

Flintlastic[®] Modified Bitumen

APPLICATION HANDBOOK



A pocket guide reference for the roofing professional

CertainTeed 
COMMERCIAL ROOFING SYSTEMS

CertainTeed *Flintlastic*® Modified Bitumen roofing products represent the finest in quality roofing materials. Beyond quality materials, proper application is the key to the successful performance of any roofing system.

This pocket guide is intended as a handy reference tool only. It is not all-inclusive, and before installation of any ***Flintlastic* Modified Bitumen** Roof System the CertainTeed Commercial Roof Systems Specification Manual must also be referenced.

CertainTeed *Flintlastic* Modified Bitumen roofing products are intended for use by professional roofing contractors only. It is the sole responsibility of the applicator to exercise all appropriate safety precautions in the application and handling of roofing products utilizing torches, hot asphalt, cold adhesive and related equipment. For more information concerning safety contact the following agencies:

NRCA (National Roofing Contractors Association)

10255 W. Higgins Rd., Ste. 600, Rosemont, IL 60018-5607 Ph. 847-299-9070

MRCA (Midwest Roofing Contractors Association)

4840 W. 15th St., Ste. 1000, Lawrence, KS 66049-3876 Ph. 785-843-4888

NERCA (Northeast Roofing Contractors Association)

1400 Hancock St., 7th Flr., Quincy, MA 02169 Ph. 617-479-1478

WSRCA (Western States Roofing Contractors Association)

1400 Marsten Rd., Ste. N, Burlingame, CA 94010 Ph. 916-989-6096

ARMA (Asphalt Roofing Manufacturers Association)

1156 15th St. NW, Ste. 900, Washington, DC 20005 Ph. 202-572-0354

NFPA (National Fire Protection Association)

Batterymarch, Quincy, MA 02269 Ph. 617-770-4543

For a copy of the CertainTeed Commercial Roof Systems Specification Manual, contact the nearest CertainTeed regional office listed below:

West Region

6400 Stevenson Blvd.
Fremont, CA 94538
(800) 955-0811
(800) 790-3347 fax

South Region

5525 MacArthur Blvd.
Suite 900
Irving, TX 75038
(800) 333-ROOF (7663)
(972) 580-5645 fax

North Region

Riverbridge Industrial Center
800 West Front Street
Chester, PA 19013
(866) 297-ROOF (7663)
(610) 874-6170 fax

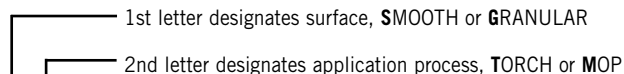
Contents

Product Quick Reference Chart	.2
Material Handling and Storage	.3
Weather Precautions	.4
Roof Slope and Drainage	.4
Substrate Preparation	.4
Primer	.4
Base Sheet Application	.5
Vapor Retarders	.6
Insulation	.6
Re-Cover Considerations	.7
Roof Relief Vents	.7
Proper Tools	.8
Proper Attire	.9
Roof Layout	.9
Flintlastic APP Basic Application	.11
Flintlastic APP Flashing Details	.13
Flintlastic SBS Basic Application	.23
Hot Asphalt	.24
Cold Adhesive	.25
Flintlastic SBS Flashing Details	.27
Job Completion	.34
Safety Tips	.34
Reference Tables	.41
Recommended Minimum Gauges for Fascia and Cleat	.41
General Guide to Mechanical Fasteners	.42

What's in a name?

Each roll of **CertainTeed Flintlastic Modified Bitumen** has a 3-letter identification code in its name.

Example:



Flintlastic GTS — 3rd letter designates modifier, **SBS** or **APP**

CertainTeed Flintlastic Modified Bitumen Product Quick Reference Chart

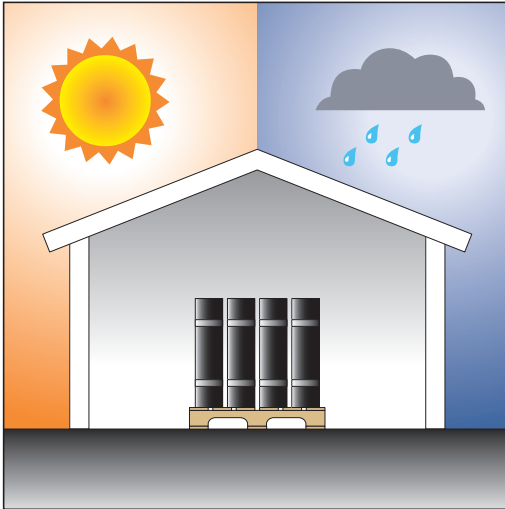
Product	Type	Specs	Uses
GlasBase™	Fiberglass; G2	3 sq. roll; 75 lbs./roll	Base Sheet
FlexiGlas™ Base Sheet	Fiberglass; G2	2 or 3 sq. roll; 60 or 90 lbs./roll	Base Sheet or Mid Ply
All Weather/ Empire™ Base	Organic; Type 15	2 sq. roll; 86 lbs./roll	Base Sheet
Yosemite® Buffer Base	Organic; Type 30	1 sq. roll; 90 lbs./roll	Buffer Base Sheet
Black Diamond™ Base	SBS Modified, fiberglass reinforced; Type G2	2 sq. roll; 75 lbs./roll	Self-adhering base or mid ply with fine min- eral particle surfacing
Channel Vent	Fiberglass base sheet with channels for lateral venting	1 sq. roll; 78 lbs./roll	Base sheet with ventilating capability
Poly SMS	SBS base sheet, polyester reinforced	2 sq. roll; 90 lbs./roll	Base or Mid Ply
Ultra Poly SMS	Premium, heavy SBS base sheet, polyester reinforced	1 sq. roll; 90 lbs./roll	Base or Mid Ply
Flexiglas™ Premium Cap 960	SBS Modified, fiberglass reinforced	1 sq. roll; 100 lbs./roll	Mineral Surfaced Cap Sheet
Flintlastic® GTA	APP Modified, polyester reinforced	1 sq. roll; 105 lbs./roll	Mineral Surfaced Cap Sheet
Flintlastic® STA	APP Modified, polyester reinforced	1 sq. roll; 90 lbs./roll	Smooth Surfaced Cap or Mid Ply
Flintlastic® GTS	SBS Modified, polyester reinforced	3/4 sq. roll; 90 lbs./roll	Mineral Surfaced Cap
Flintlastic® GMS	SBS Modified, polyester reinforced	1 sq. roll; 100 lbs./roll	Mineral Surfaced Cap

Flintlastic® and Flexiglas™ products are also available in **FR** (fire resistant) grade.

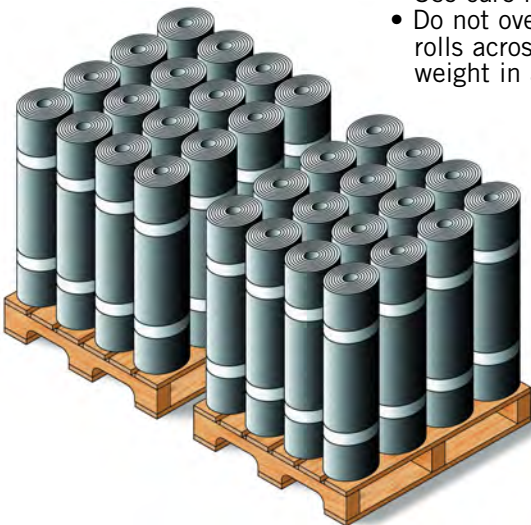
STA and GMS also available in **Premium** and **Plus**.

Material Handling and Storage

- Store rolls upright on pallet in dry area.
- Store indoors in a ventilated area.
- Keep rolls protected from exposure to heat, sun, cold and moisture



- Do not double stack pallets.
- Do not store rolls on their sides.
- Use care in the handling of the rolls.
- Do not overload the roof...stagger rolls across the roof—avoid excessive weight in a concentrated area.



Weather Precautions

Do not attempt application if weather conditions and substrate are not dry.

Do not attempt application if ice, frost, moisture or snow is present. Rolls can be installed in cold weather if conditions are dry, the rolls have not been allowed to freeze and proper cold weather handling and storage procedures are followed. Store rolls in a heated area until just prior to use and do not proceed with installation if rolls have been allowed to freeze or weather conditions are unsuitable.

In extremely warm weather, use caution when walking on freshly installed material to avoid "tracking" warm asphalt; when torch applying smooth APP membrane in very warm weather the installer can walk beside the sheet being applied (as is the standard torch method with mineral surfaced APP and SBS membrane) to avoid tracking.

Roof Slope and Drainage

All roof decks to which the **Flintlastic Modified Bitumen** roof system is to be installed must have a minimum slope of 1/4" per foot (as recommended by the NRCA) and must have positive drainage. See also "Roof Layout" on page 9 of this handbook. Greater slope may be necessary as part of the structural design, depending upon the particular building, to accommodate rapid and thorough run-off of precipitation.

Substrate Preparation

All surfaces to which the **Flintlastic Modified Bitumen** is to be installed must be smooth, dry, free from dust or debris, free from settling or distortion, and free from cracks, knotholes, or other defects.

Primer

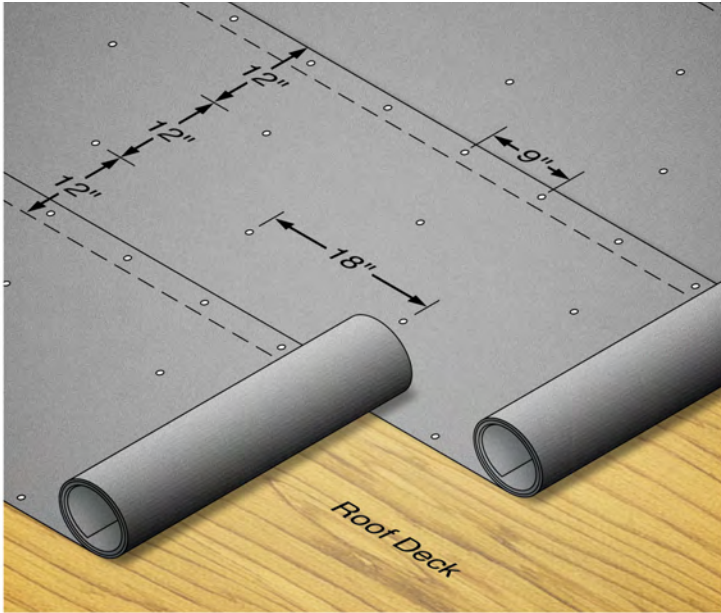
Concrete decks must be properly primed with suitable asphalt primer (meeting ASTM D-41) and the primer must be thoroughly dry.

Metal flashings must also be primed with a suitable asphalt primer for metal, and primer must be thoroughly dry and any solvents evaporated prior to application of membrane flashing. Using sandpaper to roughen the surface of metal to which torch applied membrane such as Flintlastic STA will be bonded is also recommended.

Base Sheet Application

In new construction or re-roofing applications, an appropriate CertainTeed base sheet must be installed over the substrate. Unless otherwise specified, base sheet must be overlapped min. 4" at endlaps and 2" at sidelaps.

For nailable substrates, base sheet must be mechanically fastened in accordance with NRCA standards (fasteners placed every 9" o.c. at sidelaps and every 18" o.c. in two staggered rows in the field of the sheet; the two staggered rows are placed 12" from each sidelap).



Standard fastening pattern for GlasBase.

For non-nailable surfaces, spot mopping with hot asphalt at the minimum rate of one 9"-12" circle every 18"-24" o.c. in all directions, using appropriate type asphalt at the minimum rate of 15 lbs. per square, is the standard spot mopping method. Refer to the CertainTeed Commercial Roof Systems Specification Manual for specific information regarding Factory Mutual requirements, which may differ per individual specification. Refer also to the "Hot Asphalt Application" section on page 24 of this booklet.

Vapor Retarders

Vapor retarders are used to help prevent movement of water vapor into the roof system, where it could condense and cause damage. Determination of the requirement for, and suitability of, a vapor retarder is the sole responsibility of the designer, specifier or architect.

Insulation

All insulations require the use of appropriate base sheet between the insulation and the new roof system. Insulations must be installed in accordance with manufacturer instructions, local code and Factory Mutual requirements.

