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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,* including *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 Division 01, other specification sections, and the Drawings. Delete all Specifier Notes after editing this Section.

Section numbers and titles are based on *MasterFormat 2014 Update.*

SECTION 07 21 19

FOAMED-IN-PLACE INSULATION

Specifier Notes: This Section covers Covestro LLC "Bayseal CC X" closed-cell, spray-applied, polyurethane foam (SPF) insulation. "Bayseal CC X" is available in two grades "Bayseal CC X" and "Bayseal CC XP" for warm and cold weather applications.

Consult Covestro LLC for assistance in editing this Section for the specific application.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Closed-cell, spray-applied, polyurethane foam (SPF) insulation.

1.2 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.

A. Section 07 26 00 – Vapor Retarders.

B. Section 07 27 00 – Air Barriers.

C. Section 09 96 46 – Intumescent Painting.

1.3 REFERENCE STANDARDS

Specifier Notes: List reference standards used elsewhere in this Section, complete with designations and titles.

A. ASTM International (ASTM) (www.astm.org):
   1. ASTM C 518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
   2. ASTM D 1621 – Standard Test Method for Compressive Properties Of Rigid Cellular Plastics.
   3. ASTM D 1622 / D 1622M – Standard Test Method for Apparent Density of Rigid Cellular Plastics.
   4. ASTM D 1623 – Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.
   5. ASTM D 2126 – Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
   6. ASTM D 2842 – Standard Test Method for Water Absorption of Rigid Cellular Plastics.
   7. ASTM D 2856 – Standard Test Method for Open-Cell Content of Rigid Cellular Plastics by the Air Pycnometer.
   8. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
   9. ASTM E 96 / E 96M – Standard Test Methods for Water Vapor Transmission of Materials.
   10. ASTM E 2178 – Standard Test Method for Air Permeance of Building Materials.
   11. ASTM G 21 – Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

B. ICC Evaluation Service (www.icc-es.org):
   1. ICC-ES AC377 – Acceptance Criteria for Spray-Applied Foam Plastic Insulation.
   2. ICC-ES Evaluation Report ESR-2072 – Bayseal Closed Cell Spray-Applied Polyurethane Foam Insulation.

1.4 PREINSTALLATION MEETINGS

Specifier Notes: Edit preinstallation meetings as required for the Project. Delete if not required.

A. Convene preinstallation meeting [1 week] [2 weeks] before start of Work of this Section.

B. Require attendance of parties directly affecting Work of this Section, including Contractor, Architect, applicator, and manufacturer's representative.

C. Review the Following:
   1. Materials.
   2. Protection of in-place conditions.
   3. Surface preparation.
   4. Application.
   5. Field quality control.
   6. Cleaning.
   7. Protection.
   8. Coordination with other Work.

1.5 SUBMITTALS

Specifier Notes: Edit submittal requirements as required for the Project. Delete submittals not required.

A. Comply with Division 01.

B. Product Data: Submit manufacturer's product data, including surface preparation and application instructions.

C. Manufacturer's Certification:
   1. Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
   2. Submit manufacturer's certification from Spray Polyurethane Foam Alliance Professional Certification Program (SPFA PCP) as Accredited Supplier Company.
   3. Submit evidence that manufacturer has Dunn & Bradstreet rating of 5A or can supply performance bond.

D. Product Evaluation Reports: Submit manufacturer's product evaluation reports from accredited evaluation service.

E. Manufacturer's Project References: Submit manufacturer's list of 5 successfully completed polyurethane foam insulation projects of similar size and scope, including project name and location, name of architect, and type and quantity of materials furnished.

F. Applicator's Project References: Submit applicator's list of successfully completed polyurethane foam insulation projects, including project name and location, name of architect, and type and quantity of materials applied.

G. Warranty Documentation: Submit manufacturer's standard warranty.

1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications:
   1. Manufacturer regularly engaged, for a minimum of 10 years, in the manufacturing of polyurethane foam insulation of similar type to that specified.
   2. Accreditation: SPFA Professional Certification Program as Accredited Supplier Company.

B. Applicator's Qualifications:
   1. Applicator regularly engaged, for a minimum of 5 years, in application of polyurethane foam insulation of similar type to that specified.
   2. Certified by manufacturer to install their products.
   3. Use persons trained by manufacturer in polyurethane foam insulation application or certified by SPFA Professional Certification Program as Master Installer – Insulation (Closed Cell).

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery 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 manufacturer's instructions.
   2. Keep materials in manufacturer's original, unopened containers and packaging until application.
   3. Store materials in clean, dry area indoors.
   4. Store materials at 70 degrees F to 80 degrees F (21 degrees C to 27 degrees C) a minimum of 48 hours before use.
   5. Store materials out of direct sunlight.
   6. Protect materials from freezing.
   7. Protect materials during storage, handling, and application to prevent contamination or damage.

1.8 AMBIENT CONDITIONS

Specifier Notes: Edit the following paragraph for the grade of polyurethane foam insulation specified in Part 2 of this Section.

A. Ambient and Substrate Temperatures:
   1. "Bayseal CC X" Grade of Polyurethane Foam Insulation: Between 50 degrees F and 120 degrees F (10 degrees C and 49 degrees C).
   2. "Bayseal CC XP" Grade of Polyurethane Foam Insulation: Between 30 degrees F and 80 degrees F (minus 1 degree C and 27 degrees C).

B. Moisture: Do not apply polyurethane foam insulation when moisture in form of rain, snow, ice, fog, frost, or dew is expected during application.

