturers Association, Bethesda, MD.
  - SMACNA Sheet Metal and Air conditioning National Contractor's Association, Chantilly, VA.
  - OSHA Occupational Safety and Health Administration, Washington, D.C.
  - SPRI Single Ply Roofing Industry, Waltham, MA.

#### 1.04 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 "Terminology Relating to Roofing and Waterproofing"; glossary of NRCA's "The NRCA Roofing and Waterproofing Manual"; and the Roof Consultants Institute "Glossary of Roofing Terms" for definition of terms related to roofing work in this Section.
- B. Sheet Metal Terminology and Techniques: SMACNA Architectural Sheet Metal Manual.

## 1.05 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and Flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. Jobsite Safety: Execute all operations and provide a safe work environment in accordance to OSHA standards and regulations. This requirement applies to all contractor personnel, associated subcontractors, workers in other trades, and jobsite visitors.
  - 1. Follow all industry fire prevention guidelines for storage of materials, staging areas, roof access, and application means and methods.
  - 2. Any applicable local fire codes supersede industry guidelines.
- D. Roofing System Design: Provide a membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE 7.
  - 1. Wind loads on this building elements shall be as per Purchase, Town/Village of Harrison of New York Building Code and Rules and Regulations.

## 1.06 SUBMITTALS

- A. As per Section 01 30 00 – Administrative Requirements.
- B. Product Data: For each type of product indicated.
- C. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
  - 1. Flashings and membrane terminations.
  - 2. Tapered insulation, including slopes to the drains and as otherwise shown.
  - 3. Insulation fastening patterns.
  - 4. Sheet layout with perimeter and corner defined.
- D. Samples for Verification: For the following products:
  - 1. Manufacturer's standard sample size of sheet roofing, of color specified, including T-shaped side and end lap seam.
  - 2. Manufacturer's standard sample size of cover board.
  - 3. Manufacturer's standard sample size of metal termination bars.
  - 4. Manufacturer's standard sample size of battens.
  - 5. Six roof cover fasteners of each type, length, and finish.
  - 6. Six fasteners of each type, length and finish used for complete roofing installation.
  - 7. Other accessories required to complete the Work.
- E. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
- F. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
  - 1. Submit evidence of meeting performance requirements.
- G. Qualification Data: For Installer and manufacturer.

- H. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.
- I. Research/Evaluation Reports: For components of membrane roofing system.
- J. Maintenance Data: For roofing system to include in maintenance manuals.
- K. Warranties: Special warranties specified in this Section.

## 1.07 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.
- B. Certifications: The roofing membrane manufacturer to submit letter certifying the proposed roof assemble compatibility of materials and total R-Value of the insulation system.
- C. Manufacturer Qualifications: A qualified manufacturer that has UL listing for membrane roofing system identical to that used for this Project, a minimum of five (5) years.
- D. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
- E. Roofing system manufacturer must provide inspection of guaranteed roofing system by employed personnel dedicated to Technical Services. Sales Representative not permitted to conduct such inspections.
- F. Test Reports:
  - 1. Roof drain and leader test or submit plumber's verification.
  - 2. Core cut (if requested).
- G. Moisture Survey:
  - 1. Submit prior to installation, results of a non-destructive moisture test of roof system completed by approved third party.
- H. Source Limitations: Obtain all components from single source roofing manufacturer.
- I. Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
  - 1. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.
  - 2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.

## 1.08 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, and directions for storing and mixing with other components. Roof-top storage permitted upon approval of Structural Engineer. Do not point load roof. Move only a day's supply of material to roof at one time. Do not store any flammable materials on the roof.

- 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.
- E. Do not use roll goods which have been damaged.
- F. Inspect ground areas surrounding roof on a regular basis for loose debris. All debris shall be legally disposed.
- G. Comply with fire regulations. Ensure properly rated, charged and inspected fire extinguishers are on the roof and staging area.

## 1.09 PROJECT 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.
- B. Do not start roofing if rain is imminent or ambient temperature is below 45 deg. F. If rain occurs during membrane application, cease operation and protect deck, insulation, penetrations and membrane from water damage.

## 1.10 GUARANTEE

- A. Provide manufacturer's system guarantee equal to Johns Manville's Peak Advantage No Dollar Limit Roofing System Guarantee.
  - 1. Single-Source special warranty includes roofing membrane, Flashings, roofing membrane accessories, roof insulation, fasteners, substrate board, vapor retarder, walkway products, manufacturer's expansion joints, manufacturer's edge metal products, and other single-source components of roofing system marketed by the manufacturer.
  - 2. Warranty Period: 25 years from date of Substantial Completion.
- B. Installer's Guarantee: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering Work of this Section, including all components of roofing system such as roofing membrane, Flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period:
  - 1. Warranty Period: Twenty years from date of Substantial Completion.

## PART2 PRODUCTS

### 2.01 MANUFACTURER

- A. Basis of Design: Johns Manville Roofing Systems or equal.
- B. Manufacturers of equal products will be given equal consideration.

