OPEN-CELL SPRAY FOAM INSULATION

PART 1 - GENERAL
1.1 SUMMARY
A. Section Includes: Open-cell spray polyurethane foam insulation.
1.2 PERFORMANCE REQUIREMENTS
A. Conform to applicable code for flame and smoke, concealment, and over coat requirements.
B. Spray Applied Polyurethane Insulation is approved for use as a nonstructural thermal insulating material in Type I and V construction under IBC and dwellings under IRC when installed in accordance with ICC ES Report ESR-1555. Insulation is for use in wall cavities, floor assemblies, ceiling assemblies or attics and crawl spaces when installed in accordance with Section 4. Insulation may be used in wall assemblies in fire-resistive rated-construction as described in Sections 3.6 and 4.4.
1.3 SUBMITTALS
A. Product Data: Submit manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.
B. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
1.4 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing urethane foam products and systems of this section with minimum ten years documented experience.
B. Installer Qualifications: Applicator specializing in performing Work of this section with minimum three years documented experience.
1.5 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging, clearly marked with the manufacturer's name, brand name, product identification, type of material, safety information, manufacture date, and lot numbers until ready for installation.
B. Store spray foam materials between 65 degrees F (18 degrees C) and 85 degrees F (29 degrees C) with careful handling to prevent damage to products.
C. Protect all materials from freezing and other damage during transit, handling, storage, and installation.
1.6 PROJECT CONDITIONS
A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
B. Do not apply the polyurethane foam when substrate or ambient air temperatures are below 40 degrees F (4.4 degrees C) or above 120 degrees F (49 degrees C) and relative humidity is greater than 85 percent unless advance means and methods are recommended by the manufacturer.
C. Do not apply polyurethane foam when wind velocity exceeds 15 miles per hour unless advance means and methods are recommended by the manufacturer. Use precautions to prevent damage to adjacent areas from fugitive overspray.

PART 2 - PRODUCTS
2.1 OPEN-CELL SPRAY FOAM INSULATION
A. Basis-of-Design: JM ocSPF by Johns Manville, 717 17th Street, Denver, CO 80202. Tel (800) 654-3103. www.specJM.com. Equal products will be accepted.
B. Open Cell Spray Foam Insulation: Two-component, polyurethane cellular foam with a nominal density of 0.5 pcf, foam shall have the following minimum physical properties when cured:
1. Apparent Density: 0.5 pcf when tested in accordance with ASTM D 1622.
2. R-Value (aged) when tested in accordance with ASTM C 518: 3.9 at 1 inch, 13 at 3.5 inches, 19 at 5.5 inches.
3. Oxygen Index: 25 when tested in accordance with ASTM D 2863.
4. Compressive Strength: 0.5 psi when tested in accordance with ASTM D 1621.
5. Fungi Resistance: Zero Rating when tested in accordance with ASTM G 21.
6. Air Leakage: Less than 0.02 (L/s)/m2 when tested in accordance with ASTM E 283.
7. Sound Transmission Coefficient: 51 (STC) when tested in accordance with ASTM E 90.
8. Noise Reduction Coefficient: 0.7 (NRC) when tested in accordance with ASTM C 423.
9. Open Cell Content: Greater than 90 percent when tested in accordance with ASTM D 2846.
10. Tensile Strength: Less than 5 psi when tested in accordance with ASTM D 1623.
11. Shear Strength: 1.4 psi when tested in accordance with ASTM C 273.
12. Permeability: 21 perm-inch when tested in accordance with ASTM E 96.
13. Dimensional Stability: Less than 15 percent change in volume when tested in accordance with ASTM D 2126.
14. Surface Burning Characteristics:
a. Flame Spread/Smoke Developed: At maximum 4 inch (102 mm) thickness, flame spread index of less than 25 and a smoke developed index of less than 450 when tested in accordance with ASTM E 84.
b. Corner Test: Thickness up to 12 inches (305 mm) for wall cavities and 16 inches for ceiling cavities meets NFPA 286 when covered with 1/2 inch (13 mm) gypsum board or equivalent thermal barrier.
C. Primer as Applicable to Substrate: A water based epoxy primer to achieve superior adhesion and penetration on concrete, masonry, metal, wood, etc. as supplied by Johns Manville or approved equal.
2.2 ACCESSORIES
A. Intumescent coating for spray foam insulation in attic and crawlspace applications.

