SECTION 07 57 00

COATED FOAMED ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Spray in place water proof Polyurethane Foam.

B. Protective UV coatings.

1.02 REFERENCE STANDARDS

A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

B. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness.

C. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension.

D. ASTM D1621 - Standard Test Method for Compressive Properties Of Rigid Cellular Plastics.

E. ASTM D1622/D1622M - Standard Test Method for Apparent Density of Rigid Cellular Plastics.

F. ASTM D1623 - Standard Test Method for Tensile And Tensile Adhesion Properties of Rigid Cellular Plastics.

G. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

H. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.

I. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.

J. UL 790- Standard for Standard Test Methods for Fire Tests of Roof Coverings.

K. UL (DIR)- TGIK.R9303-Roofing Systems, Uplift Resistance.

L. ICC ESR-2532 Evaluation Report.

1.03 ADMINISTRATIVE COORDINATION AND CLARIFICATIONS:

A. Roofing scope exclusions:
1. Metal copings,flashings,vents,scupper liners, collector boxes, down spouts, gutters
2. Expansion joints
3. Metal foam stops other than the standard 24ga and 2-3” face including ¾” rise

B. Preinstallation Meeting:
1. Convene a pre-installation meeting under general provisions of Section 01 70 00.
2. Require attendance of parties directly concerned with the work of this Section,
3. Review installation procedures and coordination required with related work.

C. Sequencing: Schedule work after all penetrations through roof are complete and perimeter conditions are ready to receive roof system.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on foam insulation and overcoat, physical and chemical properties, preparation of substrate required, product limitations, and cautionary requirements.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Test Reports: Provide test reports indicating that specified requirements are achieved by the products being supplied.

E. Manufacturer's Instructions: Indicate installation requirements and procedures.

F. Manufacturer's Reports: Indicate procedures followed, ambient temperatures and wind velocity during application.

G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in providing both products specified in this section, with not less than twenty years of documented experience.

B. Installer Qualifications: Company specializing in performing the work of this Section with minimum ten years documented experience, in the application of coated foam roofs, and approved by manufacturer.

C. Work of this Section to comply with manufacturer's instructions.

D. Basis of Design: Specifications and Drawing details are based on coated foamed roofing system by the specified basis of design manufacturer. Coated foamed roofing systems manufactured by other acceptable manufacturers are permitted, subject to compliance with performance requirements; and provided that deviations in materials and applications are minor, and do not detract substantially from the indicated design intent.

1. Comply with requirements specified in Section 01 40 00 and Section 01 60 00.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.

B. Store foamed roofing products in ambient temperatures as directed by manufacturer.

1.07 FIELD CONDITIONS

A. Do not install foam insulation during the following conditions:
1. When ambient temperature is below 50 degrees or as directed by manufacturer.
2. When wind velocity is above 15 mph, provide windscreens; when wind speed is above 25 mph, installation is not recommended.
3. When substrate temperature is greater than 180 degrees F or below 50 degrees F, or when dew point is less than 5 degrees F above ambient temperature.
4. When substrate moisture is present, during rain, snow, fog, or mist.

B. Spray apply coatings are not recommended during the following conditions or as directed by manufacturer.
1. When ambient temperature is below 50 degrees F.
2. When wind velocity is above 25 mph.
3. During periods of precipitation.
4. Coating must be cured prior to additional coats.

C. Exposed foam is recommended to receive a base coat by the end of the same workday.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide 5,10 *(15/20)* year manufacturer warranty for complete roofing system; manufacturer's standard limited material warranty or "No Dollar Limit" (NDL) system warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design Manufacturer:
1. SWD Urethane; Quik-Shield™ / 155-2.5 Coated Foamed Roofing System: www.swdurethane.com.
2. Substitutions: See Section 01 60 01 - Product Requirements.

B. Other Acceptable Manufacturers:
1. Gaco Western www.gaco.com
2. NCFI Urethane www.ncfi.com
3. Neogard Division of Jones-Blair Company www.neogard.com
4. Substitutions: See Section 01 60 01 - Product Requirements.

2.02 REGULATORY REQUIREMENTS

A. Comply with applicable building codes for fire resistance rating of roofing system.

2.03 FOAM INSULATION MATERIALS

A. Foam Insulation: Sprayed polyurethane foam (SPF) type, closed cell; foamed on-site, using a Low Global Warming Potential (GWP) blowing agent, free of Hydrofluorocarbons (HFC's). (2.5 physical properties listed)
1. Density: 2.5 lbs/cu ft, nominal, in accordance with ASTM D1622/D1622M.
2. Compressive Strength: 45 psi, minimum, in accordance with ASTM D1621.
3. Thermal Resistance: R-value of 5.7, minimum, per 1 inch thickness at 77 degrees F mean temperature when tested in accordance with ASTM C518.
4. Water Vapor Permeance: Vapor retarder; 1.5 perm/inch, maximum, when tested at 1 inch thickness in accordance with ASTM E96/E96M, desiccant method.
5. Closed Cell Content: At least 92 percent.