## 2.02 THERMOPLASTIC POLYOLEFIN ROOFING MEMBRANE

- A. Fabric-Reinforced Thermoplastic Polyolefin Sheet: ASTM D 6878, uniform, flexible sheet formed from a thermoplastic polyolefin, internally fabric or scrim reinforced. Product: JM TPO.
  - 1. High Albedo single ply.
  - 1. Thickness: 60 mils nominal.
  - 2. Color: White

## 2.03 AUXILIARY MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
  - 1. Liquid-type auxiliary materials classified as NO VOC.
- B. Sheet Flashing: Manufacturer's sheet flashing of same material, type, reinforcement, thickness, and color as sheet membrane. Product: JM TPO
- C. Bonding Adhesive: Manufacturer's standard water-based bonding adhesive for membrane, and solvent-based bonding adhesive for Flashings.
- D. Metal Termination Bars: Manufacturer's standard predrilled stainless steel or aluminum bars, with anchors. Product: JM Termination Systems
- E. Metal Battens: Manufacturer's standard aluminum-zinc-alloy-coated or zinc-coated steel sheet, pre-punched. Product: Membrane Battens
- F. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
- G. Expansion Joints: Provide factory fabricated weatherproof, exterior covers for expansion joint openings consisting of flexible rubber membrane, supported by a closed cell foam to form flexible bellows, with two metal flanges, adhesively and mechanically combined to the bellows by a patented bifurcation process. Provide product manufactured and marketed by single-source membrane supplier that is included in the No Dollar Limit guarantee.
- H. Fascia System: Manufacturer's factory fabricated fascia consisting of a base piece and a snap-on cover. Provide product manufactured and marketed by single-source membrane supplier that is included in the No Dollar Limit guarantee. Product: Presto-Tite Fascia. Refer to drawings.
- I. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, termination reglets, cover strips, and other accessories. Products: complementary to roofing materials.

## 2.04 ROOF INSULATION

- A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Product: ENRGY 3
  - 1. Provide insulation package with R Value as shown on the Drawings.
  - 2. Provide insulation package with minimum thickness as shown on the drawings.

3. Install no boards thicker than 1.5". If insulation package required is thicker than 1.5", install in multiple layers.

## 2.05 INSULATION ACCESSORIES (AS REQUIRED)

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- B. Provide factory preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated. Tapered pre-cut cricket, tapered pre-cut miter and tapered edge strip as required.
- C. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and provided by roofing system manufacturer. Choose one of two below if adhering insulation to substrate or adhering multiple layers of insulation. Specify for either for cold adhesive or torch applied membrane applications.
- D. Cold Fluid-Applied Adhesive: Manufacturer's No VOC, two-component cold fluid-applied adhesive formulated to adhere roof insulation to substrate. Product: MBR Bonding Adhesive
- E. Urethane Adhesive: Manufacturer's two component urethane adhesive formulated to adhere insulation to substrate. Product: JM Green Two-Part Urethane Insulation Adhesive.
- F. Insulation Cant Strips: ASTM C 728, perlite insulation board. Product: FesCant Plus
- G. Wood Nailer Strips: Comply with requirements in Section 06 10 00 – Rough Carpentry.

## 2.06 COVER BOARD

- A. High-Density Polyisocyanurate: High-density polyisocyanurate technology bonded in-line to mineral-surfaced, fiberglass reinforced facers, Invinsa Roof Board.

## 2.07 MEMBRANE FLASHING

- A. Cured membrane or flexible flashings as required by the roof membrane manufacturer. Provide un-cured pressure sensitive flashing as required by manufacturer to flash corners, scuppers, pockets or unusual shapes and transitions when use of cured materials is not practical.

# PART3 EXECUTION

## 3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
  1. Verify that roof openings and penetrations are in place and set and braced and that roof drains 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.
  2. Verify that surface plane flatness and fastening to concrete roof deck complies with requirements of Section 03 30 00 – Cast-In-Place Concrete.
  3. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.
  4. Verify that the concrete substrate is visibly dry and free from moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.

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

### 3.02 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.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.03 COVER BOARD INSTALLATION

- A. Coordinate installing the membrane roofing system components so that the cover board is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with the membrane roofing system manufacturer's written instructions for installing the cover board.
- C. Install cover board with the long joints of cover board in a continuous straight line with the end joints staggered between rows, abutting edges and ends between the boards. Fill gaps exceeding ¼ inch with cover board.
  - 1. Cut and fit cover board within ¼ inch of nailers, projections and penetrations.
- D. Trim surface of cover board where necessary at roof drains so completed surface is flush and does not restrict flow of water.
  - 1. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- E. Adhered Cover Board: Adhere cover board to substrate as follows:
  - 1. Set in a two-part cold fluid-applied adhesive according to roofing system manufacturer's instruction.
  - 2. Set in a two-part urethane adhesive according to the roofing system manufacturer's instruction.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.04 ADHERED ROOFING MEMBRANE INSTALLATION

- A. Install roofing membrane over area to receive the roofing according to the membrane roofing system manufacturer's written instructions. Unroll roofing membrane roofing system manufacturer's technical personnel.
- B. Start installation of roofing membrane in presence of membrane roofing system manufacturer's technical personnel.
- C. Accurately align roofing membrane and maintain uniform side and end laps of minimum dimensions required by the manufacturer. Stagger end laps.
- D. Bonding Adhesive: Apply solvent-based bonding adhesive to substrate and underside of roofing membrane at rate required by the manufacturer and allow to partially dry before installing roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.

