

## SDI-1000

### Steel Deck - Insulated

SPEC NOTE: This Guide Specification includes materials and methods for the application of an SBS modified bitumen roofing system over an insulated steel deck. Although edited, this specification should be adapted to suit the requirements of individual projects. It is prepared in CSI three part format and should be included as a separate section under Division 7 - Thermal and Moisture Protection.

#### PART 1: GENERAL

SPEC NOTE: Select items among Related Work, which apply to this project.

- |     |                             |                 |
|-----|-----------------------------|-----------------|
| 1.1 | Related Work                |                 |
| .1  | Sound absorbing insulation: | Section [XXXXX] |
| .2  | Steel decking:              | Section [XXXXX] |
| .3  | Concrete:                   | Section [XXXXX] |
| .4  | Rough carpentry:            | Section [XXXXX] |
| .5  | Metal flashing and trim:    | Section [XXXXX] |
| .6  | Caulking:                   | Section [XXXXX] |
| .7  | Roof drains:                | Section [XXXXX] |
| .8  | Roof vents:                 | Section [XXXXX] |
| .9  | Skylights:                  | Section [XXXXX] |
| .10 | Guy wires:                  | Section [XXXXX] |
| .11 | Other:                      | Section [XXXXX] |

SPEC NOTE: Select items among references which apply to this project.

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|-----|-----------------------------------|--|
| 1.2 | References                        |  |
| .1  | ASTM D 312:                       | Roofing Asphalt.   |
| .2  | FS LLL-1-535b, Class C/ASTM C208: | Wood Fiberboard.   |
| .3  | ASTM D41:                         | Cutback Asphalt Primer.  |
| .4  | ASTM D3019 Type III               | Cold Asphalt Adhesives   |
| .5  | ASTM D 5147:                      | Standard Test Method for sampling and Testing Modified Bitumen Roofing Membranes   |
| .6  | ASTM D 6163                       | Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous materials using Fiberglass Reinforcement. |
| .7  | ASTM D 6164                       | Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous materials using Polyester Reinforcement.  |
| .8  | Other:                            | [XXXXX]  |

SPEC NOTE: Include 1.3 only where details of roofing are considered special, such as tapered insulation and metal flashing.

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|-----|--|
| 1.3 | Shop Drawings  |
| .1  | Submit shop drawings in accordance with Section [XXXXX] - [XXXXX]. |

SPEC NOTE: Use 1.3.2 when tapered insulation is required.

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|----|--|
| .2 | Provide complete layout for tapered insulation system. |
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|-----|--|
| 1.4 | Storage and Handling   |
| .1  | Store <i>modifiedPLUS</i> ® membranes and accessories in a dry location, in original containers.   |
| .2  | If product is stored outside, it must be elevated on a platform and be protected with a waterproof cover which will shed water away from the material.                                     |
| .3  | Store all products in an upright position. Do not double stack unless product is on pallets and packaged as received from factory. Never stack more than two pallets high without racking. |
| .4  | In cold weather store <i>modifiedPLUS</i> ® membranes in heated area and take onto roof immediately prior to use.  |
| .5  | Store adhesives and primers between 60°F and 80°F, or restore to temperature range before use.   |

- .6 Store combustible materials away from heat and open flame.
- .7 Do not store *modifiedPLUS*® membranes at ambient temperatures above 120°F.

#### 1.5 Environmental Requirements

- .1 *modifiedPLUS*® installations in temperatures below 40°F can result in quality concerns.
- .2 Verify adhesion regularly during cold temperature applications.
- .3 Store rolls in heated location until needed on the roof.
- .4 It is recommended that when temperatures remain below 40°F for mopping applications and below 0°F for thermofusible applications operations should be suspended.
- .5 Minimum working temperatures shall take into consideration a factor for wind chill. Application temperature shall be considered to be the temperature minus half of the wind speed as recommended by the National Roofing Contractors Association (NRCA) and Canadian Roofing Contractors Association (CRCA).

#### 1.6 Protection

- .1 Maintain fire watch for one hour following each day's work when membranes are thermofused.
- .2 Maintain one fully operational fire extinguisher per torch applicator within 30 feet of point of work.
- .3 Protect membrane from site damage during application. Cover traffic areas with appropriate protection to serve as walkways so as to prevent any damage to the membrane.

