SECTION 07 21 60 – STRUCTURAL THERMAL BREAK

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials, and equipment necessary to complete the work of this Section including the following.

1. Structural thermal breaks fabricated from the following material:

   a. Reinforced thermoset resin. (Armatherm FRR)

2. Thermal breaks at the following locations:

   a. Steel beam connections.
   b. Masonry shelf angles.
   c. Curtain wall mullions.
   d. Cladding/façade connections.
   e. Roof penetrations.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Division 03, Section 03 30 00 “Cast-In-Place Concrete” for coordination with concrete.
2. Division 04, Section 04 20 00 “Unit Masonry” for coordination with masonry construction.
3. Division 05, Section 05 12 00 “Structural Steel Framing” for coordination with framing.
4. Division 07, Section 07 21 00 “Thermal Insulation” for building insulation.
5. Division 07, Section 07 42 16 “Metal Plate Wall Panels” for exterior cladding.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions.

B. Schedule: Submit a list of locations where structural thermal breaks are to be used, and the specific product and thickness to be used at each location.

C. Shop Drawings: Submit shop drawings showing details of construction, and relationship of structural thermal break material with adjacent construction including fastening and/or anchorage connection details, Armatherm thermal break material size and thickness.

D. Thermal Design: Wall assembly or interface detail shall meet the ASHRAE 90.1 requirements for continuous insulation and shall not have structural connections (beams, support framing, sub girts, clips) which create thermal bridging. Effective U values of wall, roof and foundation assemblies shall meet or exceed the design requirements per code. Effective U value calculation or modeling shall be performed in accordance with ASHRAE guidelines.

E. Structural Design: Design structural thermal break connections and/or façade attachment support framing using performance requirements and design criteria indicated. Provide comprehensive engineering analysis by a qualified professional engineer.

1.3 QUALITY ASSURANCE

A. Manufacturer: Minimum of 5 years' experience producing similar products.

B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.4 DEVLIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Storage and Handling: Comply with manufacturer's recommendations for storage and handling. Protect from weather damage.

1.5 WARRANTY

A. Warranty: Provide manufacturer's standard limited warranty against defects in manufacturing.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis-of-Design Manufacturer: Armatherm, 4 Middle Street, Fairhaven, MA 02719. Tel: 844-360-1036. Email: sales@armatherm.com. Web: www.armatherm.com.

2.2 REINFORCED THERMOSET THERMAL BREAKS

A. Structural Thermal Break Material: Armatherm FRR reinforced thermoset resin with the following attributes:

1. Compressive Strength: ASTM D638 40,000 psi.
2. Compressive Modulus: ASTM D695 673,400 psi.
3. Shear Strength: ASTM D732 16,000 psi.
4. Thermal Conductivity: ASTM C518 1.05 BTU in/ hr sf degree F.
5. Coefficient of Thermal Expansion: ASTM E8312.2 x 10e-6 in/in/degree F.
6. Thermal Resistance (R value): ASTM C518 0.95 hr sf degree F/ BTU.
7. Surface Burning Characteristics: ASTM E84.
    a. Flame Spread: 25 (class A).
    b. Smoke Developed: 50 (class A).
8. Accessories: Armatherm FRR bushings and washers as applicable to location. Armatherm washers shall be minimum 0.25 inch thick. Armatherm bushing and washer to provide thermal break between steel washer/bolt and internal structural steel.
9. Thickness: 1/2 minimum or as required to resist loads provided in structural documents.

B. Structural Performance: Provide structural thermal break material at exterior steel to interior steel or any framing connection that bypasses the continuous insulation. Provide structural

thermal break material and connections capable of withstanding and/or transferring the following loads and conditions:

1. Shear, moment and wind loads as indicated.
2. Design structural thermal break to allow for fabrication and construction tolerances, accommodate live load deflection, shrinkage and creep of the building structure and other building movements as required by (applicable building code). Maintain structural steel deflections per AISC 360.
3. Submit independent test results or engineered performance analysis for structural thermal break material in bearing and/or slip critical connections where shear and moment loads are applied.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install thermal breaks in accordance with manufacturer's instructions and approved submittals and the following

1. Install in proper relationship with adjacent materials.
2. Include accessory products including bushings and washers.
3. Protect from damage until acceptance.

END OF SECTION