

Henry TPO Installation Guide

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General Information



This Henry TPO installation guide has been designed to give the user a GENERAL overview of the installation of a Henry TPO Fully Adhered Roofing System. This installation guide is intended as a broad reference aid, and is not intended to be all-inclusive.

Precautions

If Henry Low-VOC Bonding Adhesive is not allowed to dry properly, gas bubbles or blisters may form under TPO Membrane sheet. These bubbles or blisters may subside over time.

Due to solvent flash-off, condensation may form on freshly applied Henry Low-VOC Bonding Adhesive when the ambient temperature is near the dew point. If condensation develops, possible surface contamination may occur, and the application of Henry Low-VOC Bonding Adhesive must be discontinued. Allow the surface to dry, and when conditions allow, apply a thin coat at a coverage rate of approximately half the normal coverage rate for re-adhering a previously coated surface.

Use extreme care when working on ladders, roofs, below-grade applications or elevations above ground. If used as an emergency repair to a roofing system, contact the existing roofing system manufacturer for compatibility and to ensure compliance with terms and limitations of their warranty.

Surface may be slippery when wet, damp or frost-covered. Do not expose TPO Membrane to temperatures in excess of 180°F. Proper TPO Membrane protection must be installed in areas where roof top traffic or activity is anticipated.

THIS INFORMATION, AS WELL AS INFORMATION CONTAINED IN SAFETY DATA SHEETS AND ON PRODUCT PACKAGING, MUST BE REVIEWED PRIOR TO STORAGE, HANDLING OR USE OF THESE PRODUCTS.

Precautions

Liquid adhesives, primers, and sealants, as well as their fumes, contain petroleum distillates and are EXTREMELY FLAMMABLE. Do not inhale vapors. Maintain proper ventilation. Store these products away from heat, flame and sparks. Do not smoke near these materials. A fire extinguisher must be present when these products are used.

Keep containers closed when not in use. Make sure that open containers are not placed near fresh air ventilators on the roof. Avoid contact with eyes. Glasses, goggles or face shields are recommended. If contact is made with the eyes, flush immediately with plenty of water for a minimum of 15 minutes, and contact a physician. Avoid contact with the skin. Chemically resistant gloves are required for hand protection. In case of skin contact, thoroughly wash the affected area with soap and water.

When loading materials onto the roof, make sure that concentrated loads do not exceed the design load limitations of the existing roof structure. If stacking products, ensure sufficient stability of the materials.

To ensure proper adhesion of splice tapes, clean TPO Membrane with VM&P Naptha or a VOC compliant solvent.

Tools and Equipment

Soft bristle push broom	Cotton rags
Steel or silicone 2" hand roller	Duct tape
Roofing nails	Chalk line
Hammer	Coated or solvent-resistant (Hycron™) gloves
Scissors	Safety glasses
Utility knife	Fire extinguisher
Lumber crayon	4" and 9" medium nap paint roller and handle
Caulk gun	

Roof Surface Preparation

Henry TPO fully-adhered roofing system will adhere to a variety of substrates including wood, metal, concrete, rubber, masonry, wood fiberboard and polyisocyanurate. TPO Membrane may NOT be adhered to polystyrene insulation. Priming of the roof deck is not required.

Be sure the roof surface is clean, and free of dust, dirt, rust, oil, grease and loose material. The roof surface must be dry. TPO Membrane will not adhere to wet or damp surfaces. Trapped moisture may vaporize and negatively affect the performance of TPO Membrane.

Quality roofing practice dictates that ponding water be prevented. The roof surface should have a positive slope of at least 1/4":12 to prevent ponding water. Ponding water is defined as the presence of standing water within 24 hours of precipitation.

Before starting, please consult the Precautions section at the beginning of this guide.

Installation of Insulation (Optional)

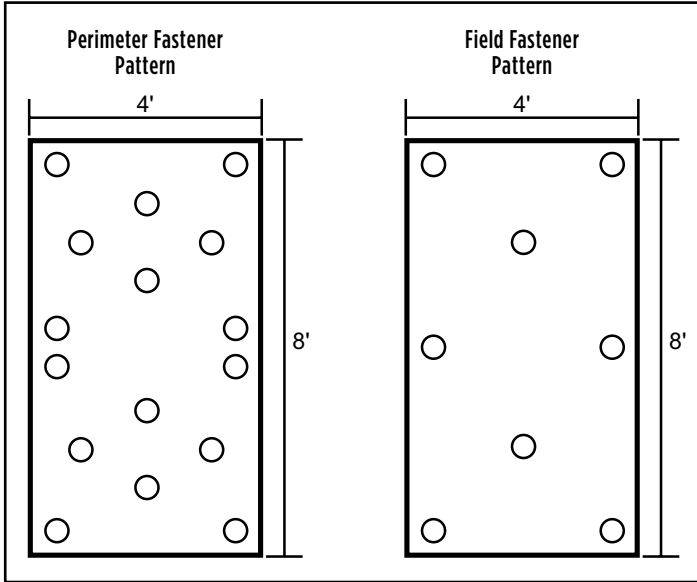
Butt all Henry Insulation boards together, staggering the joints. All spaces larger than one-quarter inch (1/4") must be filled to provide a uniform, smooth surface.