In general, the following rigid board insulation types are acceptable for use under **Flintlastic Modified Bitumen** Roof Systems (consult CertainTeed for specific Factory Mutual requirements):

Fiberglass or Mineral Wool

Conforming to Fed. Spec. HH-1-526 and ASTM C726 (CGSB 51.31M)

Wood Fiberboard

Conforming to Fed. Spec. LLL1-535b and ASTM C-208 (CGSB 51.26M)

Perlite

Conforming to Fed. Spec. HH-1-529 and ASTM C-728

Extruded Polystyrene*

Conforming to ASTM C578-85-Type IV (CGSB SB-51.20M Type 2-Type 4)

Expanded Polystyrene*

Conforming to Fed. Spec. HH-1-524 and ASTM C578, Min. 1.1 Density (CGSB 51.26M)

Polyisocyanurate*

Conforming to Fed Spec. HH-1-1972 and ASTM C-1289 Type II.

*Expanded polystyrene, extruded polystyrene, and polyisocyanurate insulations require a separate layer of perlite, fiberglass or wood fiberboard prior to installation of base sheet. Additionally, taping of insulation joints may be required. Refer to NRCA and insulation manufacturer requirements.

*Do not expose flammable or heat sensitive insulations to heat, solvents or flame.

In accordance with NRCA recommendations, two separate layers of insulation, the first layer mechanically fastened in accordance with NRCA, Factory Mutual and manufacturer specifications, are recommended. Per NRCA guidelines, the joints of the insulation boards in the top layer should be vertically staggered and offset from the joints in the underlying layer; the end joints of adjacent insulation boards should be staggered, and the edges of abutting insulation boards should be in moderate contact.

CertainTeed reserves the right to accept or reject another manufacturer's insulation as an acceptable substrate for attachment of a CertainTeed Commercial Roof System. CertainTeed Corp. does not warrant performance of another manufacturer's insulation unless such approval is granted in writing by CertainTeed in advance of installation.

Re-cover Considerations

In re-cover applications, the existing roof system must be the only roof system in place. Two or more existing roofs require a tear-off. It is the contractor's responsibility to determine the suitability of any substrate, including verifying the load limitations, local code requirements, and condition of existing roof system and insulation. If any moisture is present, the existing roofing and insulation (if insulation is present) must be removed and the substrate examined. Any needed repairs to the deck must be completed, and the insulation and existing membrane replaced with new, dry materials, prior to application of the new roof system.

If re-roofing over the existing roof system is deemed feasible, installation of appropriate insulation or re-cover board may be required. Base sheet is a requirement in all re-cover applications. Refer to the CertainTeed Commercial Roof Systems Specification Manual for complete details.

Roof Relief Vents

If roof relief vents are deemed appropriate they should be of a suitable type with minimum 4" flange and weather resistant hood, spaced 20' from roof edge perimeter and every 40' o.c. thereafter.

Proper Tools

To the professional roofer, the importance of proper tools is understood. However, here's a brief recap of the ideal tools for applying **Flintlastic Modified Bitumen**:



Some of the proper tools needed for Flintlastic APP Modified Bitumen application.

- For torch applications, a U.L. listed torch designed specifically for the application of modified bitumen membrane with U.L. listed high-pressure hose, and U.L. listed regulator. Use an appropriate length field torch for applying the field roof membrane, and a “detail” torch for accomplishing flashing details.
- Propane tank with pressure gauge.
- At least one ABC type fire extinguisher, fully charged (min. 20 lbs.) per each operating torch and the appropriate number of fire extinguishers at the kettle area if hot asphalt is used.
- For hot asphalt applications, appropriate asphalt heating, handling and application equipment. Mop size should be not less than 32 ounces.

- A roofer's hooked blade knife (the hooked blade is ideal for cutting the membrane).
- A roofer's trowel with beveled edges and rounded tip (allows smoothing of details without cutting or marking the membrane); trowels that allow adequate room between the roofer's gloved fingers and the warm membrane are the best.

Proper Attire

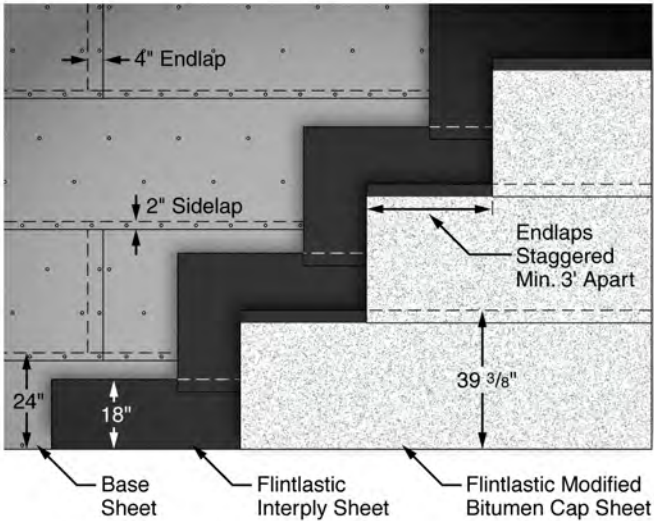
- Long pants and long sleeved shirts.
- Leather work shoes with synthetic or smooth leather soles.
- Leather work gloves that adequately shield the wrist area. Refer also to the "Safety" section of this booklet on page 34 for information regarding proper work attire.

Roof Layout

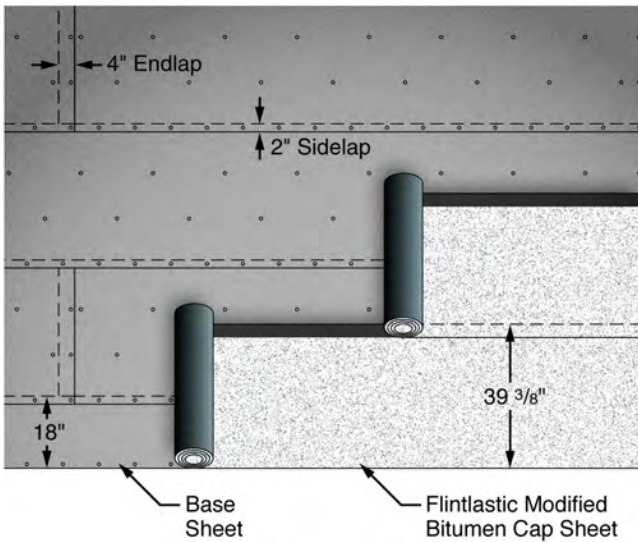
As with most types of roof installations, **Flintlastic Modified Bitumen** roof installation begins at the low point of the roof with successive rolls installed so that no laps are against the flow of water. When membrane is applied with hot asphalt, where roof slope is 1" per foot or less, sidelaps are installed perpendicular to the direction of the roof slope. In situations where the roof slope exceeds 1" per foot, rolls are installed with the sidelaps running parallel to the slope direction. Torch applied membrane can be installed with sidelaps perpendicular to the slope where roof slope is 2" per foot or less (over 2" install sidelaps parallel to roof slope direction).

Additionally, where roof slope exceeds 1" per foot for hot asphalt applied **Flintlastic Modified Bitumen** membrane or 2" per foot for torch applied **Flintlastic Modified Bitumen**, "back-nailing" of membrane is required. Refer to the General Requirements section of the CertainTeed Commercial Roof Systems Specification Manual for back-nailing guidelines.

Endlaps are to be staggered. If cap sheet endlaps are aligned, they must be capped with a full roll width of **Flintlastic Modified Bitumen**. In multiply applications, membrane sidelaps must also be staggered. *See illustrations on the following page.*



In multi-ply systems, stagger field sidelaps from interply and base sheet sidelaps.



Stagger field sidelaps from base sheet sidelaps.

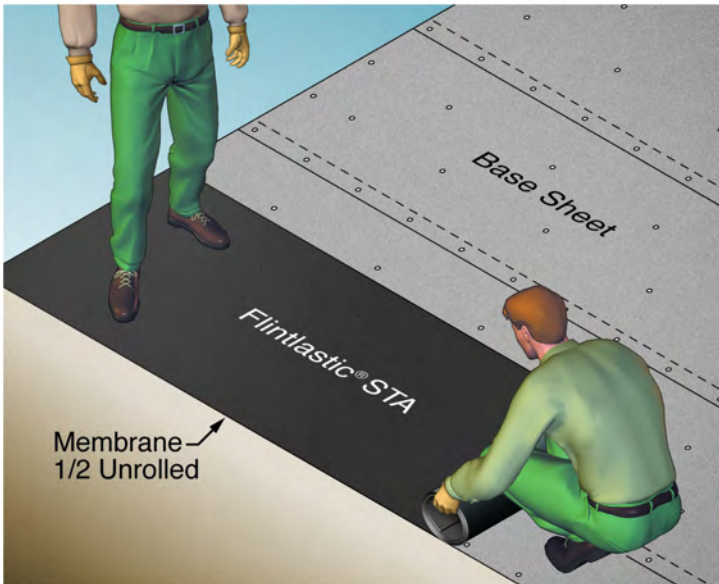
Warning: *Flintlastic Modified Bitumen* application requires the use of hot asphalt and/or an open flame roofing torch. Improper application practices may cause physical injury to the applicator or damage to the property. Refer to the current CertainTeed Commercial Roof Systems Specification Manual for further information.

Basic Application: *Flintlastic APP Modified Bitumen*

Prepare the substrate as described on pages 4-5.

Flintlastic APP Modified Bitumen must be applied using a professional roofer's torch. Use of hand-held roofing torches is recommended and affords the most control. If multiple burner torching machines are utilized care must be taken to assure uniform heat application and to avoid over-heating of the membrane.

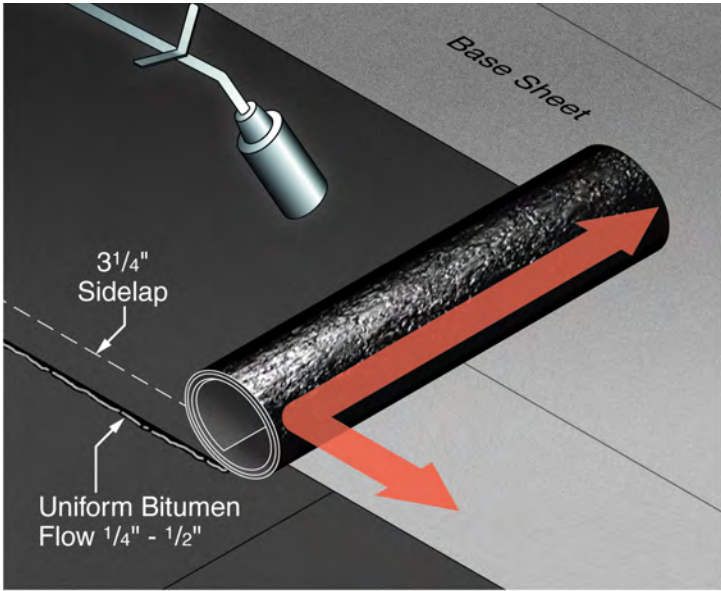
Begin membrane application by unrolling the roll and aligning the sidelaps. Reroll the roll halfway. Standing on the unrolled portion to prevent shifting, begin torching the exposed polyethylene side of the rolled portion. Walk forward as you torch, pushing the heated coil forward and into place with your boot.



Position and align the roll.

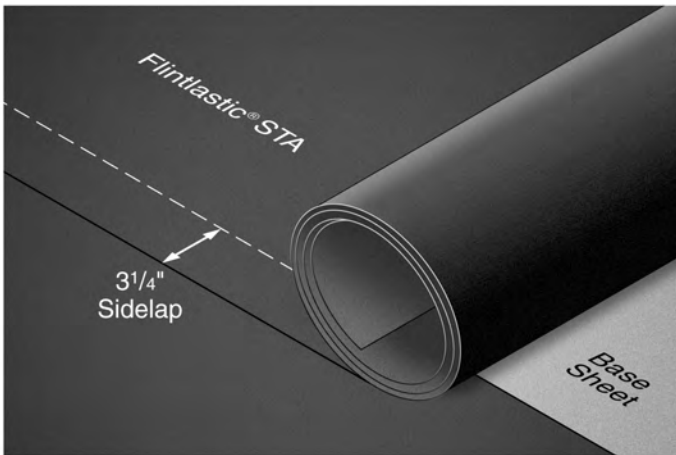
Proper torching procedure involves passing the torch flame in an "L" pattern across the coiled portion of the roll and up the sidelap area. As subsequent rolls are installed, heat is applied both to the roll and the exposed laps of the membrane being overlapped onto. As it is heated, the roll becomes shiny and the polyethylene film melts away. Adequate heat is confirmed when a uniform flow of melted bitumen compound flows evenly in a 1/4"-1/2" uniform bead that oozes from the applied membrane's edges. Be sure to heat the entire roll evenly, not just the lap areas, with extra concentration at the laps. Once at the end of the roll,

reroll the untorched half, pulling back to beyond the starting point as much as possible, and repeat the torching procedure.



