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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 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 *MasterFormat 2018 Edition*.

SECTION 07 54 01

INDUCTION FASTENING SYSTEM FOR THERMOPLASTIC MEMBRANE ROOFING

Specifier Notes: This section covers OMG Roofing Products "RhinoBond®" induction fastening system for attachment of roof insulation and polyvinyl-chloride (PVC) or thermoplastic-polyolefin (TPO) membrane roofing to roof deck or purlins. Consult OMG Roofing Products for assistance in editing this section for the specific application.

Coordinate this section with the thermoplastic membrane roofing section.

PART 1 GENERAL

1.1 SECTION INCLUDES

Specifier Notes: Edit the following sentence for PVC or TPO membrane roofing.

- A. Induction fastening system for attachment of roof insulation and [polyvinyl-chloride (PVC)] [thermoplastic-polyolefin (TPO)] membrane roofing to roof deck or purlins.

1.2 RELATED REQUIREMENTS

Specifier Notes: Edit the following list of related sections as necessary. Limit the list to sections with specific information that the reader might expect to find in this section, but is specified elsewhere. Provide the section numbers for the sections specifying the roof insulation and thermoplastic membrane roofing.

Roof insulation will be specified in a separate roof insulation section or will be included in the thermoplastic membrane roofing section.

- A. Section [07 22 16] [_____] – Roof Board Insulation: Roof insulation installed under thermoplastic membrane roofing.

Specifier Notes: Include one of the following two sentences.

- B. Section [07 54 19] [_____] – Polyvinyl-Chloride Roofing: PVC membrane roofing.
- C. Section [07 54 23] [_____] – Thermoplastic-Polyolefin Roofing: TPO membrane roofing.

1.3 REFERENCE STANDARDS

Specifier Notes: List standards referenced in this section, complete with designations and titles. Delete standards not included in the edited section. Including a standard in this list does not require compliance with that standard.

- A. FM Approval Standard 4470 – Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction.

1.4 PREINSTALLATION MEETINGS

Specifier Notes: Edit preinstallation meetings as necessary. Delete if not required.

- A. Convene preinstallation meeting [2] [_____] weeks before use of induction fastening system.
- B. Require attendance of parties directly affecting work of this section, including:
 - 1. Contractor.
 - 2. Architect.
 - 3. Owner.
 - 4. Installer.
 - 5. Membrane roofing manufacturer's representative.
 - 6. Induction fastening system manufacturer's representative.
- C. Meeting shall include, but not be limited to, the following subjects:
 - 1. Proper operation of induction welding tools and magnetic cooling clamps.
 - 2. Calibration of induction welding tools.
 - 3. Installation of roof insulation and membrane roofing.

4. Insulation fastening patterns for desired FM wind uplift ratings in accordance with membrane roofing manufacturer's instructions for roof field, perimeter, and corners.
5. Testing of welds.
6. Protection of installed membrane roofing.
7. Coordination with other work.

1.5 SUBMITTALS

Specifier Notes: Edit submittal requirements as necessary. Delete submittals not required.

- A. Comply with Section 01 33 00 – Submittal Procedures.
- B. Product Data: Submit membrane roofing manufacturer's product data and installation instructions for induction fastening system.
- C. Samples: Submit membrane roofing manufacturer's samples of induction fastening system plates and fasteners.
- D. Membrane Roofing Manufacturer's Certification: Submit membrane roofing manufacturer's certification that induction fastening system complies with specified requirements and is suitable for intended application.
- E. Membrane Roofing Manufacturer's Project References: Submit membrane roofing manufacturer's list of successfully completed induction fastening system projects, including project name and location, name of architect, and type and quantity of thermoplastic membrane roofing fastened.
- F. Warranty Documentation: Submit membrane roofing manufacturer's standard warranty for induction fastening system.

1.6 QUALITY ASSURANCE

- A. Installer's Qualifications: Employ persons trained to operate induction fastening system for installation of thermoplastic membrane roofing.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling Requirements:
 1. Store and handle materials in accordance with membrane roofing 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. Protect materials during storage, handling, and installation to prevent damage.