Henry Screws and Insulation Plates shall be applied at the minimum rate of eight (8) per 4'x8' sheet of Henry Insulation, or as required to meet anticipated wind uplift loads.. When installing Henry Insulation in the perimeter areas, the minimum fastener pattern is one (1) deck plate and one (1) screw every two (2) square feet or sixteen (16) per 4' x 8' sheet in a diamond in the box pattern, and eight (8) per 4' x 4' sheet. Additional Henry Fasteners may be required to meet anticipated wind uplift loads.

Extra Henry Fasteners should be installed around protrusions such as pipes, chimneys, skylights and irregularities in the roof deck.

Do not lay more Henry Insulation than can be covered with TPO Membrane by the end of the working day.

Installation of Insulation (Optional)



For buildings less than 60' in height, the width of the perimeter is defined as .4 x the building's height.

Installation of Roofing

General:

Stir Henry Low-VOC Bonding Adhesive thoroughly before applying to surface(s).

Refer to the sections in this guide designated to pipes, penetrations, curbs, perimeters and terminations for instructions on installing TPO Membrane to surfaces with these characteristics.

DO NOT apply Henry Low-VOC Bonding Adhesive to any seam areas (see Seams section of this guide for installation instructions on seaming adjoining sections of TPO Membrane together).

Substrate Preparation:

Be sure that surface is clean and free of any dirt, dust, oil, grease, rust or any other loose material (see Roof Surface Preparation section). Note: The surface MUST be dry before applying Henry Low-VOC Bonding Adhesive. Any moisture may negatively affect the performance of the system products.

Clean any excessive dirt from TPO Membrane with VM&P Naptha or a VOC compliant solvent.

Installation of Roofing

Fully Adhered Application:

For application of TPO Membrane onto porous or non-porous surfaces EXCEPT polystyrene insulation. NOTE: Refer to the Roof Surface Preparation section in this guide to ensure that both the substrate and TPO Membrane are ready for installation. Unroll and position TPO Membrane to achieve a minimum 4" overlap in the seam area.

Avoiding wrinkles, fold TPO Membrane in half onto itself, exposing the substrate.

Open and thoroughly stir Henry Low-VOC Bonding Adhesive or Henry Low-VOC Bonding Adhesive II68.

Use a medium nap, solvent-resistant paint roller to apply Henry Low-VOC Bonding Adhesive to both TPO Membrane and the substrate at a rate of sixty (60) square feet per gallon.

Henry Low-VOC Bonding Adhesive must be applied to 100% of both surfaces in an evenly distributed coat without any globs or puddles.

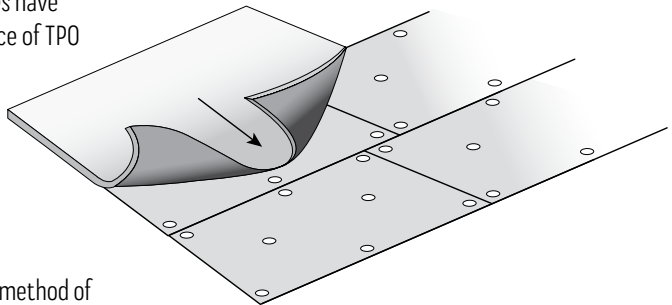
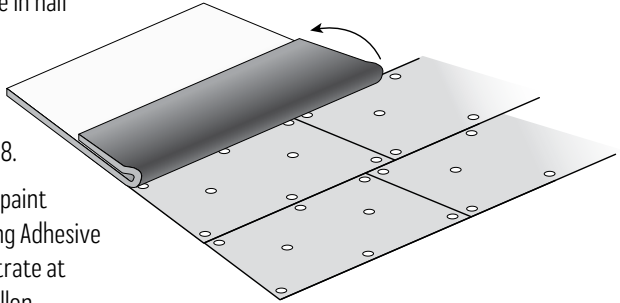
Keep both surfaces exposed, to allow Henry Low-VOC Bonding Adhesive to dry until it is tacky to the touch. Note: Henry Low-VOC Bonding Adhesive should have a tacky feel and should not string to a dry finger touch before proceeding to the next steps of installation.

Starting from the middle, to avoid wrinkles, roll the coated sheet onto the coated substrate.

Immediately after both surfaces have been adhered, broom the surface of TPO Membrane to ensure maximum contact. Note: DO NOT apply an excessive amount of pressure while brooming, as this may cause TPO Membrane to wrinkle.

Repeat the two-sided (contact) method of application for the other half of TPO Membrane.

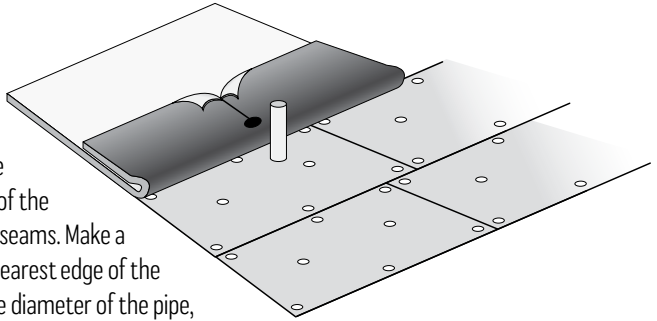
Please refer to the Seams section of this guide for complete instructions on finishing the seam.