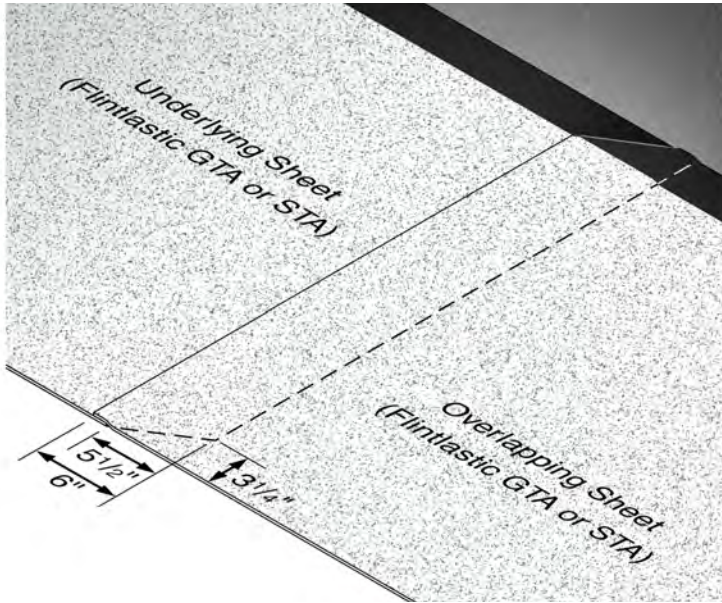
Proper torching, in an "L" pattern, assures uniform 1/4"-1/2" compound flow at laps and adequate heat across the coil.

Trim the lower outside corner of the roll at an angle as shown. See illustration on next page. Overlap subsequent rolls 3-1/4" at sidelaps (or as specified, min. 3-1/4") and 6" at endlaps. Sidelap lines are generally indicated for the applicators' convenience.



Overlap Flintlastic STA sidelaps a minimum of 3-1/4".

Trim the upper outside corner of the subsequent rolls as shown. All trimmed corners will be covered with the subsequent rolls.



Endlap cuts are made at an angle as shown.

It is critical (especially at the lap areas) to apply adequate heat to both the membrane being installed and the area of membrane being overlapped onto. A warm trowel should be used to check laps for an adequate seal. Any unbonded areas must be lifted and retorched. Do not attempt to reseal by torching the top surface of the membrane.

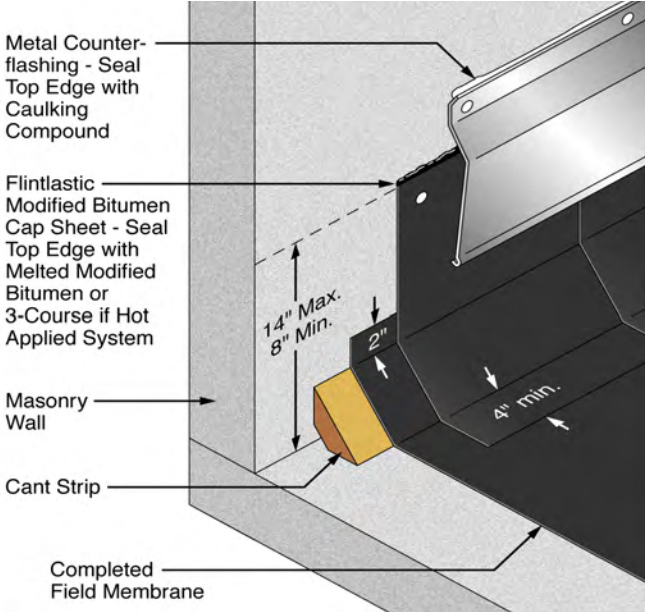
Flashing Details: *Flintlastic* APP Modified Bitumen

Flashing details are accomplished using cut pieces of **Flintlastic APP Modified Bitumen** in combination with appropriate prefabricated flashing components. The same sidelap and endlap rules apply to flashing details as to field membrane. Examples of typical flashing details are as follows:

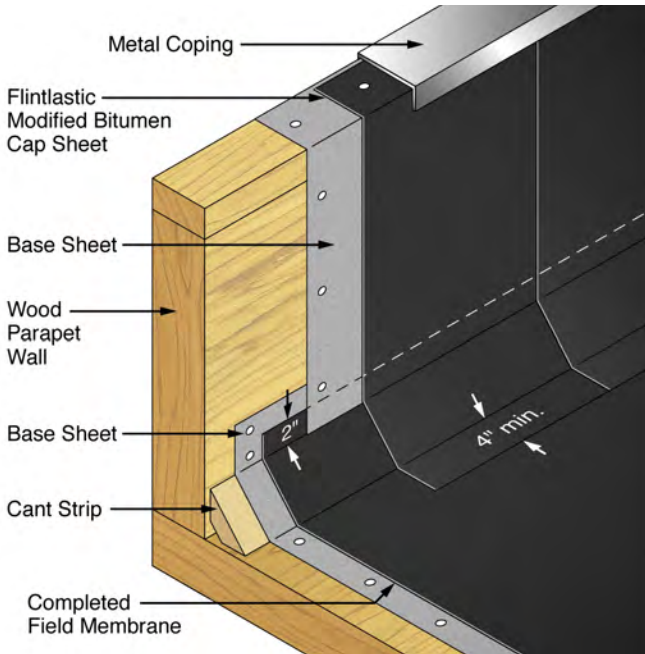
Parapet Wall

Noncombustible cant strip must be installed at the base of the parapet wall. Field membrane plies must extend a minimum of 2" beyond the top of the cant strip. For nailable walls, appropriate base sheet must also cover parapet wall and extend to the top of cant strip. Base sheet extends over the top of parapet and is mechanically fastened. Parapet wall flashing membrane (**Flintlastic APP Modified Bitumen**) not exceeding roll width must

extend to the edge of the parapet wall if coping is used, or a minimum of 8" above the top of the cant strip if termination bar and counterflashing are installed, and a minimum of 4" onto the completed field membrane.



Concrete wall with metal counterflashing.

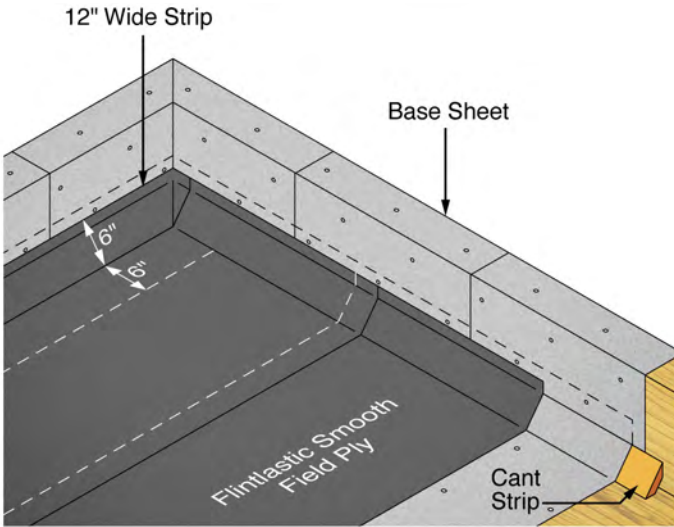


Wood parapet wall with metal coping.

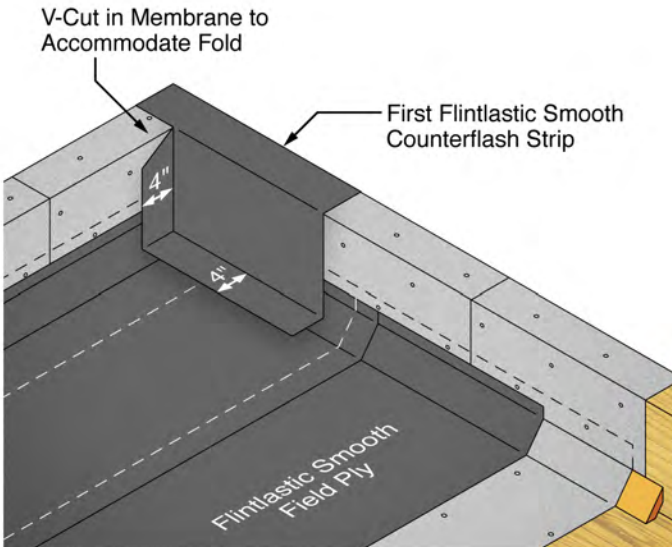
Parapet Inside Corners

Base of corner: Make a “V”-shaped cut in the **Flintlastic APP Modified Bitumen** membrane to permit it to conform to the inside corner fold (both sides of the “V” will neatly overlap when folded into the corner).

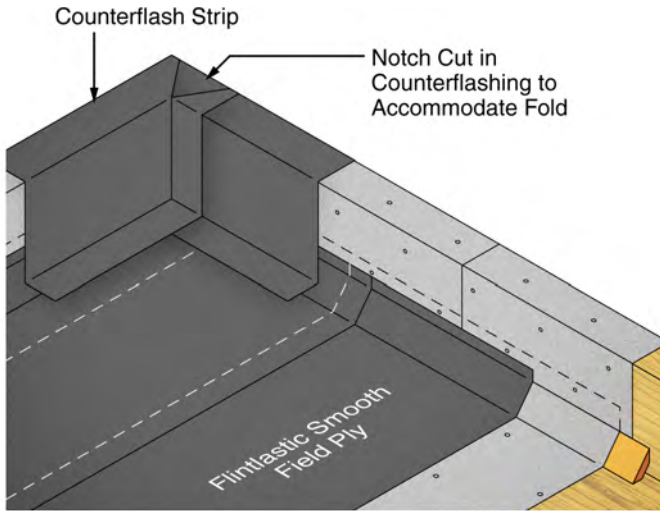
Use a trowel to press the heated membrane flaps into place. Top of corner: Cut a notch part way to permit the top of the membrane to conform to the inside corner and fold over the top of the parapet. Cap the resulting gap with a strip of **Flintlastic APP Modified Bitumen**.



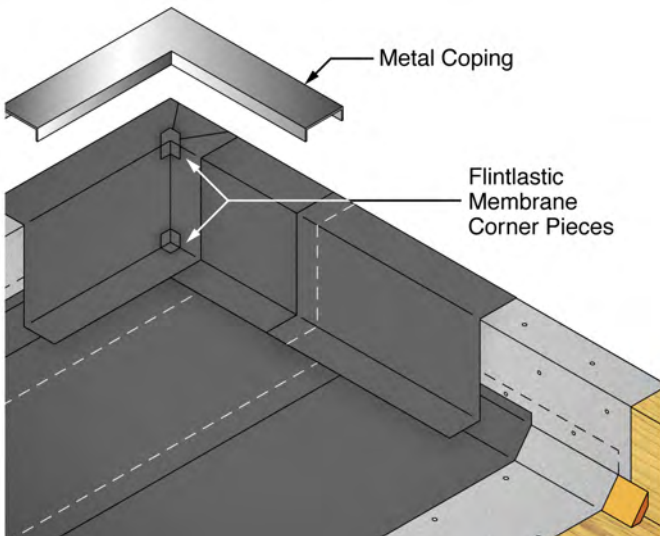
Inside corner (parapet) detail, torch applications - part a.



Inside corner (parapet) detail, torch applications - part b.



Inside corner (parapet) detail, torch applications - part c.