#### 1.7 Submittals

- .1 Submit in writing, a document stating that the applicator of the primary membranes specified in this Section is recognized by the manufacturer as suitable for the execution of the Work.

#### 1.8 Quality Assurance

- .1 Perform Work in accordance with the printed requirements of the membrane manufacturer and this specification. Advise designer of any discrepancies prior to commencement of the Work.
- .2 Maintain one copy of manufacturers' literature on site throughout the execution of the Work.
- .3 At the beginning of the Work and at all times during the execution of the Work, allow access to site by the roofing membrane manufacturers' representative.
- .4 At the request of the design professional, submit documentation certifying that the roofing membranes comply with ASTM D6163 and ASTM D6164.
- .5 Materials used in this Section, including air/vapor barrier membranes, primers, mastics, adhesives and sealants shall be fully compatible and shall be sourced from one manufacturer.
- .6 At the request of the design professional, submit copies of the membrane manufacturers' current certification to ISO 9002.

#### 1.9 Alternatives

- .1 Submit requests for alternatives in accordance with Section [XXXXX] - [XXXXX].
- .2 Submit requests for alternatives to this specification a minimum of ten (10) working days prior to bid closing for evaluation. Include a list of 10 projects of similar scope completed in the past 5 years.
- .3 Acceptable alternatives will be confirmed by addendum. Substitute materials not approved in writing prior to bid closing shall not be permitted for use on this project.

#### 1.10 Warranty

SPEC NOTE: There are two options for warranties from the manufacturer. 1.10.2 is a standard five or ten year product warranty offered at no charge to the owner. The contractor would be responsible for workmanship for the first two years. Specify 1.10.1 and 1.10.2 together.

- .1 Contractor hereby warrants that the modified bituminous roofing and membrane flashings will stay in place and remain leakproof for two years.
- .2 Roofing membrane manufacturer hereby warrants that the membrane and membrane flashings will remain in a watertight condition and will not leak as a result of faulty materials for a period of [five years] [ten years]. Scope of warranty shall include material and labor required to return the membrane to a watertight condition.

SPEC NOTE: The second option is a labor, material and workmanship warranty. In this case, the membrane manufacturer is responsible for workmanship from the end of the second year to the tenth year. The contractor would be responsible for workmanship for the first two years. Specify 1.10.1 and 1.10.3 together. Note that there is a charge for this warranty.

- .3 Roofing membrane manufacturer hereby warrants that the membrane and membrane flashings will remain in a watertight condition and will not leak as a result of faulty materials or faulty workmanship for a period of ten [10] years. Scope of warranty shall include material and labor required to return the membrane to a watertight condition.

**PART 2: PRODUCTS**

SPEC NOTE: Choose from among the following primers based on types of membranes selected.

- 2.1 .1 Primer: Primer for all hot asphalt applied membranes shall be #103 or #104 as manufactured by HENRY and be fully compatible with membranes.
- .2 Primer: Primer for all thermofused applications shall be 930-18 rubberized primer as manufactured by HENRY and be fully compatible with membranes.

SPEC NOTE: Gypsum board may be specified over steel deck as a thermal barrier. It is not required with most rigid insulation. Refer to building code.

- 2.2 .1 Gypsum board shall be minimum 5/8" thick, 4' x 8' sheets meeting ASTM C-36, Type X.
- .2 Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening substrate panel to roof deck.

SPEC NOTE: The design and selection of an air/vapor barrier or vapor retarder is the responsibility of the design authority.

SPEC NOTE: Choose from the following air/vapor barriers.

- 2.3 .1 Air/vapor barrier: Hot Asphalt or Cold Adhered Air/vapor barrier shall be *modifiedPLUS*® G100s/s as manufactured by HENRY, an SBS modified bituminous membrane with a 100 g/m<sup>2</sup> glass reinforcement and have a sanded surface top and bottom with a minimum thickness of 80 mils. Product shall conform to the requirements of ASTM D6163 Type I grade S.
- .2 Air/vapor barrier: Thermofused Air/vapor barrier shall be *modifiedPLUS*® G100p/p as manufactured by HENRY, an SBS modified bituminous membrane with a 100 g/m<sup>2</sup> glass reinforcement and have a polyethylene surface top and bottom with a minimum thickness of 88 mils. Product shall conform to the requirements of ASTM D6163 Type I grade S.
- .3 Air/vapor barrier: Self-adhered Air/vapor barrier shall be Blueskin® Roof Underlayment PE 200 HT complete with Blueskin® Primer as manufactured by HENRY, a self-adhered membrane having a thickness of 40 mils.
- .4 Air/vapor barrier: Self-Adhered, Sand Surfaced Air/vapor barrier shall be PERMA-SEAL™ FG as manufactured by HENRY, an SBS modified bitumen self-adhering reinforced membrane having a thickness of 56 mils.

