Fabreeka International, Inc. September 2019

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Guide Specification

Specifier Notes: This guide specification is written in Construction Specifications Institute (CSI) 3-Part Format in accordance with *The CSI Construction Specifications Practice Guide,* *MasterFormat, SectionFormat,* and *PageFormat.*

This Section must be carefully reviewed and edited by the Architect or Structural Engineer to meet the requirements of the Project and local building code. Coordinate this Section with Conditions of the Contract, Division 01, other specification sections, and the Drawings. Delete all Specifier Notes after editing this Section.

Section numbers and titles are based on *CSI MasterFormat 2018 Edition.*

1. 05 12 23.19

STRUCTURAL THERMAL BREAKS

Specifier Notes: This Section covers Fabreeka International, Inc. “Fabreeka-TIM” structural thermal breaks for bolted structural steel connections. Consult Fabreeka International, Inc. for assistance in editing this Section as required for the Project.

Use of “Fabreeka-TIM” structural thermal breaks may contribute to LEED credits. Consult Fabreeka International, Inc. for more information.

* 1. GENERAL
     1. SECTION INCLUDES
        1. Structural thermal breaks for bolted structural steel connections.
     2. RELATED REQUIREMENTS

Specifier Notes: Edit the following list of related sections as required for the Project. Limit the list to sections with specific information that the reader might expect to find in this Section, but is specified elsewhere.

* + - 1. Section 05 12 23 – Structural Steel for Buildings: Bolted structural steel connections.
    1. REFERENCE STANDARDS

Specifier Notes: List reference standards used elsewhere in this Section, complete with designations and titles. Delete reference standards from the following list not used in the edited Section.

* + - 1. ASTM International (ASTM) ([www.astm.org](http://www.astm.org)):
         1. ASTM C 177 – Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
         2. ASTM D 638 – Standard Test Method for Tensile Properties of Plastics.
         3. ASTM D 695 – Standard Test Method for Compressive Properties of Rigid Plastics.
         4. ASTM D 696 – Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C With a Vitreous Silica Dilatometer.
         5. ASTM D 732 – Standard Test Method for Shear Strength of Plastics by Punch Tool.
         6. ASTM D 790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
         7. ASTM D 2863 – Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index).
      2. International Organization for Standardization (ISO) ([www.iso.org](http://www.iso.org)):
         1. ISO 9001 – Quality management systems – Requirements.
    1. PREINSTALLATION MEETINGS

Specifier Notes: Edit the Preinstallation Meetings article as required for the Project. Delete this article if not required.

* + - 1. Convene preinstallation meeting [1 week] [2 weeks] before start of Work of this Section.
      2. Require attendance of parties directly affecting Work of this Section, including Contractor, Architect, Structural Engineer, and installer.
      3. Review the Following:
         1. Materials.
         2. Installation.
         3. Adjusting.
         4. Protection.
         5. Coordination with other Work.
      4. Contact manufacturer with any questions.
    1. SUBMITTALS

Specifier Notes: Edit the Submittals article as required for the Project. Delete submittals not required.

* + - 1. Submittals: Comply with Division 01.
      2. Product Data: Submit manufacturer’s product literature, including connection design examples.
      3. Shop Drawings: Submit drawings, indicating:
         1. Dimensions and locations of structural thermal break plates, structural thermal break washers, and bushings.
         2. Size and location of holes in structural thermal break plates.
         3. OD and ID for structural thermal break washers and bushings.
         4. Structural steel connection details, including bolt and washer sizes.
      4. Samples: Submit manufacturer’s samples of the following:
         1. Structural Thermal Break Plates: Minimum 2 inches by 2 inches.
         2. Thermal break washers.
         3. Thermal break bushings.
      5. Manufacturer’s Certification: Submit manufacturer’s certification that materials comply with specified requirements and are suitable for intended application.
      6. Warranty Documentation: Submit manufacturer’s standard warranty.
    1. QUALITY ASSURANCE
       1. Manufacturer’s Qualifications:
          1. Manufacturer regularly engaged in the manufacturing of structural thermal breaks of similar type to that specified for a minimum of 10 years.
          2. ISO 9001 certified company.
       2. Installer's Qualifications:
          1. Installer regularly engaged in erection of structural steel framing of similar type to that specified for a minimum of 5 years.
          2. Use persons trained for erection of structural steel framing.
    2. DELIVERY, STORAGE, AND HANDLING
       1. Delivery Requirements: Deliver materials to site in manufacturer’s original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, and installation locations if needed.
       2. Storage and Handling Requirements:
          1. Store and handle materials in accordance with manufacturer’s instructions.
          2. Keep materials in manufacturer’s original, unopened containers and packaging until installation.
          3. Store materials in clean, dry area indoors.
          4. Do not store materials directly on floor or ground.
          5. Store materials out of direct sunlight.
          6. Keep materials from freezing.
          7. Protect materials during storage, handling, and installation to prevent damage.
    3. AMBIENT CONDITIONS
       1. Do not install materials under ambient conditions outside manufacturer’s limits.
  1. PRODUCTS
     1. MANUFACTURERS
        1. Manufacturer: Fabreeka International, Inc., 1023 Turnpike Street, Stoughton, Massachusetts 02072. Toll Free 800-322-7352. Phone 781-341-3655. Fax 781-341-3983. [www.fabreeka.com](http://www.fabreeka.com). info@fabreeka.com.