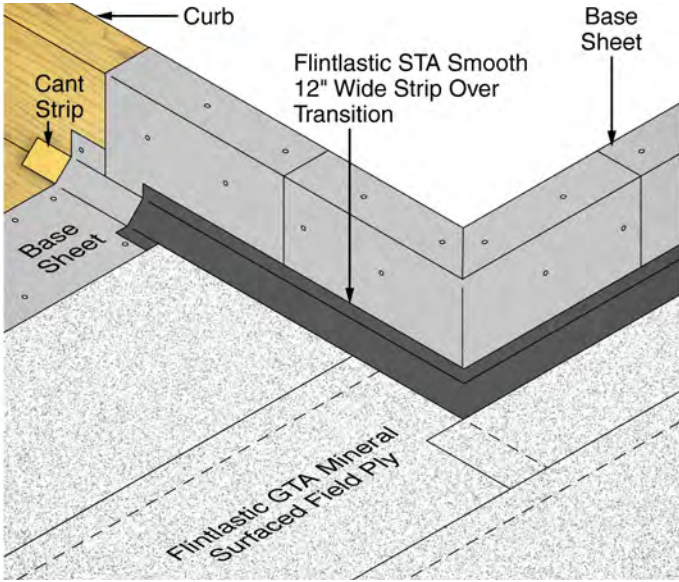


Inside corner (parapet) detail, torch applications - part d.

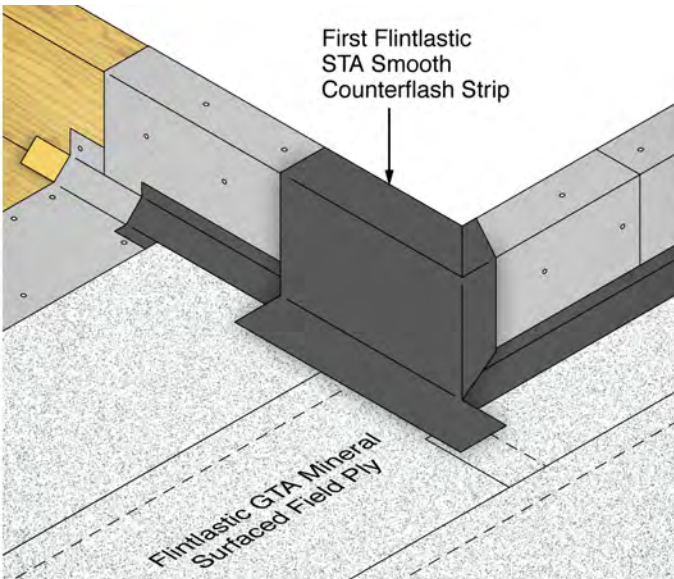
Outside Corners and Curbs

At outside corners such as curbs, the reverse situation occurs from that of inside corners. The “V”-shaped cut goes at the top of the membrane strip and the notch or straight slice at the bottom, since the membrane is folding the opposite way. In this case, cap the opening at the bottom of the strip which extends onto the field of the roof a minimum of 4".

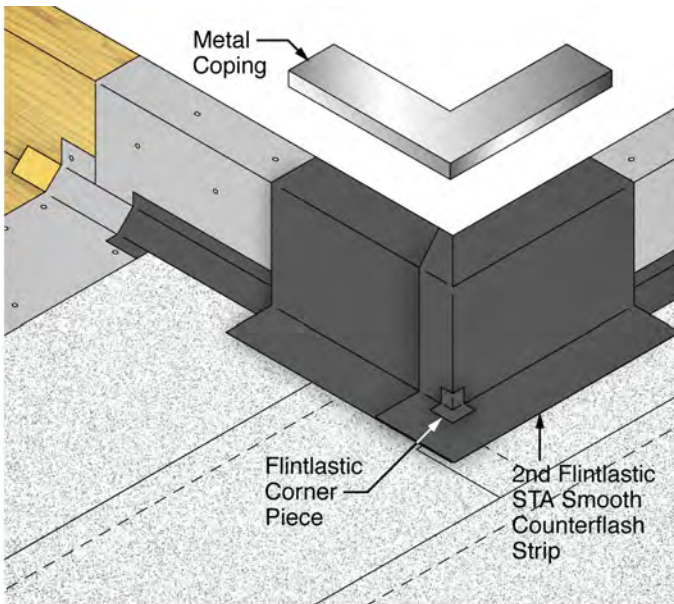
Note: Flashing membrane should be Flintlastic STA Smooth. For aesthetic value, appropriate roof coating or Flintlastic GTA Mineral may be applied over exposed Flintlastic STA Smooth when Flintlastic GTA mineral surfaced cap sheet is the field membrane used.



Outside corner (or curb) detail, mineral surfaced torch applications - part a.



Outside corner (or curb) detail, mineral surfaced torch applications - part b.



Outside corner (or curb) detail, mineral surfaced torch applications - part c.

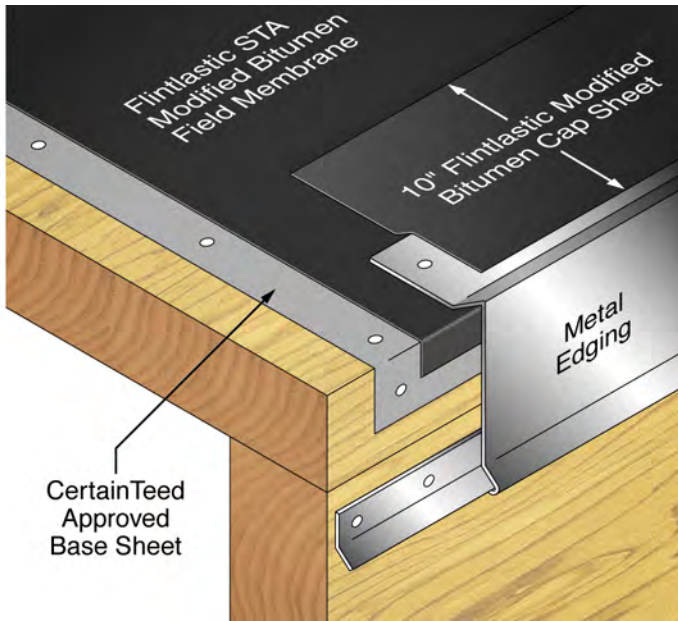
Metal Edge Detail—Mineral Surfaced Applications

Base sheet must extend over fascia a min. of 2", mechanically fastened. A min. 12" wide strip of flashing membrane (**Flintlastic APP Modified Bitumen**) should then be applied to the base sheet, turned over the roof edge and extending 10" onto the field of the roof. Appropriate edge metal (minimum 26 gauge, primed) must be properly installed and secured. Finally the mineral surfaced **Flintlastic APP Modified Bitumen** cap sheet is installed securely over the 4" edge metal face (continuous from the field of the roof).

Metal Edge Detail—Smooth Surfaced Applications

Base sheet must extend over fascia a min. of 2", mechanically fastened. Next, the smooth surfaced **Flintlastic APP Modified Bitumen** field membrane is installed, turned down over the fascia. Appropriate edge metal (minimum 26 gauge, primed) must be properly installed and secured. A minimum 10" wide strip of **Flintlastic APP Modified Bitumen** smooth surfaced

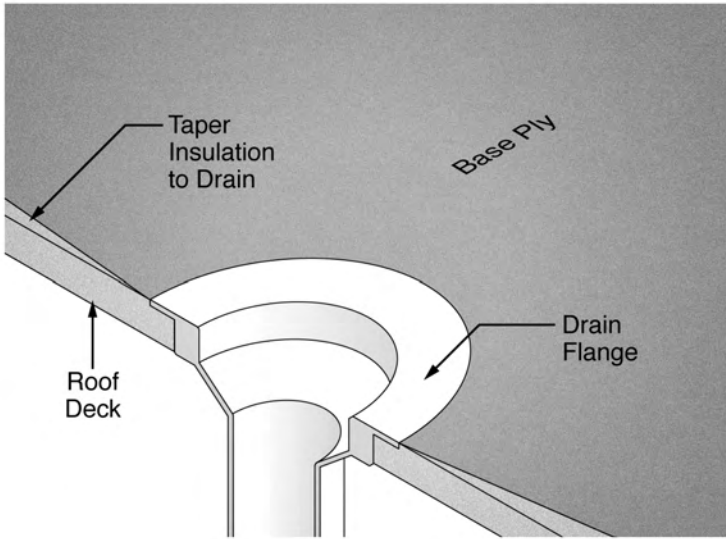
membrane should then be applied over the metal (flush to the roof edge and extending a minimum of 6" onto the field of the roof past the portion of the metal which rests on the field membrane).



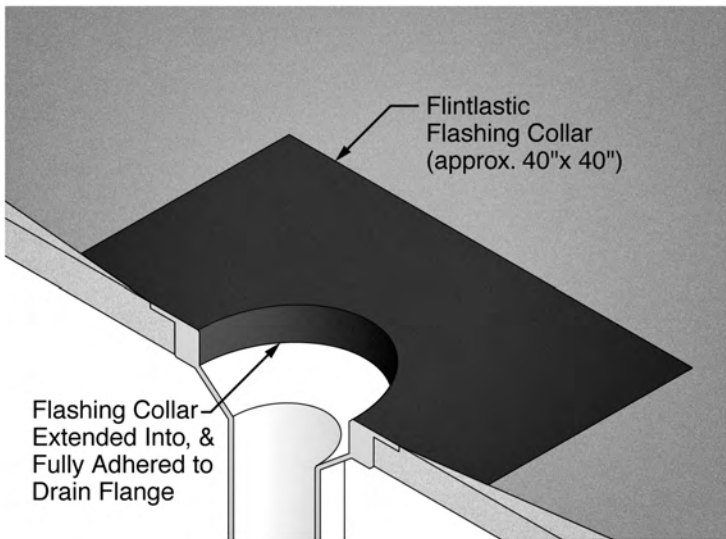
Metal edge detail, Flintastic STA Smooth Surfaced APP Modified Bitumen Membrane.

Drains—APP

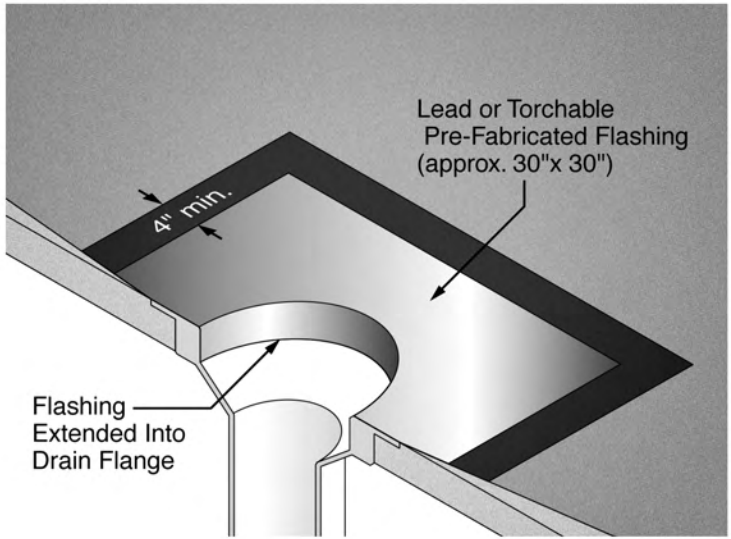
A strip of **Flintastic APP Modified Bitumen** large enough to extend a minimum of 4" beyond the lead flashing edge in all directions (min. 40" x 40") is applied to the base sheet at the drain area. A minimum 30" x 30" lead flashing is installed next. Over the primed flashing the field roof membrane is applied in normal fashion. The drain opening should be cut out while the membrane is still warm and the edges sealed. Set the drain cap in place and secure the clamping ring. If two field plies of **Flintastic APP Modified Bitumen** membrane are used, the first field ply takes the place of the 40" x 40" flashing ply. See illustrations on following pages.



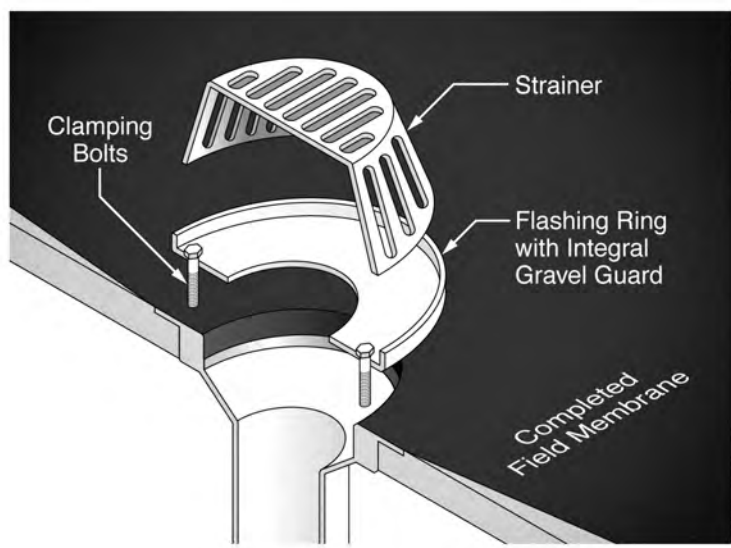
Drain detail, torch applications - part a.