SPEC NOTE: Choose from the following roofing membrane adhesives.

- 2.4 .1 Mopping asphalt: Mopping asphalt shall be ASTM D312 Type III on slopes up to 1:16 and Type IV for slopes of greater than 1:16. Use Type IV for all flashing.
- .2 Cold adhesive: Cold adhesive for membranes shall be HENRY #902 or #903 by spray, or notched squeegee, applied at a rate of 2 gallons /100ft<sup>2</sup> with adhesive and methods of the manufacturer. Adhere strictly to the latest HENRY data sheet instructions. Use HENRY #906 Flashmaster™ Plus Wet or Dry Elastomeric Flashing Cement for membrane flashings.

SPEC NOTE: Choose from the following list of acceptable insulation types. Insulation may be applied by using cold adhesives, hot applied asphalt or mechanical fasteners depending on type and project requirements.

- 2.5 .1 Roof insulation: Extruded polystyrene to ASTM C578-85-Type IV to thickness indicated. Maximum dimension when hot mopping or cold adhering shall be 4'.
- .2 Roof insulation: Fibrous glass to ASTM C726 to thickness indicated. Maximum dimension when hot mopping or cold adhering shall be 4'.
- .3 Roof insulation: Polyisocyanurate to ASTM C 1289 Type II to thickness indicated. Maximum dimension when hot mopping or cold adhering shall be 4'.
- .4 Roof insulation: Expanded polystyrene to ASTM C578 to thickness indicated. Maximum dimension when hot mopping or cold adhering shall be 4'.

SPEC NOTE: If tapered insulation is used choose type, standard, slope, and minimum thickness at drains.

- 2.6 .1 Tapered roof insulation: [XXXXX].

SPEC NOTE: Extruded or expanded polystyrene, polyurethane, and polyisocyanurate require an overlay prior to the application of the base sheet. Choose from among the following acceptable types.

- 2.7 .1 Overlay: Overlay shall be wood fiberboard conforming to ASTM C-208 and shall have a minimum thickness of ½" .

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- .2 Overlay: Overlay shall be perlite with a minimum thickness of ½".
- .3 Overlay: Overlay shall be Re-Cover Board as manufactured by HENRY. Minimum thickness shall be 1/8". Use appropriate surfacing depending on base sheet application method.
- .4 HENRY Re-Cover Board or Johns Manville's Duraboard (Perlite Coverboard) are required for thermofusible applications of insulation to a thermofusible base sheet.

SPEC NOTE: Insulation including overlay may be mechanically fastened, adhered with hot asphalt or cold adhered. Contact HENRY if you are planning on using cold adhesives in your roof system.

- 2.8 .1 Cold adhesive: Cold adhesive for adhering insulation shall be #111 InsulBond® Roof Insulation Adhesive as manufactured by Henry Co. Adhere strictly to the latest HENRY data sheet instructions.

SPEC NOTE: For applications where the base sheet, base sheet flashing and cap sheet are mopped in hot asphalt or are cold-adhered, choose 2.9.

SPEC NOTE: For a standard service base sheet choose 2.9.1. For a heavy duty base sheet choose 2.9.2.

- 2.9 .1 Membrane base sheet: Membrane base sheet shall be *modifiedPLUS*® G100s/s as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 80 mils and a glass reinforcement of 100g/m<sup>2</sup> meeting ASTM D6163 Type I Grade S. The upper and lower surface shall be sanded.
- .2 Membrane base sheet: Membrane base sheet shall be *modifiedPLUS*® NP180s/s as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 90 mils and a non-woven polyester reinforcement of 180g/m<sup>2</sup> meeting ASTM D6164 Type I Grade S. The upper and lower surface shall be sanded.