Specifier Notes: Specify if substitutions will be permitted.

* + - 1. Substitutions: [Not permitted] [Comply with Division 01].
      2. Single Source: Provide materials from single manufacturer.
    1. STRUCTURAL THERMAL BREAKS
       1. Structural Thermal Breaks: “Fabreeka-TIM”.
          1. Description:

Load-bearing, structural thermal break/insulation material to prevent thermal bridging between flanged, bolted, structural steel framing members at connections.

Maintains structural integrity of connections while reducing energy loss.

* + - * 1. Material: Fiberglass-reinforced laminate composite.
        2. ICC Certified:

US: ESL-1164.

Canada: ESL-1165.

* + - * 1. RoHS II compliant.

Specifier Notes: Specify thickness of the structural thermal breaks here or indicate on the Drawings.

* + - * 1. Thickness: [1/4 inch (6.4 mm)] [1/2 inch (12.7 mm)] [3/4 inch (19.1 mm)] [1 inch (25.4 mm)] [2 inches (50.8 mm)] [Indicated on the Drawings].
        2. Ultimate Mechanical Properties, Nominal:

Tensile Strength, ASTM D 638: 11,000 psi (75.8 MPa).

Flexural Strength, ASTM D 790: 25,000 psi (172.4 MPa).

Compressive Strength, ASTM D 695: 38,900 psi (268.2 MPa).

Compressive Modulus, ASTM D 695:

1/2-Inch (12.7 mm) Thickness: 291,194 psi (2,007.7 MPa).

1-Inch (25.4 mm) Thickness: 519,531 psi (3,582.0 MPa).

Shear Strength, ASTM D 732: 15,000 psi (103.4 MPa).

Operating Temperature Range: Minus 20 degrees F to 250 degrees F (Minus 29 degrees C to 121 degrees C).

Loss in Ultimate Strength at 250 degrees F (121 degrees C): 30 percent.

* + - * 1. Flame Resistance, Nominal:

Oxygen Index, ASTM D 2863: 21.8 percent.

* + - * 1. Thermal Properties, Nominal:

Coefficient of Thermal Expansion, ASTM D 696: 2.2 in/in/degree C x 10-5.

Thermal Conductivity, ASTM C 177: 1.8 BTU/hr/ft2/in/degree F (0.259 W/m\* degree K).

Heat Flow Resistance, R-Value:

1/4-Inch (6.4 mm) Thickness: 0.14.

1/2-Inch (12.7 mm) Thickness: 0.28.

1-Inch (25.4 mm) Thickness: 0.56.

* + - * 1. Density: 107.83 pcf (1,727 kg/m3).
        2. Coefficient of Friction:

“Fabreeka-TIM” to Steel:

Compression Load 5,000 psi (34.5 MPa): 0.27 µs.

Compression Load 10,000 psi (69 MPa): 0.26 µs.

* + 1. ACCESSORIES

Specifier Notes: Delete accessories not required. Consult Fabreeka International, Inc. for information regarding the use of thermal break washers and bushings to complete thermal break connections.

Consult Fabreeka International, Inc. for available sizes of thermal break washers and bushings.

* + - 1. Thermal Break Washers: “Fabreeka-TIM” washers.
         1. Material: Same as “Fabreeka-TIM” structural thermal break plates.
         2. Thickness: 1/4 inch (6.4 mm).
         3. OD and ID: Determined by structural bolt diameter. Refer to Recommended Washer and Bushing Sizes in manufacturer’s product data.
      2. Thermal Break Bushings: “Fabreeka” bushings.
         1. Material: Elastomeric material.
         2. Length: Determined by thickness of steel end plate.
         3. OD and ID: Determined by structural bolt diameter. Refer to Recommended Washer and Bushing Sizes in manufacturer’s product data.
  1. EXECUTION
     1. EXAMINATION
        1. Examine locations to receive structural thermal breaks.
        2. Notify Architect or Structural Engineer of conditions that would adversely affect installation or subsequent use.
        3. Do not begin installation until unacceptable conditions are corrected.
     2. INSTALLATION
        1. Install structural thermal breaks in accordance with Structural Engineer’s instructions at locations indicated on the Drawings.
        2. Install sizes of structural thermal break plates, washers, and bushings as indicated on the Drawings.
        3. Install hardened USS Grade 8 flat washers on both sides of thermal break washers in accordance with Structural Engineer’s instructions.
           1. Steel Washer OD: Greater than or equal to thermal break washer OD.
        4. Install bushings into oversized holes in steel end plates to accept OD of bushings.
        5. Bolted Structural Steel Connections: Install bolted structural steel connections as specified in Section 05 12 23.
           1. Bolt torque values are provided by Structural Engineer and are determined by required clamping force, proper tension of bolts, and long-term creep.
     3. ADJUSTING
        1. Remove and replace with new material, damaged components that cannot be successfully repaired, as determined by Architect or Structural Engineer.
     4. PROTECTION
        1. Protect Work of this Section from damage until Substantial Completion.

END OF SECTION