- E. Bonding Adhesive: Apply water-based bonding adhesive to substrate at rate required by the manufacturer and immediately install roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.
- E. Mechanically fasten roofing membrane secure at terminations, penetrations and perimeter of roofing.  
Apply roofing membrane with side laps shingled with slope of roof deck where possible.
- F. Seams: Clean seam areas, overlap roofing membrane, and hot-air weld side and end laps of roofing membrane according to manufacturer's written instructions to ensure a watertight seam installation.
  - 1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roofing membrane.
  - 2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
    - a. Remove and repair any unsatisfactory sections before proceeding with Work.
  - 3. Repair tears, voids, and lapped seams in roofing membrane that do not meet requirements.
- G. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.
- H. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.05 FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply solvent-based bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with sheet flashing.
- D. Clean seam areas and overlap and firmly roll sheet flashings into the adhesive. Weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.07 FIELD QUALITY CONTROL

- A. Testing Agency: Owner, at their desire, will engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Owner.
  - 1. Notify Architect or Owner 48 hours in advance of date and time of inspection.
- C. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.



### 3.08 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to the Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane 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.

**\*\* END OF SECTION \*\***

**SECTION 07 62 00**  
**SHEET METAL FLASHING, ROOF FLASHINGS AND TRIM**

**PART1GENERAL**

**1.01 SECTION INCLUDES**

- A. Metal wall flashing at parapet, coping and base.
- B. Counterflashings at roof mounted equipment.
- C. Membrane Roof Flashing.

**1.02 RELATED SECTIONS**

- A. Section 07 90 00 - Joint Sealers.
- B. Section 09 90 00 – Paints and Coatings
- C. Division 23 - Mechanical:
- D. Division 23 - Mechanical: Flashing sleeves and collars for mechanical items protruding through roofing membrane.
- E. Division 26 - Electrical : Roof curbs for electrical equipment.
- F. Division 26 - Electrical: Flashing sleeves and collars for electrical items protruding through roofing membrane.

**1.03 REFERENCES**

- A. ASTM B 32 - Standard Specification for Solder Metal.
- B. SMACNA - Architectural Sheet Metal Manual.
- C. AAMA 2604 – High Performance Organic Coatings on Aluminum Extrusions and Panels.
- D. AAMA 2605 – Superior Performance Organic Coatings on Aluminum Extrusions and Panels.
- E. ASTM B209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- F. ASTM B221– Standard Specifications for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wires, Profiles, and Tubes.

**1.04 SUBMITTALS**

- A. Submit under provisions of Section 01 30 00.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- C. Samples: Submit two samples, 6 x 6 inch in size illustrating typical seam, external corner, internal corner, valley, ridge, junction to vertical dissimilar surface, material and finish.

- D. Submit two samples 6 x 6 inch in size illustrating metal finish color.
- E. Submit manufacturer's data on prefabricated copings indicating sizes, configuration, finishes, colors, installation and maintenance requirements.

#### 1.05 QUALITY ASSURANCE

- A. Perform metal flashing Work in accordance with CDA standard details and requirements.
- B. Perform Work of prefabricated copings in accordance with manufacturer's requirements.
- C. Perform Work of roof membrane flashing and bellows flashing in accordance with manufacturer's requirements.

#### 1.06 QUALIFICATIONS

- A. Fabricator and Installer: Company specializing in sheet metal flashing work with a minimum of three (3) years documented experience.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- C. Prevent contact with materials which may cause discoloration or staining.

#### 1.08 COORDINATION

- A. Coordinate work under provisions of Division 1.
- B. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

### PART2PRODUCTS

#### 2.01 SHEET MATERIALS

- A. Metal Flashings: Aluminum; minimum .032 inch thickness;  
Stainless Steel, minimum 24 ga. For counterflashing – Refer to Dwg A-501, Detail 16.
- B. Finish: Kynar.
- C. Custom Shapes: Aluminum as specified above - (Drip Edges, Gutters, downspouts) As indicated on the drawings in profiles as shown.
- D. Metal Caps (Interior) - Aluminum: ASTM B209, alloy 3003-H14, 0.050-inch thick, formed as indicated, mill finish.
- E. Membrane Flashing: Cured membrane or flexible flashings as required by the roof membrane manufacturer. Provide un-cured pressure sensitive flashing as required by manufacturer to flash corners, scuppers, pockets or unusual shapes and transitions when use of cured materials is not practical.

## 2.02 ACCESSORIES

- A. Fasteners: Same material and finish as flashing metal with soft neoprene washers.
- B. Solder: Provide 50 - 50 tin/lead solder (ASTM B 32), with rosin flux.
- C. Bituminous Coating: SSPC - Paint 12, solvent-type bituminous mastic, nominally free of sulfur, compounded for 15-mil dry film thickness per coat.
- D. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, non-drying, nonmigrating sealant.
- E. Elastomeric Sealant: Generic type recommended by manufacturer of metal and fabricator of components being sealed and complying with requirements for joint sealants as specified in Section 07 90 00 - Joint Sealers.
- F. Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior nonmoving joints including riveted joints.
- G. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of flashing sheet.
- H. Roofing felt: asphalt or coal tar saturated felt weighing not less than 30 lbs per 100 square feet.
- I. Paper Slip Sheet: 4 to 6-lb. rosin-sized building paper.
- J. Reglets: Units of type and profile indicated, compatible with zinc, noncorrosive.
- K. Metal Accessories: Provide clips, straps, anchoring devices, and similar accessory units as required for installation of work, noncorrosive, size and gauge required for performance.
- L. Flexible flashing installation accessories: As recommended and required by membrane manufacturer.