SPEC NOTE: For a standard service base sheet flashing choose 2.9.3. For a heavy duty base sheet choose 2.9.4.

- .3 Base sheet flashing: Base sheet flashing shall be *modifiedPLUS*® G100s/s as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 80 mils and a glass reinforcement of 100g/m<sup>2</sup> meeting ASTM D6163 Type I Grade S. The upper and lower surface shall be sanded.
- .4 Base sheet flashing: Base sheet flashing shall be *modifiedPLUS*® NP180s/s as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 90 mils and a non-woven polyester reinforcement of 180g/m<sup>2</sup> meeting ASTM D6164 Type I Grade S. The upper and lower surface shall be sanded.

SPEC NOTE: For a standard service cap sheet choose 2.9.5. For a heavy duty cap sheet and cap sheet flashing Choose 2.9.6. For a heavy duty cap sheet where extra puncture resistance is required choose 2.9.6.

- .5 Cap sheet and cap sheet flashing: Cap sheet and cap sheet flashing shall be *modifiedPLUS*® NP180gM4 [FR] as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 160 mils and a non-woven polyester reinforcement of 180g/m<sup>2</sup> meeting ASTM D6164 Type I Grade G. The upper surface shall have ceramic granules and the lower surface shall be sanded.
- .6 Cap sheet and cap sheet flashing: Cap sheet and cap sheet flashing shall be *modifiedPLUS*® NP250gM4 [FR] as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 160 mils and a non-woven polyester reinforcement of 250g/m<sup>2</sup> meeting ASTM D6164 Type II Grade G. The upper surface shall have ceramic granules and the lower surface shall be sanded.

SPEC NOTE: For applications where the base sheet is attached with hot asphalt and the base sheet flashing, cap sheet and cap sheet flashing are thermofused, choose 2.10.

SPEC NOTE: For a standard service base sheet choose 2.10.1. For a heavy duty base sheet choose 2.10.2.

- 2.10 .1 Membrane base sheet: Membrane base sheet shall be *modifiedPLUS*® G100p/s as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 80 mils and a glass reinforcement of 100g/m<sup>2</sup> meeting ASTM D6163 Type I Grade S. The upper surface shall have a polyethylene film and the lower surface shall be sanded.
- .2 Membrane base sheet: Membrane base sheet shall be *modifiedPLUS*® NP180p/s as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 88 mils and a non-woven polyester reinforcement of 180g/m<sup>2</sup> meeting ASTM D6164 Type I Grade S. The upper surface shall have a polyethylene film and the lower surface shall be sanded.

SPEC NOTE: Choose from the following base sheet flashings.

- .3 Base sheet flashing: Base sheet flashing shall be *modifiedPLUS*® G100p/p as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 88 mils and a glass reinforcement of 100g/m<sup>2</sup> meeting ASTM D6163 Type I Grade S. The upper and lower surface shall have a polyethylene film.
- .4 Base sheet flashing: Base sheet flashing shall be *modifiedPLUS*® NP180p/p as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 120 mils and a non-woven polyester reinforcement of 180g/m<sup>2</sup> meeting ASTM D6164 Type I Grade S. The upper and lower surface shall have a polyethylene film.

SPEC NOTE: For a heavy duty cap sheet and cap sheet flashing Choose 2.10.5. For a heavy duty base sheet and extra puncture resistance is required Choose 2.10.6.

- .5 Cap sheet and cap sheet flashing: Cap sheet and cap sheet flashing shall be *modifiedPLUS*® NP180gT4 [FR] as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 160 mils and a non-woven polyester reinforcement of 180g/m<sup>2</sup> meeting ASTM D6164 Type I Grade G. The upper surface shall have ceramic granules and the lower surface shall have a polyethylene film.
- .6 Cap sheet and cap sheet flashing: Cap sheet and cap sheet flashing shall be *modifiedPLUS*® NP250gT4 [FR] as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 160 mils and a non-woven polyester reinforcement of 250g/m<sup>2</sup> meeting ASTM D6164 Type II Grade G. The upper surface shall have ceramic granules and the lower surface shall have a polyethylene film.

SPEC NOTE: For applications where the base sheet, base sheet flashing, cap and cap sheet flashing are thermofused, Choose 2.11. Note that the substrate must be designed to receive a thermofusible membrane, such as Re-Cover Board or 'torch-safe' insulation products.

