

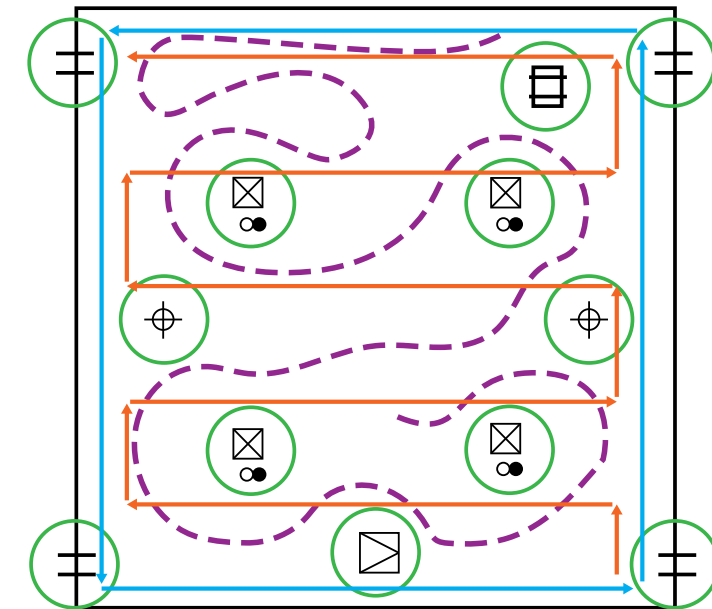


Quick Reference

Guide for Inspecting Your System

This guide will illustrate the minimum requirements of a roof inspection and provide a basic understanding of some common details.

Below is a simple roof drawing with penetrations included. It shows the path followed by Carlisle Field Service Representatives (FSRs) when they inspect a roof for warranty.



- Roof Hatch
- Curb
- Pipe
- Pourable Sealer Pocket
- Scupper
- Drain
- Sleeper

- Step 1: Inspect the perimeter.**
Update the roof plan to show the location of all curbs, penetrations, drains, etc.
Focus on securement and termination.
Mark deficiencies on the roof plan as they are found.
- Step 2: Inspect all seams on the roof level.**
Focus on plate placement and proper seaming.
- Step 3: Inspect all curbs, penetrations, drains, etc.**
Focus on one detail at a time, confirming proper securement, termination, and flashing minimums.
- Step 4: Finally, walk across the roof, update areas in need of repair, and perform a general check of the system.**

Note: This drawing is for your records. Applicators should complete all repairs by the end of each work day.

When the roof has multiple levels, inspect one level at a time. For larger roof levels, break into smaller sections to eliminate confusion.

NOTE: USE TPO PRIMER WITH ALL PRESSURE-SENSITIVE (PS) PRODUCTS.

Heat Welding Procedures:

Temperature settings for automatic welder:
TPO = 1004°F

All welds must be a minimum of 1½" wide, regardless of warranty duration.

Minimum requirements for test welds: Perform a test weld at the start of work each morning and afternoon by using like material over the same substrate. Carlisle does not require the use of destructive testing.

Once cooled, peel the test sample apart to examine delamination of the membrane from the scrim reinforcement.

Welding Troubleshooting Checklist:

- Temperature and/or speed of welder
- Outside temperature (humidity and time of day)
- Heat transfer over insulation plates
 - Cold welds/voids can be found where seams cross over plates
- Cord size and distance from power source
- Generator size and wattage
 - Minimum 6500-watt generator for 1 automatic welder
 - Minimum 3000-watt generator for 2 hand welders
- Regular service/maintenance for welder
- Cleanliness of membrane
 - Proper cleaning materials/rags
 - Weathered Membrane Cleaner for TPO membrane
- Cleanliness of automatic welder/hand welder nozzle
- Check all start and stop points thoroughly

All seams must be probed prior to final roof inspection. Voids in the membrane must be repaired by the end of each work day.

Please consult Carlisle's Specification Supplement (section T-01-11) for more information about welding procedures, generator usage, and general troubleshooting.



IMPORTANT INFORMATION:

If you need assistance, it's only one call away.

Local FSR phone number:

Additional FSR phone number(s):

Sales Representative phone number:

Technical Sales Representative phone number:

Distributor phone number(s):

As a reminder, this guide is meant to help with details commonly seen in the field. Not all details are included in this guide. Carlisle applicators are encouraged to call with any questions.

For assistance, please call 1-800-479-6832 and ask for the Technical Warranty Services Department.