## 2.03 FABRICATED UNITS (METAL FLASHINGS)

- A. Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown and with other recognized industry practices. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material.  
  
Form exposed work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.
- B. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder. Rivet joints for additional strength where required.
- C. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- D. Sealant Joints: Where movable, nonexpansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with CDA standards.

- E. Separations: Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

## **PART3EXECUTION**

### **3.01 EXAMINATION**

- A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

### **3.02 PREPARATION**

- A. Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.

### **3.03 INSTALLATION - METAL FLASHINGS**

- A. General: Except as otherwise indicated, comply with manufacturer's installation instructions.
  - 1. Anchor units of work securely in place by methods indicated, providing for thermal expansion of units; conceal fasteners where possible, and set units true to line and level as indicated.
  - 2. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.
  - 3. Extend flashings under over or through the veneer and backup as indicated on the drawings and turn up minimum 8 inches and bed into mortar joint of backup.
  - 4. Lap end joints minimum of 6 inches and seal water-tight.
  - 5. Use flashing manufacturer's recommended adhesive and / or sealer.
- B. Underlayment: Where installation is to be directly on cementitious or wood substrates, install a slip sheet of red rosin paper on a course of asphalt saturated felt.
- C. Apply plastic cement compound between metal flashings and felt flashings.
- D. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles. Extend flashings minimum 8 in. beyond opening and form up at ends to form end dams.
- E. Solder metal joints for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.
- F. Seal metal joints watertight.
- G. Install reglets to receive counterflashing in manner and by methods indicated. Where shown in masonry, furnish reglets to trades of masonry work for installation.
- H. Install counterflashing in reglets, either by snap-in seal arrangement or by soldering in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.

### **3.04 INSTALLATION - METAL WALL CAPS**

- A. Install pre formed metal caps in accordance with SMACNA Architectural Sheet Metal Manual and as indicated on the drawings.

### 3.05 INSTALLATION – ROOF FLASHINGS

- A. Install roof flashings in accordance with membrane manufacturer's requirements.

### 3.06 FIELD QUALITY CONTROL

- A. Field inspection will be performed under provisions of Section 01 40 00.
- B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

**\*\* END OF SECTION \*\***

## SECTION 07 71 00 PREFORMED COPINGS

### PART1 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.

#### 1.02 SUMMARY

- A. Work described in this section includes preformed aluminum coping system complete with fasteners, sealants, anchorage devices and other accessories as necessary to provide a complete metal edge system.

#### 1.03 RELATED SECTIONS

- A. Section 01 50 50 – Construction And Demolition Waste Management.
- B. Section 06 10 00 – Miscellaneous Carpentry.
- C. Section 07 54 23 – Thermoplastic-Polyolefin Roofing.
- D. Section 07 62 00 – Sheet Metal Flashing, Roof Flashing And Trim
- E. Section 07 90 00 – Joint Sealants
- F. Division 22 – Roof Drains & Plumbing Penetrations

#### 1.04 DEFINITIONS

- A. American Architectural Manufacturer Association (AAMA):
  - 1. AAMA 621-96: Voluntary/Standard Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates.
  - 2. AAMA 2605-05: Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- B. American Society of Civil Engineers (ASCE):
  - 1. ASCE 7-05: Minimum Design loads for Buildings and Other Structures.
- C. American Society for Testing and Materials (ASTM):
  - 1. A653-03: Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 2. A755-03: Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and pre-painted by the Coil-Coating Process for Exterior Exposed Building Products.
  - 3. B209-02a: Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  - 4. D1056-00: Specification for flexible Cellular Materials -Sponge or Expanded Rubber.
  - 5. D357S-00el: Standard Test Methods for flexible Cellular Materials made from Olefin Polymers.

- D. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
  - 1. Architectural Sheet Metal Manual, 6th edition.
- E. Single Ply Roofing Industry (SPRI)
  - 1. ES-I 2003: Wind Design Standard for Edge Systems Used with low Slope Roofing Systems.
- F. National Association of Architectural Metal Manufacturers (NAAMM)
  - 1. Metal finishes Manual for Architectural and Metal Products.

#### 1.04 DESIGN AND PERFORMANCE CRITERIA

- A. General Performance: Metal edge assemblies shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Thermal Expansion and Contraction.
  - 1. Completed metal edge and flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, or reducing performance ability.
  - 2. The design temperature differential shall be not less than 220 degrees Fahrenheit.
- C. Uniform Wind load Capacity.
  - 1. Installed metal edge system shall withstand negative wind pressures complying with the following criteria. Data to be provided on the Shop Drawings submittals, verified by a NY State Registered Structural Engineer with original seal and signature affixed to the shop drawing:
    - a. Design Code: ANSI/SPRI ES-I.
    - b. Safety factor: 2.0
    - c. Height at Metal Edge System: 10 feet + -.
    - d. Minimum Building Width: 18' +- feet.
 Coping to comply with the Code parameters for:
    - 1. Element Negative Wind Pressure:
    - 2. Horizontal Pressure (acting on vertical fascia and coping elements)
    - 3. Vertical Pressure (acting upward on horizontal coping elements)
 The "a" dimension used to determine the distance (measured from the corner of the building) in which anchorage and/or fasteners must be increased to account for higher wind pressure.
  - 2. The nominal capacity of the panel system shall be determined based on physical testing in accordance with ANSI/SPRI ES-I. The allowable load carrying capacity shall be calculated by reducing the calculated nominal capacity by the safety factor listed herein.
- D. Metal thicknesses of exposed sheet metal components shall meet the requirements of ANSI/SPRI ES-I Table 5.