SPEC NOTE: For a standard service base sheet choose 2.11.1. For a heavy duty base sheet choose 2.11.2.

- 2.11 .1 Membrane base sheet: Membrane base sheet shall be *modifiedPLUS*® G100p/p as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 88 mils and a glass reinforcement of 100g/m<sup>2</sup> meeting ASTM D6163 Type I Grade S. The upper and lower surface shall have a polyethylene film.
- .2 Membrane base sheet: Membrane base sheet shall be *modifiedPLUS*® NP180p/p as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 120 mils and a non-woven polyester reinforcement of 180g/m<sup>2</sup> meeting ASTM D6164 Type I Grade S. The upper and lower surface shall have a polyethylene film.

SPEC NOTE: For a standard service base sheet flashing choose 2.11.3. For a heavy duty base sheet choose 2.11.4.

- .3 Base sheet flashing: Base sheet flashing shall be *modifiedPLUS*® G100p/p as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 88 mils and a glass reinforcement of 100g/m<sup>2</sup> meeting ASTM D6163 Type I Grade S. The upper and lower surface shall have a polyethylene film.
- .4 Base sheet flashing: Base sheet flashing shall be *modifiedPLUS*® NP180p/p as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 120 mils and a non-woven polyester reinforcement of 180g/m<sup>2</sup> meeting ASTM D6164 Type I Grade S. The upper and lower surface shall have a polyethylene film.

SPEC NOTE: For a heavy duty cap sheet and cap sheet flashing choose 2.11.5. For a heavy-duty base sheet and extra puncture resistance is required choose 2.11.6.

- .5 Cap sheet and cap sheet flashing: Cap sheet and cap sheet flashing shall be *modifiedPLUS*® NP180gT4 [FR] as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 160 mils and a non-woven polyester reinforcement of 180g/m<sup>2</sup> meeting ASTM D6164 Type I Grade G. The upper surface shall have ceramic granules and the lower surface shall have a polyethylene film.
- .6 Cap sheet and cap sheet flashing: Cap sheet and cap sheet flashing shall be *modifiedPLUS*® NP250gT4 [FR] as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 160mils and a non-woven polyester reinforcement of 250g/m<sup>2</sup> meeting ASTM D6164 Type II Grade G. The upper surface shall have ceramic granules and the lower surface shall have a polyethylene film.

SPEC NOTE: SBS modified bitumen expansion joint membranes over raised curbs have been typically installed in roofing membrane systems for several years. ELASTO-SEAL EJ, a flat vulcanized expansion joint membrane is suited for locations where a flat profile and provisions for greater differential movement between building structures are required. Raised curbs are not required. ELASTO-SEAL EJ, is a flat one piece prefabricated expansion joint membrane capable of withstanding simultaneous movement in three different planes.

For flat profile heavy-duty expansion joint details using ELASTO-SEAL EJ membrane choose 2.14.

SPEC NOTE: For raised curb expansion joints, choose from the following:  
For thermofusible SBS modified bitumen expansion joint membrane choose 2.12.

For an SBS modified bitumen membrane flashing set in the hot asphalt choose 2.13.

- 2.12 .1 Expansion Joint Membrane: Expansion joint membrane shall be *modifiedPLUS*® NP180p/p as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 120 mils and a non-woven polyester reinforcement of 180g/m<sup>2</sup> meeting ASTM D6164 Type I Grade S. The upper and lower surface shall have a polyethylene film.
- 2.13 .1 Expansion Joint Membrane: Expansion joint membrane shall be *modifiedPLUS*® NP180 p/s as manufactured by HENRY, an SBS modified bitumen membrane having a minimum thickness of 100 mils and a non-woven polyester reinforcement of 180g/m<sup>2</sup> meeting ASTM D6164 Type I Grade S. The upper surface shall have a polyethylene film and the lower surface shall be sanded.
- 2.14 .1 Expansion Joint Membrane: flat vulcanized expansion joint membrane with fleece backing, ELASTO-SEAL EJ as manufactured by HENRY Inc. Membrane to accommodate movement of up to:  $\pm 1" / \pm 2" / \pm 10"$  with 500% elongation at - 40 °F across its length and at all vulcanized points.
- .2 All details and connections are to be completed by means of factory fabricated vulcanization.

