SECTION 077129 - MANUFACTURED ROOF EXPANSION JOINTS

3-INCH JOINT, ST.CLAIRE; 6-INCH JOINT, WARRENTON

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. Aluminum roof expansion joints.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wooden curbs or cants for mounting roof expansion joints.
2. Section 075552 "Modified Bituminous Protected Membrane Roofing" for roofing system.
3. Section 076200 "Sheet Metal Flashing and Trim" for shop- and field-fabricated sheet metal expansion-joint systems, flashing, and other sheet metal items.
4. Section 077200 "Roof Accessories" for manufactured and prefabricated metal roof curbs.

1.3 DEFINITIONS

A. Maximum Joint Width: Widest linear gap a joint system tolerates and in which it performs its designed function without damaging its functional capabilities.

B. Minimum Joint Width: Narrowest linear gap a joint system tolerates and in which it performs its designed function without damaging its functional capabilities.

C. Movement Capability: Value obtained from the difference between widest and narrowest widths of a joint.

D. Nominal Joint Width: The width of the linear opening specified in practice and in which the joint system is installed.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For roof expansion joints.

1. Include plans, elevations, sections, and attachment details.
2. Include details of splices, intersections, transitions, fittings, method of field assembly, and location and size of each field splice.
3. Provide isometric drawings of intersections, terminations, and changes in joint direction or planes, depicting how components interconnect with each other and adjacent construction to allow movement and achieve waterproof continuity.

C. Samples: For each exposed product and for each color specified, 6 inches (150 mm) in size.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Sample Warranties: For special warranties.

C. Test Reports: ASTM-E1399 test reports.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Approved by manufacturer and having experience installing joint systems that are similar in design complexity.

B. Source Limitations: Obtain all architectural joint system through one source from a single manufacturer.

C. Loading Characteristics: Standard loading refers to covers that are capable of withstanding up to 500 lb. point loads. Heavy duty refers to covers that are capable of withstanding up to 2000 lb. point loads.

1.8 WARRANTY

A. Special Warranty: Manufacturer and Installer agree to repair or replace roof expansion joints and components that leak, deteriorate beyond normal weathering, or otherwise fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Roof expansion joints shall withstand exposure to weather, remain watertight, and resist the movements indicated without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint seals, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg. F (67 deg. C), ambient; 180 deg. F (100 deg. C), material surfaces.

2.2 COORDINATION

A. Coordinate installation of exterior wall joint systems with roof expansion assemblies to ensure that wall transitions are weathertight.

2.3 ALUMINUM ROOF EXPANSION JOINTS

A. Aluminum Roof Expansion Joint; St. Claire Branch: Manufactured, continuous, waterproof, joint-cover assembly; consisting of a formed or extruded metal cover secured to extruded aluminum frames, with water-resistant gasketing between cover and frames, and with provision for securing assembly to substrate and sealing assembly to roofing membrane or flashing. Provide each size and type indicated, factory-fabricated units for corner and joint intersections and horizontal and vertical transitions including those to other building expansion joints, splicing units, adhesives, and other components as recommended by roof-expansion-joint manufacturer for complete installation. Fabricate each assembly specifically for installation configuration indicated on Drawings.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings, Model SJTW-300 Roof to Wall 3” expansion joint by Construction Specialties, or comparable product by one of the following:

a. Balco, Inc.
b. C/S Group.
c. MM Systems Corporation.
d. Watson Bowman Acme Corp.

2. Joint Movement Capability: Plus and minus 50 percent of joint size, as indicated on Drawings.
3. Frame Members: Extruded aluminum configured for sloped cants with integral 5-1/2-inch tall aluminum curb as indicated; with exposed finish matching cover.
4. Cover: Vertical Cover Plate, Extruded aluminum; thickness as recommended by manufacturer, but shall be no less than .090-inch thick.

a. Aluminum Finish: Mill.

5. Secondary Seal: Continuous, waterproof 7-ply laminate reinforced PVC membrane within joint and attached to substrate on sides of joint below the cover.
6. Factory Fabricated Transitions: All end caps, transitions and miters to be factory fabricated to ensure weather integrity. Field fabrication is not acceptable.

B. Aluminum Roof Expansion Joint; Warrenton Branch: Manufactured, continuous, waterproof, joint-cover assembly; consisting of a formed or extruded metal cover secured to extruded aluminum frames, with water-resistant gasketing between cover and frames, and with provision for securing assembly to substrate and sealing assembly to roofing membrane or flashing. Provide each size and type indicated, factory-fabricated units for corner and joint intersections and horizontal and vertical transitions including those to other building expansion joints, splicing units, adhesives, and other components as recommended by roof-expansion-joint manufacturer for complete installation. Fabricate each assembly specifically for installation configuration indicated on Drawings.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings, Model SRTW-600 Roof to Wall 6" expansion joint by Construction Specialties, or comparable product by one of the following:

   a. Balco, Inc.
   b. C/S Group.
   c. MM Systems Corporation.
   d. Watson Bowman Acme Corp.

