

G-20

Rooftop Component Anchorage and Attachment

July 2026

The information contained in this supplement serves as criteria for Specifiers and Authorized Applicators regarding the design and installation of Carlisle Roofing Systems and the use of rooftop component anchorage and attachment for roofing assembly installations. In addition to the information contained herein, attached details are included to provide the Specifiers and Authorized Applicators with quick access to specific information. Specifiers and Authorized Applicators are advised to reference all applicable details included with this spec supplement.

A. Description

Rooftop Component Anchorage and Attachment systems incorporate a code compliant, watertight and warrantable system of hardware, brackets, fasteners and accessories used for the positive securement of non-structural rooftop components including but not limited to HVAC units, ductwork, vent and exhaust stacks, antennas, flagpoles, etc. Rooftop component anchorage and attachments are installed within a new Carlisle Roofing Membrane (EPDM, TPO, PVC, KEE HP) system or retrofit application installed in accordance with the appropriate Carlisle Roof Membrane Specification.

1. Membrane Roof Systems

Rooftop component anchorage is installed as an accessory to a new or existing, single-ply roof assembly (EPDM, TPO, PVC, KEE HP) to provide positive securement of rooftop components directly to the roof deck while maintaining the watertight integrity of the system.

Secure rooftop equipment in all zones and regions of the roof with an engineered rooftop attachment system designed for maintaining a watertight condition without damage to the roofing assembly. The anchor assembly shall consist of a flashing, weatherized steel plate, and a welded, threaded attachment meeting requirements for the specific application.

- a. **Adhered Assemblies** – Using EPDM, TPO, PVC or KEE HP, insulation may be installed either mechanically (fastened directly to the deck) or set in Flexible FAST bead adhesive to the structural deck. Subsequent layers of insulation or coverboard may be mechanically fastened through all layers or set in Flexible FAST bead adhesive. The membrane shall be fully adhered using the appropriate bonding adhesive following Carlisle's Thermoset (EPDM), Thermoplastic (TPO, PVC and KEE HP), FleeceBACK (EPDM, TPO, PVC or KEE HP) or FleeceBACK AFX (EPDM or TPO) membrane specifications.
- b. **Induction Welded Assemblies** – Using TPO or PVC / KEE HP, insulation is mechanically fastened using appropriate Carlisle Fasteners and TPO or PVC / KEE HP Induction Welding Plates which are used to secure both layers to the structural deck. The fastening density of the plates and fasteners shall be in compliance with the Induction Welding Attachment (Attachment I) of the Thermoplastic Specification.
- c. **Mechanically Fastened Assemblies** – Using EPDM, TPO, PVC or KEE HP, membranes are mechanically fastened over insulation/underlayment to the deck with the appropriate Carlisle Fasteners and Fastening Plates. The fastening density of the plates and fasteners shall be installed per Carlisle's Thermoset (EPDM), Thermoplastic (TPO, PVC and KEE HP) membrane specification.

B. Quality Assurance

1. The specified roofing system must be installed by a Carlisle Authorized Roofing Applicator in compliance with drawings and specifications as approved by Carlisle SynTec.
2. Roof system must be inspected and approved by a Carlisle Field Service Representative. All anchors intended for photovoltaic (PV) system anchorage shall be inspected and verified for proper installation prior to placement of the PV array. Refer to Carlisle's PV letter of compliance.

3. Rooftop component anchorage fastener type and fastening density for attachment to the structure must be specified by a structural engineer or registered design professional and design approved by the Authority Having Jurisdiction (AHJ).
4. Concrete Decks: Do not install this assembly before the concrete deck has reached its' initial structural strength. Project Engineer must be consulted prior to job start-up.
5. Concentrated loads from rooftop equipment may cause deformation of insulation/underlayment and possible damage to the membrane if proper protection is not provided.
6. Structural Loads
 - a. Rooftop components and their support must be designed to resist dead loads, live loads, wind and seismic loads in compliance with the specified local building code.
 - b. It is the responsibility of the building owner or his/her designated representative to verify structural load limitation. In addition, a core cut may be taken to verify the weight of existing components when the roofing system is to be specified on an existing facility.
 - c. Coordinate additional design considerations for seismic and wind zones with the Structural Engineer
7. Compliance, Codes & Approvals
 - a. International Building Code (IBC)
 - b. International Mechanical Code (IMC)
 - c. American Society of Civil Engineers (ASCE): ASCE 7 (As adopted by local AHJ) provides the requirements for attaching nonstructural components to a structure.
 - i. Components shall be bolted, welded, or otherwise positively fastened without consideration of frictional resistance produced by the effects of gravity. A continuous load path of sufficient strength and stiffness between the component and the supporting structure shall be provided.
 - d. Factory Mutual
 - i. FM-4481 – Anchors for Roof Mounted Equipment

C. Submittals

1. Shop drawings must be submitted to Carlisle by the Carlisle Authorized Roofing Applicator along with a completely executed Notice of Award (Page 1 of Carlisle's Request for Warranty form) for approval. Approved shop drawings are required for inspection of the roof and on projects where on-site technical assistance is requested.
2. Upon completion of the installed work, submit copies of the manufacturer's final inspection to the specifier prior to the issuance of the manufacturer's warranty.
3. Submittals:
 - a. Complete Roof Plan indicating all roof drains, scuppers, chimneys, crickets, roof hatches, ladders and accessories.
 - b. Structural plans for area to receive anchors indicating structural deck type.
 - c. Shop drawing indicating anchor locations.
 - d. Temporary Rooftop Protection Plan indicating locations to be protected and materials used to protect the existing roof membrane during anchor installation.
 - e. Schedule of anchors / fasteners specific to the project.
 - f. Schedule of equipment to be anchored including type, dimensions, weight of equipment and installation layout.
 - g. Product data sheet for rooftop component anchors and accessories to be installed.