### PART 3: EXECUTION

SPEC NOTE: Where applicable, coordinate application of roof air/vapor barrier with wall air/vapor barrier to ensure complete continuity of air seal.

- 3.1 .1 Examination: Verify that all deck surfaces and substrates are acceptable for installation of the system. Apply thermal barrier using mechanical fasteners

SPEC NOTE: If the air/vapor barrier is applied in hot asphalt choose 3.2.

- 3.2 .1 Primer: Apply HENRY #103 or #104 primer by roller or spray to all surfaces where air/vapor barrier membrane is to be applied at a rate of 300 sq ft/gal. and allow to dry. Adhere strictly to the latest HENRY data sheet instructions.
- .2 Air/vapor barrier: Unroll and align air/vapor barrier centered at low point of roof or drain. Apply air/vapor membrane in Type III asphalt applied at a rate of 25 lbs/100ft<sup>2</sup>, lapping 3" on sides and 6" on ends. A bead of asphalt should be observed flowing out of the seams. Seal around projections as per manufacturers' recommendations.

SPEC NOTE: If the air/vapor barrier is cold adhered choose 3.3.1. If the air/vapor barrier is self-adhered choose 3.3.2. and 3.3.3 or 3.3.4 and 3.3.5.

- 3.3 .1 Air/vapor barrier: Unroll and align air/vapor barrier centered at low point of roof or drain. Install insulation using cold adhesive as required by manufacturer.
- .2 Primer: Apply Blueskin Primer by roller or spray to all surfaces where air/vapor barrier membrane is to be applied at a rate of 250 ft<sup>2</sup>/gal. and allow to dry.
- .3 Air/vapor barrier: Unroll and align air/vapor barrier centered at low point of roof or drain. Apply air/vapor removing release providing 2" side and end laps. Seal around projections as per manufacturers' recommendations.
- .4 Primer: For self-adhering membranes, apply Blueskin Primer by roller or spray to all surfaces as required and allow to dry.
- .5 Air/vapor barrier: Unroll and align air/vapor barrier centered at low point of roof or drain. Apply air/vapor removing release paper providing 2" side and end laps. Seal around projections as per manufacturers' recommendations.

SPEC NOTE: If the air/vapor barrier is torch applied choose 3.4.

- 3.4 .1 Primer: Apply HENRY 930-18 primer by roller or spray to all surfaces where air/vapor barrier membrane is to be applied at a rate of 200-300 ft<sup>2</sup>/ gal. and allow to dry. Adhere strictly to the latest HENRY data sheet instructions.
- .2 Air/vapor barrier: Unroll and align air/vapor barrier centered at low point of roof or drain. Reroll and torch apply *modifiedPLUS*® G100p/p membrane applying even heat across width of roll. Sufficient heat should be applied to melt the lower surface and provide a flow of bitumen. Lap cap sheet 3" on sides and 6" on ends. At all end or head laps of cap sheets where T joint occurs, cut corner of membrane to be overlapped on a 45° angle. Ensure membrane is free of wrinkles or blisters and is well adhered to the substrate.
- 3.5 .1 Insulation: Install insulation in moderate contact, stagger end joints to provide a smooth surface for application of membrane.

**SPEC NOTE:** Choose from among the following methods for attachment of insulation.

- .2 Embed insulation in hot asphalt applied at the rate of 30 lbs. per 100 ft<sup>2</sup> or as per insulation manufacturers' instructions. Install only as much insulation as can be covered by roofing membrane in one day.
  - .3 Embed insulation in HENRY #111 Insulbond cold insulation adhesive as recommended by manufacturer. Adhere strictly to the latest HENRY data sheet instructions. Install only as much insulation as can be covered by roofing membrane in one day.
  - .4 Apply insulation using mechanical fasteners of type and spacing required by the manufacturer.
- 3.6 .1 Tapered insulation: Install tapered insulation in hot asphalt applied at a rate of 25 lbs/100ft<sup>2</sup> as per manufacturers' recommendations. Install only as much fiberboard as can be covered by roofing membrane in one day.
- .2 Install tapered insulation in HENRY #111 Insulbond cold insulation adhesive as recommended by manufacturer. Adhere strictly to the latest HENRY data sheet instructions. Install only as much tapered insulation as can be covered by roofing membrane in one day.
- .3 Overlay: Install overlay in hot asphalt applied at a rate of 25 lbs/100ft<sup>2</sup> as per manufacturers' recommendations. Install only as much fiberboard as can be covered by roofing membrane in one day.
- .4 HENRY Re-Cover Board or Johns Manville's Duraboard (Perlite Coverboard) are required for thermofusible applications of insulation to a thermofusible base sheet.

