



# CARLISLE'S Hot Mopped Sure-Weld® AFX

## G U I D E - S P E C

### Hot Mopped Sure-Weld® Roofing System

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This **GUIDE-SPEC** is a brief outline of Carlisle's Hot Mopped Sure-Weld Roofing System requirements and is intended for use as a submittal with a bid package. Specifiers and Carlisle Authorized Roofing Applicators must comply with the specification and details contained in Carlisle's Technical Manual.

#### 1.01 DESCRIPTION

The Hot Mopped Roofing System utilizes Sure-Weld® (white) AFX 120 FleeceBACK® or Sure-Weld AFX 135 FleeceBACK membrane. The fleece-backed membrane is fully mopped to an acceptable existing roofing membrane, structural concrete deck, base sheet or HP Recovery Board with Type III or IV Asphalt or Modified Asphalt. Adjoining sheets of membrane are overlapped and joined together with a minimum 1-1/2" wide hot air weld.

#### 1.02 ASSEMBLY OPTIONS

A. **Projects with Smooth BUR (Type III or IV Asphalt), Mineral Cap Sheet or SBS Modified Bitumen**

The membrane may be mopped directly to the existing material after priming the surface with Cut-Back Asphalt Primer.

B. **Projects with Gypsum, Lightweight Insulating Concrete, Fibrous Cement or Wood Decks (No Insulation)**

The membrane may be mopped directly to an approved base sheet. One-way vents are required and must be installed at the rate of 1 every **1000 square feet for vermiculite lightweight insulating concrete** and **1 vent every 2000 square feet for cellular or perlite lightweight insulating concrete**.

C. **Projects with Structural Concrete Decks (No Insulation)**

Membrane may be mopped directly to the deck after the surface has been primed with Cut-Back Asphalt Primer. For those projects where a two-ply vapor retarder/temporary roof has been specified, the membrane may be mopped directly to a Type IV glass felt (ASTM D2178).

D. **Projects Where Additional Insulation is Specified**

1. When additional insulation is desired, new insulation must be overlaid with Carlisle 1/2" thick HP Recovery Board. Both new insulation and membrane underlayment may be mechanically fastened or mopped. On steel or wood decks, refer to Paragraph 3.03E for underlayment options.
2. When mopping insulation to **gypsum, fibrous cement and wood decks**, Carlisle FR Base Sheet™ or a Type VI glass felt base sheet (ASTM D 2178) must be used and shall be fastened to the deck.

3. **On structural concrete decks**, when mopping new insulation is specified, the deck shall be primed with Cut-Back Asphalt Primer prior to mopping insulation boards. As an option, two plies of Type IV glass felt may be mopped to the primed concrete surface.

4. **On fluted/corrugated steel decks**, insulation cannot be mopped to the steel deck. New insulation must be attached incorporating mechanical securement.

#### 1.03 QUALITY ASSURANCE

A. Carlisle recommends the use of Carlisle supplied products with this roofing system. The performance or integrity of products by others, when selected by the specifier and accepted as compatible by Carlisle, is not the responsibility of Carlisle and is disclaimed by the Carlisle Warranty.

B. This roofing system must be installed by a Carlisle Authorized Roofing Applicator in compliance with shop drawings as approved by Carlisle. There must be no deviations made from Carlisle's specifications or the approved shop drawings without the **PRIOR APPROVAL** of Carlisle.

C. After completion of the installation, upon request, an inspection shall be conducted by a Field Service Representative of Carlisle SynTec Incorporated to ascertain the membrane system has been installed according to Carlisle's published specifications and details applicable at the time of bid.

#### 1.04 SUBMITTALS

A. To ensure compliance with Carlisle's warranty requirements, the following projects should be forwarded to Carlisle for review prior to installation, preferably prior to bid.

1. Projects where building height exceeds 50'.
2. Projects where 20-year Total System Warranties are specified.
3. Air pressurized buildings or buildings with large openings where the total wall openings exceed 10% of the total wall area on which the openings are located.
4. Cold storage buildings and freezer facilities.
5. Projects where membrane is expected to come in direct contact with petroleum-based products or other chemicals.
6. Projects where wind speed coverage greater than 55 mph is specified.

B. Along with the project submittals (shop drawing and Request for Warranty), the roofing contractor must include pullout test results



when fasteners are used for insulation or base sheet securement into fibrous cement, lightweight insulated concrete, gypsum, or Orient Strand Board (OSB).

