SECTION 07 22 00

WATERPROOFING INSULATION

NOTE: This guide specification is provided as a guideline and must be modified, as required, by the Designer of Record for each project. This specification is prepared in general accordance with CSI format to be included under Division 7 – Thermal and Moisture Protection. Additional information is provided. [delete this paragraph]

Optional information is presented in “blue” font below. Choose appropriate options, delete, as necessary. [delete this paragraph]

# GENERAL

## SUMMARY

### Work shall include, but is not limited to, the following:

#### Preparation of insulation substrates.

#### SOPRA-XPS extruded polystyrene waterproofing insulation.

##### Included in waterproofing manufacturer’s single-source warranty.

##### UL GREENGUARD Certified.

##### Global recycled content, percentage as specified for extruded polystyrene insulation board product.

#### Insulation, related materials, and labor required to complete specified waterproofing insulation system.

## RELATED SECTIONS

### Division 010000 – General Requirements

### Division 011000 – Summary of Work

### Division 071416 – Cold Fluid-Applied Waterproofing

### Division 075552 – Modified Bituminous Protected Membrane Waterproofing

### Division 075556 – Cold-Applied Protected Membrane Waterproofing, COLPHENE LM BARR

### Division 077200 – Waterproofing Overburden Accessories

### Division 076200 – Sheet Metal Flashing and Trim

## DEFINITIONS

### ASTM D 1079-Definitions of Term Relating to Roofing and Waterproofing.

### The National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual, Fifth Edition Glossary.

## REFERENCES

### AMERICAN SOCIETY OF CIVIL ENGINEERS - Reference Document ASCE 7, Minimum Design Loads for Buildings and Other Structures.

### AMERICAN STANDARD OF TESTING METHODS (ASTM):

#### ASTM C 203 - Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation.

#### ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

#### ASTM C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

#### ASTM D 1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.

#### ASTM D 2126 - Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.

#### ASTM D 2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics.

#### ASTM D 2863 - Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index).

#### ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

#### ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.

### AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):

#### ANSI/FM 4474- American National Standard for Evaluating the Simulated Wind Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures.

### FLORIDA BUILDING CODE (FBC):

#### 20XX Florida Building Code (FBC).

### INTERNATIONAL CODES COUNCIL (ICC):

#### 20XX International Building Code (IBC).

### NATIONAL ROOFING CONTRACTORS’ ASSOCIATION (NRCA).

### UNDERWRITERS LABORATORY (UL):

#### UL 723 Standard for Test for Surface Burning Characteristics of Building Materials.

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

#### UL 1256 – Fire Test of Roof Deck Constructions.

### UL ENVIRONMENTAL 2818: UL GREENGUARD Certification Program for Chemical Emissions for Building Materials, Finishes and Furnishings.

## ACTION SUBMITTALS

### Product Data Sheets: Submit manufacturer’s product data sheets, installation instructions and/or general requirements for each component.

### Safety Data Sheets: Submit manufacturer’s Safety Data Sheets (SDS) for each component.

### Sample/Specimen Warranty from the manufacturer and contractor including specified insulation products.

### Shop Drawings: Provide roof plan and applicable roof system detail drawings.

## CLOSEOUT SUBMITTALS

### Warranty: Specified insulation shall be included in the manufacturer’s warranty upon substantial completion.

## DELIVERY, STORAGE AND HANDLING

### Refer to each product data sheet or other published literature for specific requirements.

### Deliver materials and store them in their unopened, original packaging, bearing the manufacturer's name, related standards, and any other specification or reference accepted as standard.

### Protect and store materials in a dry, well-vented, and weatherproof location. Only materials to be used the same day shall be removed from this location.

### When materials are to be stored outdoors, store away from standing water, stacked on raised pallets or dunnage, at least 4 in or more above ground level. Carefully cover storage with “breathable” tarpaulins to protect materials from precipitation and to prevent exposure to condensation.

### Properly dispose of all product wrappers, pallets, cardboard tubes, scrap, waste, and debris. All damaged materials shall be removed from job site and replaced with new, suitable materials.

## SITE CONDITIONS

### SAFETY:

#### The contractor shall be responsible for complying with all project-related safety and environmental requirements.

#### Refer to NRCA CERTA recommendations, local codes and building owner’s requirements for hot work operations.

#### The contractor shall review project conditions and determine when and where conditions are appropriate to utilize the specified products. When conditions are determined by the contractor to be unsafe or undesirable to proceed, measures shall be taken to prevent or eliminate the unsafe or undesirable exposures and conditions, or equivalent approved materials and methods shall be utilized to accommodate requirements and conditions.

#### The contractor shall refer to product Safety Data Sheets (SDS) for health, safety, and environment related hazards, and take all necessary measures and precautions to comply with exposure requirements.

#### Extruded polystyrene insulation is a combustible foam plastic. The maximum service temperature is 167 °F (75 °C). Prevent exposure to extreme heat and open flames.