**SPEC NOTE:** Choose the method of application for each of the base sheet, base sheet flashing, cap sheet and cap sheet flashing. Ensure application method matches products selected in Part 2.

- 3.7 .1 Mop applied base sheets: Apply base sheet in Type III or Type IV asphalt, subject to slope requirements, applied at a rate of 25 lbs/100ft<sup>2</sup>. Mopping asphalt shall be heated so that its mopping temperature is not below 400°F.
- .2 Start all roofing applications at the lowest point to ensure water runs over the laps of the membrane.
- .3 Unroll membrane into mopped asphalt a maximum of 4' behind mopping application and carry to top of cant.
- .4 Lap base sheet 3" on sides and 6" on ends.
- .5 Reinforce around all projections and drains using additional ply of base sheet as per manufacturers' instructions.
- 3.8 .1 Torch applied base sheets: Apply base sheet beginning at the low point of the roof and align membrane along the center line of roof drain. Re-roll and torch apply to substrate following manufacturers' printed instructions.
- .2 Carry to vertical or top of cant as specified.
- .3 Seal around all projections with an additional ply of membrane as per manufacturers' instructions.
- 3.9 .1 Cold adhered base sheets: Apply HENRY #902 or #903 by spray, or notched squeegee, applied at a rate of 2 gallons /100ft<sup>2</sup> with adhesive and methods of the manufacturer. Adhere strictly to the latest HENRY data sheet instructions.
- 3.10 .1 Mop applied base sheet flashings: Apply base sheet flashing in Type IV asphalt applied at a rate of 25 lbs/100ft<sup>2</sup>.
- .2 Begin application 4" from toe of cant and extend vertically as indicated. Mechanically fasten base sheet flashing using 1" round top nails on 8" centers. Refer to manufacturers' standard details.
- 3.11 .1 Torch applied base sheet flashings: Apply HENRY 930-18 primer by roller at a rate of 300 ft<sup>2</sup>/gal. and allow to dry. Apply base sheet flashing by torching as per manufacturers' instructions to primed substrate. Adhere strictly to the latest HENRY data sheet instructions.
- .2 Begin application 4" from toe of cant or vertical and extend vertically as indicated. Mechanically fasten base sheet flashing using 1" round top nails on 8" centers. Refer to manufacturers' standard details.
- 3.12 .1 Cold-adhered base sheet flashings: Apply cold adhere base sheet flashings with #906 Flashmaster™ Plus Wet or Dry Elastomeric Flashing Cement. Adhere strictly to the latest HENRY data sheet instructions.
- .2 Install flashings in three foot lengths (cut cross machine or from end of roll) using selva edge for laps. De-granulate or prime where membrane will overlap. Coat back of material and surface to receive flashing with #906 Flashmaster™ Wet or Dry flashing cement at the rate of 12.5 sq ft per gallon applied in an unbroken 1/8" film thickness. Allow sheet to set tacky. Press in place. modifiedPLUS® flashing height cannot exceed 12" when installed in #906. Lap ends 4". Extend in the field 4".
- 3.13 .1 Mop applied cap sheets: Apply cap sheet in Type III or Type IV asphalt, subject to slope requirements, applied at a rate of 25 lbs/100ft<sup>2</sup>.
- .2 Plan work so that both the side and end laps of the cap sheet are offset from those of the base sheet a minimum of 12" for side and 18" for end laps.

