SECTION 07 55 56

HOT FLUID-APPLIED RUBBERIZED ASPHALT PROTECTED MEMBRANE WATERPROOFING

# GENERAL

## SUMMARY

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

#### Preparation of concrete substrate, and all flashing substrates.

#### Hot rubberized asphalt membrane.

#### Neoprene membrane flashings.

#### Modified bitumen membrane flashings.

#### Protection course.

#### Liquid-applied, reinforced flashings.

#### All related materials and labor required to complete specified roofing necessary to receive specified manufacturer’s warranty.

## RELATED DIVISIONS

A. Division 01 General Requirements

1. Section (XX XX XX)

B. Division 03 Concrete

 1. Section (XX XX XX)

C. Division 07 Thermal and Moisture Protection

1. Section 07 21 00 Thermal Insulation

2. Section 07 62 00 Sheet Metal Flashing and Trim

3. Section 07 71 29 Manufactured Roof Expansion Joints

### 4. Section 07 72 00 Waterproofing Overburden Accessories

5. Section 07 92 00 Joint Sealants

D. Division (XX)

 1. Section (XX XX XX)

## 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):

### CANADIAN GENERAL STANDARDS BOARD (CGSB):

#### CGSB 37.50-M89 – Hot Applied, Rubberized Asphalt for Roofing and Waterproofing.

### INTERNATIONAL CONCRETE REPAIR INSTITUTE (ICRI)

#### Concrete Surface Profile (CSP) Scale.

## SUBMITTALS

### Submit manufacturer’s product data sheets.

### Submit manufacturer’s installation instructions.

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

D. Certification from an independent testing laboratory experienced in testing this type of material, that the material meets the CGSB-37.50-M89 standard for rubberized asphalt membranes

E. Sample Warranty from the manufacturer and contractor.

F. Certification showing that all components are being supplied and warranted by a single-source manufacturer.

G. Provide roof plan and applicable system detail drawings.

H. Certification from waterproofing system manufacturer that applicator is approved to install the specified materials and system.

## CLOSEOUT SUBMITTALS

### Warranty: Provide manufacturers and contractor’s warranties upon completion of the waterproofing system.

## QUALITY ASSURANCE

### MANUFACTURER:

#### Manufacturer shall have a minimum 25 years of experience manufacturing roofing and waterproofing materials and systems.

#### Manufacturer shall have trained Technical Field Personnel separate from sales representatives.

### CONTRACTOR QUALIFICATIONS:

#### Contractor shall be approved by the manufacturer to install specified materials prior to the bidding period.

#### Applicators shall have completed projects of similar scope using same types of materials as specified.

#### Contractor shall provide full time, on-site superintendent or foreman experienced with the specified waterproofing system.

#### Applicators shall be trained in the application methods for all materials.

#### Contractor shall maintain a daily record documenting installation and project conditions.

## 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, with the manufacturer and product names visible.

### 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. During cold weather, store materials in a heated location. Remove only material needed for immediate use.

### When materials are to be kept outdoors, store away from standing water, stacked on dunnage, and at least 4 in above ground level. Carefully cover stored materials to protect them from precipitation. Do not double stack hot rubber boxes as they may crush.

### Carefully store roof membrane materials delivered in rolls on-end. Store and protect rolls to prevent damage. Do not double stack rolled goods.

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

## SITE CONDITIONS

### SAFETY:

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

#### The contractor shall review project conditions and determine when and where conditions are appropriate to install the specified hot rubber membrane system materials. When it is unsafe or undesirable to proceed, measures shall be taken to prevent or eliminate the unsafe or undesirable conditions.

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

### ENVIRONMENTAL CONDITIONS:

#### Monitor substrate and material temperatures, as well as other environmental conditions such as ambient temperature, moisture, sun, wind, and humidity. 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. Do not install materials when conditions are unacceptable to achieve the specified results.

#### Precipitation and dew point: Ensure the project environment is dry a minimum of 48 hours before application and will remain dry during application. Ensure waterproofing materials and substrates remain above the dew point temperature as required to prevent condensation and maintain dry conditions.