#### Do not allow contact between polystyrene insulation and solvents, or other incompatible materials that may dissolve or damage the insulation.

### ENVIRONMENTAL CONDITIONS:

#### Extruded polystyrene insulation shall be protected from direct exposure to sunlight. Do not leave insulation exposed to UV rays for more than 60 days.

#### Monitor substrate temperature and material temperature, as well as all environmental conditions such as ambient temperature, moisture, sun, cloud cover, wind, humidity, and shade. Ensure conditions are satisfactory to begin work and ensure conditions remain satisfactory during the installation of specified materials. Materials and methods shall be adjusted as necessary to accommodate varying project conditions. Materials shall not be installed when conditions are unacceptable to achieve the specified results.

## PERFORMANCE REQUIREMENTS

### FIRE CLASSIFICATION:

#### System Performance: Refer to the specified waterproofing system’s fire classification requirements.

#### Material Performance: Insulation material testing shall be in accordance the following specified requirements:

##### Tested per UL 723, meets Class A, B or C, or tested per ASTM E84, meets Class A, B or C.

### WIND UPLIFT RESISTANCE:

#### Refer to specified wind uplift resistance requirements and ratings for the specified waterproofing system.

### ENERGY CONSERVATION REQUIREMENTS:

#### Insulation "R" value shall be tested per ASTM C 518 as referenced in material standards ASTM C578.

#### System Thermal Resistance:

##### Total insulation system thermal resistance R Value, total continuous insulation (ci) above-deck: R(00) total

### ENVIRONMENTAL:

#### UL ENVIRONMENTAL 2818: UL GREENGUARD Certified.

#### Global recycled content, percentage: The percentage of global recycled content shall meet specified values for each extruded polystyrene insulation board product as specified herein.

# PRODUCTS

## MANUFACTURER

### SINGLE SOURCE MANUFACTURER: All system materials shall be provided by a single supplier with 20 years or more manufacturing history in the US.

#### Comply with the Manufacturer’s requirements as necessary to provide the specified warranty.

### ACCEPTABLE MANUFACTURER:

#### SOPREMA, located at: 310 Quadral Dr.; Wadsworth, OH 44281; Tel: 800-356-3521; Tel: 330-334-0066; Website: www.soprema.us.

#### Acceptable Alternate Manufacturers: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## THERMAL INSULATION SYSTEM

### RIGID INSULATION

#### EXTRUDED POLYSTYRENE:

##### Meets or exceeds requirements of ASTM C578.

##### Insulation board R Value (RSI value) per 1 inch (25.4 mm) @ 75 °F (24°C) per ASTM C518 R: 5.0 (RSI- 0.88) per 1 inch thickness.

##### Water Vapour Permeance, perm (Ng/Pa•s•m²) per ASTM E96 (Method A): 0.9 perm (52 Ng/Pa•s•m²).

##### Dimensional Stability, maximum percentage per ASTM D2126: 1.5 percent.

##### Water Absorption by volume maximum percentage per ASTM D2842: 0.7 percent.

##### Limiting Oxygen Index, Percentage per ASTM D2863: 24 percent.

##### SOPREMA SOPRA-XPS 30: Closed cell rigid extruded polystyrene foam used as a thermal insulation for foundation wall systems and protected membrane waterproofing assemblies where the applied load does not exceed 20 psi.

###### Shiplap board thickness: 1.0, 1.5, 2.0, 2.5, 3.0, 4.0 in minimum board thickness. Total thickness to meet specified insulation system thermal resistance ‘R’ value.

###### Square board thickness: 1.0, 1.5, 2.0, 2.5, 3.0, 4.0 in minimum board thickness. Total thickness to meet specified insulation system thermal resistance ‘R’ value

###### Dimensions: 2 x 8 ft boards.

###### Meets or exceeds ASTM C578, Type IV.

###### Compressive Strength: Minimum per ASTM D1621: 30 psi (210 kPa).

###### Flexural Strength, minimum psi (kPa) per ASTM C203: 80 psi (550 kPa).

###### Global recycled content, percentage: 69 percent.

##### SOPREMA SOPRA-XPS 40: Closed cell rigid extruded polystyrene foam used as a thermal insulation for foundation wall systems and protected membrane waterproofing assemblies where the applied load does not exceed 20 psi.

###### Square board thickness: 1.0, 1.5, 2.0, 2.5, 3.0, 3.5 in minimum board thickness. Total thickness to meet specified insulation system thermal resistance ‘R’ value.

###### Dimensions: 2 x 8 ft boards.

###### Meets or exceeds ASTM C578, Type VI.

###### Compressive Strength: Minimum per ASTM D1621: 40 psi (275 kPa).

###### Flexural Strength, minimum psi (kPa) per ASTM C203: 116 psi (800 kPa).

###### Global recycled content, percentage: 69 percent.

##### SOPREMA SOPRA-XPS 60: Closed cell rigid extruded polystyrene foam used as a thermal insulation for foundation wall systems and protected membrane waterproofing assemblies where the applied load does not exceed 20 psi.