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- .3 Unroll membrane into mopped asphalt a maximum of 4' behind mopping application and carry to top of cant. Lap cap sheet 3" on sides and 6" on ends.
- .4 At all end or head laps of cap sheets, where T joint occurs, cut corner of membrane to be overlapped, on a 45° angle.
- 3.14 .1 Torch applied cap sheets: Apply cap sheet beginning at the low point of the roof or center of drain. Re-roll and torch apply to base sheet following manufacturers' printed instructions.
- .2 Carry to vertical or top of cant as specified.
- 3.15 .1 Cold-adhered cap sheets: Apply cold adhered cap sheets with in HENRY #902 or #903 by spray, or notched squeegee, applied at a rate of 2 gallons /100ft<sup>2</sup> with adhesive and methods of the manufacturer. Adhere strictly to the latest HENRY data sheet instructions.
- 3.16 .1 Mop applied base sheet flashings: Apply base sheet flashing in Type IV asphalt applied at a rate of 25 lbs/100ft<sup>2</sup>.
- .2 Begin application 4" from toe of cant and extend vertically as indicated. Mechanically fasten base sheet flashing using 1" round top nails on 8" center. Refer to manufacturers' standard details.
- 3.17 .1 Torch applied cap sheet flashings: Begin application 6" from toe of cant or vertical and extend vertically as indicated.
- 3.18 .1 Cold-adhered cap sheet flashings: Apply cold adhere cap sheet flashings with in HENRY #906. Mechanically fasten base sheet flashing using 1" round top nails on 8" center. Adhere strictly to the latest HENRY data sheet instructions.
- .2 Install flashings in three foot lengths (cut cross machine or from end of roll) using selva edge for laps. De-granulate or prime where membrane will overlap. Cut *modifiedPLUS*® cap sheet to required dimensions. Coat back of material and surface to receive flashing with #906 Flashmaster™ Wet or Dry flashing cement at the rate of 12.5 sq ft per gallon applied in an unbroken 1/8" film thickness. Allow sheet to set until tacky. Press in place. *modifiedPLUS*® flashing height cannot exceed 12" when installed in #906. Lap ends 4". Extend in the field 4"
- .3 Touch up bleed out with matching granules.
- 3.19 Expansion Joints (Torch Applied Method)
  - .1 At raised curb expansion joint details, install expansion joint membrane at the plane of the air/vapor barrier membrane.
  - .2 Loop flashing membrane down into joint ensuring that the depth of loop is a minimum 1½" or 1.5 x the width. Extend flashing membrane minimum of 6" on each side of joint. Lap end joints a minimum of 6".
  - .3 Construct curbs, install insulation and overlay as specified.
  - .4 Apply membrane base sheet flashing and membrane cap sheet flashing by torching as per manufacturers' instructions to primed substrate. Refer to manufacturers' standard details.
  - .5 Mechanically fasten base sheet flashing using 1" round top nails on 8" centers.
- 3.20 Expansion Joints (Membrane set in Hot Asphalt)
  - .1 At raised curb expansion joint details, install expansion joint membrane at the plane of the air/vapor barrier membrane.
  - .2 Loop flashing membrane down into joint ensuring that the depth of loop is a minimum 1½" or 1.5 x the width. Extend flashing membrane minimum of 6" on each side of joint. Lap end joints a minimum of 6".
  - .3 Construct curbs, install insulation and overlay as specified.
  - .4 Apply membrane base sheet flashing in Type IV asphalt and membrane cap sheet flashing by torching as per manufacturers' instructions to base sheet. Refer to manufacturers' standard details.
  - .5 Mechanically fasten base sheet flashing using 1" round top nails on 8" centers.
- 3.21 Expansion Joint (ELASTO-SEAL EJ)
  - .1 Install all components of the system in accordance with the manufacturer's most recent printed instructions and standard details.
  - .2 The system is to be installed at the same plane as the roofing membrane and be wholly encapsulated between the plies with Type III hot asphalt or *modifiedPLUS*® modified bitumen membrane. It is recommended that the polyester fleece on both sides of the ELASTO-SEAL EJ be primed with an asphaltic primer prior to the torching application of the modified bitumen membrane.
  - .3 The bottom surface of the ELASTO-SEAL EJ can be mopped to a *modifiedPLUS*® modified bitumen base sheet or alternatively rolled in, to a torch liquefied modified bitumen base sheet. ELASTO-SEAL EJ can be stripped in by torching or mopping in the modified bitumen cap sheet.
  - .4 Mopping of the cap sheet is done in the conventional manner of mopping in stripping plies. The joint shall not obstruct water flow across its surface and forms a continuous monolithic waterproof barrier. <>