SECTION  – expansion joint assemblies

1. General
   1. SUMMARY
      1. This Section includes requirements for supply and installation of expansion control systems including but not limited to, the following:
         1. Interior pedestrian and vehicular traffic joints.
         2. Interior/exterior wall and ceiling joints.
      2. Related Requirements:
         1. Section 07 13 26 – Self-Adhering Sheet Waterproofing.
         2. Section 07 21 13 – Board Insulation.
         3. Section 07 84 00 – Firestopping and Smokeseals.
         4. Section 07 92 00 – Joint Sealants.
   2. design criteria
      1. Design expansion joint assemblies to permit movement of +/- 50% of joint width, without detrimental effects.
   3. SUBMITTALS
      1. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
      2. Action Submittals: Provide the following submittals before starting any work of this Section:
         1. Product Data: Submit manufacturer's product specifications, construction details, material and finish descriptions, and dimensions of individual components and seals.
         2. Shop Drawings: Submit shop drawings for each different type of joint system specified, provide placement drawings including but not limited to, the following:
            1. Line diagrams showing entire route of each joint system, plans.
            2. Elevations, sections, and details.
            3. Joints and splice locations.
            4. Attachments to work of other Sections.
         3. Samples for Verification: Full size units 150mm (6") long of each type of joint system indicated; in sets for each finish, colour, texture, and pattern specified, showing the full range of variations expected in these characteristics.
      3. Informational Submittals: Provide the following submittals when requested by the Consultant:
         1. Certificates: Submit certificate signed by manufacturer indicating that Products supplied for work of this Section are appropriate for expected range of performance including engineered judgements for fire rated products not tested to meet ULC requirements.
         2. Source Quality Control Submittals: Submit testing data from a qualified testing agency indicating that expansion control systems meet range of movement and exposure requirements for Project, based on comprehensive testing of current products.
      4. Sustainable Design Submittals: Coordinate project sustainable design requirements with Section 01 33 29 – Sustainable Design Reporting, in addition, provide information for following specific requirements of this Section:
         1. MR Credit 2.2 - Construction Waste Management:
            1. Content: Reduce amount of construction waste materials going to landfill by using more efficiently sized materials; a minimum of 75% by weight of construction waste materials must be diverted from landfill disposal; larger panel products having fewer off cuts may contribute to required content.
            2. Compliance Requirements: Submit calculations indicating reduction in waste materials by comparing amount of waste arising from using standard panel products compared to larger panel products; products that use less packaging will be given preference over products that provide standard packaging.

Coordinate waste management requirements with Section 01 74 19 – Construction Waste Management.

Remove from site and dispose of packaging materials at appropriate recycling facilities, as follows:

Divert unused metal materials from landfill to metal recycling facility.

Divert unused wood materials from landfill to recycling or composting facility.

Divert unused waterproofing materials from landfill to recognized collection site; do not dispose of materials into sewer systems, lakes, or streams, or onto ground or in other locations where it will pose an environmental concern.

* 1. ADMINISTRATIVE REQUIREMENTS
     1. Coordination: Coordinate compatibility of products supplied by this Section with adjoining joint systems specified in other Sections.
     2. Pre-Construction Meeting: Conduct a meeting before starting any concrete or waterproofing work with attendance by Contractor, Subcontractor for work of this Section, Subcontractor's for work affected by this Section to discuss the following:
        1. Expansion joint placement and alignment, and installation of block outs.
        2. Establishing minimum nominal joint width to suit ambient conditions at time of installation of expansion joint materials.
        3. Protection of expansion joints during construction and after installation of expansion joint materials.
        4. Include follow-up agenda item for subsequent progress meetings to identify ongoing coordination and responsibilities relating to installation of expansion joints.