#### 1.05 SUBMITTALS

- A. Shop drawings: Show metal edge system with accessories and components in plan view, sections and details. Include metal thicknesses and finishes, section lengths, joining details, anchorage details, flashings and special fabrication provisions for termination and penetrations. Indicate relationships with adjacent and interfacing work. Shop drawings to be prepared by metal *edge system* manufacturer and sealed by a Professional Engineer Registered in the State of New York.
- B. Financial Certification: Provide the building owner with a signed and notarized (sealed) affidavit by an officer of the system manufacturer which confirms a current minimum corporate asset-to-liability ratio of not less than 3:1 for the system manufacturer, or its parent



corporation. Financial support information and affidavit must be dated within 30 days prior to the product submittal.

- C. Design Test Reports.
  - 1. Submit copies of design test reports for each of the performance testing standards listed in specification article 1.4.
  - 2. Test reports shall be performed by independent, International Accreditation Service, Inc. (IAS) accredited testing laboratory, and shall bear the seal of a Registered Professional Engineer in the State of New York.
- D. Engineering Calculations.
  - 1. Submit engineering wind pressure calculations specific to this project.
  - 2. Calculations shall be prepared and sealed by a professional engineer that is a full time employee of the system manufacturer.
    - \*a. Calculations shall be prepared by a Professional Structural Engineer licensed in the State of New York.
  - 3. Calculations shall clearly demonstrate that the system is capable of resisting the calculated design wind pressure(s) after the application of the safety factor specified herein in accordance with the requirements of ANSI/SPRI ES-I and the Building Code.
- E. Warranty: Provide unexecuted specimen warranty documents for each warranty as required in the specification article 1.10.
- F. Samples
  - 1. Prior to commencement of coping fabrication, submit a physical sample of metal edge section, at least 12 inches (305 mm) long showing profile with cleats, anchoring device(s) and also a sample of color selected.

#### 1.06 QUALITY CRITERIA/INSTALLER QUALIFICATIONS.

- A. Engage an experienced metal *edge system* contractor (erector) to install edge system who has a minimum of three (3) years of experience specializing in the installation of metal edge systems.
- B. Contractor must be certified by manufacturer specified as a supplier of the metal edge system and obtain written certification from manufacturer that installer is approved for installation of the specified system.
- C. Successful contractor must obtain all components of edge system from a single manufacturer. Any secondary products that are required which cannot be supplied by the specified manufacturer must be recommended and approved in writing by primary manufacturer prior to bidding.
- D. Fabricator/Installer shall submit work experience and evidence of adequate financial responsibility. Architect reserves the right to inspect fabrication facilities in determining qualifications.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Inspect materials upon delivery.
- B. Handle materials to prevent damage.
- C. Store materials off ground providing for drainage; under cover providing for air circulation; and protected from any debris.

#### 1.08 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal system to be performed according to the manufacturer's written instructions and warranty requirements.
- B. Field Measurements: Verify actual dimensions of construction contiguous with the coping by field measurements before fabrication.

## 1.09 COORDINATION

- A. Coordinate sizes and location of all the work which interfaces with the coping system.
- B. Coordinate the coping system with rain drainage work, flashing, trim and construction of other adjoining work to provide a leak proof, secure and noncorrosive installation.

## 1.10 WARRANTIES

- A. Endorse and forward to the Owner the following warranties:
  - 1. Manufacturer's standard 20 year finish warranty covering checking, cracking, peeling, chalking, fading and adhesion of the painted sheet metal and/or extruded aluminum materials.
  - 2. Manufacturer's standard 20 year warranty covering defects in the materials and workmanship, resistance to blow-off and weather tightness, in accordance with the stated design limits.
  - 3. Installer's 5 year warranty covering coping system installation and water tightness.
- B. Warranties shall commence on date of Substantial Completion.

## PART2PRODUCTS

### 2.01 METAL COPING SYSTEM

- A. General: Provide factory-formed metal coping system designed to be field assembled by attaching anchoring chairs to parapet wall and engaging coping cover to anchoring chairs.
- B. Concealed anchor chair coping system.
  - 1. Coping system shall be: IMETCO EZ Edge sloped coping system as manufactured by IMETCO, subsidiary of The Garland Company, Inc.
  - 2. Alternate manufacturers are subject to full compliance with specification requirements, and shall be submitted for approval as follows.
    - a. Manufacturers not listed above must submit for approval, ten (10) days prior to bid date, the following: Manufacturer's literature; certification of testing in accordance with specification requirements and sections 1.04 and 1.05; sample warranties in accordance with specification section 1.10; installer qualifications in accordance with specification section 1.06, and a list of five (5) similar projects in size and scope of work.
    - b. Manufacturers of equal products shall be given equal consideration.
  - 3. Material: Aluminum sheet, 0.050 inch (1.27mm) thick.
    - a. Kynar finishes and color selection shall be as selected from manufacturer's selections.
  - 4. Characteristics.
    - a. Pre-Formed Coping cover.
      - 1) Fabrication: Copings shall be factory formed from specified metal.
      - 2) Exposed front face dimension: 6 inches (152 mm). The peak of the coping cover, when installed, shall be 1-3/8 inches (35 mm) higher than the parapet top surface. Refer to Drawings for coping details. The manufacturer shall determine the proper attachments and construction of coping if dimensions so warrant.