PART 2 PRODUCTS

2.1 MANUFACTURER

Specifier Notes: Some thermoplastic membrane roofing manufacturers that use the “RhinoBond” Induction Fastening System manufactured by OMG Roofing Products have their own brand names for the induction welding tools, plates, and fasteners. Consult OMG Roofing Products or membrane roofing manufacturer for more information.

- A. Induction Fastening System Manufacturer: OMG Roofing Products, 153 Bowles Road, Agawam, Massachusetts 01001. 800-633-3800. Fax 413-821-0417. www.olyfast.com. info@olyfast.com.

2.2 SYSTEM DESCRIPTION

- A. Induction Fastening System:
1. Non-membrane penetrating fastening system for installing roof insulation and thermoplastic membrane roofing.
 2. Fastening system uses same plates and fasteners to secure roof insulation and membrane roofing to roof deck or purlins without penetrating roof materials.
 3. Electromagnetic induction welding process bonds underside of membrane roofing to top of coated plates.
 4. FM Rating for Wind Uplift: Specified in thermoplastic membrane roofing section.
 5. Approval: FM.

2.3 TOOLS

- A. Induction Welding Tools: OMG Roofing Products “RhinoBond” induction welding tool.
1. Description: Portable, electromagnetic induction welder that bonds underside of thermoplastic membrane roofing to top of coated plates using microprocessor-controlled, electromagnetic induction welding.
 2. Typical Weld Time: Approximately 5 seconds per plate, depending on ambient temperature, membrane roofing thickness, and power source.
 3. Power: 5,000 Watt generator minimum, 110 to 125 V, 60 Hz, stable energy source.
 4. Power Cord: 12 gauge, 100’ maximum power cord
- B. Magnetic cooling clamps.

2.4 MATERIALS

- A. Plates: OMG Roofing Products “RhinoBond” plates.

Specifier Notes: Edit the following sentence for PVC or TPO membrane roofing.

1. Secures roof insulation and [PVC] [TPO] membrane roofing.
2. Type:

Specifier Notes: Specify PVC-type or TPO-type plates to match the PVC or TPO membrane roofing.

- a. PVC-Type Plates:
 - 1) Coated with adhesive formulated for PVC membrane roofing.
 - 2) Color: Black.
- b. TPO-Type Plates:
 - 1) Coated with adhesive formulated for TPO membrane roofing.
 - 2) Color: Gold.
3. Diameter: 3 inches.
4. Thickness: 22 gauge.
5. Material: Coated Galvalume.
6. Coating Corrosion Resistance: Meets FM Approval Standard 4470 criteria.
7. Profile: Recessed center and raised flat bonding surface.
8. FM approved.

B. Fasteners:

Specifier Notes: Specify OMG Roofing Products "XHD Fasteners #15" or "RetroDriller" Fasteners depending on type of roof deck. Delete type of fasteners not required. *Pull Tests should always be performed to determine fastener pull out values.

1. OMG Roofing Products "XHD Fasteners #15":
 - a. Secures roof materials to 22-gauge minimum steel deck.
 - b. Head:
 - 1) #3 Phillips truss head.
 - 2) Diameter: 0.435 inch.
 - c. Thread Diameter: 0.275 inch.
 - d. Shank Diameter: 0.202 inch.
 - e. Length: Sufficient length to penetrate steel deck at top flute a minimum of 1 inch.
 - f. Drill point.
 - g. Heat treated.
 - h. Coating: OMG Roofing Products "CR-10" corrosion-resistant coating.
 - i. Coating Corrosion Resistance: Meets FM Approval Standard 4470 criteria.
 - j. FM approved.
2. OMG Roofing Products "RetroDriller" Fasteners:
 - a. Secures roof materials to maximum 3/16-inch structural steel purlins in standing seam metal roof applications.
 - b. Head:
 - 1) #3 square.
 - 2) Diameter: 0.435 inch.
 - c. Thread Diameter: 0.230 inch.
 - d. Shank Diameter: 0.194 inch.
 - e. Length: Sufficient length to penetrate steel purlins a minimum of 1 inch.
 - f. Drill Point: 1/2 inch.
 - g. Heat treated
 - h. Coating: OMG Roofing Products "CR-10" corrosion-resistant coating.
 - i. Coating Corrosion Resistance: Meets FM Approval Standard 4470 criteria.
 - j. FM approved.