D. Rooftop Component Anchorage Products - Rooftop Attachment System: Engineered, attachment system specifically designed for installation without the need for exposed roof penetrations, ballast or flashings, and without causing damage to the roofing membrane.

Refer to Anchor Products installation instructions and the specified roofing material manufacturer requirements before installation.

1. **U2400 EPDM:** a lightweight, rooftop attachment system consisting of a pressure-sensitive factory cut EPDM (Ethylene Propylene Diene Monomer) flashing membrane and a U-Anchor 2000 series G90 galvanized steel plate with (1) one 3/8"-16 x 1-3/8" stainless steel bolt.
 - a. Provides a positive, watertight, manufacturer accepted attachment for mechanically attached and fully adhered EPDM roofing membranes.

- b. Attached by fastening through the roofing assembly into the structural decking with type and number of fasteners specified by your design professional.
 - i. Flashing membrane material: EPDM (Ethylene Propylene Diene Monomer)
 - ii. Flashing membrane thickness: 60-mil; 90-mil available upon request (additional lead time)
 - iii. Flashing membrane color: Available in all standard EPDM colors to match the roof installation.
 - iv. Plate: G90 Galvanized Steel Plate
 - v. Plate size: 11.75" x 11.75" Cover Membrane; 5.5" diameter G90 Galvanized Steel Plate
 - vi. Plate thickness: 0.047"
 - vii. Bolt: 3/8"-16 x 1-3/8" Type 304 Stainless Steel
2. **U2400 TPO:** a lightweight, rooftop attachment system consisting of a TPO (thermoplastic polyolefin) flashing membrane factory induction welded to a U-Anchor 2000 series G90 galvanized steel plate with (1) one 3/8"-16 x 1-3/8" stainless steel bolt.
- a. Provides a positive, watertight, manufacturer accepted attachment for mechanically attached and fully adhered TPO roofing membranes.
 - b. Attached by fastening through the roofing assembly into the structural decking with type and number of fasteners specified by your design professional.
 - i. Flashing membrane material: TPO (Thermoplastic polyolefin)
 - ii. Flashing membrane thickness: 60-mil; 80-mil available upon request (additional lead time)
 - iii. Flashing membrane color: Available in all standard TPO colors to match the roof installation.
 - iv. Plate: G90 Galvanized Steel Plate
 - v. Plate size: 11.75" x 11.75" Cover Membrane; 5.5" diameter G90 Galvanized Steel Plate
 - vi. Plate thickness: 0.047"
 - vii. Bolt: 3/8"-16 x 1-3/8" Type 304 Stainless Steel
3. **U2400 PVC / KEE HP:** a lightweight, rooftop attachment system consisting of a PVC / KEE HP (Polyvinyl Chloride / Ketone Ethylene Ester) flashing membrane factory induction welded to a U-Anchor 2000 series G90 galvanized steel plate with (1) one 3/8"-16 x 1-3/8" stainless steel bolt.
- a. Provides a positive, watertight, manufacturer accepted attachment for mechanically attached and fully adhered PVC / KEE HP roofing membranes.
 - b. Attached by fastening through the roofing assembly into the structural decking with type and number of fasteners specified by your design professional.
 - i. Flashing membrane material: KEE HP (Ketone Ethylene Ester) Note: Used for both PVC and KEE HP membrane installations.
 - ii. Flashing membrane thickness: 60-mil; 80-mil available upon request (additional lead time)
 - iii. Flashing membrane color: Available in all standard PVC / KEE HP colors to match the roof installation.
 - iv. Plate: G90 Galvanized Steel Plate
 - v. Plate size: 11.75" x 11.75" Cover Membrane; 5.5" diameter G90 Galvanized Steel Plate
 - vi. Plate thickness: 0.047"
 - vii. Bolt: 3/8"-16 x 1-3/8" Type 304 Stainless Steel
4. **U3400 EPDM:** a lightweight, rooftop attachment system consisting of a pressure-sensitive, factory cut EPDM (Ethylene Propylene Diene Monomer) flashing membrane and a U-Anchor 3000 series G90 galvanized steel plate with (2) two 3/8"-16 x 1-3/8" stainless steel bolts.
- a. Provides a positive, watertight, manufacturer accepted attachment for mechanically attached and fully adhered EPDM roofing membranes.
 - b. Attached by fastening through the roofing assembly into the structural decking with type and number of fasteners specified by your design professional.
 - i. Flashing membrane material: EPDM (Ethylene Propylene Diene Monomer)
 - viii. Flashing membrane thickness: 60-mil; 90-mil available upon request (additional lead time)
 - ii. Flashing membrane color: Available in all standard EPDM colors to match the roof installation.
 - iii. Plate: G90 Galvanized Steel Plate
 - iv. Plate size: 17.50" x 11.75" Cover Membrane; 11" x 5.5" G90 Galvanized Steel Plate
 - v. Plate thickness: 0.047"
 - vi. Bolts: 3/8"-16 x 1-3/8" Type 304 Stainless Steel