## Preformed Copings

- 3) Exposed rear face dimension: 4inches (102 mm). The lower edge of the horizontal surface of the coping cover, when installed, shall be 3/4 inches,(19 mm) higher than the parapet top surface.
- 4) Horizontal top dimension: Refer to Drawings.
- 5) Length: 10 feet (3.05 m) maximum recommended length.
- b. Anchor chair.
  - 1) Anchor Chair: 16 inch (406 mm) long by 16 gauge galvanized steel x width as required for parapet wall.
  - 2) Anchor chairs shall be spaced at on center as deemed by the Contractor to provide the strength requirements for the loading as per the Building Code..
- c. Coping system shall provide 5/8 inch (16 mm) of fall from front to rear to facilitate drainage and prevent water from ponding on top surface of coping cover.
- d. Anchor chair shall incorporate a sheet metal springing devise to allow coping cover to be rotated and snapped into place and secured without the use of exposed fasteners.
5. Internal splice plates shall be provided at coping cover joints. Splice plates shall be 6Inches (152 mm) wide and finished to match the coping cover.
6. Sealant Bead: Non-curing, 100 percent solids, polyisobutylene compound sealant bead. Provide permanently elastic, nonsag, nontoxic, nonstaining bead 5/16-inch- (8-mm-) diameter in accordance with coping system manufacturer's recommendations at all splices.
7. Fasteners: Attach anchor chairs using 1/4 inch x1-1/4 Inch (6 mm x32 mm) long multi-purpose screws. Use two (2) screws at front face of anchor chair and two (2) screws on top horizontal surface of anchor chair.
8. Corners, tees, and other transitions shall be mitered, welded, and post-painted to match coping covers.
9. Radius (In plan view) copings, shall be factory formed by welding sheet aluminum sections and finishing with a post-applied finish.
10. Arched (in elevation view) copings shall factory formed by welding sheet aluminum sections and finishing with a post-applied finish. The profile of arched copings shall not have a drip edge or fiat hem, and shall utilize a 1/8 inch (3 mm) stainless steel rivet painted to match the coping cover finish.

## PART 3EXECUTION

### 3.01 EXECUTION, GENERAL

- A. Refer to Division 07 Section Common Work Results for Thermal and Moisture Protection.

### 3.02 PROTECTION

- A. Isolate metal products from dissimilar metals, masonry or concrete with bituminous paint, tape, or slip sheet. Use gasketed fasteners where required to prevent corrosive reactions.

### 3.03 GENERAL

- A. Secure fascia to pre-weather treated wood nailers at bottom edge with a continuous cleat. Wood blocking to be flashed prior to the installation of the cleats.
- B. Fastening of metal to walls and wood blocking shall comply with building code standards.
- C. All accessories or other items essential to the completeness of sheet metal installation, whether specifically indicated or not, shall be provided and of the same material as item to which applied.
- D. Allow sufficient clearances for expansion and contraction of linear metal components. Secure

metal using fasteners as required by the system. Exposed face fastening will be rejected.

### 3.04 INSPECTION

- A. Verify that curbs are solidly set and nailing strips located.
- B. Perform field measurements prior to fabrication.
- C. Coordinate work with work of other trades.
- D. Verify that substrate is dry, clean and free of foreign matter.
- E. Commencement of installation shall be considered acceptance of existing conditions.

### 3.05 FLASHING MEMBRANE INSTALLATION

- A. Snap-On Coping Cap Detail:
  - 1. Install Miters first.
  - 2. Position base flashing of the Built-Up and/or Modified Roofing membrane over the wall edge covering nailers completely, fastening eight (8) inches on center. Install membrane and cap sheet with proper material and procedure according to manufacturer's recommendations.
  - 3. Install minimum sixteen (16) gauge, sixteen (16) inch long by specified width anchor chair at on centers as indicated on the reviewed submittal.
  - 4. Install six (6) inch wide splice plate by centering over sixteen (16) inch long by specified width anchor chair. Apply two beads of sealant to either side of the splice plate's center. Approximately two (2) inches from the coping cap joint. Install Coping Cap by hooking outside hem of coping on outside face of anchor chair. Press downward on inside edge of coping until "snap" occurs and hem is engaged on the entire chair.

### 3.06 CLEANING

- A. Clean installed work in accordance with the manufacturer's instructions.
- B. Replace damaged work than cannot be restored by normal cleaning methods.

### 3.07 CONSTRUCTION WASTE MANAGEMENT

- A. Remove and properly dispose of waste products generated. Comply with requirements of authorities having jurisdiction.

**\*\* END OF SECTION \*\***

## SECTION 07 76 19 PORCELAIN PAVING TILES

### 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.

#### 1.02 SUMMARY

- A. Furnish and install a complete Architectural Pavers and Adjustable Pedestals deck support system with a maximum cavity height of up to 22 inches.
- B. Related Sections include the following:
  - 1. Section 03 30 00 Cast-in-Place Concrete.