Installation of Roofing

PIPES/PENETRATIONS

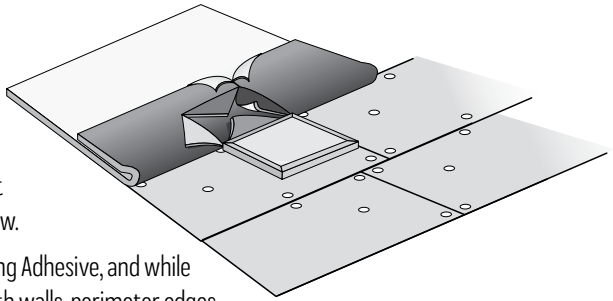
If a pipe or penetration is encountered when laying out the field sheets, roll the folded TPO Membrane to the pipe. Be sure to maintain the proper alignment of the sheet with the roof edge, wall and seams. Make a straight cut from the pipe to the nearest edge of the field sheet. Cut a hole to match the diameter of the pipe, and roll the field sheet around the pipe. Check the final position of the sheet. Fold TPO Membrane back, and begin the bonding procedure.



After the field sheet has been installed and seams are complete, apply Henry Low-VOC Primer and 6"-wide Henry Cover Strip (white) over the entire cut in the field sheet, from the pipe to the end of the sheet. Apply Henry Lap Sealant (white) around entire Henry Cover Strip (white). See Pipe Seal section of this guide for further information on finishing this detail.

CURBS (Skylights, Chimney)

When encountering an outside corner on a perimeter wall, refer to the Perimeter Walls section of this guide. When encountering outside corners on a rooftop penetration such as a skylight or chimney, follow the instructions below.



Prior to applying Henry Low-VOC Bonding Adhesive, and while maintaining proper sheet alignment with walls, perimeter edges and other protrusions, unroll TPO Membrane up to the base of the unit.

Measure the width and depth of the unit, and transfer the corresponding dimensions onto the folded TPO Membrane. Draw an X inside the box. Cut the X mark, and from one corner, cut a straight line to the nearest edge of TPO Membrane. Roll TPO Membrane around the unit, leaving a triangle of TPO Membrane, and turn up each one of the four (4) sides. Using scissors, cut a round hole at every angle change of TPO Membrane at the outside corners. (This will prevent the cut in TPO Membrane from expanding.)

After all cuts are made, and TPO Membrane is correctly positioned, fold TPO Membrane back and begin bonding procedures. After the field is complete, bond the triangles up the sides of the unit (i.e. chimney, skylight etc.). Take care to bond TPO Membrane into the angle change so that TPO Membrane is completely adhered. After the field sheet has been installed and seams are complete, apply Henry Low-VOC Primer and 6" -wide Henry Cover Strip (white) over the entire cut in the field sheet from the curb to the end of the sheet. Apply Henry Lap Sealant (white) around the entire Henry Cover Strip (white). Refer to the Outside Corners section of this guide for further details on finishing the curb.

Perimeter Walls

TPO Membrane on the wall should be a continuation of the deck TPO Membrane. TPO Membrane should extend up the wall as far as possible, to prevent the possibility of moisture infiltration behind TPO Membrane. TPO Membrane must extend on the roof deck a minimum of 6" and up the wall a minimum of 12".

Horizontal Termination

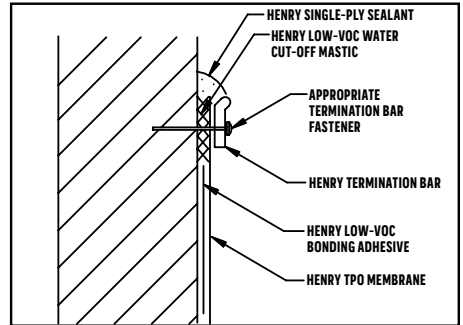
TPO Membrane securement at the base of a parapet wall is recommended. This is accomplished with the use of universal 2" round seam plates placed a minimum of 12" on center in the angle change at the base of the wall and secured to the deck with Henry Fasteners.

Henry Fasteners and Plates are then overlaid with Henry Cover Strip (white) after priming TPO Membrane with Henry Low-VOC Primer.

Perimeter Walls

Vertical Termination

After desired flashing height is attained and TPO Membrane is adhered, determine the placement of Henry Termination Bar, peel the top edge of TPO Membrane back, and apply a bead of Henry Low-VOC Water Cut-Off Mastic between TPO Membrane and the wall or curb. Install Henry Termination Bar directly over TPO Membrane and Henry Low-VOC Water Cut-Off Mastic. Spacing of appropriate termination bar fasteners must provide constant compression on Henry Low-VOC Water Cut-Off Mastic. Clean any Henry Low-VOC Water Cut-Off Mastic from Henry Termination Bar, and apply a bead of Henry Single-Ply Sealant over the top of Henry Termination Bar.



NOTES:

1. Apply on hard, smooth surface only; not for use on wood.
2. Henry Low-VOC Water Cut-Off Mastic must be held under constant compression.
3. Do not wrap Henry Termination Bar around corners.
4. Allow 1/4" to 1/2" (6 mm to 13 mm) max. spacing between consecutive lengths of Henry Termination Bar.