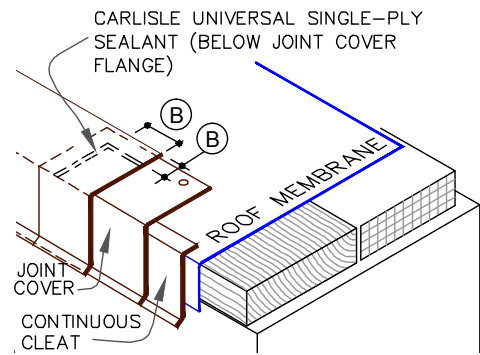


TPO (Thermoplastic) Rooftop Guide/Inspection Checklist

Common Details

U-1A SecurSeal Drip Edge

- Is wood nailer wider than metal flange?
- Is wood nailer flush with insulation?
- A continuous cleat and the metal must be fastened 6" OC using ring shank nails.
 - Installed according to SMACNA ES-1 requirements.
- Deck flange must be completely covered by TPO PS Cover Strip with a minimum of 2" coverage past nail heads.
 - Apply TPO PS Coverstrip using TPO Primer or Low-VOC Primer.
 - Wood nailer must be securely anchored.
 - When using metal by others, the metal flange must be fastened so it does not bow prior to overlaying.



U-1A SecurSeal Drip Edge Fascia

U-2A/MF- 2A Membrane Splice

- Are all seams probed? Are all welds a minimum of 1½" wide?
- If reinforced edging is exposed, is 1/8" bead of TPO Cut-Edge Sealant present?
- For 60-mil and thicker membranes, are TPO T-Joint Covers present at field splice intersections?
- On mechanically fastened systems, are Piranha™ Plates fastened minimum 12" OC within the field splice?

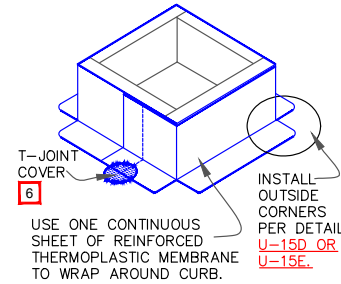
U-5A Curb Flashing Thermoplastic

- Is 1½" hot air weld past plates and fasteners present?
- Is membrane terminated properly at the top of the curb?
 - Is counter-flashing used? If so, was it fastened with neoprene washers?
 - Are fasteners present underneath metal counter-flashing?
 - Is Water Cut-Off Mastic present?
- Membrane securement at inside angle changes?
- Are outside corners complete?
- On 60-mil and thicker membranes, have factory-fabricated T-Joint Covers been installed?
- If Termination Bar is used, follow U-9D Details.

U-6A Drain Details

- Are all drain bolts or clamps are in place to provide constant compression?
- Hole in membrane must be larger than drain hole itself, minimum ½" from inside the drain ring.
- Is Water Cut-Off Mastic present between the cleaned drain bowl and the membrane?

- If seams are present in drain:
 - Entire splice overlap at drain base must be hot air welded.
- Drain ring must not be broken/cracked (must be replaced if found this way).



U-5A Curb Flashing

U-8 Pipes/Single Penetrations

Note: Temperature of pipes must not exceed 160°F. Field-fabricated Hot Stack must be installed per Detail U-8E.

Pre-molded Pipe Flashing

- Is it on a flat surface (flanges cannot be overlapped)?
- Is cut in pipe boot above rib?
- Are Water Cut-Off Mastic and clamping ring present at top of boot?

Field-fabricated Pipe Flashing

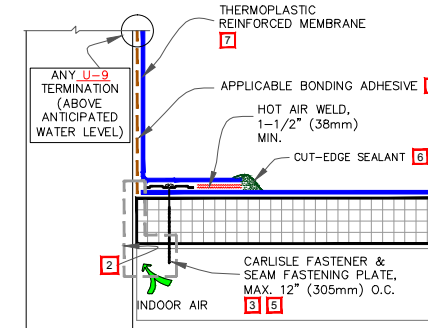
- Are two wraps present?
 - Base wrap goes up pipe ½" minimum?
 - Top wrap overlaps base wrap 1" with a 1½" minimum splice on the vertical overlap?
 - Are Water Cut-Off Mastic and clamping ring present at top of field-fabrication?
 - Fully adhered systems: Securement is needed at any pipes greater than 18" in diameter. Mechanically fastened systems: securement is always required.

U-9 Termination Bars

- If warranty duration is 15 years or longer, Termination Bar must be present.
 - For warranties longer than 20 years, counter-flashing and Termination Bar must be used.
- Is Water Cut-Off Mastic present?
- Is Universal Single-Ply Sealant/sealant by others present at top of Termination Bar?
 - If counter-flashing is used, Universal Single-Ply Sealant/sealant by others is required at top edge of metal flashing: not on top of Termination Bar.
- Termination Bar not bent?
- Fastening of bar shall never exceed 12" OC and must always be sufficiently fastened to keep constant compression on Water Cut-Off Mastic.
- Do not wrap Termination Bar around corners. Apply on hard, smooth surfaces only: not for use on exposed wood.
 - See Detail U-9E for additional requirements if Termination Bar is used at tilt-up panel joints.
 - Water Cut-Off Mastic must be installed at approximately 10' per tube.