## PERFORMANCE REQUIREMENTS

### SPECIFICATIONS:

#### Performance testing shall be in accordance with CGSB 37.50-M89 – Hot Applied, Rubberized Asphalt for Roofing and Waterproofing.

1.11 WARRANTY [Please delete A or B below and delete all warranty durations that are not applicable for the project]

A. MANUFACTURER’S MATERIAL WARRANTY: The manufacturer shall provide the owner with the manufacturer’s warranty for materials only for [5][10][15][20]-years from the date the warranty is issued.

B. MANUFACTURER’S NO DOLLAR LIMIT (NDL) WARRANTY. The manufacturer shall provide the owner with the manufacturer’s NDL warranty providing labor and materials for [10][15][20]-years from the date the warranty is issued.

1. Manufacturer requires a successful 24-hour flood test or ELD for NDL warranty

C. CONTRACTOR’S WARRANTY: The contractor shall guarantee the workmanship and shall provide the owner with the contractor’s warranty covering workmanship for a period of [2][5]-years from completion date.

# PRODUCTS

## MANUFACTURER

### SINGLE SOURCE MANUFACTURER: All hot rubberized asphalt system components including the membrane, flashings sheets, and protection layers shall be manufactured in the US and supplied or approved by a single supplier.

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

### SPECIFIED MANUFACTURER:

#### GCP Applied Technologies 20 Moores Road,

#### Malvern, PA 19355

#### 866-333-3726

### 2. Other specifiers as listed below:

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## HOT RUBBERIZED ASPHALT MEMBRANES

### HOT RUBBERIZED ASPHALT FIELD AND FLASHING MEMBRANE

##### 1. BITUTHENE HRA: Hot rubberized asphalt composed of selected compatible asphalt, synthetic rubbers, and stabilizing fillers used for horizontal and vertical waterproofing.

##### a. Meets or exceeds CGSB 37.50-M89.

##### b. Fully reinforced system: Base layer 90 mils, top layer 125 mils, totaling a minimum of 215 mils.

##### c. Application temperature range: 380-400° (193-204°).

##### d. Flow rate @ 140°F (60°C): 0

##### e. Solid’s content %: 100

##### f. Cone penetration @ 77°F (25°C): 81

##### g. Cone penetration @ 122°F (50°C): 145

##### h. Toughness, joule min.: 19.4

##### i. Toughness ration, min.: 0.052

##### j. Adhesion, min.: Pass

##### k. Perm rating: 1

##### l. Water absorption, g: 0.13 gain

##### m. Low temp flexibility, -13°F (-25°C): Pass

##### n. Crack bridging, -13°F (-25°C): Pass

##### o. Heat stability, 5 hours: Pass

##### p. Viscosity at application temperature: 4.77 sec

##### q. Flash point, C.O.C.: >500°F (260°C)

##### r. Hydrostatic pressure resistance: 231 psi (110 N/m2)

B. REINFORCEMENT

1. BITUTHENE HRA FABRIC: Spunbonded polyester fabric used as the reinforcement in hot rubberized asphalt membrane systems.

a. Unit weight: 1.35 oz/sq yd

 b. Thickness: 9.7 mils (0.25 mm)

 c. Sheet Grab Tensile (MD): 29 lb

 d. Sheet Trapezoid Tear (MD): 5.9 lb

e. Width: 36 in (0.91 m)

f. Length: 750 ft (228.6 m)

### PROTECTION COURSE [Please delete all protection courses not applicable for the project]

1. BITUTHENE HRA PROTECTION G: SBS modified membrane

reinforced with a tough fibrous glass mat and surfaced with a fine release sand on both sides. Used as the top protection layer in the field.

a. Thickness: 91 mils (2.3 mm)

##### b. Width: 39.375 in (1 m)

##### c. Length: 49.5 ft (15 m)

 d. Meets: ASTM D6163 Grade S, Type I

2. BITUTHENE HRA PROTECTION P: SBS modified membrane

reinforced with a stress-resistant polyester mat and surfaced with a fine release sand on both sides. Used as the top protection layer in the field.