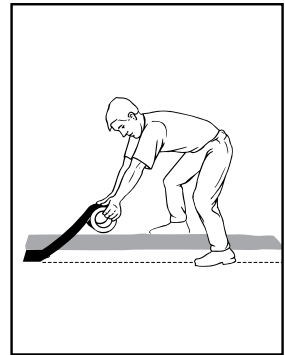
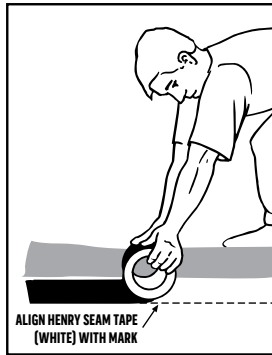
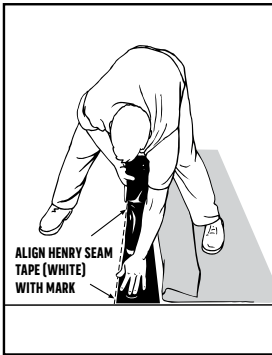
Seams

Seaming Using Seam Tape – Fully Adhered Application

Position the top TPO Membrane sheet to achieve a 4" overlap. To properly place Henry Seam Tape (white) so it extends beyond the leading edge of the top TPO Membrane, fold back the top TPO Membrane and chalk a line 4-1/4" to 4-1/2" from the leading edge of the bottom TPO Membrane sheet.

Fold the top sheet back to expose the seam area. Using a medium nap roller apply Henry Low-VOC Primer to the seam area of the top and bottom sheet and allow to flash off.

NOTE: If TPO Membrane is contaminated with dirt, dust or debris, clean the seam area with VM&P Naptha or a VOC compliant solvent before applying Henry Low-VOC Primer.

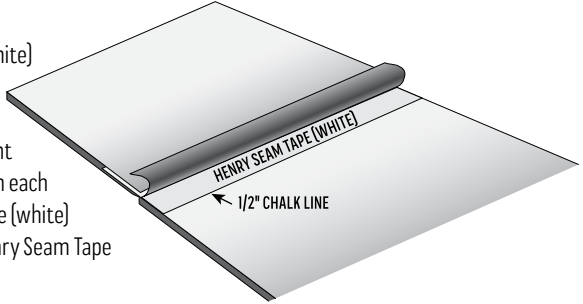


Unroll 3"-wide Henry Seam Tape (white) along the length of the seam, tape side down, and align Henry Seam Tape (white) (not the clear backing) along the chalk line. Using moderate pressure, set Henry Seam Tape (white) into place to avoid air entrapment. Fold the top TPO Membrane onto Henry Seam Tape (white) release liner. Ensure that 1/4" to 1/2" of Henry Seam Tape (white) is exposed after seam is closed.

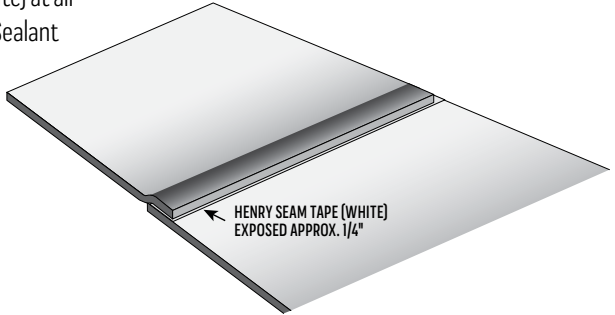
Seams

Reaching under the top ply of TPO Membrane, pull the release liner away from Henry Seam Tape (white) at a 45° angle to the seam. While removing the liner, draw your hand across the seam, from the back to the leading edge. This will prevent wrinkles and fish mouths from forming in the seam. After the liner is removed, roll the entire length of the seam with a steel or silicone hand roller, first across the seam, and then across the length of the seam.

NOTE: When splicing Henry Seam Tape, (white) overlap each piece a minimum of one inch (1"), and firmly roll with a steel or silicone hand roller. Apply Henry Lap Sealant (white) along the seam's leading edge, 3" in each direction from anywhere Henry Seam Tape (white) is overlapped. Ensure that ¼" to ½" of Henry Seam Tape (white) is exposed after seam is closed



Install Henry Corner/T-Joint Cover (white) at all "T" intersections and apply Henry Lap Sealant (white) around the outer perimeter.



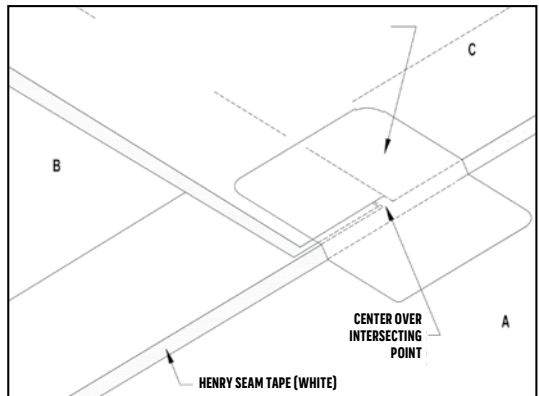
T-Joints

A T-Joint is formed when two sheets of TPO Membrane form a seam that travels under or over a third ply. The center of the "T" is where the middle sheet ends, and the top sheet bridges over the middle sheet.

Install a Henry Corner/T-Joint Cover (white) centered over the T-Joint intersection after applying Henry Low-VOC Primer to the area.