#### 1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM)
  - 1. ASTM D 638 - Tensile Properties of Plastics
  - 2. ASTM D 790 - Flexural Properties of Unreinforced and Reinforced Plastics Insulating
  - 3. ASTM D 1525 - Vicat Softening Temperature of Plastics

#### 1.04 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Samples:
  - 1. Porcelain Pavers: Submit samples for type, color and texture required.
- C. Shop Drawings: Submitted by contractor showing all components required for the paver & pedestal requirements. Shop drawings shall include plan drawings showing layout of all paver areas and detail drawings showing how the various components of the system fit together. Include manufacturer's literature completely describing all components of the paver pedestal systems and giving detailed installation recommendations and instructions. Also included detailed installation drawings for all Porcelain Pavers.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All products covered under this Section shall be produced by a single manufacturer unless otherwise specified with a minimum of fifteen (15) years proven production experience.
- B. Installer Qualifications: Installer shall have a minimum of three (3) years proven construction experience and be capable of estimating & building from blueprint plans and details, determining elevations, in addition to proper material handling. All Work must comply with Tile Tech Inc installation application procedures for pedestal mounted Porcelain Pavers as

specified herein.

- C. Special Consideration: The installer and or subcontractor must assume the responsibility for and take into consideration (1) the structural capability and adequacy of the structure to carry the dead and live load weight(s) involved, and (2) that the density of any insulation is satisfactory to resist crushing and damaging the waterproofing membrane.

## 1.06 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with provisions of Section 01 30 00.
- B. Protect Porcelain Pavers during shipment, storage and construction against damage. Store a minimum of 4 inches off the ground in a dry location and cover with polyethylene to protect from contact with materials which would cause staining or discoloration.

## 1.07 PROJECT CONDITIONS

- A. Tile Tech Pavers specified are to be used with pedestrian traffic only & all four (4) sides of a deck system must restrain and contain the decking panels with perimeter blocking or walls. Decking panels must not be allowed to move laterally.
- B. The substrate that is to receive pedestals must have slope and provide positive and adequate drainage in accordance with good building practice and applicable building codes.
- C. Pavers:
  - 1. Any substrate that is to receive the pavers shall adequately have positive drainage slope.
  - 2. A wall or perimeter containment on all open sides is required. Install structural perimeter containment that restrains the entire decking system.

## 1.08 WARRANTIES / GUARANTEES

- A. Tile Tech Pedestal System (Porcelain Pavers and pedestals) shall remain free from defects for a period of ten (10) years. The contractor shall warrant that his work will remain free from defects of labor and materials used in conjunction with his work in accordance with the general conditions for this project or a maximum of three (3) years.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. The Pavers specified herein are based upon products manufactured by: Tile Tech Inc. 88-380-5575 Phone: (213) 380-5560 Fax: (213) 380-5561 E-mail: [sales@tiletechpavers.com](mailto:sales@tiletechpavers.com) Website: [www.tiletechpavers.com](http://www.tiletechpavers.com) or equal.
- B. Pavers equal in appearance and function and meeting these specifications, will be acceptable when the specified submittals are approved in writing by the Architect prior to bid.

### 2.02 MATERIALS

- A. PORCELAIN PAVERS:

1. Type: Porcelain Pavers.
2. Color: Standard range manufactured by Tile Tech Inc.
3. Size: Nominal 24" x 24" x 3/4"
4. Finish: To be selected by the Architect.
5. Weight: 9lbs per Sqft.

## 2.03 PERIMETER CONTAINMENT AND SUPPORT

- A. The complete assembly of the Porcelain Pavers must be restrained at the perimeter of the pavers area.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Prior to starting work inspect the substrate to ensure that it has been properly prepared to accept the Tile Tech Pavers. The substrate and or surface shall be clean and free of any projections and debris which may impair the performance of the pavers. Verify all elevations, and area dimensions. Commencement of work shall imply acceptance the surfaces conditions.
- B. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.

### 3.02 PREPARATION

- A. The substrate surface that will receive the Pavers must be structurally capable of carrying the dead and live loads anticipated.

### 3.03 INSTALLATION

- A. Install in accordance with Tile Tech Inc and other contributing manufacturer's instructions. Installation requirements vary for each individual project site. Tile used, pattern, grid layout, starting point, and finished elevation should be shown on plan view shop drawings, which have been prepared and approved by the designer, installing contractor and/or owner.
- B. GRID LAYOUT AND ELEVATIONS:
  1. Once the starting point and the finished elevation of the surface have been established and marked around the perimeter using a transit water level or laser leveling device.
  2. Precise measurements should be taken and pavers area should be accurately defined. Mark off and 'square up' all outside edges with control lines using "snapped" chalk lines. Mark two (2) lines that are perpendicular to each other across the pavers area. Use the control lines as references to periodically check and assure a square layout during installation.

### 3.04 PERIMETER CONTAINMENT

- A. Any area of the pavers that is not restrained by an appurtenance must be 'boxed-in' and contained. The pavers area will move if all sides are not adequately restrained. Perimeter framing and edging boards located at the outside of the pavers perimeter must be installed to provide restraint. No movement should be allowed at the perimeter of the paver area

greater than one tab width.

### 3.05 FIELD QUALITY CONTROL

- A. Inspect often during installation to assure that the tiles are level and not rocking. Unless otherwise specified in writing to allow for expansion, inspect to assure that all paver spacing between tiles and at perimeter walls does not exceed a tab width. Particular attention should be made to assure that all pedestrian entry or access points to the deck are level and that the deck surface tiles are not randomly raised or uneven creating a tripping or safety hazard.