##### a. Thickness: 79 mils (2.0 mm)

##### b. Width: 39.375 in (1 m)

##### c. Length: 64.25 ft (20 m)

 d. Meets: ASTM D4601, Type II

3. BITUTHENE HRA CAP: SBS-modified bitumen cap sheet reinforced with a high-performance, stress resistant polyester mat surfaced with a fine release sand on the bottom and mineral granules on the top. Can be used as the top protection layer in the field if overburden is not specified.

##### a. Thickness: 145 mils (3.7 mm)

##### b. Width: 39.375 in (1 m)

##### c. Length: 32.83 ft (10 m)

##### d. Meets: D6164, Grade G, Type I

##### e. Granule Surfacing: White or black mineral granules.

D. NEOPRENE

1. BITUTHENE HRA NEOPRENE: Uncured neoprene rubber membrane designed for use to reinforce wall and base flashings, expansion joints and other details

##### a. Thickness: 60 mils (1.5 mm).

##### b. Width: 6” (15.24 cm) or 12” (30.48 cm).

##### c. Length: 100 ft (30.5 m)

 d. Elongation: 267%

 e. Tensile Strength: 1484 psi

### E. MODIFIED BITUMEN BASE FLASHING

1. BITUTHENE HRA PROTECTION G: SBS modified membrane

reinforced with a tough fibrous glass mat and surfaced with a fine release sand on both sides. Used as the base in two-ply modified flashings.

a. Thickness: 91 mils (2.3 mm)

##### b. Width: 39.375 in (1 m)

##### c. Length: 49.5 ft (15 m)

 d. Meets: ASTM D6163 Grade S, Type I

### F. MODIFIED BITUMEN CAP FLASHING

1. BITUTHENE HRA CAP: SBS-modified bitumen cap sheet reinforced with a high-performance, stress resistant polyester mat surfaced with a fine release sand on the bottom and mineral granules on the top. Used as the cap in two-ply modified flashings.

##### a. Thickness: 145 mils (3.7 mm)

##### b. Width: 39.375 in (1 m)

##### c. Length: 32.83 ft (10 m)

##### d. Meets: D6164, Grade G, Type I

e. Granule Surfacing: White or black mineral granules.

## ACCESSORIES

### PRIMERS

#### BITUTHENE ADHESIVE PRIMER B2 LVC: Low VOC primer used to prime green and damp concrete as well as wood, masonry, gypsum sheathing and other substrates. Utilized for the preparation of waterproofing membrane and flashing substrates for hot rubberized asphalt.

##### Application temp: 25 ºF (-4 ºC)

b. VOC Content: <200 g/L.

## EXAMINATION

###### A. Acceptable substrates are precast concrete, cast-in-place concrete, and plywood. If concrete is poured on a metal pan deck it must be of the venting type.

###### 1. Cast-in place Concrete and Composite Decks must meet the following

###### requirements:

#### a. Minimum 2,500 psi (17,235 kPa) compressive strength

#### b. Minimum 115 pcf (1842 kg/m3) density

#### c. Broom finish or equivalent (ICRI CSP 3 to 5)

#### d. Cure for structural concrete: minimum 28 days, prior to application of the membrane.

#### e. Contact GCP regarding curing compounds and release agents

#### f. For lightweight structural concrete and lightweight insulation concrete contact GCP.

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

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

### D. During the application of specified materials examine all project conditions to ensure conditions remain satisfactory to complete the specified waterproofing system.

## PREPARATION

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

### Work shall not begin until all conditions are made satisfactory to begin work. Commencing of work shall indicate contractor’s acceptance of conditions.

## PRIMER APPLICATION

### Examine all substrates, and conduct adhesion peel tests as necessary, to ensure satisfactory adhesion is achieved.

### Apply BITUTHENE ADHESIVE PRIMER B2 LVC to clean, dry, and properly prepared compatible substrates as required.

### Apply primer using brush, roller, or sprayer.

### Apply primer to the concrete evenly in accordance with Perm-A-Barrier HRA published literature. Do not overapply primer or allow primer to pool. Allow primer to thoroughly dry prior to the membrane application.

### Monitor project conditions for primer dry times and adhesion of the hot rubber membrane plies. Adjust application methods as necessary.

## RUBBERIZED ASPHALT FIELD DETAIL APPLICATION (SOPRA-FLASH R)

### All detailing shall be installed prior to installing the field membrane.

###### B. Follow manufacturer’s instructions for type and size of substrate joints, cracks, segment joints and shear keys that need to be addressed.