1. Products
   1. APPROVED MANUFACTURERS
      1. Basis of Design Products: Products named in this Section were used as the basis of design for the project; additional manufacturers offering similar products may be incorporated into the work of this Section provided they meet the performance requirements established by the named products and provided they submit requests for substitution a minimum of ten (10) days in advance of Bid Closing.
      2. Provide expansion joint materials which are designed and installed to function in the same assembly, by one manufacturer, to ensure compatibility of the expansion control system. Manufacturers offing products that may be incorporated into the Work include, but are not limited to the following:
         1. Emseal Joint Systems, LTD.
         2. MM Systems Corporation.
   2. DESIGN CRITERIA
      1. Provide factory fabricated expansion control systems capable of withstanding the types of loads and of accommodating the kinds of movement, and the other functions for which they are designed including those specified below, without failure.
         1. Vertical Exterior Joints: Maintain continuity of weather enclosure.
         2. Joints in Fire Resistance Rated Assemblies: Maintain fire resistance ratings of assemblies.
         3. Other Joints: Where indicated, provide joint systems that prevent penetration of water, moisture, and other substances deleterious to building components or content.
   3. EXPANSION JOINT ASSEMBLIES
      1. Provide joint systems of design, basic profile, materials, and operation indicated.
      2. Provide units that can accommodate joint widths indicated including alignment variations in adjacent surfaces, and as follows:
         1. Provide units in longest practicable lengths to minimize number of end joints. Provide hairline mitred corners where joint changes directions or abuts other materials.
         2. Include closure materials and transition pieces, tee joints, corners, curbs, cross connections, and other accessories as required to provide continuous joint systems.
         3. Public Area Seals: Non-slip seals designed to lie flat with adjacent surfaces and complying with handicapped accessibility guidelines for public areas.
      3. Preformed Foam Joint System: Preformed, pre compressed, self expanding, watertight, and as follows:
         1. Blind-Side Assembly:
            1. Double celled extruded, thermoplastic rubber gland flanked by integral side flashing sheets.
            2. Termination bar and anchors.
            3. Basis of Design Material: BG System by Emseal Joint Systems, LTD.

Select appropriate blind-side assembly model from manufacturer to suit expansion joint size.

* + - 1. Positive Side Assembly:
         1. High density cellular polyurethane foam, impregnated with water-based polymer-modified asphalt.
         2. Joint Movement: -25%, -25% (50% total).
         3. Basis of Design Material: 20H System by Emseal Joint Systems, LTD.

Select appropriate positive side assembly model from manufacturer to suit expansion joint size.

* + - 1. Fire Rated Concrete Deck Assembly - Up to 4" Joint Width:
         1. Fire-retardant-impregnated foam, factory pre-coated on the bottom fire-facing side with an intumescent fire-proofing material, providing a 2 hour fire rating. Pre-coated traffic wear surface consisting of a highway-grade, fuel resistant silicone seal.
         2. Joint Movement: -25%, -25% (50% total).
         3. Basis of Design Material: Emshield DFR2 by Emseal Joint Systems, LTD.
      2. Fire Rated Concrete Deck Assembly - 4" and Larger Joint Width:
         1. Fire-retardant-impregnated foam, factory pre-coated on the bottom fire-facing side with an intumescent fire-proofing material, providing a 2 hour fire rating. Pre-coated watertight wear surface and traffic durable cover plate.
         2. Joint Movement: -50%, -50% (100% total).
         3. Basis of Design Material: Emshield SJS FPFR 2 by Emseal Joint Systems, LTD.
      3. Vertical Exterior Expansion Joint Assembly - 1/2" to 8" Joint Width:
         1. Provide watertight, energy-efficient exterior and interior joints in vertical-plane walls above grade. Preformed sealant shall be silicone pre-coated, preformed, pre-compressed, self-expanding, sealant system. Expanding foam to be cellular foam impregnated with a water-based, non-drying, 100% acrylic dispersion. Seal shall combine factory-applied, low-modulus silicone and a backing of acrylic-impregnated expanding foam into a unified hybrid sealant system.
         2. Joint Movement: -25%, -25% (50% total).
         3. Basis of Design Material: Colorseal by Emseal Joint Systems, LTD. Colour: As selected by the Consultant from the manufacturer's standard product line.
      4. Horizontal Exterior Expansion Joint Assembly - 1/2" to 10" Joint Width:
         1. Provide watertight, expansion joint for expansion joints and isolation joints in non-traffic, high-movement, and seismic structural joints in decks. Preformed sealant shall be silicone pre-coated, preformed, pre-compressed, self-expanding, sealant system. Expanding foam to be cellular foam impregnated with a water-based, non-drying, 100% acrylic dispersion. Seal shall combine factory-applied, low-modulus silicone and a backing of acrylic-impregnated expanding foam into a unified hybrid sealant system.
         2. Joint Movement: -50%, -50% (100% total).
         3. Basis of Design Material: Horizontal Colorseal by Emseal Joint Systems, LTD. Colour: White.
  1. MATERIALS
     1. Accessories: Manufacturer's standard anchors, clips, fasteners, set screws, spacers, flexible moisture barrier and filler materials, drain tubes, lubricants, adhesives, and other accessories compatible with material in contact, as indicated or required for complete installations.
     2. Aluminum Extrusions: AA6063-T6 and AA6063-T5 alloy, conforming to ASTM B 221-92a.
     3. Fasteners: Plated steel; size and length to suit.
     4. Bituminous Paint: Conforming to CAN/CGSB-1.108, Type 2.
     5. Expansion Joint Wall Covers: Extruded aluminum wall joint covers, surface mounted, complete with PVC gaskets. Aluminum finish: Clear anodized.
        1. Joint Width: As indicated on Structural Drawings.
        2. Basis of Design Model: ASMC Series by C/S Construction Specialties.
           1. Select appropriate joint cover model from manufacturer to match expansion joint size.
  2. FINISHES
     1. Aluminum Finishes:
        1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
        2. Class II, Clear Anodic Finish: AA M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 607.1.
  3. FABRICATION
     1. Fabricate components in longest practicable lengths.
     2. Prefabricate corners and other intersection pieces.
     3. Resilient gasket filler strips shall be keylocked or bonded to aluminum retainers.
     4. Select width of assemblies to suit expansion joint size, unless otherwise shown assume 2" wide joints.