B. Substrate Primer: As required by insulation manufacturer for indicated application conditions.

2.04 TOPCOAT MATERIALS

Spec Note

(Remove from final Draft): Choose coating appropriate to project and climate. Contact Ron Stas at SWD Urethane (toll free) 1-800-828-1394 for assistance

A. Overcoat: Acrylic top coat color _____.
1. Tensile Strength (ASTM D412): 280 psi.
2. Foam Adhesion Failure dry (peak) D-423 6.1
3. Elongation (ASTM D412): 355 percent.
4. Surface Burning Flame (Index) (ASTM E84) 10
5. Surface Burning Smoke (Index) (ASTM E8) 15
4. Water Vapor Permeance: 3.5 perms @ 20mils, maximum, when tested in accordance with ASTM E96/E96M.
5. Solar Reflectance Index (SRI): 103 percent, when measured in accordance with ASTM E1980.
6. Solar Reflectance: 82 percent, when measured in accordance with ASTM E903.
7. Hardness (Shore A): 60, when tested in accordance with ASTM D2240.
8. Basis of Design: Specified manufacturer's Quik-Shield 1929F.

B. Overcoat: Silicone top coat color _____.
1. Tensile Strength (ASTM D412): 247 psi.
2. Elongation (ASTM D412): 237 percent.
3. Water Vapor Permeance: 10.7 perms, maximum, when tested in accordance with ASTM E96/E96M.
4. Solar Reflectance Index (SRI): 113 percent, when measured in accordance with ASTM E1980.
5. Solar Reflectance: 89 percent, when measured in accordance with ASTM E1549.
6. Hardness (Shore A): 37, when tested in accordance with ASTM D2240.
7. Basis of Design: Specified manufacturer's Quik-Shield 2120.

2.05

A. Spray Foam Cant Strip: Spray polyurethane foam (SPF) insulation, applied at interruptions and penetrations through roof surface and providing slope transition to roof surface.

B. Sealant: Type required or recommended by roofing manufacturer.

PART 3 EXECUTION- (Prior to application confirm that only one roofing system exists)

3.01 PREPARATION/EXAMINATION - WOOD DECK

A. Blow the deck clean.

B. Verify that wood substrate moisture content does not exceed 12 percent; excessive depressions or excessively weathered OSB board or plywood is unacceptable.

C. Examine the overall flatness and or slope of the deck

D. Verify that deck surface is smooth and dry and deck joints do not exceed ¼ inch. If so, cover with primed sheet metal or tape.

E. Tape over knot holes where wood is missing.

F. Remove materials or substances that will interfere with total adhesion of foam to substrate

G. Mask off adjacent surfaces that are not intended to receive foam.

H. Prime per manufacturer's recommendation.

3.02 PREPARATION/ EXAMINATION - CONCRETE DECK

A. Blow the deck clean.

B. Notify GC if concrete deck is surface is unacceptable due to excessive honeycomb finish or excessive irregularities. Concrete trade to provide acceptable surface to foam to.

C. Examine cured concrete substrate for moisture content according to manufactures requirements.

D. Remove materials or substances that will interfere with total adhesion of foam to substrate.

E. Mask off adjacent surfaces that are not intended to receive foam.

F. All concrete deck substrate to be primed prior to applying foam.

3.03 PREPARATION/ EXAMINATION - METAL DECK

A. Blow the deck clean.

B. Remove materials or substances that will interfere with total adhesion of foam to substrate when spraying directly to metal surface.

C. Overlay fluted/standing seam metal decks tape where tape can adequately span the flute, gypsum, Densdeck or U.L. approved Polyiso board. In some cases, foam can be applied directly to metal without overlay but primer is required.

D. Mask off adjacent surfaces that are not intended to receive foam.

E. All exposed metal surfaces to be primed prior to applying foam.

3.04

A. Prepare existing roofing surface in accordance with applicable section.

B. Remove all wet roofing and insulation material.

C. Use materials or substances that will not interfere with total adhesion of foam.

D. Mask off adjacent surfaces that are not intended to receive foam.

E. Prime per manufacturer’s recommendation.

3.05 INSTALLATION FOAM ROOF SYSTEM

A. Prior to start of Coated Foam installation, confirm installation of various flashing by others (reference section 1.03-A)

B. Apply primer and foam in accordance with manufacturer's instructions.

C. Install foam to a prescribed thickness and or slope. Foam thickness to be no less than 1 inch.

D. Extend foam a minimum of 8” above horizontal roof surface walls, curbs, and penetrations but preferably 12”, then fillet the foam and feather out at termination point. Foam cant is recommended at horizontal to vertical transitions.

E. Schedule foam installation to permit base coat application, preferably on same day. If this time limit is exceeded, prepare exposed foam skin surface in accordance with circumstances and manufacturer's instructions.

F. Apply foam to permit first coat of application on same day. If this time limit is exceeded, prepare exposed foam skin surface in accordance with manufacturer's instructions.

G. Finished foam surface is ideally an "orange peel" texture. Added coarseness may require additional coating to achieve specified dry mil thickness per manufacturer recommendations.

3.06 SILICONE COATING INSTALLATION

A. Install coating in accordance with manufacturer's instructions.

B. Apply coating to a total dry film thickness required to meet specified warranty.

C. Extend coating to cover foam and extend 2 inches above foam to a self-terminating finish.

D. High traffic areas: Additional silicone coating, granules may be used as walkways, other high traffic areas and or entire roof deck surfaces. Walkway paths shall be 4 feet wide and generally include areas 4 feet around all mechanical units.

E. Granules Application: Broadcast #9 granules in wet silicone top coat at a rate of 30lbs per 100 square feet.

3.07 CLEANING

A. Remove masking materials and any excess or coated foam products as necessary.

3.08 PROTECTION

A. Roof surface is free of traffic for minimum three days after finish coat application.

END OF SECTION