5. **U3400 TPO:** a lightweight, rooftop attachment system consisting of a TPO (thermoplastic polyolefin) flashing membrane factory induction welded to a U-Anchor 3000 series G90 galvanized steel plate with (2) two 3/8"-16 x 1-3/8" stainless steel bolts.
 - a. Provides a positive, watertight, manufacturer accepted attachment for mechanically attached and fully adhered TPO roofing membranes.
 - b. Attached by fastening through the roofing assembly into the structural decking with type and number of fasteners specified by your design professional..
 - i. Flashing membrane material: TPO (Thermoplastic polyolefin)
 - ix. Flashing membrane thickness: 60-mil; 80-mil available upon request (additional lead time)
 - ii. Flashing membrane color: Available in all standard TPO colors to match the roof installation.
 - iii. Plate: G90 Galvanized Steel Plate
 - iv. Plate size: 17.50" x 11.75" Cover Membrane; 11" x 5.5" G90 Galvanized Steel Plate
 - v. Plate thickness: 0.047"
 - vi. Bolts: 3/8"-16 x 1-3/8" Type 304 Stainless Steel
6. **U3400 PVC / KEE HP:** a lightweight, rooftop attachment system consisting of a PVC / KEE HP (Polyvinyl Chloride / Ketone Ethylene Ester) flashing membrane factory induction welded to a U-Anchor 3000 series G90 galvanized steel plate with (2) two 3/8"-16 x 1-3/8" stainless steel bolts.
 - a. Provides a positive, watertight, manufacturer accepted attachment for mechanically attached and fully adhered PVC / KEE HP roofing membranes.
 - b. Attached by fastening through the roofing assembly into the structural decking with type and number of fasteners specified by your design professional.
 - i. Flashing membrane material: KEE HP (Ketone Ethylene Ester) Note: Used for both PVC and KEE HP membrane installations.
 - x. Flashing membrane thickness: 60-mil; 80-mil available upon request (additional lead time)
 - ii. Flashing membrane color: Available in all standard PVC / KEE HP colors to match the roof installation.
 - iii. Plate: G90 Galvanized Steel Plate
 - iv. Plate size: 17.50" x 11.75" Cover Membrane; 11" x 5.5" G90 Galvanized Steel Plate
 - v. Plate thickness: 0.047"
 - vi. Bolts: 3/8"-16 x 1-3/8" Type 304 Stainless Steel

D. Accessories

1. **HVAC Tie-Down Kit (HTD 0640):** FM-4481 compliant securement for rooftop HVAC units (New Installations or Retrofit applications) consisting of the following components:
 - a. 3/16-inch x 12-feet long stainless-steel wire cable
 - b. (2) 30/30 brackets
 - c. (1) turnbuckle
 - d. (2) corner protectors
 - e. (1) wire cable thimble
 - f. (2) cable clamps
 - g. (2) 3/8" flange nuts
 - h. (2) 3/8" flat washers
2. **Guy Wire Tie-Down Kit (GWK 0600):** FM-4481 compliant securement for rooftop accessories such as vent stacks, antennas, roof mounted flag poles, etc. (New Installations or Retrofit applications) consisting of the following components.
 - a. 3/16-inch x 10-feet long aircraft grade stainless steel wire cable
 - b. (1) 30/30 bracket
 - c. (1) turnbuckle
 - d. (1) wire cable thimble
 - e. (2) cable clamps
 - f. (1) 3/8" flange nuts
 - g. (1) 3/8" flat washers
3. **2-Pipe Snow Fence (SRS 0220):** Snow retention system attached to single-ply roof membrane using the U-Anchor 3400-S series attachment. The 2-Pipe Snow Fence Kit should be used for snow retention in areas where the estimated snow load is not expected to exceed 65 psf or the roof slope does not exceed a slope of 4:12. Please contact Anchor Products for kits with greater estimated snow loads or greater roof slopes.

Note: Snow retention systems are designed and calculated based upon site specific requirements provided by the structural engineer for the project. The snow retention system is made up of several key components, including:

- a. Aluminum Bracket (4" long x 1.75" wide x 4" high, 0.19" pipe thickness)
 - a. 3/8" – 16 Stainless Steel Flange Nut
 - b. Stainless Steel Flat Washer
- b. Stainless Steel Pipe Collar (1.75" long x 0.627" wide x 1.75" high) with stainless steel set screw (5/16"-18)
- c. Stainless Steel Pipe Endcap (0.92" long x 0.295" wide x 0.92" high)
- d. Aluminum Restrictor Plates (4" long x 3.5" wide x 11.25" high)
 - a. 5/16" Self-tapping, zinc-plated Steel, Hex Head Fastener
- e. 8-foot; 1" OD Aluminum Pipe (96" long x 1" outside diameter)
- f. Aluminum Pipe Splice (6" long x 0.75" wide x 0.75" high)

E. Manufacturers

Anchor Products, LLC i.e., U-Anchor Rooftop Attachments.
P.O. Box 1551, Colleyville, TX 76034.
Tel: (888) 575-2131
www.AnchorP.com
Email: info@anchorcorp.com

F. Warranty

1. U-Anchors are approved for inclusion in Carlisle's watertight warranty and come standard with an Anchor Products 20-year limited material only warranty.
 - a. Anchor Products Standard 20-year Limited Material Only Warranty - Anchor Products warrants the U-Anchor product to be free of defects in material and workmanship to the original purchaser for a period of 20 years from the original date of sale.
 - b. Anchor Products Material Only warranties are contingent upon compliance with ASCE-7, ASTM D6630, Anchor's instructions as well as roof membrane manufacturer's specifications and shall not apply to any product that has been repaired or modified by persons other than Anchor.
 - c. The warranty does not cover any Product that is not installed in accordance with Anchor Products' instructions and the roof membrane manufacturer's specifications by a certified applicator.

G. Execution

Follow current specifications for installing roof membranes and seaming per specific membrane. [Sure-Seal (EPDM), Sure-Weld (TPO) or Sure-Flex (PVC / KEE HP)].

General

1. Prior to the start of work, the Contractor shall review and inspect rooftop component locations and identify anchorage points based on the existing structure. Any unsatisfactory roof membrane conditions shall be reported to the General Contractor at the time observed.
2. Where conditions are found to be unsatisfactory, work shall not begin until conditions are made satisfactory to begin work. Commencing of work shall indicate Contractor's acceptance of conditions.
3. Loose fasteners, metal shards and debris shall be removed when observed.
4. Before commencing work each day, the Contractor shall prepare all roofing substrates to ensure conditions are satisfactory to proceed with the installation of specified materials. Preparation of substrates includes, but is not limited to, substrate repairs, securement of substrates, eliminating all incompatible materials, and cleaning.
5. Consult roofing manufacturer of existing or new roofing system for the type of isolation pads required between the roof and base any equipment that may be in contact with the roof surface.
6. When requested by the Architect, provide a factory-trained representative of the manufacturer to visit the site while the work is in progress to assure that the installation conforms to the manufacturers' design and installation

requirements.