#### 1.05 WARRANTY

- A. **5 or 10-year System Warranties** are available for a charge on commercial projects.
- B. **10 or 15-year Golden Seal™ Total System Warranties** are also available for a charge. Projects with a Total System Warranty must incorporate materials from among those manufactured, marketed or specifically approved by Carlisle.
- C. A **20-year Total System Warranty** is available for a charge for projects utilizing Sure-Weld AFX 135 membrane and incorporating additional design enhancements.
- D. Warranty coverage for leaks caused by hailstorms or accidental punctures are available. Contact Carlisle for specific warranty terms and conditions.

#### 1.06 JOB CONDITIONS

- A. Type III Asphalt, used for membrane and/or insulation securement, shall be restricted to projects with a maximum roof slope of 1/2" in 12". Type IV or Modified Asphalt can be used for projects with a maximum roof slope of 1-1/2" in 12". Projects with roof slopes exceeding 1-1/2" in 12" must be submitted to Carlisle for review prior to installation.
- B. Consult the Asphalt Manufacturer concerning asphalt heating temperature and minimum ambient temperature during installation.
- C. Curing compounds used in conjunction with structural concrete decks must be confirmed by the concrete curing-compound manufacturer as compatible with the attachment method.
- D. Projects where lightweight insulated concrete fill is being removed, new insulation must be mechanically fastened or attached with modified SEBS asphalt after priming the deck surface.
- E. On retrofit-recover projects, existing roofing material must be investigated and wet material must be removed. Existing Phenolic Insulation must be removed.
- F. The use of a vapor retarder to protect insulation and reduce moisture accumulation within an insulated roof assembly should be investigated by the specifier. Consult the latest publications by **ASHRAE** (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.) and **NRCA** (National Roofing Contractors Association) for specific information.
- G. Coordination between various trades is essential to avoid unnecessary rooftop traffic over sections of the roof and to prevent damage to the membrane.

#### 1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the job site in the original, unopened containers labeled with the manufacturer's name, brand name and installation instructions.
- B. Job site storage temperatures in excess of 90° F may affect shelf life of curable materials.

C. When liquid adhesives and sealants are exposed to lower temperatures, restore to a minimum of 60° F before use. Do not store containers with opened lids due to loss of solvent that will occur from flash off.

D. Membrane should be stored in its original plastic wrap or be covered to protect from moisture. Any moisture absorbed by the fleece-backing must be removed by using a wet-vac system, prior to membrane mopping.

E. When specified, insulation must be stored so it is kept dry and is protected from the elements.

## PART II PRODUCTS

### 2.01 GENERAL

The components of this roofing system are to be products of Carlisle. The installation, performance or integrity of products by others is not the responsibility of Carlisle and is expressly disclaimed by the Carlisle Warranty. Other components (asphalt and pressure relief vents) which are not supplied by Carlisle, when required for the installation of this roofing system, may be included as part of the Carlisle Warranty.

### 2.02 MEMBRANE

Fleece backed TPO membrane incorporates Sure-Weld (white) 45 or 60-mil thick reinforced TPO membrane laminated to a 10 ounce per square yard, non-woven polyester, polypropylene blended fleece-backing resulting in a total thickness of approximately 120-mil (Sure-Weld AFX 120) or 135-mil (Sure-Weld AFX 135). This membrane is available in a width of 12' and length of 75". A nominal 3" wide selvage edge is provided on one edge along the length of the membrane for heat welding the splice.

### 2.03 RELATED CARLISLE MATERIALS

Carlisle Base Sheets are required for Total System Warranty projects.

#### A. Carlisle Base Sheets

1. **Carlisle FR Base Sheet** - is primarily used as an insulation base sheet, but may be used as a membrane base sheet directly over wood decks for projects with warranty coverage not to exceed 15-years.
2. **Carlisle Modified Base Sheet** – The Carlisle Modified Base Sheet can be used as an option to overlaying new insulation in lieu of Carlisle HP Recovery Board. Refer to Paragraph 3.03 for requirements.

#### B. Carlisle Base Sheet Fasteners and Plates

1. **Carlisle Dual-Prong Fastener** – used to secure base sheets to fibrous cement, lightweight concrete and gypsum.
2. **Carlisle Metal Cap** – For use on projects limited in height 30' or 40' depending on base sheet used, 1" Carlisle Metal Cap in conjunction with a ring shank nail may be use to attach base sheets to wood plank, plywood or OSB decks.
3. **Other Related Carlisle Products** – Sure-Weld Flashing, Adhesive, Cut-Edge Sealant, Water Cut-Off Mastic, PT 304 Sealant, TPO Molded Pocket Sealant, Weather Membrane Cleaner, Pressure-Sensitive Cover Strip, Coated Metal, Heat Weldable Walkway Rolls, Pre-Molded Accessories, and Carlisle HP-250 Primer, Termination Bars, Fasteners/Plates are used with this roofing system. Other Carlisle products, such as insulation and edgings/copings are also required when such components are to be included as part of the System Warranty.