Drain detail, torch applications - part b.



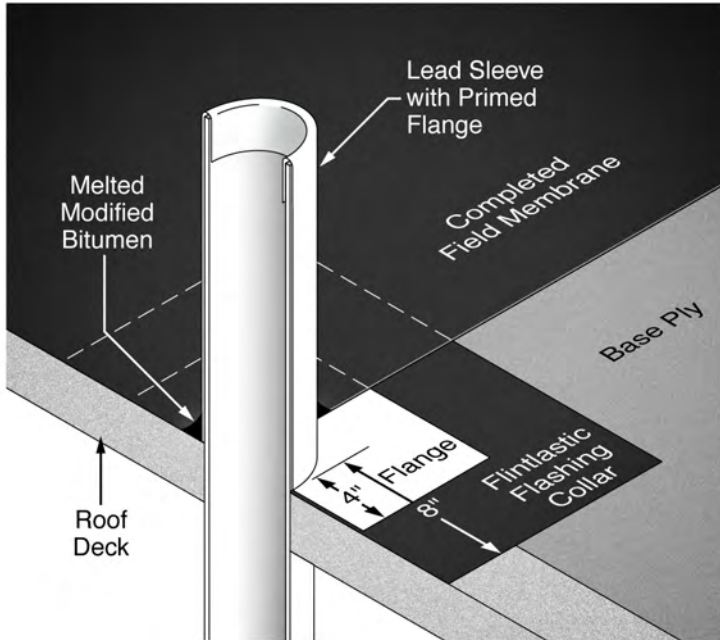
Drain detail, torch applications - part c.



Drain detail, torch applications - part d.

Vent Pipes

Position the smooth Flintlastic flashing on a piece of membrane and mark the dimensions of the vents. Cut a hole corresponding to the pipe size so that a snug fit is achieved. The membrane strip must be large enough to extend a minimum of 4" beyond the outside edge of the vent pipe flange in all directions. Heat the underside of the membrane strip and press into place. Install the vent pipe collar. Over this the Flintlastic field membrane is applied. Seal the base of the pipe collar with melted modified bitumen.

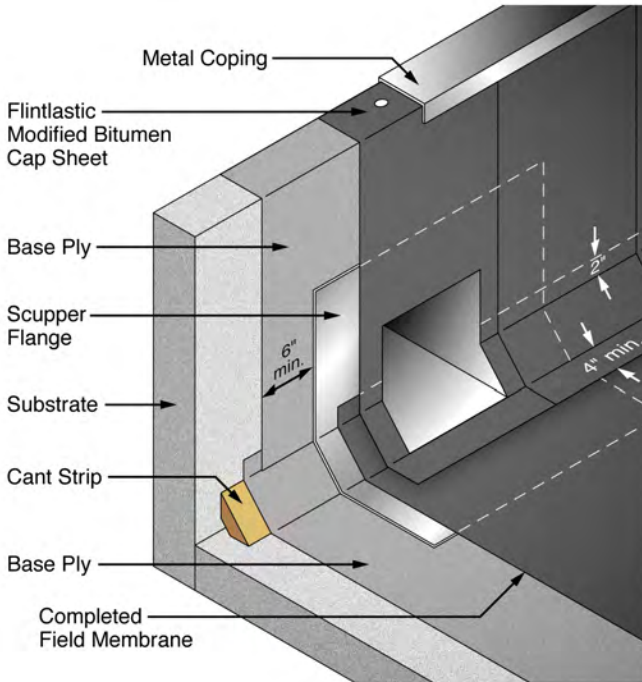


Vent pipe detail, torch applied membrane.

Scuppers

The scupper flange is positioned between the base ply and the Flintlastic field membrane, securely fastened. The field base ply extends a min. of 2" above the cant strip. The parapet wall base ply extends from the top outside edge of the parapet over the field base ply to the top of the cant strip, securely fastened. Install scupper, securely fastened 3 " o.c., in a bead of sealant. The field ply or plies (on top of the scupper flange) also extend a min. of 2" above the cant strip. Cut out scupper

opening as necessary. Field membrane is fully adhered and edges sealed. Over this, install a cap of fully adhered **Flintlastic APP Modified Bitumen** membrane that covers the top of the parapet and extends down the parapet wall and a minimum of 4" onto the field of the roof. Secure membrane 9" o.c. through tin discs along top of parapet. Again, cut out scupper opening and seal membrane edges. Install parapet wall metal coping.



Scupper detail, torch applications.

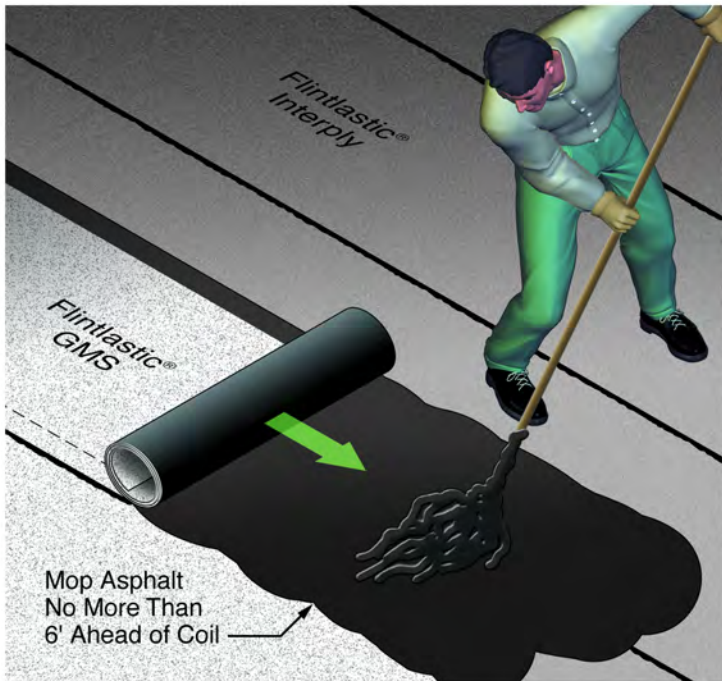
Basic Application: *Flintlastic*® SBS Modified Bitumen

Prepare the substrate as described on pages 4-5.

Flintlastic SBS Modified Bitumen can be applied in either hot asphalt, cold SBS modified bitumen adhesive or using a professional roofer's torch (*Flintlastic GTS* only). Do not use hot asphalt or cold adhesive for applying polyethylene backed **Flintlastic SBS Modified Bitumen** (use torch application method).

Hot Asphalt Application

Roofing asphalt shall conform to ASTM D-312 Type III (slopes up to 1/2"/ft.) or Type IV (slopes 1/2"-3"/ft.) Asphalt must not be heated to or above the actual flash point. Asphalt should not be heated and held above the finished blowing temperature for more than 4 hours. All moppings shall be uniform and free from voids. Bitumen temperature shall be at the Equiviscous Temperature (EVT) $\pm 25^{\circ}\text{F}$, at the point of application (minimum 425°F). EVT is defined as the temperature at which asphalt attains the proper viscosity for application (this information is typically found on the product labeling). Adequate heat at the point of application is critical to proper adhesion of the membrane plies. Apply asphalt uniformly and evenly without voids; a small bead of asphalt should be visible at all lap areas.



**"Hot mop" application of Flintastic GMS
Modified Bitumen Cap Sheet.**

Solid moppings require a minimum of 25 lbs./100 ft² hot asphalt application.

Spot mopping of base sheet, when appropriate, is generally accomplished using a minimum of 9"-12" diameter circles spaced every 18"-24" o.c. in three staggered rows. (Certain Factory Mutual listed specifications may have different requirements; refer to the CertainTeed Commercial Roof Systems Specification Manual for complete details).

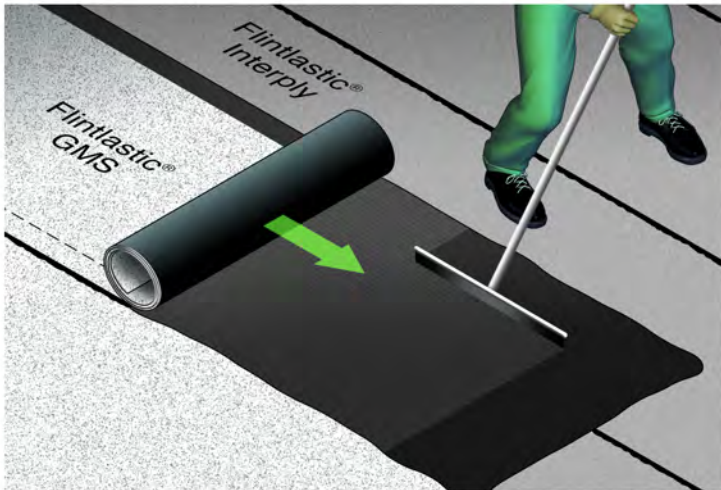
Excessive, prolonged heating of asphalt can have a detrimental effect on the integrity of the product. Additionally, excessive heating of asphalt poses a serious flash or fire hazard. Refer also to the "Safety" section beginning on page 34 of this handbook for more information.

The following chart shows guidelines for heating of asphalt by type (Type III and IV):

NRCA published guidelines regarding heating and slope restrictions for mopping grade roof asphalt			
ASTM D312 Type	Mopping Temp.	Heating Temp.	Max. Slope
Type III	400°- 450°F	500°F	1/4"- 3"
Type IV	400°- 475°F	500°F	3"-6"

Cold Adhesive Application

SBS modified bitumen adhesive used to apply **Flintlastic SBS Modified Bitumen** membrane must be of a type recognized by CertainTeed Corp. as suitable (min. ASTM D-3019, Type III). Adhesive must be stored, handled and applied in a manner consistent with the adhesive manufacturer's recommendations. Strict attention must be paid to every aspect of the adhesive manufacturer's requirements including, but not limited to, weather and climate limitations, application method and technique, curing time, application rates (gallons/100 ft²), handling and storage. Proper squeegee or spray equipment must be used. Do not use modified bitumen adhesives in areas without proper ventilation. See *illustration on following page*.



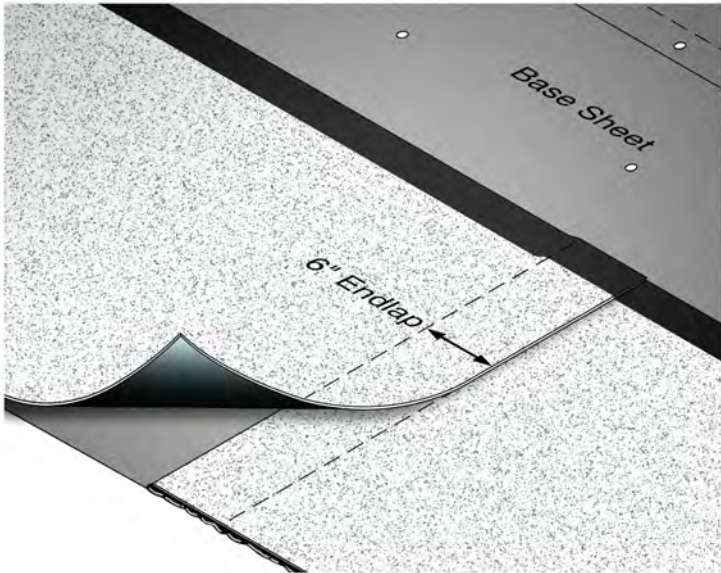
Flintlastic GMS can be applied using approved SBS modified bitumen adhesives; shown is the squeegee method.

Membrane application requirements such as endlap and sidelap widths, number and order of plies and flashing details are the same for both hot and cold applications.