NOTE: All Henry Corners/T-Joint Covers (white) should be thoroughly rolled with a steel or silicone hand roller.

NOTE: Henry Lap Sealant (white) is required around all edges of Henry Corner/T-Joint Cover (white).

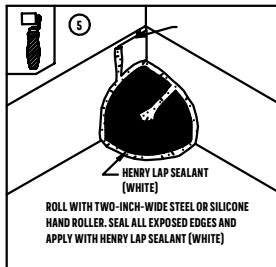
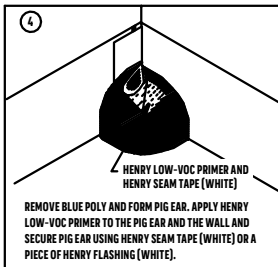
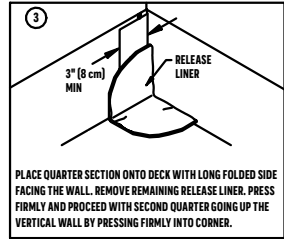
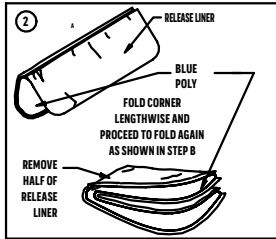
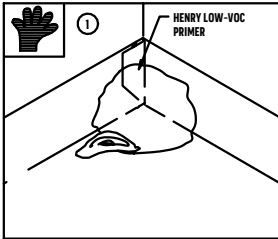
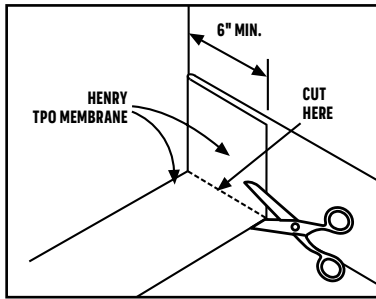


Corners

Inside Corners

TPO Membrane should extend up the wall as far as possible (6" min.). Cut TPO Membrane as shown. Apply Henry Low-VOC Bonding Adhesive or Henry Low-VOC Bonding Adhesive 1168 to the wall, roof deck and TPO Membrane. Roll sheet to the base of the angle change. Firmly press or create the sheet tightly into the angle change. Roll the sheet up the wall. Use a bristle broom to firmly adhere TPO Membrane sheet to the wall and roof deck. Cut the flap to a maximum 3" width and secure to the wall TPO Membrane using Henry Low-VOC Primer and 3"-wide Henry Seam Tape (white). Refer to the Vertical Termination section at Perimeter Walls for instructions on terminating the edge of the vertical membrane.

Use Henry Corner/T-Joint Cover (white) to finish the inside corner.



NOTE:

Wall Flashings should extend a minimum of six inches (6") above the roof deck.

Corners

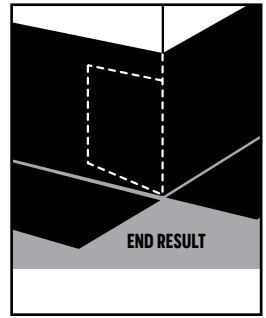
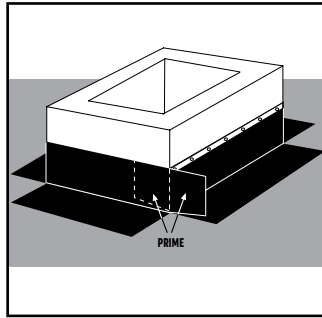
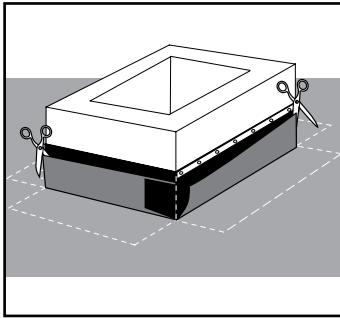
Outside Corners

Measure and cut a piece of TPO Membrane to wrap the penetration and overlap itself by a minimum of 3". Allow at least 3" of material to extend onto the deck, and at least 3" of TPO Membrane to extend past the triangle of TPO Membrane already adhered to the curb. Mark the desired height of TPO Membrane on the penetration. This mark will serve as the starting point of the installation of TPO Membrane piece. Apply Henry Low-VOC Bonding Adhesive or Henry Low-VOC Bonding Adhesive I168 to the penetration, roof deck and TPO Membrane. Allow Henry Low-VOC Bonding Adhesive to flash off properly.

Starting at the mark, press the material into place, working from the top of TPO Membrane to the bottom while working around the penetration. This step will be easier if a second person holds TPO Membrane away from the penetration. The material that will splice onto the deck should fold back against the penetration. At the final corner, use scissors to cut out the 3" excess that will fold down on to the roof deck. **DO NOT** cut the 3" excess that will be adhered to the penetration.