7. Roof Membrane Protection: The Contractor shall be responsible for providing temporary roof membrane surface protection for tradespeople from the point of roof access to all locations specified to receive rooftop component anchorage, providing an undamaged roof surface at the time of completion of work.
 - a. A Temporary Rooftop Protection Plan shall be submitted to the architect and approved prior to the start of work.
 - b. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
 - c. Only authorized personnel may access the roof surface. Unnecessary foot traffic shall be avoided.
 - d. Provide temporary membrane protective barrier for work areas which may include the following:
 - i. Plywood
 - ii. Gypsum Board
 - iii. Cement Board
 - iv. Polyiso, EPS, or XPS Rigid Insulation board
 - e. Cutting, drilling and grinding that must be done on the rooftop are to occur on a protected surface with proper clearance above the roof membrane.
 - f. Exercise care in installation of rooftop component anchorage with roofing or waterproofing so protection materials are not displaced and roofing or waterproofing is not punctured or otherwise damaged. Carefully replace protection materials that become displaced and arrange for repair of damaged roofing or waterproofing.
 - g. Use care in handling portable components and equipment during installation, to avoid damage to roofing, flashing, equipment, or related materials.
 - h. Maintain temporary protection and leave in place until replacement roofing has been completed.
 - i. Upon completion of work, the Contractor shall walk entire roof surface to ensure all tools, packaging and debris are removed.
8. The use of wood for creating equipment support is not permitted.
9. Wood blocking may be required beneath the U-Anchors if the anticipated compressive loads exceed the compressive strength of the roof assembly. Please consult with the project design professional or local building engineer to determine whether blocking is necessary.

H. U2400 / U3400 Anchor Installation

1. STEP 1: Align the U-Anchor Plate according to the engineered design. For installations requiring alignment of multiple U-Anchors in a row, snap a chalk line and align anchors along the chalk line using the pre-cut notches in the membrane flashing (TPO & PVC/KEE HP) or the bolt holes of the plate (EPDM).
2. STEP 2: Fasten the U-Anchor plate through the roofing system and into the roof deck using approved fasteners at the fastening density specified by the Project Engineer.
3. STEP 3: (EPDM only): Temporarily install flashing membrane and mark its perimeter. This will define the area where primer will be applied.
4. STEP 4:
 - a. For TPO and PVC/KEE HP anchors, clean the roof surface and hot air weld the anchor. For TPO installations, finish the installation by applying cut-edge sealant around the perimeter of the flashing membrane.
 - b. For EPDM anchors, apply EPDM primer on the anchor plate as well as the roof surface where the flashing will be installed. Allow the primer to get tacky to the touch.
5. STEP 5: (EPDM only): Cut a slit in the release liner on the underside of the flashing membrane. With the liner still attached, insert the bolt through the center hole of the cove flashing and position it in place by aligning the notches with the chalk line.
6. STEP 6: (EPDM only): Remove the flashing release liner, gently curl the flashing edges up and push the bolt(s) through the flashing hole(s). Before sticking the flashing down, ensure that it is properly aligned. Once aligned, press

the flashing down firmly to the roof surface with your hands to adhere, paying attention to avoid wrinkles and air pockets.

7. STEP 7: (EPDM only): Using a 2-inch wide and roller, roll the flashing material to achieve a proper bond to the anchor plate and roof membrane.
8. STEP 8: (EPDM only): Finish installation by placing the separation disk(s) around the bolt(s) before attaching any components to the u-Anchor. Adhesion of the separation disk is not required.

NOTE: When installed over a seam that creates a T-joint, follow applicable Carlisle's U-2 detail for proper T-joint treatment.

Associated Installation Details

U2400 Thermoset Application	AN-01
U3400 Thermoset Application	AN-02
U2400 Thermoplastic Application.....	AN-03
U3400 Thermoplastic Application.....	AN-04