U-12 Parapet/Curb Angle Change

- Is securement present? Note: TPO Primer is required to mate membrane to PS RUSS, bonding adhesive is not acceptable.
 - Appropriate fastening rate for required warranty? No more than 12" OC.
 - 6" OC for warranty wind speeds greater than 90 mph.
- Verify all flashings are properly adhered.
- When seam is present at angle change, there must be a 1½" weld.
 - If 1½" weld is not achieved, overlay using TPO Non-Reinforced Flashing with a minimum 1½" splice in all directions around the splice.
- How is membrane terminated?
 - See Detail U-9.



U-12A Parapet Flashing

U-13 Tie-ins to Existing Roofing System

- Is membrane securement present?
- If the deck slopes toward the new roofing system, refer to tie-in details: Concrete Deck Termination or Weep Holes Steel Deck.
- For built-up roof tie-ins:
 - Cold Tie-in – PS Elastoform Flashing® used with Two-Part Pourable Sealer.
 - Hot Tie-in – multiple layers of felt and asphalt must be used. Refer to pg. 50 of the Field Guide for exact steps. See Detail U-13B.
- Tie-ins for existing membrane/EPDM or TPO U-13C, D, and E:
 - PS Cured Coverstrip or field membrane in conjunction with PS SecurTAPE™.
- Shingle roof tie-ins: Detail U-13F (extend above anticipated slush line).
- When tying in to PVC, a complete isolation of the system must be built and separation walls must be constructed.

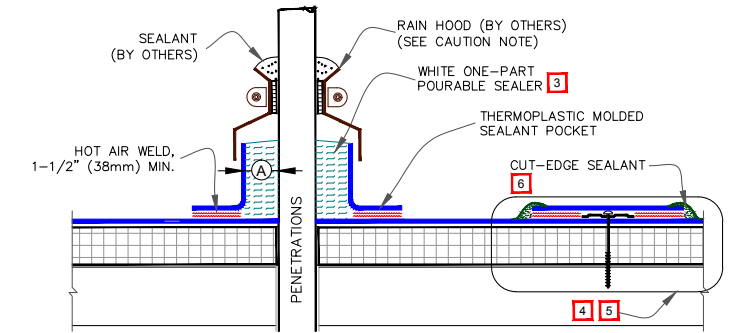
U-15 Inside/Outside Corner With or Without PS RUSS

- Is membrane securement present at angle change?
- Are plates and fasteners 6"-9" away from Inside/Outside Corner?
- Are plates and fasteners minimum 12" OC? Note: 6" OC must be used when warranty wind speed is greater than 90 mph. See U-12 Details.
- Pig ear fold in Inside Corner:
 - Fold on vertical wall and shedding water? 1½" weld achieved?
- When flashing Inside or Outside Corners, use one of the following:

- TPO Inside Corners or TPO Outside Corners. Please note: TPO accessory corners are not universal.
- Or, when cutting your own 6" x 6" TPO Non-Reinforced Flashing:
 - Flashing must be formed before application of Inside or Outside Corners. See Details U-15 B and F.

U-16 Molded Sealant Pockets

- For use on multiple hard-to-flash penetrations. Pipe clusters must have a minimum of 1" clearance between penetrations.
- Entire area inside Molded Sealant Pocket, as well as all penetrations, must be primed using TPO Primer or Low-VOC Primer.
- Carlisle One-Part Pourable Sealer must be used: filler by others is not allowed. Is Pourable Sealer at least 2" deep?
- 1½" weld present on deck flange?
- Securement is required on mechanically fastened systems: Not required on fully adhered systems.
 - In fully adhered systems, pockets larger than 18" in diameter must have plates and fasteners.



U-16A Molded Sealant Pocket

U-18 Metal Scupper

- Metal scupper box must have a continuous flange with rounded corners.
- Is wood nailer present underneath metal?
- Is Water Cut-Off Mastic present underneath metal and on top of membrane?
- Is Cut-Edge Sealant present?
- Sealant by others is needed on outside of scupper where the scupper meets the outside wall.

U-24 Sleepers/Wood Blocking

- Are slip sheets present underneath to prevent damage to new membrane?

Check usage of Walkway Rolls.

- Present at all fixed access points, HVAC units that are regularly serviced, and concentrated walk areas?

U-27 Insulation Fastening

- Is insulation fastening in accordance with current specifications and details?
- Has proper fastener penetration been achieved?
- Reduced fastening patterns are approved on 22-gauge or heavier steel, concrete, minimum 1½" wood, and ¾" plywood decks only.