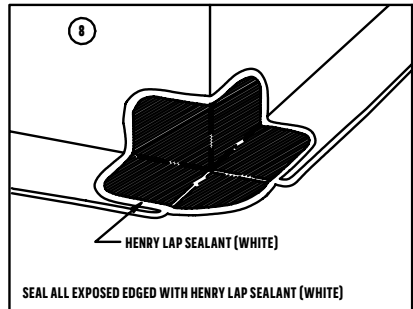
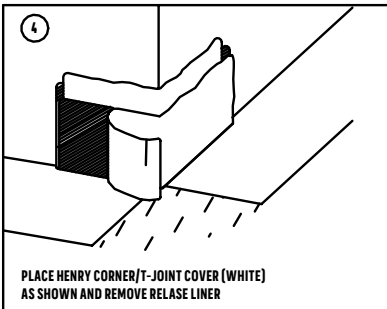
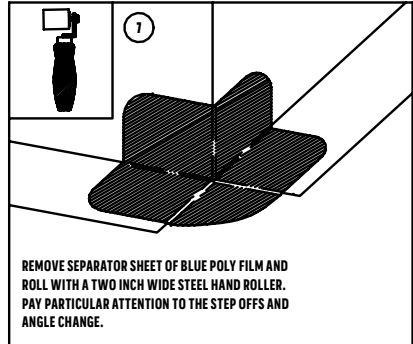
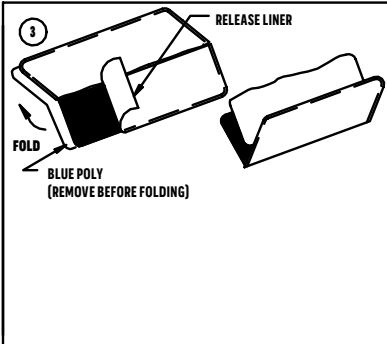
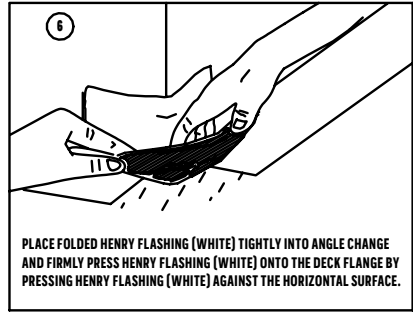
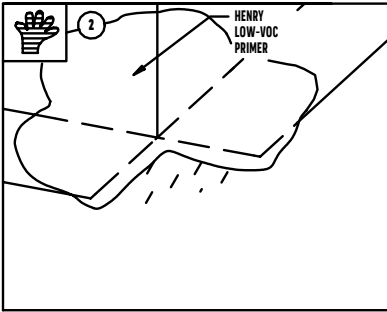
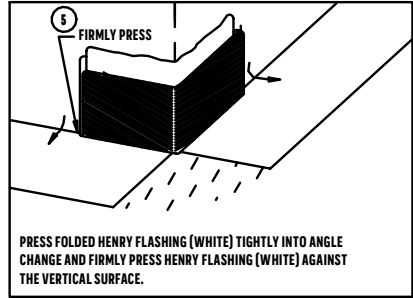
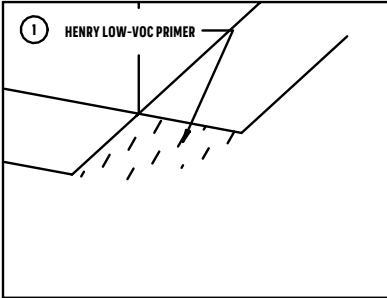
Starting with one side, cut down to the angle change at the corner. Roll TPO Membrane tightly into the angle change and onto the roof deck. Repeat on each side of the penetration. Cut the excess TPO Membrane flap to a maximum 3" width and secure using Henry Low-VOC Primer and 3"-wide Henry Seam Tape (white). Complete the seaming process of the curb wrap to the deck TPO Membrane using Henry Low-VOC Primer and 3"-wide Henry Seam Tape (white).

Refer to the Vertical Termination section at Perimeter Walls for instructions on terminating the top edge of the vertical membrane.



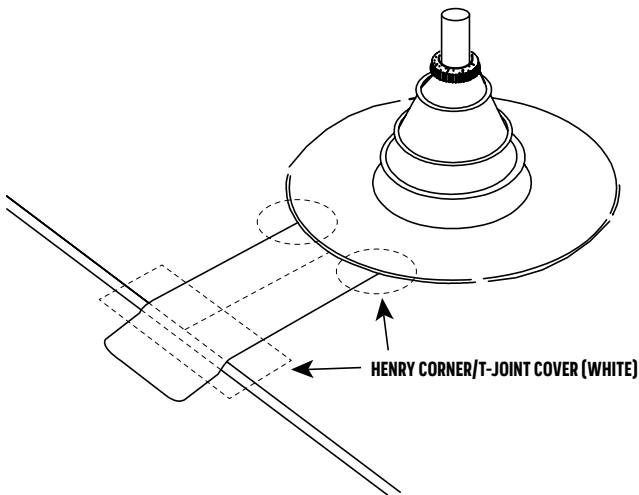
Corners

Finish outside corners with Henry Corners/T-Joint Covers (white).