PART 3 - EXECUTION
3.1 EXAMINATION
A. Do not begin installation until substrates have been properly prepared.
B. Verify that all surfaces to receive polyurethane foam insulation are clean, dry and free of dust, dirt, debris, oil, solvents and all materials that may adversely affect the adhesion of the polyurethane foam.
C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
3.2 PREPARATION
A. Clean surfaces thoroughly prior to installation.
B. Mask and protect adjacent surfaces from over spray.
C. Prepare surfaces using the methods recommended by the spray foam manufacturer for achieving the best result for the substrate under the project conditions.
D. Wood:
1. Plywood shall contain no more than 18 percent moisture as measured in accordance with ASTM D 4449 and ASTM D 4444.
2. Most untreated and unpainted wood surfaces need not be primed. The spray polyurethane foam can be applied directly to the dry wood. Priming may be required under certain conditions as recommended by the manufacturer.
E. Steel:
1. Primed: Clean primed metal surfaces free of loose scale, rust, weathered or chalking paint. Remove grease, oil, or other contaminants with proper cleaning solutions.
2. Previously Painted: Clean painted metal surface using sand or power tools to remove loose scale and dirt. Remove grease, oil, and other surface contaminants using a power wash technique and proper cleaning solutions.
3. Galvanized: Clean galvanized steel as recommended by manufacturer. Steel should be primed with primer at the rate of 1 gallon per 300 square feet.
4. Unpainted Steel: Clean as recommended by manufacturer to prepare the steel surface for the primer. Prime with primer at the rate of 1 gallon per 300 square feet.
F. Concrete and Masonry: Dust, loose cured and loose dirt and any other contaminants, including asphaltic materials removed. If primer is required, prime at the rate of one gallon per 300 square feet.
G. Sheathing Boards: Roof sheathing boards need not be primed prior to the application of sprayed-in-place polyurethane foam.
3.3 PRIMER APPLICATION
A. Prepare surfaces and apply primer in accordance with manufacturer's instructions.
B. Apply primer to the properly prepared substrates in accordance with the manufacturer's instructions to achieve a minimum thickness of dry film thickness. Allow primer to cure 24 hours prior to application of spray polyurethane foam or other products.

OPEN-CELL SPRAY FOAM INSULATION (CONT.)