## 2.04 OTHER "NON-CARLISLE" PRODUCTS

- A. **Base Sheet By Others** - Primarily used beneath insulation and may be used beneath the membrane set in Hot Asphalt for projects with standard warranty coverage not to exceed 10-years maximum. **Type IV Glass Felt** – (ASTM D 2178), and **Type VI Glass Felt** – (ASTM D 2178)
- B. **Base Sheet fasteners and plates by others** must be FM approved and the respective manufacturers' published recommendations for proper installation must be followed. These fasteners and plates may be used for projects with standard warranty coverage not to exceed 10-years maximum.
- C. **Hot Asphalt** - Asphalt (ASTM D 312): Type III or IV Hot Asphalt, or Modified SBS or SEBS Asphalt may be used.
- D. **Cut-Back Asphalt Primer** - Cut-Back Asphalt Primer meets ASTM D 41 and is used to prime structural concrete decks, existing smooth BUR, mineral surfaced cap sheet, or modified bitumen membranes prior to mopping.  
  
**CAUTION:** Curing compounds used in conjunction with concrete decks must be confirmed by the concrete curing compound manufacturer as compatible with this attachment method.
- E. **One-Way Pressure Relief Vent** - Vents are required when the membrane is mopped over a secured base sheet directly over lightweight insulating concrete at the rate of 1 every 1,000 to 2,000 square feet depending on the type of lightweight insulating concrete. Refer to Paragraph 3.04D.

## PART III EXECUTION

### 3.01 GENERAL

- A. When feasible, begin application at highest point of highest roof level and work to lowest point to prevent moisture infiltration and minimize construction traffic on completed sections. This will include completion of all flashings and terminations.
- B. A proper substrate shall be provided by the building owner. The structure shall be sufficient to withstand normal construction loads and live loads.

### 3.02 ROOF DECK CRITERIA

- A. Defects in the roof deck must be reported and documented to the specifier, general contractor and building owner for assessment. The Carlisle Authorized Roofing Applicator shall not proceed unless the defects are corrected.
- B. When mechanical attachment of insulation is specified, provide pullout as listed in Carlisle's Sure-Weld Adhered Roofing System Specifications, Part II, Application, Attachment I.

### 3.03 SUBSTRATE REQUIREMENTS

- A. The substrate must be dry, relatively smooth, free of protrusions, debris, sharp edges or foreign materials and must be free of accumulated water, ice and snow. Cracks or voids in substrate greater than 1/4" must be filled with a suitable material.
- B. Membrane can be mopped directly to structural concrete, smooth surfaced asphalt BUR, SBS modified bitumen and mineral surfaced cap sheets after priming with Cut-Back Asphalt Primer.
- C. Projects with wood, gypsum, fibrous cement or lightweight insulating concrete substrates, a base sheet must be properly secured prior to mopping the membrane and/or insulation.

- D. When specified, insulations must be overlaid with Sure-Seal HP Recovery Board and shall be mechanically fastened to the roof deck with 1 insulation fastener and plate per every 2 square feet.
- E. On steel and wood decks (excluding oriented strand board), as an option to Sure-Seal HP Recovery Board, insulation may be overlaid with Carlisle Modified Base Sheet, which must be fastened using either Carlisle HP or HP-X Fasteners and 3" diameter insulation plates in accordance with Carlisle's published fastening pattern.
- F. On retrofit-recover projects, cut and remove wet insulation as identified by the specifier and fill all voids with new insulation, so that it is relatively flush.

## 3.04 INSTALLATION

Prior to beginning installation, refer to the applicable OSHA Safety Requirements, Material Safety Data Sheets and Technical Data Bulletins for cautions and warnings. For asphalt application refer to established guidelines by ARMA.

### A. Insulation Attachment

1. Insulation substrate is to be dry and clear of foreign materials and existing roofing must be adequately secured.
2. Existing gravel surfaced built-up roofs must be scraped to remove all loose gravel. Large blisters that may prevent continuous embedment of insulation must be repaired.
3. Acceptable insulation shall be limited to maximum 4' X 4' board sizes. Trim insulation boards as necessary to prevent bridging and ensure full embedment.
4. The asphalt temperature during application shall be within 25° F from EVT (equiviscous temperature). Manufacturer's heating instructions (i.e., maximum heating temperature, prolonged storage temperature guidelines, etc.) must be strictly followed.
5. To achieve full embedment of insulation, asphalt shall be applied at the rate of 28 - 32 pounds per square.