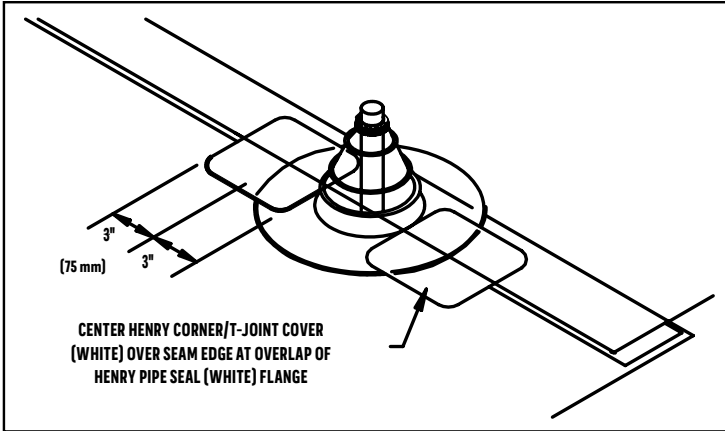
Pipe Seal

1. After applying Henry Low-VOC Primer to either side of the cut in the field TPO Membrane, install an appropriate length of Henry Cover Strip (white) and roll with a 2" roller.
2. Cut Henry Pipe Seal (white) adjacent to the raised "ring" one size smaller than the pipe diameter. DO NOT CUT DIAGONALLY THROUGH THE INDEX RING.
3. Pull Henry Pipe Seal (white) over pipe until base flange is in contact with TPO Membrane.
4. Mark pipe around the top of Henry Pipe Seal (white).
5. Pull Henry Pipe Seal (white) upwards on pipe, until mark on the pipe is visible.
6. Install Henry Low-VOC Water Cut-Off Mastic below the mark that indicates the top of the installed Henry Pipe Seal (white).
7. Apply Henry Low-VOC Primer to deck TPO Membrane in the area where the base flange will be bonded. Allow to dry.
8. Pull Henry Pipe Seal (white) back down over pipe and into position.
9. Remove release liner from the tape, and with hand pressure, press tape to primed area. Roll splice area with a hand roller.
10. Install a stainless steel universal clamping ring to the top of Henry Pipe Seal (white) to provide constant compression of Henry Low-VOC Water Cut-Off Mastic.
11. Apply Henry Corners/T-Joint Covers (white) where Henry Pipe Seal (white) intersects a field splice.
12. Apply Henry Lap Sealant (white) around Henry Corners/T-Joint Covers (white).



NOTE: Temperature of the pipe must not exceed 180°F.

Pipe Seal



NOTES:

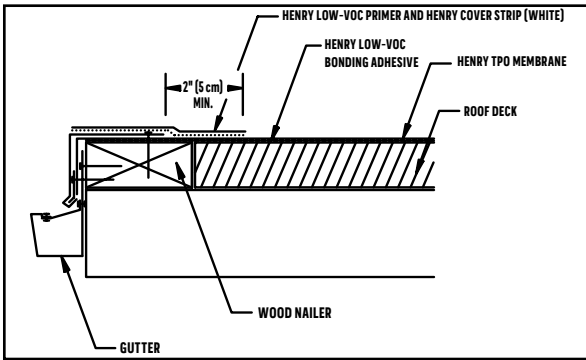
1. Remove all lead and other existing flashing material.
2. Henry Pipe Seal (white) must have intact rib at top edge, regardless of pipe diameter.
3. Deck flanges of Henry Pipe Seal (white) shall not be overlapped, cut or applied over any angle change.

Roof Edge Details

Metal Drip Edge and Drip Edge to Gutter Using Henry Cover Strip

Install a metal drip edge per manufacturer's instructions. Apply Henry Low-VOC Primer to the metal drip edge and TPO Membrane, for the entire length of the drip edge. To ensure proper adhesion, apply Henry Low-VOC Primer to an area that is wider than Henry Cover Strip (white). Henry Cover Strip (white) should be applied 1/2" from the outside edge of the metal drip edge while extending onto the deck TPO Membrane by at least 2".

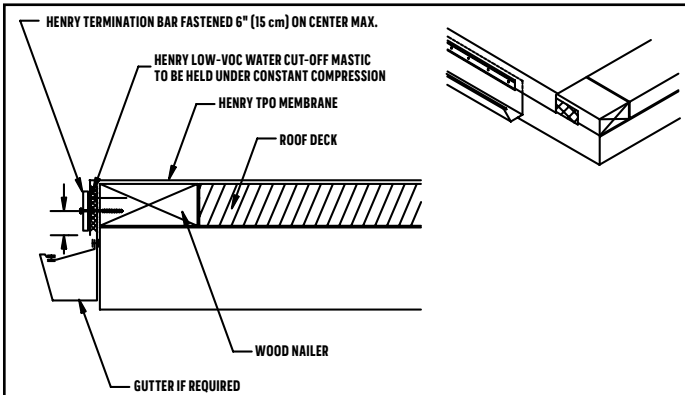
When splicing two pieces of Henry Cover Strip (white), allow for a minimum overlap of 1". Apply Henry Corners/T-Joint Covers (white) and Henry Lap Sealant (white) where needed.



NOTES:

1. Min. 2" (5 cm) seam from nail head.
2. Henry Cover Strip (white) must overlap deck TPO Membrane min. 2" (5 cm).
3. Fasteners and fastener pattern as recommended by metal edge manufacturer.
4. Wood nailer must extend past total width of metal edge deck flange.
5. Underside of metal flange must be sealed at all joints.