3.4 INSTALLATION
A. Install in spray foam in accordance with manufacturer's instructions.
B. Spray polyurethane foam components (A) and (B) shall be processed in accordance with instructions found on the manufacturers product datasheet.
C. Schedule application to anticipate climatic conditions prior to application to ensure highest quality foam and to maximize yield. All substrates to be sprayed must be dry at the time of application. Moisture in the form of rain, fog, frost, dew, or high humidity greater than 85 percent R.H is not permitted unless Contractor reviews means and methods of spraying with manufacturer's representative prior to installation. Use screens, masking and other precautions to prevent damage to adjacent areas from fugitive overspray.
D. Where spray foam system is installed within attics or crawl spaces where entry is made only for service of utilities, an ignition barrier must be installed in accordance with IBC Section 2603.4.1.6. The ignition barrier must be installed in a manner so that the foam plastic insulation is not exposed.
E. Application in attics and crawlspaces with Intumescent Coating:
1. In attics, spray foam insulation may be spray-applied to the underside of roof sheathing and roof rafters.
2. In crawlspaces, spray foam insulation may be spray-applied to the underside of floors as described in this section.
3. Thickness of open-cell foam applied to the underside of the top space must not exceed 10 inches (254 mm).
4. Thickness of open-cell foam applied to vertical surfaces must not exceed 12 inches (300 mm).
5. Spray Foam must be coated uniformly coated with intumescent coating at a coverage rate of 0.6 gallons per 100 square feet in accordance with manufacturer's instructions.
6. Surfaces to be coated must be dry, clean, and free of dirt, loose debris, and any other substances that could interfere with the adhesion of the coating.
7. Coating must be applied when ambient and substrate temperatures are above 50 degrees F (10 degrees C) and requires a 24-hour curing time after application.
F. Application in attics and crawlspaces with Minimum ½ inch (12.7 mm) Gypsum Board. (NOTE: NOT APPLICABLE FOR THIS PROJECT.)
1. In attics, spray foam insulation may be spray-applied to the underside of roof sheathing and roof rafters.
2. In crawlspaces, spray foam insulation may be spray-applied to the underside of floors as described in this section.
3. Thickness of open-cell foam applied to horizontal surfaces must not exceed 16 inches (406 mm).
4. When applied to vertical surfaces, the thickness of open-cell foam must not exceed 12 inches (305 mm).
G. Application on Attic Floors: (NOTE: NOT APPLICABLE FOR THIS PROJECT.)
1. Spray Foam Insulation must be separated from the area beneath the attic by an approved 15 minute rated coating.
2. Maximum height is 12 (305 mm) inches.
3. Must be coated with 0.6 gallons per square foot of intumescent coating.
4. Spray Foam Insulation may be installed to a maximum thickness of 12 inches (254 mm) between joists in attic floors. Insulation must be separated from the area beneath the attic by an approved thermal barrier. The ignition barrier in accordance with IBC Section 2603.4.1.6 may be omitted when installed in accordance with this Section.
H. One-hour Fire-Resistance Rated Wall Assemblies (Limited Load Bearing): (NOTE: NOT APPLICABLE FOR THIS PROJECT.)
1. Interior Face: One layer of 5/8-inch-thick (15.9 mm) Type X gypsum wallboard must be applied parallel to the interior face of 2-by-6 wood studs space a maximum of 16 inches (406 mm) on center and fastened with Type S, 1-5/8 inch (41 mm) long screws spaced 8 inches (203 mm) on center. The interior cavity is filled with 3 inches of spray- applied foam insulation.
2. Exterior or Opposite Face: Another layer of 5/8 inch (15.9 mm) thick Type X gypsum wallboard must be applied in the same manner as the interior face.
3. Axial Load Design: Axial loads applied to the wall assembly must be limited to the least of the following:
a. 2,756 pounds (1222 642 N) per stud.
b. A maximum of 51 percent of the load calculated in accordance with Section 3.6 and 3.7 of the ANSI/AF&PA NDS.
I. Exothermic Caution:
1. Polyurethane foam shall be sprayed in minimum 1/2 inch (12.7 mm) thick passes or lifts. Overall thickness applied in one pass shall be limited to a maximum of 4 inches for open cell foam to avoid fire hazards resulting from excessive heat generation. When applying on chlorinated polyvinyl chloride the pass thickness for must be limited to 6 inches. If additional thickness is required it must be applied within 15 minutes.
2. If a second pass is needed, wait 10 to 15 minutes between passes to allow reaction heat to dissipate. If more passes are needed, wait 30 minutes between passes to allow reaction heat to dissipate.
3. The exothermic reaction can cause temporary substrate thermal rises in excess of 150 degrees F, which may result in substrate thermal expansion. If the substrate then contracts when the reaction heat dissipates, substrate deformation can occur.
4. The full thickness of spray polyurethane foam shall be applied within any given area should be completed in one day.
J. Vapor Retarder Application: (NOTE: NOT APPLICABLE FOR THIS PROJECT.)
1. When required, a vapor retarder should be applied to the substrate to be insulated or to the finished spray polyurethane foam insulation. The predominant direction of the vapor drive determines the location of the vapor retarder relative to the spray polyurethane foam.
2. Apply air barriers and vapor retarder (if required) according to ICC recommendations.
3.5 ACCESSORY APPLICATION
A. Joint Filler Foam and Caulk: Use joint filler foam and/or caulk to seal around windows, doors, chimneys, electrical raceways, sill plates, multiple studs, etc. Expansion of joint filler foam in a confined space can tighten window frames and door jambs. Use care in these areas to avoid distortion of these members.
3.6 FIELD QUALITY CONTROL
A. Protect installed products until completion of project.
3.7 PROTECTION
A. Protect installed products until completion of project.
B. After completing work, clean glass and spattered surfaces.
C. Touch-up, repair or replace damaged products before Substantial Completion.
3.8 SCHEDULES
A. For the following locations, apply the average cured open-cell SPF thickness indicated:
1. Exterior walls: 5.5 inches.
2. Underside of Roof Deck: Thickness required to obtain an insulation value of R-38.

END OF SECTION

BUILDING INSULATION

SUMMARY
A. Provide Insulation in all interior walls and ceiling spaces of the building.
B. See schedule below for type of insulation to be used.
C. Insulation in exterior walls and on underside of roof deck shall be spray foam. See Spray Foam Insulation specification in other section.

SUBMITTALS
A. Submit under provisions of General Conditions.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.

THERMAL BATT INSULATION
A. Interior Walls: Use Owens-Corning Sound Attenuation Batts. Fill entire void solid with insulation. Use 4" thick Sonobatt R-11 in 2x4 stud walls and use 6" in 2x6 stud walls.
B. Ceiling: Use Owens-Corning Fiberglass Batt Insulation, 6" thick, R-19.

INSTALLATION
A. Install per manufacturers instructions.
B. Install insulation in areas and in thickness' as indicated above. Cut and fit tightly around obstructions and fill voids with insulation. Repair punctures or tears in vapor retarder facing by taping.
C. Extend vapor retarder to extremities of areas to be protected from vapor transmission. Insulation to be installed with the vapor retarder on the inside face of the building. Secure in place with adhesive or other anchorage.
D. Protect insulation from damage and from becoming wet before, during, and after installation.

END OF SECTION

VAPOR BARRIER

SUMMARY
A. Provide vapor barrier on exterior side of all exterior walls and under slab of building.
B. See schedule below for type of vapor barrier to be used.

VAPOR BARRIER
A. Slab: Use 6 mil Visqueen.
B. Exterior Walls: Use TY-VEK COMMERCIAL WRAP

INSTALLATION
A. Install vapor barrier in areas as indicated above. Cut and fit tightly around obstructions. Repair punctures or tears in vapor barrier by taping.
B. Extend vapor barrier to extremities of areas to be protected from vapor transmission.