### B. Application over Structural Concrete Decks

Prior to asphalt application, the substrate shall be broomed or air blown to remove dirt, dust or debris and primed. Refer to Paragraph 3.03B.

### C. Application over Gypsum, Fibrous Cement, or Wood Decks

1. **When insulation is specified beneath membrane** (asphalt attached to the deck), an acceptable base sheet must be fastened with acceptable fasteners and plates prior to insulation mopping.

As an option, an additional layer of felt may be mopped to fastened base sheet at the rate of 23-25 pounds per square.

2. **When additional insulation is not specified**, an **approved base sheet** is required and shall be mechanically fastened to the deck with **approved fasteners** prior to membrane mopping.

### D. Application over Lightweight Insulating Concrete

1. Newly poured lightweight insulating concrete must be allowed to hydrate in accordance with the manufacturer's written recommendation.
2. The approved base sheet must be fastened with fasteners and plates prior to mopping the membrane.

3. One-way pressure relief vents must be installed in conjunction as described in Paragraph 2.07E.

#### E. Application directly over Existing Roofing Membrane

Existing roof materials must be dry and adequately secured to the structure.

#### F. Membrane Installation

The membrane shall be fully mopped to an acceptable roofing membrane, structural deck, base sheet or HP recover Board with Type III, IV or Modified SBS or SEBS Asphalt as outlined in the Sure-Weld Hot Mopped Roofing System Specification.

1. The coverage rate of asphalt shall be 18-22 pounds per square (100 square feet). It is important that "heavy spots" of asphalt, typically occurring at mopping overlaps or where mop is first positioned, be avoided. At these areas, asphalt must be spread evenly to avoid a heavy coverage rate that can cause asphalt saturation of fleece backing. Asphalt saturation of fleece must be avoided.
2. If spreaders are used to apply asphalt, care must be taken to ensure the proper coverage rate, 18-22 pounds per square, is maintained. Do not overlap asphalt layers at multiple pass lines since the heavy coverage rate occurring at these overlapping areas must be avoided.
3. Mopping membrane directly to Polyisocyanurate insulation is not permitted. Carlisle HP Recovery Board must be used as an overlayment when insulation is specified.
4. When positioning membrane along the length for tape or adhesive splices, allow fleece backing to extend approximately 1/2" above adjoining membrane to avoid direct contact between EPDM membrane and hot asphalt.
5. When using a mop to apply asphalt, position membrane over substrate overlapping adjacent sheets to accommodate membrane splicing. Fold in half lengthwise to expose substrate and back side of membrane (full width of membrane by approximately half the length).
6. Beginning at membrane fold, apply asphalt to full width of membrane extending a maximum of 3' to 6' while rolling membrane into asphalt immediately. Asphalt temperature at the time of membrane adhesion must be above 325° F. Continue to apply asphalt for full width of membrane extending 3' to 6' at a time while embedding membrane into asphalt until entire half of sheet is adhered. Fold back the unbonded half of membrane and repeat bonding procedures identified above.

7. After membrane mopping, immediately after adhesion, **brush down the sheet with a soft bristled broom using light to medium pressure. Do not use weighted rollers or heavy pressure when brooming the membrane to avoid asphalt saturation of the fleece.**

#### G. Hot Air Welding Procedures

Hot air weld the Sure-Weld membrane sheets using the Automatic Hot Air Welding Machine or Hot Air Hand Welder and silicone roller.

1. The Sure-Weld AFX Membrane has a selvage edge (fleece backing is discontinued) on one side along the length of the sheet for membrane welding.
2. **Check the surfaces** of the Sure-Weld membrane to be hot air welded to ensure they are properly prepared.
3. Refer to Carlisle's Sure-Weld Hot Mopped Roofing System for procedures on Operating Automatic Hot Air Welding Machine, Temperature Settings, Equipment Set-Up, Membrane Welding, Test Cuts, Hand Held Welder Settings, Seam Probing, and Welding Problems / Repairs.

#### H. Flashing

1. On Total System Warranty projects, Carlisle's Termination Bar in conjunction with Water Cut-Off Mastic, must be installed under all metal counterflashings used for vertical wall terminations.
2. Typically, a separate piece of Sure-Weld Membrane, in conjunction with Sure-Weld Bonding Adhesive, is used for flashing.
3. Copings, counterflashing and other metal work, not supplied by Carlisle, shall be securely fastened and sealed to prevent moisture from entering the roofing system or building.

**Attach copies of the applicable Carlisle Details that pertain to the individual project to complete a bid package submittal.**

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