C. Relative Humidity: Do not apply polyurethane foam insulation when relative humidity over 85 percent is expected during application.

D. Wind: Do not apply polyurethane foam insulation with wind speed above 12 mph.

E. Do not apply polyurethane foam insulation under ambient conditions outside manufacturer's limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Covestro LLC, 2400 Spring Stuebner Road, Spring, Texas 77389. Toll Free 800-221-3626. Phone 281-350-9000. Fax 281-288-6450. Website www.polyurethanes.covestro.com.

Specifier Notes: Specify if substitutions will be permitted.

B. Substitutions: [Not permitted] [Comply with Division 01].

C. Single Source: Provide materials from single manufacturer.

2.2 FOAMED-IN-PLACE INSULATION

A. Foamed-in-Place Insulation: "Bayseal CC X" closed-cell, spray-applied, polyurethane foam (SPF) insulation.
   1. Two-component, HFC-245fa blown, medium-density system.
      a. A-Component: Aromatic diisocyanate.
      b. B-Component: Polyols, fire-retarding materials, and additives.

Specifier Notes: Specify "Bayseal CC X" or "Bayseal CC XP" grade polyurethane foam insulation for warm or cold weather applications.

Specify "Bayseal CC X" grade for ambient and substrate temperatures between 50 degrees F and 120 degrees F (10 degrees C and 49 degrees C).

Specify "Bayseal CC XP" grade for ambient and substrate temperatures between 30 degrees F and 80 degrees F (minus 1 degree C and 27 degrees C).

   2. Grade: ["Bayseal CC X"] ["Bayseal CC XP"].

B. Acceptance Criteria: ICC-ES AC377, Appendix X, for use without prescribed ignition barrier and without need for additional fire-resistant coating.

C. Evaluation Report: ICC-ES ESR-2072.

D. Typical Physical Properties:
   1. Air Leakage Rate, ASTM E 2178: Less than 0.02 L/s-m^2.
   2. Moisture Vapor Transmission (Permeance), ASTM E 96:
      a. 0.80 perm at 1 inch.
      b. 0.23 perm at 3.5 inches.
      c. 0.14 perm at 5.5 inches.
      d. 0.10 perm at 7.9 inches.
   3. Core Density, ASTM D 1622: 2.0 pcf, nominal.
   4. R-Value, Aged, ASTM C 518:
      a. 6.9 at 1 inch.
      b. 21 at 3 inches.
   5. Compressive Strength, ASTM D 1621: 25 psi, nominal.
   6. Tensile Strength, ASTM D 1623: 60 psi, nominal.
   7. Water Absorption, ASTM D 2842: Less than 2 percent.
   8. Dimensional Stability, ASTM D 2126, Change in Volume:
      a. 158 Degrees F, 97 Percent Relative Humidity: Less than 9 percent.
   9. Closed Cell Content, ASTM D 2856: Greater than 90 percent.
   10. Surface Burning Characteristics, ASTM E 84, 4 Inches:
      a. Flame Spread Index: Less than 25.
      b. Smoke Developed Index: Less than 450.
   11. Fungi Resistance, ASTM G 21: Zero rating.

2.3 ACCESSORIES

Specifier Notes: Consult Covestro LLC for substrate conditions requiring application of a primer. Delete if primer is not required.

A. Primer: _____.

Specifier Notes: Include the following sentence if polyurethane foam insulation is to be covered with intumescent coating.

B. Intumescent Coating: Specified in Section 09 96 46.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas to receive polyurethane foam insulation.

B. Notify Architect of conditions that would adversely affect application.

C. Do not begin surface preparation or application until unacceptable conditions are corrected.

3.2 PREPARATION

A. Protection of In-Place Conditions:
   1. Protect adjacent surfaces from contact with overspray.
   2. Protect electrical outlet and junction boxes from contact with polyurethane foam insulation.

B. Surface Preparation:
   1. Prepare surfaces in accordance with manufacturer's instructions.
   2. Remove dirt, dust, debris, oil, grease, rust, loose scale, ice, frost, moisture, and other surface contaminants which could adversely affect application of polyurethane foam insulation.

3.3 APPLICATION

A. Spray-apply polyurethane foam insulation in accordance with manufacturer's instructions at locations indicated on the Drawings.

B. Material Temperature: Maintain materials in containers at 65 degrees F to 85 degrees F (18 degrees C to 29 degrees C) while in use.

C. Ensure substrates are dry during application.

D. Insulation Thickness:
   1. Maximum Pass Thickness: 2 inches.
   2. Total Thickness: Indicated on the Drawings.

E. Apply polyurethane foam insulation to uniform thickness without voids, pinholes, cracks, and crevices.

Specifier Notes: Include the following paragraph if polyurethane foam insulation is to be covered with intumescent coating.

F. Intumescent Coating:
   1. Cover polyurethane foam insulation with intumescent coating at locations indicated on the Drawings.
   2. Apply intumescent coating as specified in Section 09 96 46.

3.4 FIELD QUALITY CONTROL

Specifier Notes: Specify field quality control for application of polyurethane foam insulation as required for the Project.

A. Inspect completed application of polyurethane foam insulation, including:
   1. Total thickness.
   2. Free of voids, pinholes, cracks, and crevices.
   3. Adhesion to substrate.

3.5 CLEANING

A. Promptly clean surfaces that receive overspray of polyurethane foam insulation.

B. Do not use harsh cleaning materials or methods that could damage surfaces.

3.6 PROTECTION

A. Protect Work of this Section from damage during construction.

END OF SECTION