END OF SECTION

FLEXIBLE FLASHING

SUBMITTALS
A. Make submittals in accordance as set forth in General Requirements
B. Product data: Manufacturers detailed material specifications and installation instructions

PRODUCT HANDLING
A. Deliver materials in manufacturer's original packaging with labels intact and legible.
B. Store materials in accordance with manufacturer's instructions.

MATERIALS
A. Flexible flashing: Air shield by W.R. Meadows 40 mil self adhering or equal.

INSTALLATION
A. Locations: Flexible flashings shall be installed in locations shown on drawings or described herinafter.
B. Flexible Flashings:
1. As the unit masonry progresses flexible flashings shall be installed in full height or width strips with a minimum of running joints.
2. Such joints shall be lapped not less than 6" and sealed with the specified adhesive.
3. Do not stretch the membrane.
4. At head of doors, windows or other opening, extend membrane 12" beyond each jamb and at sill of all openings,except doors, unless otherwise shown on the drawings extend membrane 12" beyond each jamb and build end dams. Wrap all openings-four sides.
5. The top edge of the membrane shall be cemented continuously to concrete back-up and other vertical surfaces and offset to within ½" of the interior wall face of the masonry back-up.
6. The bottom edge of the membrane shall extend horizontally to within ½" of exterior wall surface.

CEMENT BOARD SIDING

GENERAL

SECTION INCLUDES
A. Fiber cement trim and soffit panels

SUBMITTALS
A. Submit under provisions of General Conditions.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

QUALITY ASSURANCE
A. Installer Qualifications: Minimum of 2 years experience with installation of similar products.

DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Store siding on edge or lay flat on a smooth, level surface. Protect edges and corners from chipping. Store sheets under cover and off the ground prior to installation.
C. Store and dispose of solvent-based materials, and other materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

PROJECT CONDITIONS
A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

MANUFACTURERS
A. Manufacturer: James Hardie Building Products, Inc; 26300 La Alameda, Suite 250, Mission Viejo, CA 92691. ASD. Toll Free Residential: (888) J-HARDIE. Toll Free Commercial: (866) 274-3464. Tel: (949) 348-1800. Fax: (949) 367-0185. Email: info@jameshardie.com. Web - Residential: http://www.jameshardie.com. Web - Commercial: http://www.jameshardiecommercial.com.
B. Substitutions: or equal.

MATERIALS
A. Code Compliance Requirement for Materials:
1. National Evaluation Report No. NER 405 (BOCA, ICBO, SBCCI)
2. City of Los Angeles, Research Report No. 24862
3. Metro Dade County, Florida Acceptance No. 07-0148, 04
4. US Department of Housing and Urban Development Materials Release 1263d
5. California DSA PA-019.
6. City of New York M EA 223-93-M.
7. Non-asbestos fiber-cement siding where required to be non-combustible shall be tested in accordance with ASTM E136.
B. Trim: See drawings
C. Soffit: See drawings
D. Panel: See drawings

FINISHES
A. Factory Primer: Provide factory applied universal primer.
1. Primer: PrimePlus by James Hardie.
2. Topcoat: Refer to Painting Schedule.

PART 3 EXECUTION

EXAMINATION
A. Do not begin installation until substrates have been properly prepared.
B. If framing preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
C. Nominal 2 inch by 4 inch (51 m by 102 mm) wood framing selected for minimal shrinkage and complying with local building codes, including the use of water-resistive barriers or vapor barriers where required. Minimum 1-1/2 inches (38 mm) face and straight, true, of uniform dimensions and properly aligned.
1. Install water-resistive barriers and claddings to dry surfaces.
2. Repair any punctures or tears in the water-resistive barrier prior to the installation of the siding.
3. Protect siding from other trades.

PREPARATION
A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

INSTALLATION
A. Install materials in strict accordance with manufacturer's installation instructions.

FINISHING
A. Finish factory primed siding with a minimum of one coat of high quality 100 percent acrylic or latex or oil based exterior grade paint within 180 days of installation. Follow paint manufacturer's written product recommendation and written application instructions.

PROTECTION
A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

CUMMINGS ARCHITECTURE CORP
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TEL 251.433.9600

STATE OF ALABAMA
BENJAMIN R. CUMMINGS
13300
NOV 13 2018
MOBILE, ALABAMA
REGISTERED ARCHITECT

Mulherin Custodial Home
2496 Halls Mill Road
Mobile, AL 36606

REVISIONS
MARK | DATE

SHEET NAME
ARCHITECTURAL SPECIFICATIONS

PROJECT NO.
2018-16

DATE
OCTOBER 3, 2018

SHEET NO.
A0.4