Interply or Mid-ply Application: If the *Flintlastic SBS Modified Bitumen* specification calls for interply layers, begin membrane application by unrolling the roll and aligning the sidelaps. Reroll the roll halfway. Standing on the unrolled portion to prevent shifting, begin hot asphalt application* to the substrate at the rate of 25 lbs./100 ft². Do not apply asphalt more than 6' in front of the roll at any time to prevent premature cooling. Overlap subsequent rolls with appropriate sidelaps and endlaps as specified in the CertainTeed Commercial Roof Systems Specification Manual for the *Flintlastic SBS Modified Bitumen* product being used.

Cap Sheet Application: Begin *Flintlastic SBS Modified Bitumen* membrane cap sheet application by unrolling the roll and aligning the sidelaps. Reroll the roll halfway. Standing on the unrolled portion to prevent shifting, begin hot asphalt application* to the substrate at the rate of 25 lbs./100 ft². Do not apply asphalt more than 6' in front of the roll at any time to prevent premature cooling. Overlap subsequent rolls with 4-1/4" sidelaps and 6" endlaps. See illustration on following page. Cap sheet sidelaps must be staggered from the interply sidelaps. endlaps must be staggered a minimum of 3' apart.

(*Or substitute appropriate SBS modified bitumen adhesive as described on page 25).



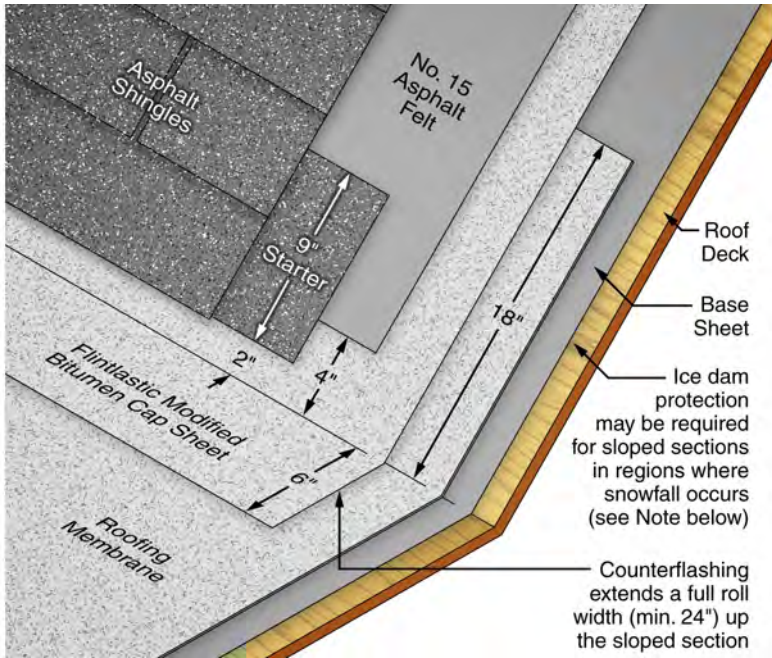
*Overlap Flintlastic cap sheet endlaps a minimum of 6".
(Note: Cut endlap corners as shown on p.13)*

Flashing Details: *Flintlastic* SBS Modified Bitumen

Flashing details are accomplished using cut pieces of **Flintlastic SBS Modified Bitumen** (base flashing and counterflashing strips), sometimes in combination with appropriate prefabricated flashing components. The flashing and counterflashing membrane are set in either hot asphalt or appropriate SBS modified bitumen elastomeric flashing cement, or torch applied (*Flintlastic* GTS SBS Modified Bitumen only). The same side and endlap rules apply to flashing details as to field membrane. Examples of typical flashing details are as follows:

Shingle Roof Transition

Existing shingles must be removed and replaced to accommodate this detail. At transitions from a "flat" roof section to a sloped, shingle roof section the completed **Flintlastic SBS Modified Bitumen** roof system must extend a minimum of 18" up the sloped section, past the transition point. (Note that the base sheet must first be installed, extending up the sloped section a minimum of 2" past the line where the membrane counterflashing will end so as not to torch or mop directly to the deck.) Next, at the transition area, a min. 30" counterflashing strip of **Flintlastic SBS Modified Bitumen** cap sheet must be fully adhered. Position the counterflashing strip so that it extends 6" onto the exposed field membrane and a minimum of 24" up



Shingle roof transition.

the sloped section of roof (minimum 6" beyond the turned up field membrane). Over the **Flintlastic Modified Bitumen** flashing plies the CertainTeed No. 15 Asphalt Felt or Roofers' Select™ shingle underlayment is mechanically fastened, beginning 4" above the transition area. Next the shingle starter row and first course of shingles are installed, beginning 2" above the transition area.

Note: In regions where snowfall occurs, install CertainTeed WinterGuard™ or Black Diamond™ Base Sheet to the sloped section prior to installing the base sheet and roofing membrane. Contact CertainTeed for details.

Parapet Wall

Noncombustible cant strip must be installed at the base of the parapet wall. Appropriate CertainTeed base sheet and all field membrane plies must extend a minimum of 2" beyond the top of the cant strip. For nailable walls, also install base sheet from the top of the cant strip to the outside edge of the parapet wall. Parapet wall flashing membrane (**Flintlastic SBS Modified Bitumen**) not exceeding roll width must extend to the edge of the parapet wall if coping is used, or a minimum of 8" above the top of the cant strip if termination bar and counterflashing are installed, and 4" onto the field membrane.

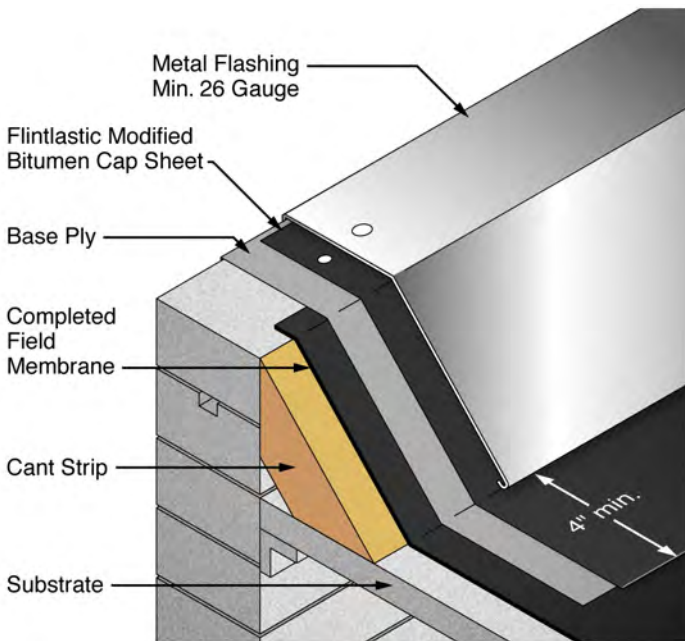
Parapet Inside Corners

Base of corner: Make a “V”-shaped cut in the **Flintlastic SBS Modified Bitumen** membrane to permit it to conform to the inside corner fold (both sides of the “V” will neatly overlap when folded into the corner).

Secure the membrane flaps using SBS modified bitumen flashing adhesive. Top of corner: Cut a notch part way to permit the top of the membrane to conform to the inside corner and fold over the top of the parapet. Cap the resulting gap with a strip of **Flintlastic SBS Modified Bitumen**. Flashing strips must extend a minimum of 4" onto the field membrane.

Outside Corners and Curbs

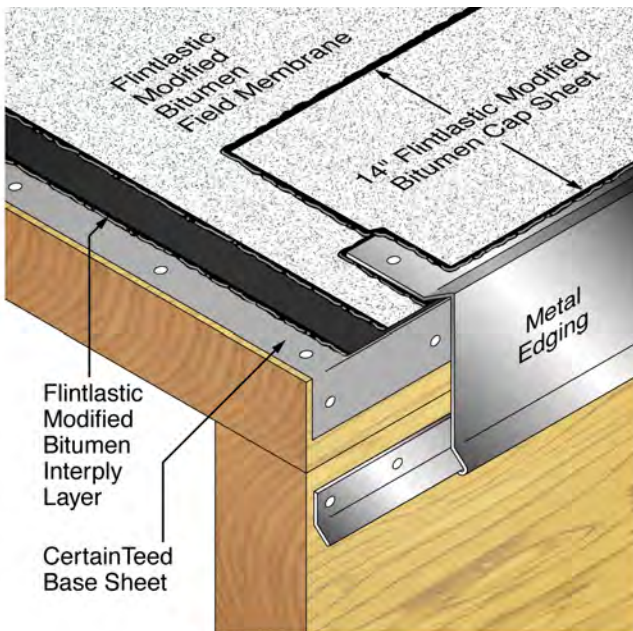
At outside corners such as curbs, the base sheet extends 2" beyond the top of the cant strip, and for nailable curbs a separate ply of base sheet extends from the inside edge of the top of the curb to the top of the cant strip. The field Flintlastic plies and cap sheet extend 2" above the top of the cant strip. Next a 2 ply base and cap flashing (Flintlastic) cover the top of the curb and extend a minimum of 4" onto the field of the roof. Install appropriate metal cap.



Example of raised curb detail.

Metal Edge Detail

Base sheet must extend over fascia a minimum of 2", mechanically fastened. Next, any interply layers and the mineral surfaced **Flintlastic SBS Modified Bitumen** cap sheet are installed. Appropriate edge metal (minimum 26 gauge, primed) must be properly installed and secured. Edge metal lengths must be overlapped 4" and laps set in a bed of hot asphalt or suitable cold adhesive. Metal must be properly secured with appropriate fasteners (spaced every 6" staggered). Finally, a minimum 14" wide strip of flashing membrane (**Flintlastic SBS Modified Bitumen**) should be fully adhered using hot asphalt or suitable cold adhesive over the primed metal, flush to the inside edge of the metal and extending a minimum of 9"-10" beyond the edge metal onto the field of the roof.

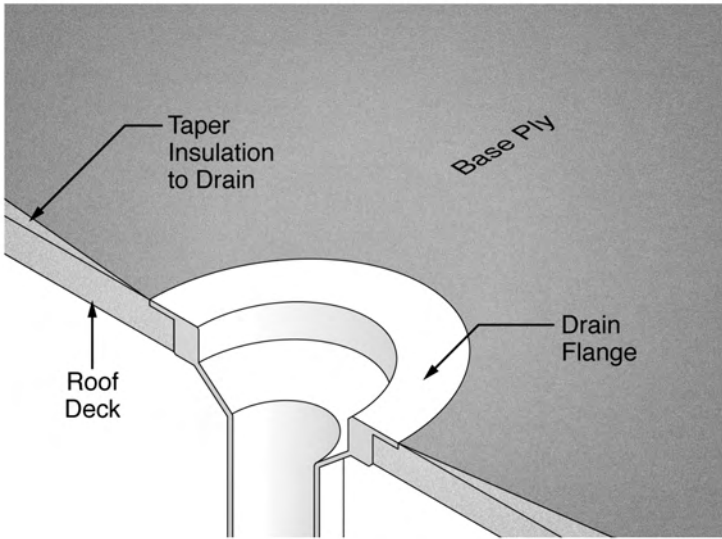


Metal edge detail, hot asphalt application.

Drains—SBS

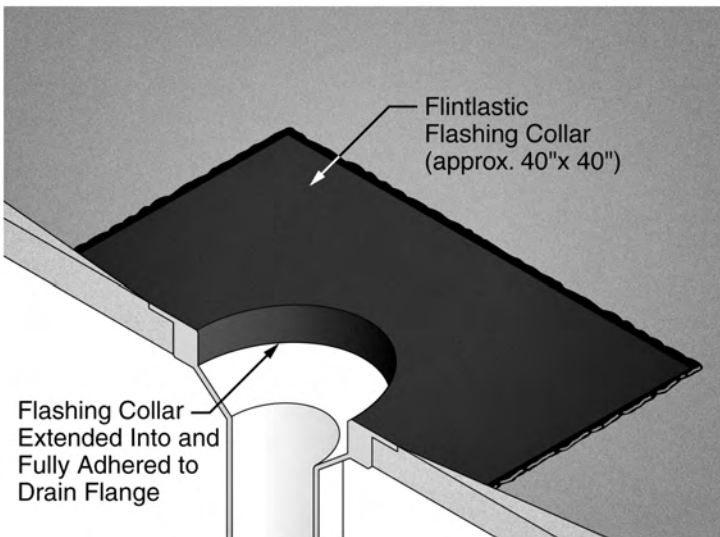
The CertainTeed base sheet should extend into the drain, set in hot asphalt or SBS modified bitumen flashing adhesive in a 9" area around the ring and flange. A strip of **Flintlastic SBS Modified Bitumen** membrane large enough to extend a minimum of 6" from the lead flashing edge (min. 40" x 40") in all directions is applied over the base sheet, with the drain hole cut out. A minimum 30" x 30" lead flashing set in compatible flashing compound is secured next. Over this, the field roof

membrane is applied in normal fashion. The drain opening should be cut out while the membrane is still warm and the edges sealed (allow the **Flintlastic SBS Modified Bitumen** membrane to extend into the drain, well adhered). Set the drain cap in place and secure the clamping ring while the membrane is still warm.