###### Square board thickness: 1.0, 1.5, 2.0, 2.5, 3.0, 3.5 in minimum board thickness. Total thickness to meet specified insulation system thermal resistance ‘R’ value.

###### Dimensions: 2 x 8 ft boards

###### Meets or exceeds ASTM C578, Type VII.

###### Compressive Strength: Minimum per ASTM D1621: 60 psi (415 kPa).

###### Flexural Strength, minimum psi (kPa) per ASTM C203: 145 (1,000 kPa).

###### Global recycled content, percentage: 57 percent.

##### SOPREMA SOPRA-XPS 100: Closed cell rigid extruded polystyrene foam used as a thermal insulation for foundation wall systems and protected membrane waterproofing assemblies where the applied load does not exceed 20 psi.

###### Square board thickness: 2.0, 3.0 in minimum board thickness. Total thickness to meet specified insulation system thermal resistance ‘R’ value.

###### Dimensions: 2 x 8 ft boards.

###### Meets or exceeds ASTM C578, Type V.

###### Compressive Strength: Minimum per ASTM D1621: 100 psi (690 kPa).

###### Flexural Strength, minimum psi (kPa) per ASTM C203: 160 psi (1,100 kPa).

###### Global recycled content, percentage: 67 percent.

### INSULATION ADHESIVE

#### POLYURETHANE FOAM INSULATION ADHESIVE

##### SOPREMA DUOTACK 365: Two-component, polyurethane foam insulation adhesive, applied in ribbons from cartridges or two-component bulk packaging with pump-driven delivery system.

###### Ribbon size: 1/2 to 3/4 in wide at point of application.

###### Ribbon spacing: As specified to meet wind uplift resistance performance for waterproofing assembly, maximum 12 in on-centers.

# EXECUTION

## EXAMINATION

### Examination includes visual observations, qualitative analysis, and quantitative testing measures as necessary to ensure conditions remain satisfactory throughout the project.

### Conduct qualitative insulation adhesive adhesion tests, or quantitative bonded pull tests as necessary to ensure satisfactory adhesion is achieved.

### The contractor shall examine all waterproofing substrates including, but not limited to insulation materials, decks, walls, curbs, rooftop equipment, fixtures, and blocking.

### The applicator shall not begin installation until conditions have been properly examined and determined to be clean, dry and, otherwise satisfactory to receive specified materials.

### During the application of specified materials, the applicator shall continue to examine all project conditions to ensure conditions remain satisfactory to complete the specified system.

## PREPARATION

### Before commencing work each day, the contractor shall prepare all substrates to ensure conditions are satisfactory to proceed with the installation of specified materials. Preparation of substrates includes, but is not limited to, substrate repairs, securement of substrates, eliminating all incompatible materials, and cleaning.

### Where conditions are found to be unsatisfactory, work shall not begin until conditions are made satisfactory to begin work. Commencing of work shall indicate contractor’s acceptance of conditions.

### Extruded polystyrene insulation is a combustible foam plastic. The maximum service temperature is 167 °F (75 °C). Prevent exposure to extreme heat and open flames.

## INSULATION ADHESIVE APPLICATION

### DUOTACK 365

#### Apply the specified two-component insulation adhesive to adhere insulation.

#### Follow insulation adhesive product data sheets and published general requirements for installation requirements.

#### Apply insulation adhesive in uniform ribbons, 1/2 in to 3/4 in wide at the point of application.

#### Immediately install insulation into insulation adhesive and apply weight to ensure the materials maintain full contact with all ribbons for complete adhesion along all ribbons. Do not allow insulation adhesive to skin-over before placing the insulation materials into the adhesive.

#### Adhere the insulation system to meet the specified wind uplift resistance performance and specified warranty requirements.

##### Maximum adhesive ribbon spacing shall be 12 in on-centers and as required by the waterproofing manufacturer to meet warranty requirements and as required to meet building code wind uplift resistance requirements.

## INSULATION SYSTEM APPLICATION

### Follow insulation system component product data sheets, published general requirements and, approvals.

### Install all insulation system components on clean, dry, uniform and, properly prepared substrates.

### All insulation system boards shall be carefully installed and fitted against adjoining sheets to form tight joints.

### Insulation system boards that must be cut to fit shall be saw-cut or knife-cut in a straight line, not broken. Chalk lines shall be used to cut insulation components. Uneven or broken edges shall not be accepted. Remove dust and debris that develops during cutting operations.

### Stagger successive layers of insulation 12 in vertically and laterally to ensure board joints do not coincide with joints from the layers above and below.

## CLEAN-UP

### Clean-up and properly dispose of waste and debris resulting from these operations each day as required to prevent damages and disruptions to operations.

END OF SECTION