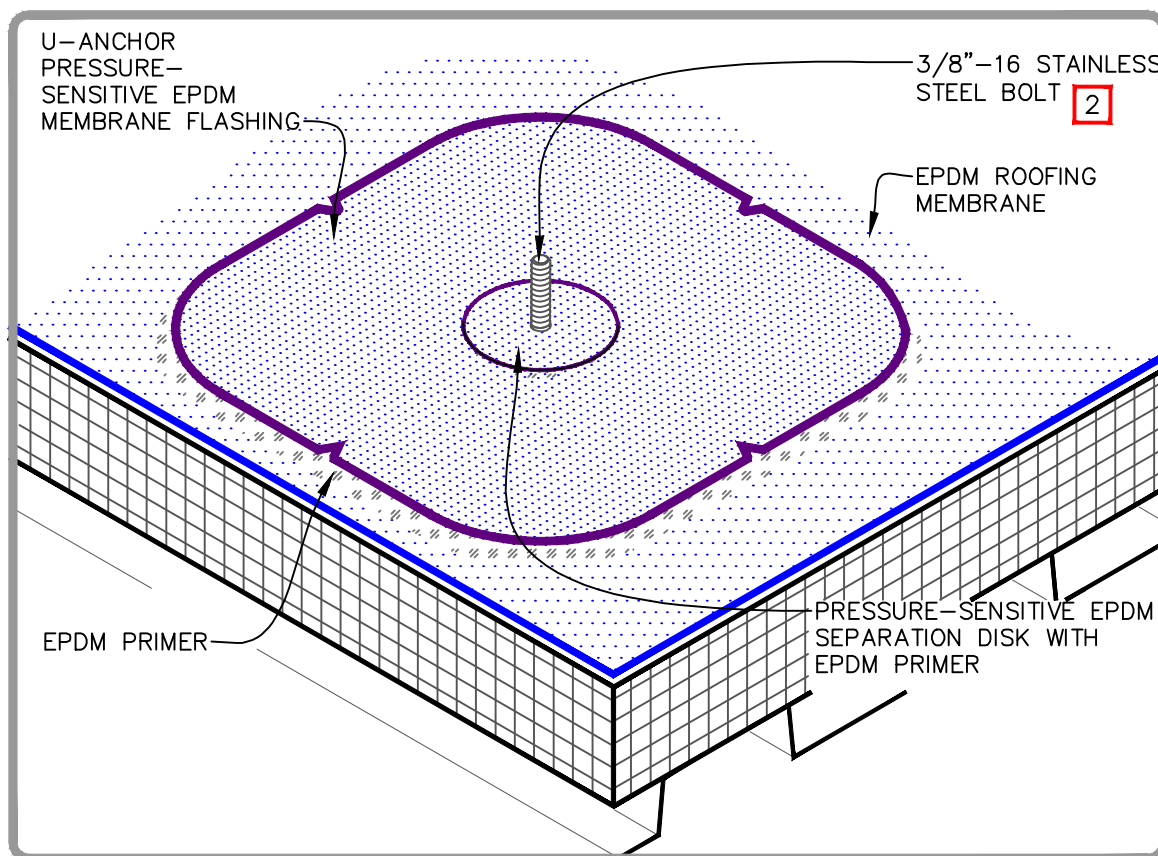
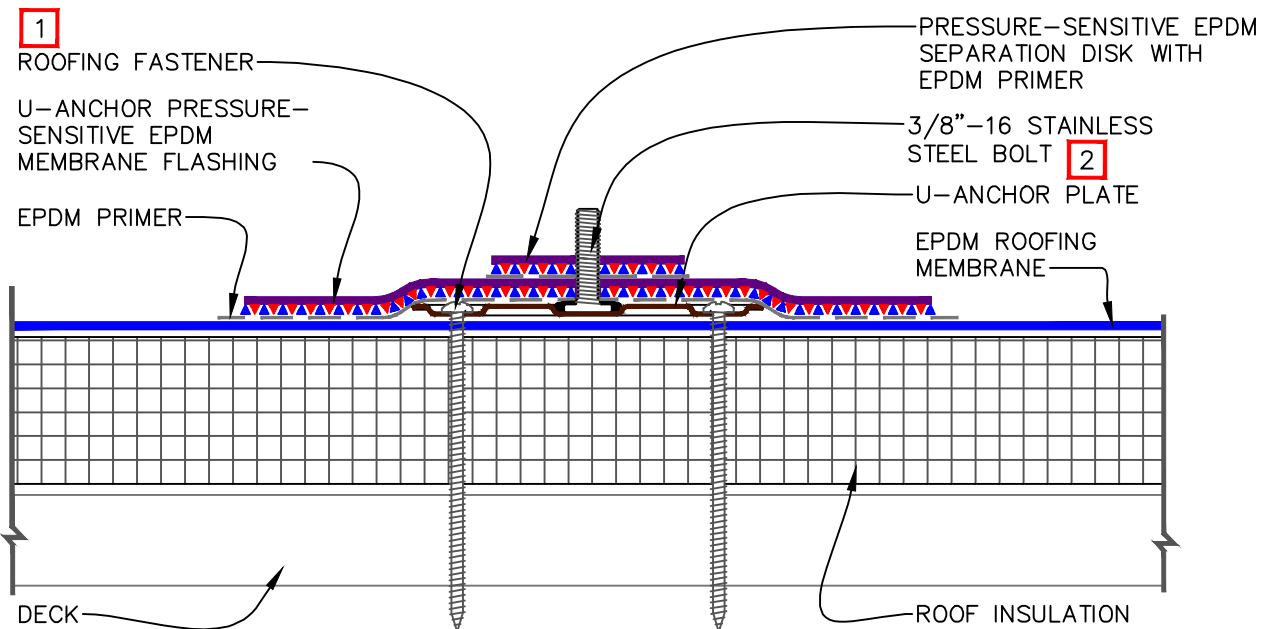
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Anchor Products is a trademark of Anchor Products LLC.

This specification represents the applicable information available at the time of its publication. Owners, specifiers and Carlisle Authorized Roofing Applicators should consult Carlisle or their Carlisle Manufacturer's Representative for any information which has subsequently been made available.

Review the appropriate Carlisle warranty for specific warranty coverage, terms, conditions and limitations.



NOTES:

1. FASTENER NOT INCLUDED WITH U-ANCHOR KIT. FASTENER TYPE DETERMINED BY DESIGN PROFESSIONAL.
2. STAINLESS STEEL BOLT INCLUDED WITH U-ANCHOR KIT