C. Roof Insulation:

Specifier Notes: Refer to the section that specifies the roof insulation.

1. Specified in [roof insulation section] [thermoplastic membrane roofing section].
2. Use minimum of 1/2-inch cover board over the following roof insulation types:
 - a. Extruded polystyrene (XPS).
 - b. Expanded polystyrene (EPS).
3. Use minimum 1-inch cover board over:
 - a. Foil-faced insulation boards.
4. Use minimum 1/2-inch cover board over:
 - a. Modified bitumen.
 - b. Built-up roofing roof covers.

Specifier Notes: Edit the following sentence for PVC or TPO membrane roofing.

- D. [PVC] [TPO] Membrane Roofing: Specified in thermoplastic membrane roofing section.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine roof deck to receive roof insulation and thermoplastic membrane roofing.
- B. Notify Architect of conditions that would adversely affect installation or subsequent use.
- C. Do not begin installation until unacceptable conditions are corrected.

3.2 PREPARATION

- A. Prepare roof deck in accordance with thermoplastic membrane roofing section.

3.3 INSTALLATION

Specifier Notes: Refer to the section that specifies the roof insulation.

- A. Lay roof insulation over roof deck in accordance with [roof insulation section] [thermoplastic membrane roofing section].
- B. Plates:
 1. Place plates in grid pattern on roof insulation in accordance with thermoplastic membrane roofing section.
 2. Install required number of plates and fasteners per 4-foot by 8-foot insulation/cover board or over purlins to achieve membrane roofing manufacturer's required FM rating.

3. Install plates in straight rows in at least 1 direction in accordance with membrane roofing manufacturer's prescriptive fastening patterns for roof field, perimeter, and corners. Plates may need to be adjusted slightly in order to hit top flutes of roof deck.
 4. Secure plates in accordance with membrane roofing manufacturer's instructions using specified fasteners and in accordance to roofing manufacturer's prescriptive fastening patterns for roof field, perimeter, and corners.
 5. Do not overdrive fasteners on plates.
 6. Install plates and fasteners tight and flat to roof insulation with no dimpling of insulation board, or cover board surface.
- C. Lay membrane roofing over roof insulation and fastened plates in accordance with thermoplastic membrane roofing section.
- D. Overlap adjoining sheets of membrane roofing and join together by heat welding in accordance with thermoplastic membrane roofing section.
- E. Calibration of Induction Welding Tools:
1. Calibrate each induction welding tool in accordance with membrane roofing manufacturer's instructions to appropriate level for site conditions.
 2. Adjust induction welding tools to achieve maximum bond strength based on ambient temperature from 0 to 120 degrees F.
 3. Recalibrate induction welding tools whenever ambient temperature changes up or down by 15 degrees F.
 4. Adjust energy level of induction welding tools in accordance with membrane roofing manufacturer's instructions to produce optimal bond.
 5. Optimal Bond: 100 percent bond.
- F. Bonding Membrane Roofing:
1. Operate calibrated induction welding tools and magnetic cooling clamps in accordance with membrane roofing manufacturer's instructions. Keep bottom of magnetic cooling clamps clean from debris with a clean cotton rag.
 2. Ensure induction welding tools are centered over plates.
 3. Create 100 percent bond between underside of membrane roofing and top of plates.
 4. Ensure total, even, consistent adhesion of membrane roofing to top of plates.
 5. Partial Bond of Membrane Roofing to Plates: Not acceptable.

3.4 FIELD QUALITY CONTROL

- A. Weld Tests:
1. Test welds to determine adhesion of underside of membrane roofing to top of plates.
 2. Test welds in accordance with membrane roofing manufacturer's instructions.
 3. Notify Architect of welds that do not have optimal bond.

3.5 PROTECTION

- A. Protect installed membrane roofing to ensure that, except for normal weathering, roofing will be without damage or deterioration at time of Substantial Completion.

END OF SECTION