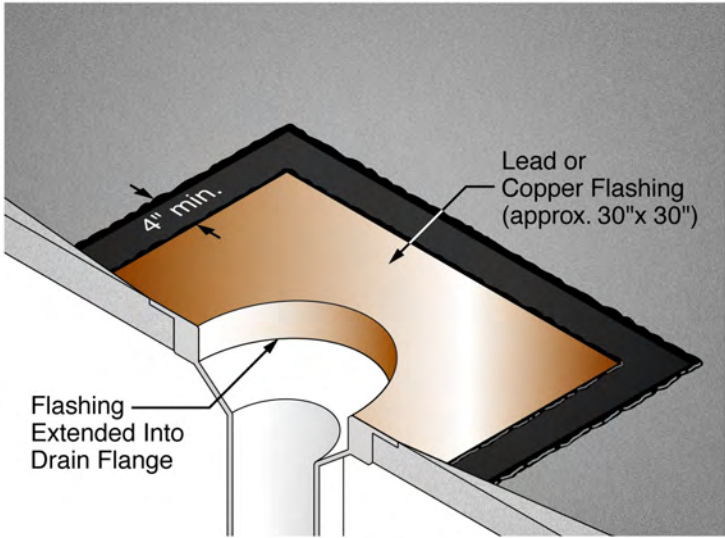
Drain detail, hot asphalt applications - part a.

(Note: For hot asphalt applied membranes, base ply shall be extended into drain and set in flashing compound or hot asphalt 9" wide around ring and flange.)

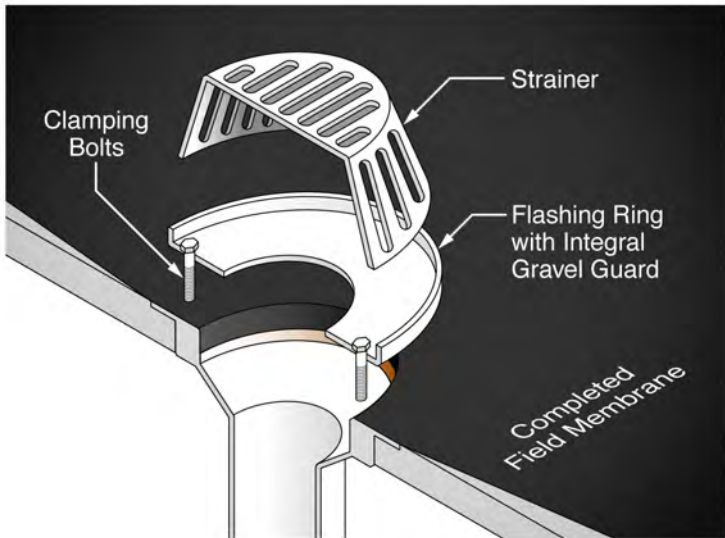


Drain detail, hot asphalt applications - part b.

Drain detail illustrations continued on following page.



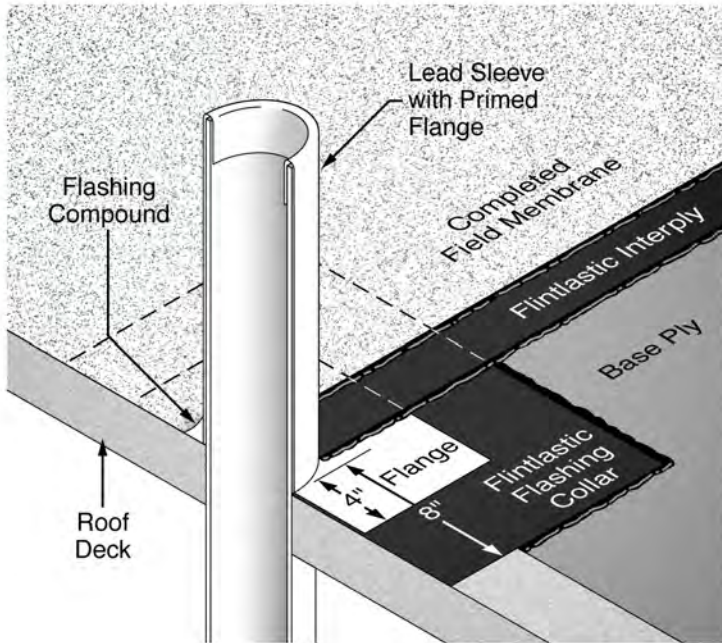
Drain detail, hot asphalt applications - part c.



Drain detail, hot asphalt applications - part d.

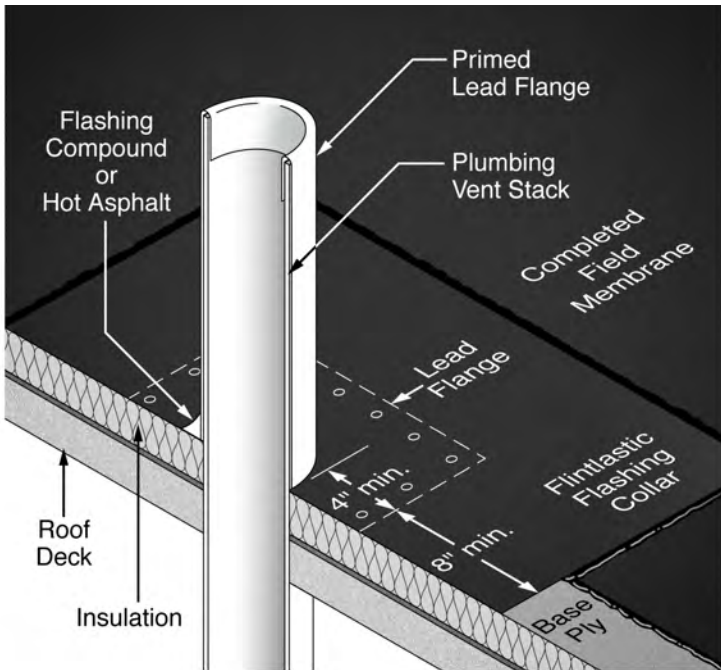
Vent Pipes

After installing the base sheet, position the prefabricated vent pipe flashing on a piece of Flintlastic SBS membrane and mark the dimensions of the vents. Cut a hole corresponding to the pipe size so that a snug fit is achieved. The membrane strip must be large enough to extend a minimum of 4" beyond the outside edge of the vent flange in all directions. Secure the membrane strip using hot asphalt or SBS modified bitumen flashing adhesive and press into place. Install the vent pipe collar, properly fastened. Install the Flintlastic SBS membrane. Use modified bitumen flashing adhesive to seal the base of the vent pipe where the field membrane ends.



Vent pipe detail, hot asphalt applications.

Alternate vent pipe detail on following page.



Alternate detail, lead pipe flashing.

Job Completion

Before considering any roof project complete, walk the roof and check laps for any signs of unbonded areas (a trowel can be used for this purpose). Check flashing details to be sure they are secure. Leave roof and premises clean and free of any roofing debris (daily). Be sure all vent caps are snug and drain screens securely in place.

Safety Tips

As stated in the warning on page 10, use of propane torches and hot asphalt requires thorough knowledge and skill in all aspects of safety with respect to their use and handling. CertainTeed recommends that professional applicators receive the CERTA torch safety training as offered by the MRCA (see inside cover) and participate in all asphalt heating and handling safety training available through their local roofing associations, ARMA and NFPA (see inside cover), local fire departments, OSHA and the NRCA, among others. **Under no circumstances should *Flintlastic* Modified Bitumen roofing application be attempted by “do-it-yourselfers” or any persons other**

than professional, trained roofers. It is the roofing contractor's sole responsibility to be certain all crew members are appropriately trained in safe and proper use of propane torching and hot asphalt equipment and procedures.

The following safety tips are a general reference only and are in no way all-inclusive.

Job Watch

When the torch application method is used, it is important to remember that carelessness resulting in heat entering a crevice may cause **con-cealed** smoldering. A supervisor trained in fire safety should remain on the jobsite **a minimum of 4 hours** after cessation of torching to check for any signs of smoke, smoldering or fire. The safety check should utilize infra-red thermometers and should include a thorough interior check of the attic, crawl spaces and return air ducts in addition to the roof area where torches have been utilized. Prior to leaving the jobsite the contractor must be certain that all chance of fire, including smoldering fire, has been eliminated.

Personnel

- Proper clothing, including work boots, long pants, long sleeved shirts and gloves, must be worn. It is the contractor's responsibility to require employees to wear proper attire.
- Workmen, other than the torch operator, should be not closer than 3 feet to the torch flame.
- It is the contractor's responsibility to observe all fire prevention policies and practices during the installation of the roof system.
- It is the contractor's responsibility to train, instruct and warn employees on the use and handling of propane torching equipment.
- Extra caution must be used when torching near exposed edges of insulation to prevent flame from coming into contact with any flammable material. Contact for any length of time with lead or other materials affected by heat must be avoided.
- Never use the equipment in an enclosed area.
- Refer to NFPA S8 "Standard for the Storage and Handling of Liquefied Petroleum Gas" and appropriate publications of the National Propane Gas Association (1600 Eisenhower, Suite 100, Lisle, IL 60532, ph. 630-515-0600) and the National Fire Protection Association (Battery March, Quincy, MA 02269).

Fire Department Regulations

- Written notice should be given to the local fire department and any necessary permits must be acquired.
- The required number of fire extinguishers shall be on the roof at all times.
- Portable smoke detectors should be installed in attics as required by the local fire department.
- All supervisors and crew members on the jobsite shall have fire safety training. The crew supervisor or foreman must remain on the jobsite **at least 4 hours** after cessation of torching, and shall check the complete roof and attic area for any signs of smoke or smoldering.
- No flammable liquids shall be stored or used on the roof (excluding LPG in approved containers). Any LPG not in use shall be stored on the ground.

Tools and Equipment

- Be certain that all torching equipment is in good working order.
- Be certain cylinder valves are clean.
- Use an adjustable pilot with a complete shut-off valve.
- Use a flint or electronic ignitor to light the torch. Matches or disposable lighters are unsafe and not acceptable.
- Do not use any equipment without an operating pressure gauge.
- Do not operate any pressure gauge beyond the top of its scale, near excessive heat (above 150°F) or where there is excessive vibration.
- Use a torch stand to direct the torch flame upward when the torch is briefly set down. Shut off completely when not in use.
- Propane tanks must be secured in an upright position, placed a minimum of 10' from the torch flame at all times.
- Secure propane tanks when on the roof.
- Increase the size of the propane tank if necessary to prevent frost from occurring. **Never heat the tank with a torch or any other device, and never put the torch flame anywhere near the tank.**
- Never turn a propane tank on its side to increase pressure. Liquid could escape.

- Protect cylinder valves, and where possible use cylinders that have valve protection welded to the cylinder. Never lift a cylinder by the valve. Valves are made of soft brass and are easily broken.
- Do not tighten brass fittings too tightly with a wrench.
- Do not attempt to put out a cylinder fire if it cannot be done without tipping the tank; Call the fire department.
- Never fill a propane cylinder that is in need of repair.
- Never lay a torch to rest on a gas cylinder.
- Use only hose intended for use with LP gas.
- Do not use hose longer than 50'.
- Use an adjustable, U.L. listed regulator with the torch.
- Keep vent in pressure regulator unobstructed at all times.
- Make sure flow of gas through regulator is in the proper direction. Directional flow is indicated on the regulator.
- Use a soap solution to check for gas leaks before lighting torch. Then check for proper operation of the torch. **Never check for leaks using lighter or matches.**
- If a leak occurs, stop work immediately and repair all relevant parts. Do not use any torch equipment that is leaking gas at any fitting.
- Stop torching immediately if any propane odor is detected.
- Check hoses frequently for wear and tear, and do not allow torch flame to come into contact with them. Keep hoses free of kinks and do not allow heavy equipment to roll over them. Also check hoses for any signs of burned or charred areas.
- Be aware of the difference between liquid and vapor gas bottles and dispensing equipment.
- Treat the torch as if it is always burning. In sunlight it can be difficult to see the flame, and when working near mechanical equipment you cannot always hear the torch.
- Never leave a torch unattended.
- Never lay a torch over the edge of the roof.
- Do not use a trowel as a torch stand.