U2400 THERMOSET APPLICATION

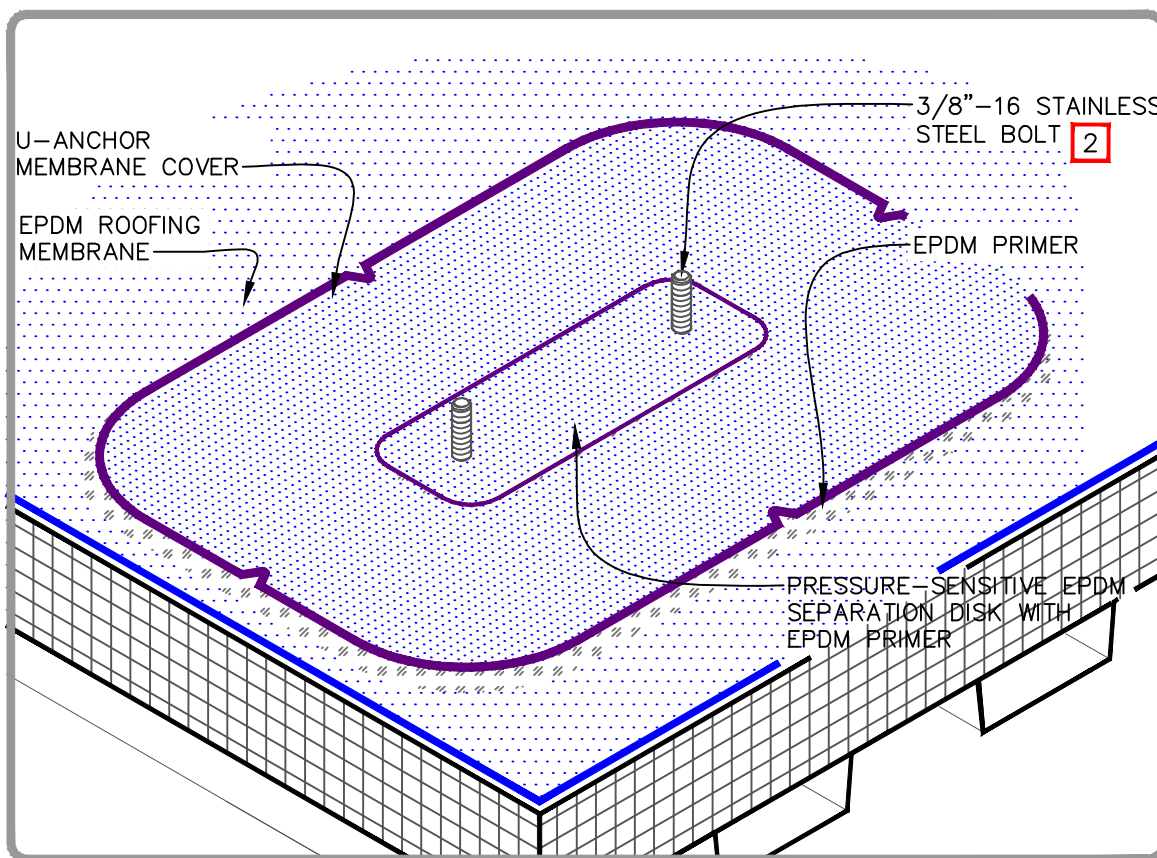
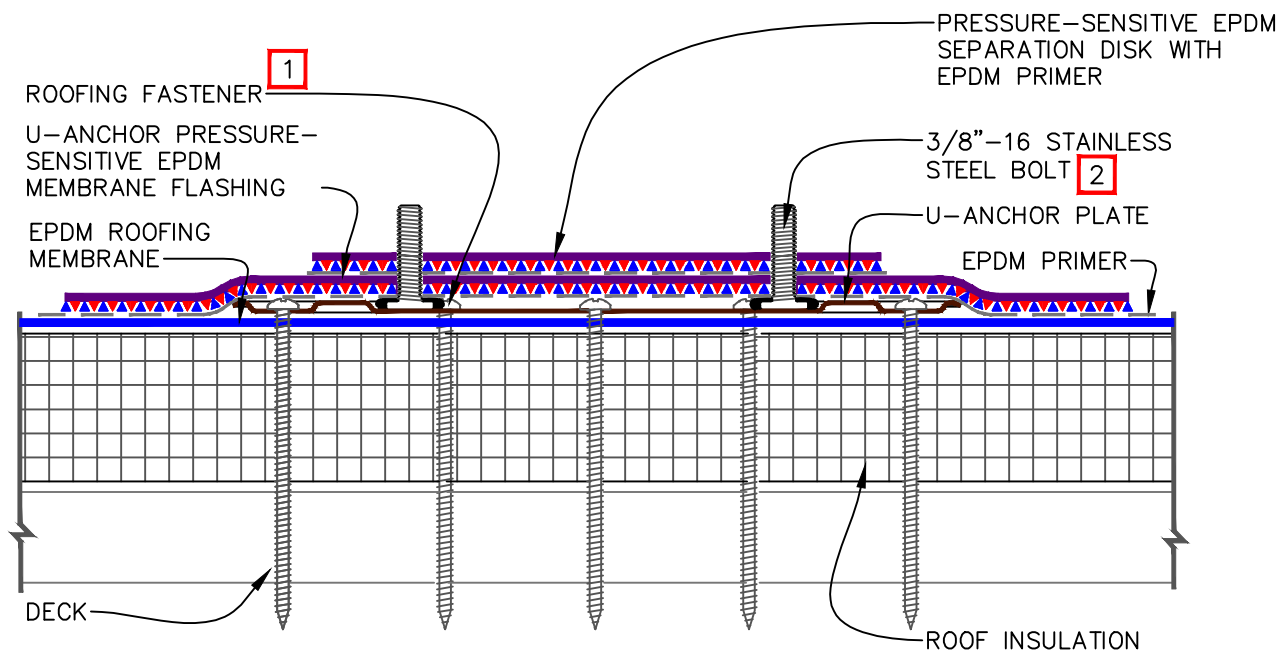
MAXIMUM WARRANTY: 20 YEARS



DETAIL NO.

AN-01

U (UNIVERSAL DETAIL)



NOTES:

1. FASTENER NOT INCLUDED WITH U-ANCHOR KIT. FASTENER TYPE DETERMINED BY DESIGN PROFESSIONAL.
2. STAINLESS STEEL BOLT INCLUDED WITH U-ANCHOR KIT