2. Joint Movement Capability: Plus and minus 50 percent of joint size, as indicated on Drawings.
3. Frame Members: Extruded aluminum configured for sloped cants with integral 5-1/2-inch tall aluminum curb as indicated; with exposed finish matching cover.
4. Cover: Vertical Cover Plate, Extruded aluminum; thickness as recommended by manufacturer, but shall be no less than .090-inch thick.

   a. Aluminum Finish: Mill.

5. Secondary Seal: Continuous, waterproof 7-ply laminate reinforced PVC membrane within joint and attached to substrate on sides of joint below the cover.
6. Factory Fabricated Transitions: All end caps, transitions and miters to be factory fabricated to ensure weather integrity. Field fabrication is not acceptable.

2.4 MATERIALS

A. Galvanized-Steel Sheet: ASTM A 653/A 653M, hot-dip zinc-coating designation G90 (Z275).

B. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304.

C. Aluminum: ASTM B 209 (ASTM B 209M) for sheet and plate, ASTM B 221 (ASTM B 221M) for extrusions; alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.

1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious or preservative-treated wood materials.
2. Mill Finish: As manufactured.

D. PVC Membrane: ASTM D 4434, Type standard with manufacturer for application.

E. Silicone Extrusions: ASTM D 2000, UV stabilized, and that does not propagate flame.

F. Adhesives: As recommended by roof-expansion-joint manufacturer and with a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

G. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to withstand design loads.

1. Exposed Fasteners: Gasketed. Use screws with hex washer heads matching color of material being fastened.

H. Elastomeric Seals: Preformed elastomeric membranes or extrusions to be installed in metal frames.

I. Compression Seals: ASTM D2000; preformed rectangular elastomeric extrusions having internal baffle system and designed to function under compression.

J. Accessories: Manufacturer’s standard anchors, clips, fasteners, set screws, spacers, and other accessories compatible with materials in contact, as indicated or required for complete installations.

K. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.5 FINISHES

A. Comply with NAAMM’s “Metal Finishes Manual for Architectural and Metal Products” for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Examine roof-joint openings, inside surfaces of parapets, and expansion-control joint systems that interface with roof expansion joints, for suitable conditions where roof expansion joints will be installed.

C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to architectural joint system manufacturer’s written instructions.

B. Repair concrete slabs and blockouts using manufacturer’s recommended repair grout of compressive strength adequate for anticipated structural loadings.

C. Coordinate and furnish anchorages, setting drawings, and instructions for installing joint systems. Provide fasteners of metal, type and size to suit type of construction indicated and to provide for secure attachment of joint systems.

3.3 INSTALLATION

A. General: Comply with manufacturer's written instructions for handling and installing roof expansion joints.

1. Anchor roof expansion joints securely in place, with provisions for required movement. Use fasteners, protective coatings, sealants, and miscellaneous items as required to complete roof expansion joints.
2. Install roof expansion joints true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
3. Provide for linear thermal expansion of roof expansion joint materials.
4. Provide uniform profile of roof expansion joint throughout its length; do not stretch or squeeze membranes.
5. Provide uniform, neat seams.
6. Install roof expansion joints to fit substrates and to result in watertight performance.
7. Torch cutting of roof expansion joints is not permitted.
8. Do not use graphite pencils to mark aluminum surfaces.

B. Directional Changes and Other Expansion-Control Joint Systems: Coordinate installation of roof expansion joints with other expansion-control joint systems to result in watertight performance. Install factory-fabricated units at directional changes and at transitions between roof expansion joints and exterior expansion-control joint systems specified in Section 079500 "Expansion Control" to provide continuous, uninterrupted, and watertight joints.

C. Seals in Metal Frames: Install elastomeric seals and membranes in frames to comply with manufacturer’s written instructions. Install with minimum number of end joints.

1. Provide in continuous lengths for straight sections.
2. Seal transitions according to manufacturer’s written instructions. Vulcanize or heat-weld field-spliced joints as recommended by manufacturer.
3. Installation: Mechanically lock seals into frames or adhere to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.

D. Compression Seals: Apply adhesive or lubricant adhesive as recommended by manufacturer before installing compression seals.

E. Terminate exposed ends of joint assemblies with field- or factory-fabricated termination devices.

F. Water Barrier: Provide water barrier at exterior joints and where called for on the Drawings. Provide drainage fittings where indicated.

G. Splices: Splice roof expansion joints with materials provided by roof-expansion-joint manufacturer for this purpose, to provide continuous, uninterrupted, and waterproof joints.

1. Install waterproof splices and prefabricated end dams to prevent leakage of secondary-seal membrane.

H. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

3.4 PROTECTION

A. Protect roof expansion joints from foot traffic, displacement, or other damage.

B. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.

C. Protect the installation from damage by work of other Sections. Where necessary due to heavy construction traffic, remove and properly store cover plates or seals and install temporary protection over joints. Reinstall cover plates or seals prior to Substantial Completion of the work.

D. Remove and replace roof expansion joints and components that become damaged by moisture or otherwise.

END OF SECTION 077129