1. Execution
   1. PREPARATION
      1. Prepare substrates according to expansion control system manufacturer's written instructions.
      2. Examine expansion joints for the presence of voids, honeycombing, spalling and to confirm joint dimensions. Report in writing all errors, discrepancies and deficiencies to the Consultant.
      3. Clean joints, ensuring that they are clean, dry, free of dust, dirt, loose materials, grease, oil and other foreign materials detrimental to installation of expansion joint assemblies.
      4. Fastening to In Place Construction: Provide anchorage devices and fasteners where necessary to secure joint systems to in place construction, including threaded fasteners with drilled in expansion shields for concrete where anchoring members are not embedded in concrete. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of joint systems.
   2. installation
      1. Comply with manufacturer's written instructions for handling and installing expansion control assemblies and materials, unless more stringent requirements are indicated.
      2. Coordinate installation of expansion control assembly materials and associated work so complete assemblies comply with assembly performance requirements.
      3. Terminate exposed ends of exterior expansion control assemblies with factory fabricated termination devices to maintain waterproof system.
      4. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required to install joint systems.
         1. Install joint cover assemblies in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
         2. Allow adequate free movement for thermal expansion and contraction of metal to avoid buckling.
         3. Locate covers in continuous contact with adjacent surfaces.
         4. Securely attach in place with required accessories.
         5. Locate anchors at interval recommended by manufacturer, but not less than 3" from each end and not more than 24" on center.
      5. Maintain continuity of joint systems with a minimum number of end joints and align metal members.
      6. Cut and fit ends to produce joints that will accommodate thermal expansion and contraction of metal to avoid buckling of frames.
      7. Adhere flexible filler materials, if any, to frames with adhesive or pressure sensitive tape as recommended by manufacturer.
      8. Preformed Foam Joint System: Install preformed foam joint system in accordance with manufacturer's instructions; clean expansion control joint and silicone surfaces of foam joint system to remove deleterious materials; apply sealants to ends, edge and fillets.
      9. Fire Barriers: Install fire barriers to provide continuous, uninterrupted fire resistance throughout length of joint, including transitions and end joints.
   3. CLEANING AND PROTECTION
      1. Do not remove protective covering until finish work in adjacent areas is complete; clean exposed metal surfaces to comply with manufacturer's written instructions when protective covering is removed.

END OF SECTION