U3400 THERMOSET APPLICATION

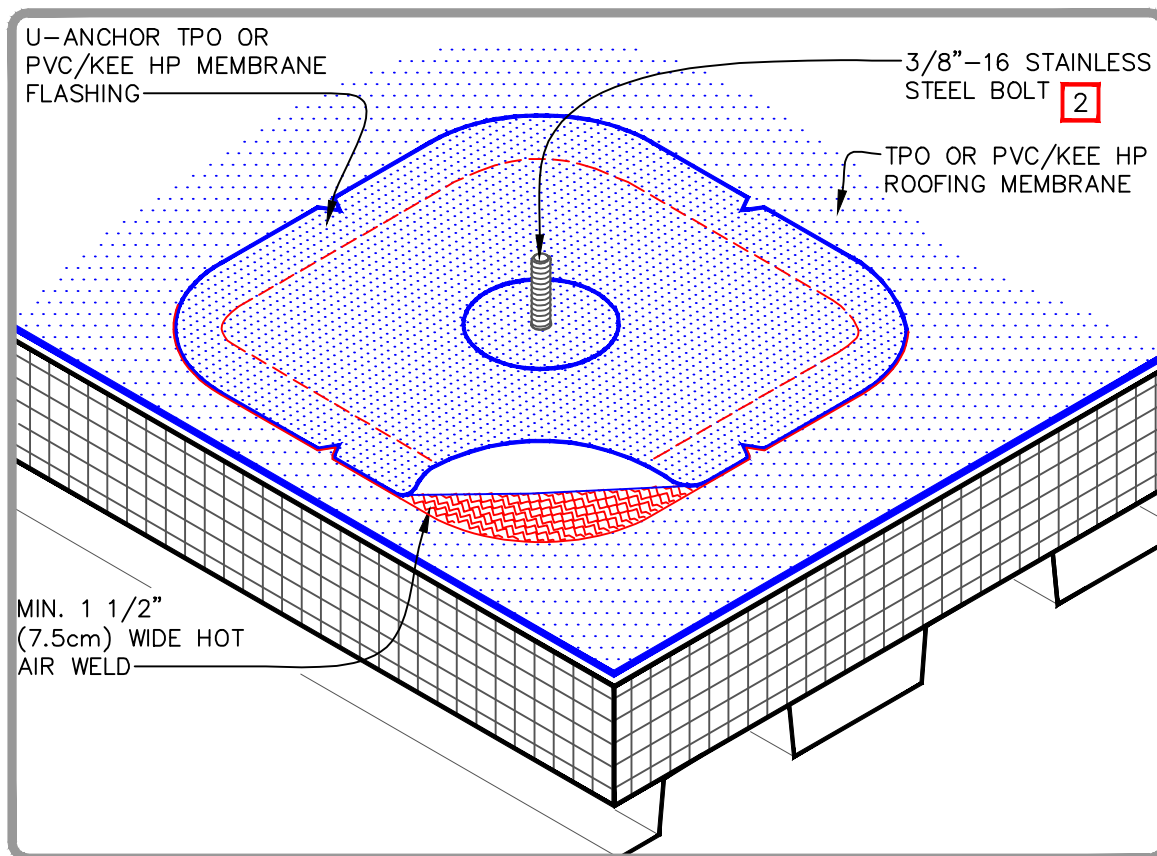
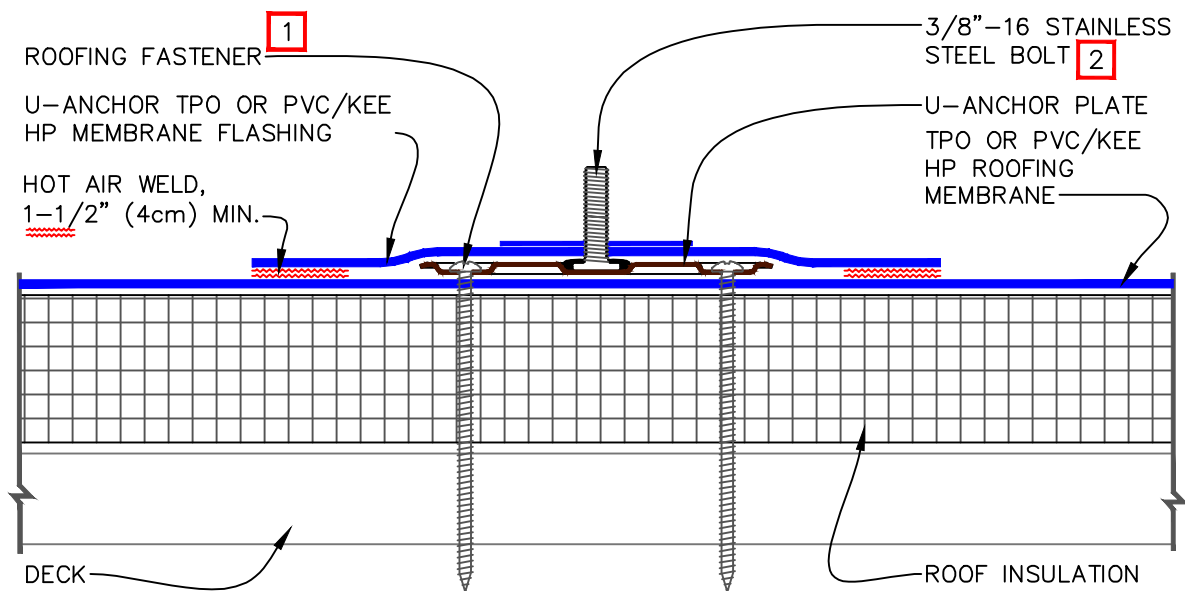
MAXIMUM WARRANTY: 20 YEARS



DETAIL NO.

AN-02

U (UNIVERSAL DETAIL)



NOTES:

1. FASTENER NOT INCLUDED WITH U-ANCHOR KIT. FASTENER TYPE DETERMINED BY DESIGN PROFESSIONAL.
2. STAINLESS STEEL BOLT INCLUDED WITH U-ANCHOR KIT
3. CLEAN EXPOSED MEMBRANE SURFACE WITH WEATHERED MEMBRANE CLEANER AND ALLOW TO DRY.