Termination Bar to Gutter



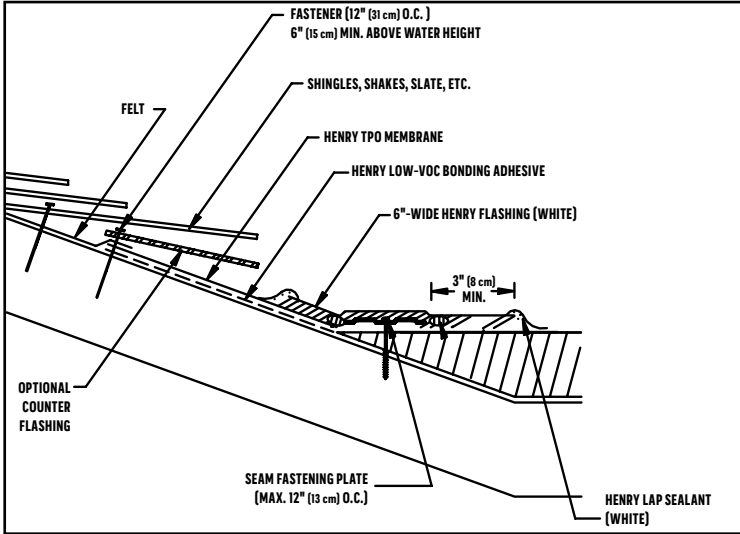
NOTE:

Spacing of appropriate termination bar fastener must provide constant compression on Henry Low-VOC Water Cut-Off Mastic.

Membrane To Shingle Transition

When installing TPO Membrane system with a tie-in to an existing shingle roof, remove a minimum of 3 courses of shingles. Adhere TPO Membrane onto the sloped roof deck. Nail the top of TPO Membrane every six inches (6"), and install the shingles over TPO Membrane as shown.

Keep the bottom course of shingles a minimum of four inches (4") above the roof angle change. To adhere the bottom course of loose shingle tabs to TPO Membrane, lift each tab, and apply a one-inch (1") long bead of Henry Lap Sealant (white).



Terms

COVER STRIP: Six inch (6") white membrane with butyl tape laminated to one side. Used when stripping in metal drip edge, repairing cuts in field TPO Membrane or flashings, which require cured membrane.

FISH MOUTH: A wrinkle that is formed when an increasing amount of TPO Membrane is forced onto an area that is too small to accommodate the material. When the wrinkle ends at the edge of the material, a conical opening is formed called a fish mouth. Wrinkles and fish mouths in seams are not acceptable, they must be removed, and the area must be covered with a Corner/T-Joint Cover.

FLASHING: Uncured white membrane with butyl tape laminated to one side. Used as an overlay in the areas where field seams make angle changes. Flashing will cure in the position in which it is applied.

FLASH OFF: The solvents in adhesives or primer will evaporate, leaving the material in a tacky, not wet or stringy condition, before mating the two surfaces together. If the proper flash off time is not allowed, blisters will form in TPO Membrane. Blisters over time will usually disappear.

INSULATION PLATES AND SCREWS: Used to mechanically attach insulation boards to roof decks.

LAP SEALANT: Applied to exposed edges of flashings.

LOW-VOC BONDING ADHESIVE: Low-VOC Bonding Adhesive used to adhere field sheets to substrates, walls and curbs. It should be thoroughly stirred before using, and will be yellow in color.

LOW-VOC PRIMER: Low-VOC Primer formulated with low-VOC content solvent used to prime TPO Membrane prior to applying pressure sensitive products. DO NOT APPLY LOW-VOC PRIMER DIRECTLY TO TAPE. Low-VOC Primer is only applied to surface being prepared to accept tape products.

LOW-VOC WATER CUT-OFF MASTIC: Used to create a waterproof compression gasket when TPO Membrane is mechanically fastened using a Termination Bar or Pipe Seal Clamp. Low-VOC Water Cut-Off Mastic is applied between TPO Membrane and the pipe, or wall. The mechanical termination is installed over TPO Membrane, compressing Low-VOC Water Cut-Off Mastic and creating the gasket.

METAL DRIP EDGE: Used to create a finished appearance and prevent water from running down the surface of fascias and walls. Metal drip edge is made from coated aluminum and steel.

Terms

PIPE SEAL: Pre-molded Pipe Seal. The best and most cost-effective way to flash pipes.

PIPE SEAL CLAMP: Stainless steel clamp used to secure the top of Pipe Seal to the pipe.

SEAM TAPE: Butyl tape used to create a watertight seam between two pieces of TPO Membrane.

SINGLE-PLY SEALANT: A general purpose sealant applied to the top of Termination Bars and Pipe Seals.

SUBSTRATE: The surface upon which TPO Membrane is applied (insulation, walls, etc.).

TERMINATION BAR: Extruded aluminum bar used to terminate TPO Membrane at parapet walls, chimneys, skylights and AC curbs. Also used to terminate TPO Membrane fascia when no metal drip edge is used. The proper fastener should be installed and spaced not more than 6 inches on center. A ¼-inch space should be maintained between Termination Bars.

TPO MEMBRANE: Reinforced thermoplastic membrane applied to roof decks and walls as a waterproofing layer.

For more information, visit www.henry.com or for technical assistance call us at 800-486-1278. Refer to Safety Data Sheets prior to using products. Safety Data Sheets are available at www.henry.com or by emailing Henry Product Support at productsupport@henry.com or by calling 800-486-1278.

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