###### C. Apply 90 mils (2.3 mm) of hot rubberized asphalt to the prepared substrate.

### D. Immediately embed a layer of neoprene or polyester reinforcing fabric overlapping ends of the sheets a minimum 2” (50.8 mm). Ensure rubberized asphalt is applied between sheet laps.

### E. Follow with an additional 125 mils (3.2 mm) layer of rubberized asphalt.

### F. Total thickness of detailing shall be seamless and average 215 mils (5.5 mm).

## MEMBRANE APPLICATION

### Refer to manufacturer’s published values for Softening Point, Minimum Flash Point (FP) and Application temperature.

### To avoid risk of fire do not heat rubberized asphalt at or above the Flash Point temperature.

C. Heat rubberized asphalt in a thermostatically controlled double jacketed melter that uses oil as a heat transfer medium and is equipped with a mechanically operated agitator. Melter must be equipped with two devices that monitor both asphalt and heating oil temperature with an accuracy of ±2°C

D. Rubberized asphalt application temperature should be within 380°F to 400°F (193°C to 204°C) when removed from the melter and at the point of application

### E. The contractor shall monitor rubberized asphalt application temperature and shall record the temperature during application.

### F. Any rubberized asphalt membrane heated and maintained at more than the specified temperature ranges must be discarded and removed from the site.

### G. Apply the rubberized asphalt membrane at a rate to provide a monolithic 90 mil minimum (2.3 mm) coat, into which is fully embedded a layer of the polyester reinforcing fabric, followed by another monolithic coat of membrane applied at a minimum thickness of 125 mil (3.2 mm). Reinforcing fabric is to have 2" (50.8 mm) side laps and 4” (101.6 mm) end laps. Ensure rubberized asphalt is fully applied between laps. Total membrane thickness shall be a minimum 215 mils (approx. 5.5 mm).

## PROTECTION COURSE APPLICATION

### Install protection course into the top layer of rubberized asphalt membrane while it is still hot and sticky to ensure full adhesion.

### Overlap protection layers a minimum of 2" (50.8 mm) at side laps and 4" (101.6 mm) at end laps. Ensure rubberized asphalt is applied between sheet laps.

### Stagger all end laps by a minimum of 3 ft (.914 M).

### Cover the hot rubber system with subsequent overburden materials as soon as possible but not longer than 30 days of membrane installation.

## RUBBERIZED ASPHALT FLASHING MEMBRANE APPLICATION

### All flashing shall be installed prior to the field membrane installation.

### Apply 90 mils (2.3 mm) of hot rubberized asphalt to the prepared substrate.

### Immediately embed a layer of neoprene or polyester reinforcing fabric overlapping sheets a minimum 3" (76.2 mm). Ensure rubberized asphalt is applied between sheet laps.

### Follow with an additional 125 mils (3.2 mm) layer of rubberized asphalt.

### If flashing system will be covered, install protection course into the top layer of rubberized asphalt membrane while it is still hot and sticky to ensure full adhesion.

### If flashing is to be left exposed, install BITUTHENE HRA CAP into the top layer of rubberized asphalt membrane while it is still hot and sticky to ensure full adhesion. Side laps to be a minimum 3" (76.2 mm) and end laps to extend into the field a minimum 6" (152.4 mm). Ensure rubberized asphalt is applied between sheet laps.

## 3.08 RUBBERIZED ASPHALT FLASHING MEMBRANE APPLICATION (OPTIONAL)

###### A. Install one layer of BITUTHENE HRA PROTECTION G in a solid application of hot rubberized asphalt. Side laps to be a minimum 3" (76.2 mm) and end laps to extend into the field a minimum 4" (101.6 mm). Ensure rubberized asphalt is applied between sheet laps.

###### B. Install one layer of BITUTHENE HRA CAP over the PROTECTION G offsetting the base sheet side laps by a minimum 12” (304.8 mm). Extend HRA CAP a minimum 6“ (152.4 mm) into the field. Ensure rubberized asphalt is applied between sheet laps.

## 3.09 CLEAN-UP

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

END OF SECTION