U2400 THERMOPLASTIC APPLICATION

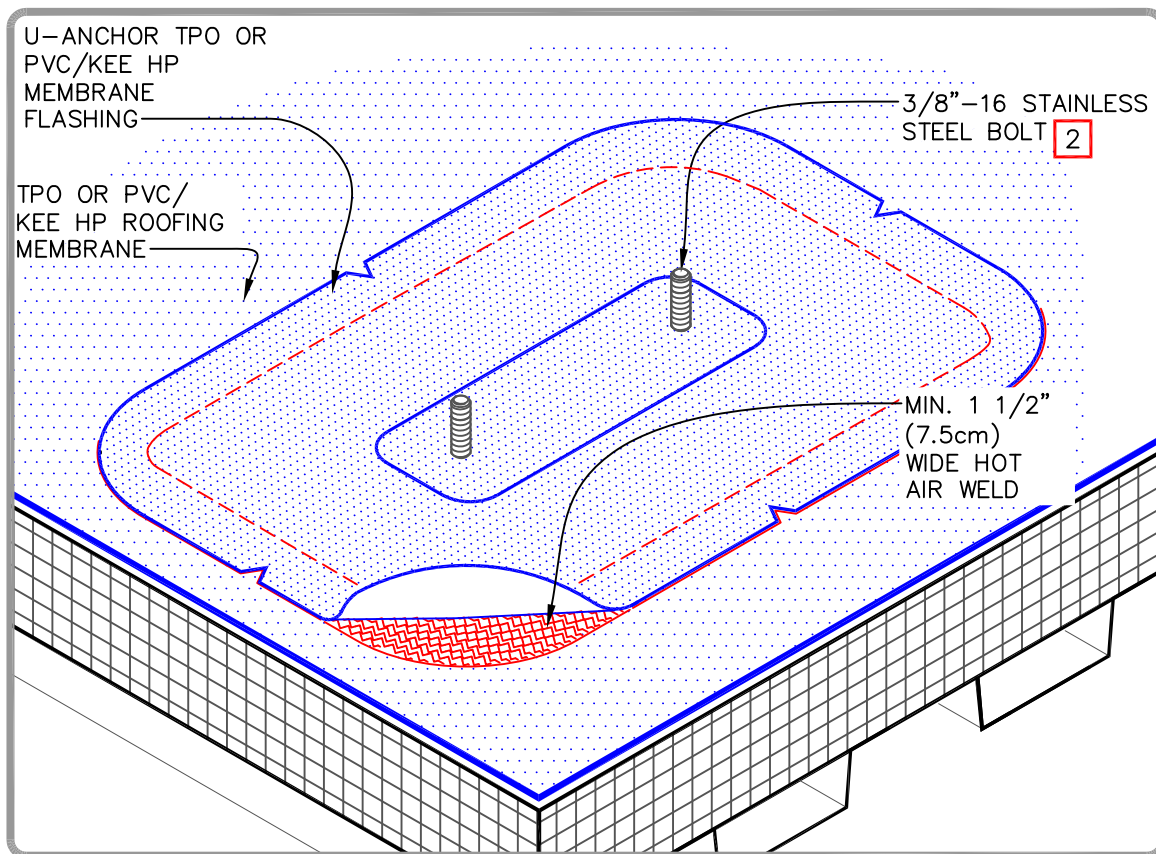
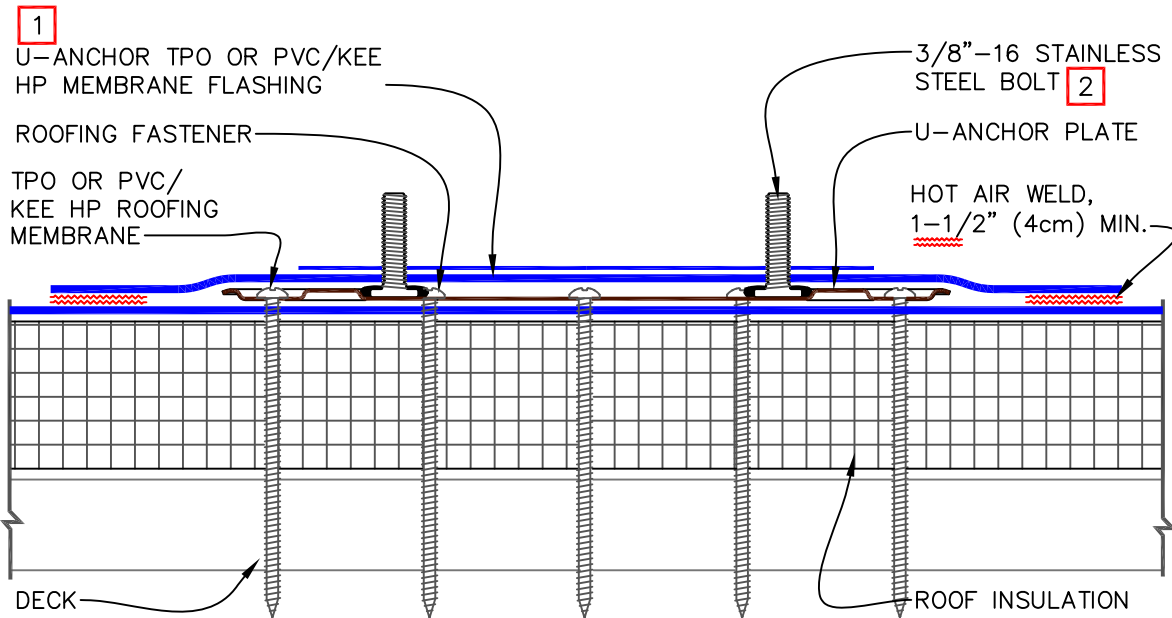
MAXIMUM WARRANTY: 20 YEARS



DETAIL NO.

AN-03

U (Universal Detail)



NOTES:

1. FASTENER NOT INCLUDED WITH U-ANCHOR KIT. FASTENER TYPE DETERMINED BY DESIGN PROFESSIONAL.
2. STAINLESS STEEL BOLT INCLUDED WITH U-ANCHOR KIT
3. CLEAN EXPOSED MEMBRANE SURFACE WITH WEATHERED MEMBRANE CLEANER AND ALLOW TO DRY.



U3400 THERMOPLASTIC APPLICATION

MAXIMUM WARRANTY: 20 YEARS



DETAIL NO.

AN-04

U (Universal Detail)