### 3.06 ROUTINE MAINTENANCE AND CARE

- A. The deck owner must perform routine maintenance of the deck. Check for rocking Porcelain Pavers. Pedestals can settle and may have to be realigned. Failure to do so can cause a tripping hazard. Make sure the edge restraint stays intact and structurally sound.
- B. Extra Materials: Deliver supply of maintenance materials to the owner. Furnish not less than 1 percent maintenance materials from same lot as materials installed and enclosed in protective packaging with appropriate identifying labels.

**\*\* END OF SECTION \*\***



## SECTION 07 90 00 JOINT SEALERS

### PART1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Preparing substrate surfaces.
- B. Sealant and joint backing.

#### 1.02 RELATED SECTIONS

- A. Section 07 62 00 – Sheet Metal Flashing And Trim
- B. Section 08 10 00 – Hollow Metal Doors and Frames
- C. Section 08 20 00 – Flush Wood Doors
- D. Section 08 41 13 – Aluminum-Framed Entrances And Storefronts
- E. Section 08 80 00 – Glazing
- F. Section 09 26 00 – Gypsum Wallboard Assemblies

#### 1.03 REFERENCES

- A. ASTM E72 – Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
- B. ASTM C1193-00 – Standard Guide for Use of Joint Sealants
- C. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
- D. ASTM C919 – Standard Practice for Use of Sealants in Accoustical Applications.
- E. ASTM D 217 – Standard Test Methods for Cone Penetration of Lubricating Grease.
- F. ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions And Elements.
- G. ASTM C920-00 - Elastomeric Joint Sealants.
- H. ASTM D1056-00 - Flexible Cellular Materials - Sponge or Expanded Rubber.
- I. SWRI (Sealant, Waterproofing and Restoration Institute) – “Sealant & Caulking the Professional’s Guide” and “Technical Bulletin Series”.

#### 1.04 SUBMITTALS

- A. Submit under provisions Section 01 30 00.
- B. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations and color availability.

- C. Samples: Submit samples illustrating sealant colors for initial selection. Multiple colors as required to match adjacent materials to be selected from initial samples.
- D. Manufacturer's Installation Instructions: Indicate special procedures, surface preparation, perimeter conditions requiring special attention, and warranty information.

#### 1.05 QUALITY ASSURANCE

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Maintain one copy of document on site.

#### 1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with documented experience on projects similar in scope.
- B. Applicator: Company specializing in performing the work of this section with documented experience on similar projects and approved by manufacturer.

#### 1.07 ENVIRONMENTAL REQUIREMENTS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.
- B. Non Toxic/non flammable.
- C. VOC compliant.
- D. All products are NOT to contain formaldehyde.

#### 1.08 WARRANTY

- A. Provide five year material and workmanship warranty.
- B. Warranty: Include coverage for installed sealants and accessories which fail to achieve water tight seal, and exhibit loss of adhesion or cohesion, or do not cure.

### PART2 PRODUCTS

#### 2.01 SEALANTS - MANUFACTURERS

- A. Henkel Corporation – OSI Greenseeries or equal.
- B. Hanno Sealing and Insulating Systems.
- C. Dow-Corning.
- D. Other manufacturer's providing equal products will be given equal consideration.

#### 2.02 SEALANTS - MATERIALS

- A. \* Single-Component, Nonsag, Neutral-Curing Silicane Sealant: DOWSIL 795; ASTM C920, Type S, Grade NS, Class 50 for use at (NT) None Traffic Grade, for use on (G) Glass, for use on (A) Aluminum, and for use on (O) Other Substrates; SWRI validation, with the following:

- |    |  |   |
|----|--|---|
| 1. | Basis of Design Product:                 | DOWSIL 795 Silicone Building Sealant.           |
| 2. | Hardness ASTM C661:                      | 35-45 durometer Shore A.                        |
| 3. | Volatile Organic Compound (VOC) Content: | 32 g/L maximum.                                 |
| 3. | Staining, ASTM C 1248:                   | None on concrete, granite, limestone and brick. |
| 4. | Movement Capability:                     | +/- 25 %  |
| 5. | Color:                                   | As selected by the Architect from the           |
|    | manufacturer's                           | selections.                                     |

## 2.03 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ASTM D1056; round, closed cell polyethylene foam rod; oversized 50 percent larger than joint width; compatible with joint sealer in accordance with sealer manufacturer.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that substrate surfaces and joint openings are ready to receive work.
- B. Verify that joint backing and release tapes are compatible with sealant.

### 3.02 PREPARATION

- A. Remove loose materials and foreign matter which might impair adhesion of sealant.
- B. Clean and prime as required joints in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions.
- D. Protect elements surrounding the work of this section from damage or disfiguration.
- E. Concrete or block walls must be well cured, dry and free of any release agents.

### 3.03 INSTALLATION

- A. Install sealant in accordance with manufacturer's instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension no greater than 1/3 of the joint width. Minimum joint width to be 1/4 in.
- D. Install bond breaker where joint backing is not used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

- G. Tool joints concave or as detailed.

### 3.04 CLEANING

- A. Clean work under provisions of General and Supplementary Conditions.
- B. Clean adjacent soiled surfaces.

### 3.05 PROTECTION OF FINISHED WORK

- A. Protect finished installation under provisions of General Conditions.
- B. Protect sealants until cured.

**\*\* END OF SECTION \*\***