- When shutting off the torch, close the propane cylinder valve first and let the remaining gas burn out of the hose before closing the torch valve.
- Keep an ABC or Halon fire extinguisher on the roof, readily accessible to each worker using a torch at all times. Make sure the extinguisher is readily accessible, but not so close to the torch or propane equipment that it cannot be safely accessed in the event of a fire.
- When using a dry chemical type extinguisher, direct the chemical stream at the base of the fire from a safe distance of about 10' to 15'. Sweep the fire away from you, starting at its nearest point and moving the chemical stream toward the furthest point.
- Do not use soda acid fire extinguisher—it spreads the flame.
- Check all equipment for wear and tear and repair or replace as necessary.
- Use extreme caution when working with torches in areas where you cannot see. Heat the membrane away from the area and then apply it to the flashing. Do not torch directly into any crevice or unsafe area where flame could be sucked in.
- Protect all equipment from damage; store in a toolbox.

Building Safety

- Use noncombustible type cant strips such as perlite or fiberglass and cover them with appropriate CertainTeed base sheet.
- Use appropriate CertainTeed base sheet over all nailable deck types including plywood, wood, lightweight insulating concrete, and over all insulations and any flammable surface.
- Use noncombustible insulation, and cover it with appropriate CertainTeed base sheet (see also pages 6-7).
- Install metal flashings to penetrations or protect flashings with tight-fitting collar prior to torching.
- Use a small detail torch when applying flashing details.
- Be certain all air conditioning units, exhaust fans, and air intake fans in the work area are shut off at the roof control.

- Shield air conditioning units and other protrusions with perlite or similar panels when using the torch around them. Heat roofing membrane away from air conditioning units, fans, soil pipes, and all other protrusions, and set in place while still hot. Use extreme caution to prevent the flame from being pulled into the building interior.
- Feather seams around details with a warm trowel.
- When torching at flashings, corners or voids in the roof or roof deck, never torch directly. Always torch the membrane to be applied and then adhere it to the corner or joint.
- Use caution when torching near pipes in the event there is suction present. Failure to utilize base sheet as required by manufacturer specifications is extremely dangerous as the base sheet provides a protective covering for underlying combustibles.
- Examine the roof substrate for any void, hole or gap and fill it with noncombustible or perlite cant strip. Cover the cant strip with CertainTeed Type G2 fiberglass base sheet.
- Never torch directly to insulation. Appropriate CertainTeed base sheet is required over all insulations. RIC/TIMA recommends that polyurethane and polyisocyanurate insulations be isolated from the roof membrane via the use of an additional layer of noncombustible insulation and CertainTeed base sheet, or an interim base ply acceptable to the membrane manufacturer.
- Install CertainTeed Type G2 fiberglass base sheet over all flammable surfaces and insulations. Base sheet must fit tightly around all deck openings and must turn up parapet walls so that torch flame cannot flash down into and start a fire underneath the deck.
- Never torch into any area where you cannot see; do not use the torch in areas such as under air conditioning units or behind counterflashing.
- Don't torch directly to wood fiber cant strips or wood fiber insulations.
- Don't torch directly to any cant strip, insulation, wood or any other flammable surface.
- Never torch near gas lines or electrical wires.

- Never torch to flammable surfaces such as EPS insulations.
- Never torch around flammable vents.
- Do not point the torch under rooftop equipment.
- Do not direct the torch down open roof penetrations, or near openings around roof penetrations.
- Never point the torch at low flashings where there is an overhang and flame could get up under the counterflashing (such as around skylights or prefabricated curbs with fiberboard sidewall insulation).
- Torching equipment is made for roofing application only and should not be used for drying out a roof or as a preheater torch.
- **Never** apply modified bitumen products directly over exposed conduits or pipes laying on the roof deck.
- LP gas is heavier than air. Do not work in an enclosed area where gas can accumulate.
- Do not rest an operating torch directly on the membrane. There is danger of fire and danger of damaging the membrane.
- Don't lay an operating torch on an open penetration on the roof. If the penetration is part of an air intake system, the flame could be sucked into the building.

Additional Hot Asphalt Considerations

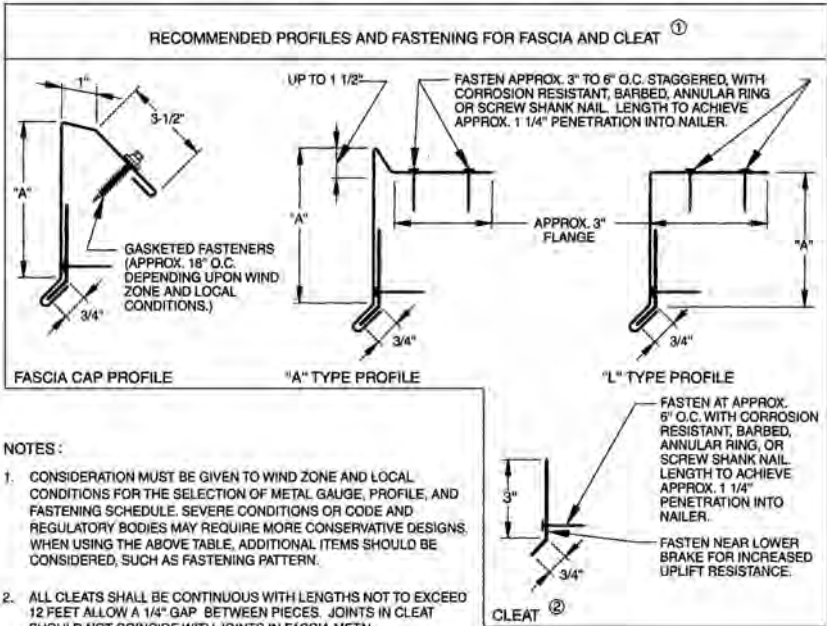
- **Maintain** kettle and tanker temperatures less than 25°F below the actual flash point of the material used.
- **NEVER** heat materials to or above the actual flash point.
- **Don't** maintain asphalt at high temperatures for prolonged periods of time.
- **Don't** allow asphalt to stand in luggers for long periods of times.
- **Use** insulated hot bitumen transport lines to help maintain acceptable bitumen temperature at point of application.
- **Circulate** bitumen while heating.

Reference Tables

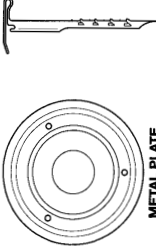
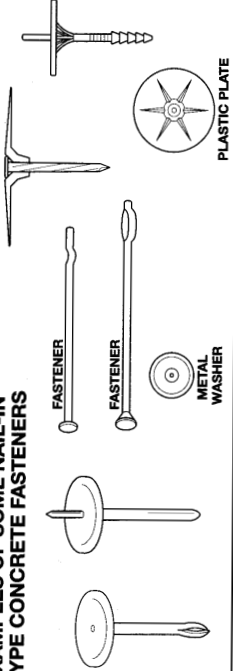
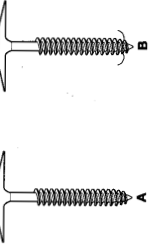
The following tables represent current NRCA recommendations as of the print date of this material.

Fascia and Cleat

RECOMMENDED MINIMUM GAUGES FOR FASCIA AND CLEAT ^①					
EXPOSED FACE WITHOUT BRAKES "A" DIMENSION	ALUMINUM ALLOY (3003-H14)	COLD ROLLED COPPER	GALVANIZED OR COATED (G90) STEEL	STAINLESS STEEL (302 AND 304)	CLEAT ^②
UP TO 3" FACE	.040"	20 oz.	24 ga.	24 ga.	NOT REQUIRED
UP TO 3" FACE	.032"	16 oz.	24 ga.	26 ga.	SAME GAUGE AS FASCIA METAL
3" TO 6" FACE	.040"	16 oz.	24 ga.	24 ga.	SAME GAUGE AS FASCIA METAL
6" TO 8" FACE	.050"	20 oz.	24 ga.	24 ga.	ONE GAUGE HEAVIER THAN FASCIA METAL
8" TO 15" FACE	ADD BRAKES TO STIFFEN OR USE TWO-PIECE FACE	ADD BRAKES TO STIFFEN OR USE TWO-PIECE FACE	ADD BRAKES TO STIFFEN OR USE TWO-PIECE FACE	ADD BRAKES TO STIFFEN OR USE TWO-PIECE FACE	ONE GAUGE HEAVIER THAN FASCIA METAL



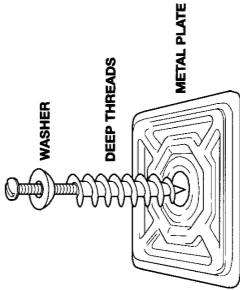
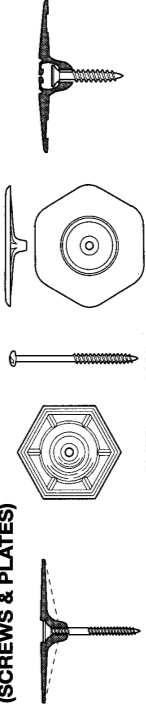
General Guide to Mechanical Fasteners (continued)

FASTENER TYPE	FASTENER USE		DECK TYPE											
	INSULATION	BASE SHEET	WOOD NAILER	FLASH/TERM BAR	STEEL DECK	PLYWOOD DECK	WOMENSH DECK	WOOD PLANK DECK	POURED CONC. DECK	PREFRESSED CONC.	PRECAST CONC.	CEMENT/WOOD FIBER	LIMIT. WOOD CONC.	POURED GYPSUM
6	 <p>BARBED CLIP FASTENER</p> <p>METAL PLATE</p>				•									
7	 <p>EXAMPLES OF SOME NAIL-IN TYPE CONCRETE FASTENERS</p>				•				•	•	•			
8	 <p>PLASTIC THREADED FASTENER</p>												•	•
	A	B												

General Guide to Mechanical Fasteners (continued)

FASTENER TYPE	FASTENER USE		DECK TYPE										
	WOOD NAHER	FLASH/TERRA BAN	PLYWOOD DECK	WOOD PLANK DECK	PREPRESSED CONG.	POURED CONG. DECK	PRECAST CONG.	CEMENT/WOOD FIBER	LYFT, MBL, CONG.	COVERED STEEL	INSULATION	BASE SHEET	
<p>9</p> <p>TOGGLE BOLT</p> <p>STEEL PLATE PLASTIC PLATE TOGGLE BOLTS PLATE TOGGLE</p>			•					•	•				
<p>10</p> <p>TWO-PIECE TUBE NAIL</p> <p>NAIL INSERT NAIL LOCKED IN DECK ONE PIECE TUBE/ ATTACHED DISC</p>												•	
<p>11</p> <p>EXPANSION FASTENER (LEAD OR NYLON)</p>												•	•

General Guide to Mechanical Fasteners (continued)

FASTENER TYPE	FASTENER USE	DECK TYPE													
		INSULATION	BASE SHEET	WOOD NAILS	FLASH/TERM BAR	STEEL DECK	PLYWOOD DECK	CONCRETE DECK	WOOD PLANK DECK	POURED CONC. DECK	PRESTRESSED CONC.	PRECAST CONC.	GRAVEL/WOOD FIBER	LEVT. INSUL. CONC.	POURED ASPHALT
12 MULTI-PIECE SCREW FASTENER	 <p>WASHER DEEP THREADS METAL PLATE</p>	•	•												
		•	•												
13 THREADED SELF-DRILLING INSULATION FASTENERS (SCREWS & PLATES)	 <p>PLATE SCREW</p>			•	•	•	•	•	•	•	•	•	•	•	•
		•	•	•	•	•	•	•	•	•	•	•	•	•	•

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