PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Foamed-in-place insulation.
      1. In exterior framed walls.
      2. In exterior wall crevices.
      3. At junctions of dissimilar wall and roof materials.

1.02 RELATED REQUIREMENTS
   A. Section 01.61.16 - Volatile Organic Compound (VOC) Content Restrictions.
   B. Section 09.21.16 - Gypsum Board Assemblies: Requirements for extension of exterior wall gypsum
      board to deck to fully encapsulate foamed-in-place insulation.

1.03 REFERENCE STANDARDS
   E. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior
      Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004
      (Reapproved 2012).

1.04 ADMINISTRATIVE REQUIREMENTS
   A. Preinstallation Meeting: Convene one week prior to commencing work of this section.

1.05 SUBMITTALS
   A. See Section 01.30.00 - Administrative Requirements, for submittal procedures.
   B. Product Data: Provide product description, insulation properties, overcoat properties, and preparation
      requirements.
   C. Manufacturer's Installation Instructions: Indicate special procedures, and perimeter conditions requiring
      special attention.
   D. Certificates: Certify that products of this section meet or exceed specified requirements.

1.06 TENNESSEE SUSTAINABLE DESIGN GUIDELINES COMPLIANCE DOCUMENTATION
      000-07-2010-05.
   B. Provide documentation of construction waste diverted from landfills:
      1. Compliance with Credit 1.02-D-2: Construction Waste Management.
   C. Submit shop drawing documentation demonstrating SDG compliance for the following:
      1. Compliance with Credit 1.02-D-3-a: Sustainable Materials - Recycled content 10%
      2. Compliance with Credit 1.02-D-3-b: Sustainable Materials - Rapidly renewables
      3. Compliance with Credit 1.02-D-3-c: Sustainable Materials - Certified wood

CONSTRUCTION DOCUMENTS PACKAGE
ISSUED: 30-DEC-15
4. Compliance with Credit 1.02-D-3-d: Sustainable Materials - Material reuse
5. Compliance with Credit 1.02-E-6-b: Material VOC Limits - Adhesive and Sealants
6. Compliance with Credit 1.02-E-6-b: Material VOC Limits - Paints
7. Compliance with Credit 1.02-E-6-b: Material VOC Limits - Coatings and Anti-corrosive paints
8. Compliance with Credit 1.02-E-6-c: Material VOC Limits - Flooring systems
9. Compliance with Credit 1.02-E-6-d: Material VOC Limits - Composite wood and agrifiber

D. Submit documentation of quantity and material cost with monthly Application for Payment to the Contractor.

1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than three years of documented experience.
B. Applicator Qualifications: Company specializing in performing work of the type specified, with minimum three years documented experience.

1.08 MOCK-UP

A. Provide composite wall mock-up, 8 feet long by 8 feet high; include insulation overcoat, wall construction, and window and frame in mock-up.
B. Locate where directed.

1.09 FIELD CONDITIONS

A. Do not install insulation when ambient temperature is lower than 70 degrees F.
B. Do not apply foam when temperature is below that specified by the manufacturer for ambient air and substrate.
C. Do not apply foam when temperature is within 5 F of dew point.

PART 2 PRODUCTS

2.01 MATERIALS

A. Foamed-In-Place Insulation: Medium-density, rigid or semi-rigid, closed cell polyurethane foam; foamed on-site, using blowing agent of water or non-ozone-depleting gas.
   1. Regulatory Requirements: Conform to applicable code for flame and smoke limitations.
   2. Aged Thermal Resistance: R-value of 5 (deg F hr sq ft)/Btu, minimum, when tested at 1 inch thickness in accordance with ASTM C518 after aging for 180 days at 41 degrees F.
   3. Water Vapor Permeance: Vapor retarder; 2 perm, maximum, when tested at intended thickness in accordance with ASTM E96/E96M, desiccant method.
   4. Water Absorption: Less than 2 percent by volume, maximum, when tested in accordance with ASTM D2842.
   5. Air Permeance: 0.004 cfm/sq ft, maximum, when tested at intended thickness in accordance with ASTM E2178 or ASTM E283 at 1.5 psf.
   6. Closed Cell Content: At least 90 percent.
   7. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.
   8. Products:
2.02 ACCESSORIES
A. Primer: As required by insulation manufacturer.
B. Overcoat: None required, as exterior wall gypsum board is extended to deck and fire caulked.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify work within construction spaces or crevices is complete prior to insulation application.
B. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation or overcoat adhesion.

3.02 PREPARATION
A. Mask and protect adjacent surfaces from over spray or dusting.
B. Apply primer in accordance with manufacturer's instructions.

3.03 APPLICATION
A. Apply insulation in accordance with manufacturer's instructions.
B. Apply insulation by spray method, to a uniform monolithic density without voids.
C. Apply to achieve a minimum thermal resistance R value of 13 for wall construction.
D. Patch damaged areas.
E. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.
F. Trim excess away for applied trim or remove as required for continuous sealant bead.

3.04 FIELD QUALITY CONTROL
A. Field inspections and tests will be performed by an independent testing agency under provisions of Section 01.43.25 and 01.45.33.
B. Inspection will include verification of insulation thickness and density.

3.05 PROTECTION
A. Do not permit subsequent construction work to disturb applied insulation.
B. Patch any damaged areas with manufacturer-approved products and methods.

END OF SECTION