# Elevate PVC, PVC KEE and MAX PVC Roofing Systems

# Guide for Designers

| Elevate PVC<br>Elevate PVC XR | Elevate PVC KEE<br>Elevate PVC KEE XR<br>Elevate PVC KEE XRT | Elevate MAX PVC<br>Elevate MAX PVC XR |
|---|---|---|

## July 2025

**NOTE: The contents of this guide are considered accurate at the time of posting. All information contained within should be validated for accuracy as it relates to specific project conditions or requirements. Specific codes, uplifts or other factors may result in changes to the information contained within this document. Validate all specific conditions with a Elevate Regional Technical Coordinator prior to its use.**

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Table 1: Product Compatibility

| PRODUCT COMPATIBILITY | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| TIS | Product | Elevate Membrane Compatibility | | | | | | |
| | | PVC | PVC XR | PVC KEE | PVC KEE XR | PVC KEE XRT | MAX PVC | MAX PVC XR |
| 2100 | PVC Water Based Bonding Adhesive | Yes | Yes | No | Yes | Yes | Yes | Yes |
| 2101 | PVC LVOC Bonding Adhesive | Yes | No | Yes | No | No | Yes | No |
| 2102 | PVC Clear Cut Edge Sealant | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2103 | PVC Clear Cut Edge Sealant LVOC | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2105 | PVC Unsupported Flashing | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2106 | PVC Walkway Pad | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2107 | PVC T-Joint Cover | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2108 | PVC Inside Outside Corner | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2109 | PVC 8 Inch Cover Strip | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2110 | PVC Universal Pipe Flashing | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2111 | PVC Split Pipe Boot | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2112 | PVC InvisiWeld Plate | Yes | No | Yes | No | No | Yes | No |
| 2113 | PVC X Tred Walkway Pad | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2114 | Elevate PVC Membrane | Yes | Yes | Yes | Yes | Yes | No | No |
| 2115 | Elevate PVC XR | Yes | Yes | Yes | Yes | Yes | No | No |
| 2116 | PVC Clad Metal | Yes | Yes | Yes | Yes | Yes | No | No |
| 2117 | Elevate PVC Min Thickness Membrane | Yes | Yes | Yes | Yes | Yes | No | No |
| 2118 | Elevate PVC XR Min Thickness Membrane | Yes | Yes | Yes | Yes | Yes | No | No |
| 2119 | Elevate PVC KEE Membrane | Yes | Yes | Yes | Yes | Yes | No | No |
| 2120 | Elevate PVC KEE XR Membrane | Yes | Yes | Yes | Yes | Yes | No | No |
| 2121 | Elevate PVC KEE Min Thickness Membrane | Yes | Yes | Yes | Yes | Yes | No | No |
| 2122 | Elevate PVC KEE XR Min Thickness Membrane | Yes | Yes | Yes | Yes | Yes | No | No |
| 2123 | PVC X Tred Walkway Pad (P) | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2124 | Jet Bond PVC Spray Adhesive | Yes | No | No | No | No | Yes | No |
| 2125 | Jet Bond PVC Cleaner | Yes | No | No | No | No | Yes | No |
| 2126 | Elevate PVC KEE XRT Membrane | Yes | Yes | Yes | Yes | Yes | No | No |
| 2127 | Elevate MAX PVC | No | No | No | No | No | Yes | Yes |
| 2128 | Elevate MAX PVC XR | No | No | No | No | No | Yes | Yes |
| 2129 | Elevate MAX PVC Reinforced Membrane Flashing | No | No | No | No | No | Yes | Yes |
| 2131 | Elevate MAX PVC Open and Closed Stack Flashing | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2132 | Elevate MAX PVC Inside and outside Corner | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2133 | Elevate MAX PVC Metal Pitch Pan | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2134 | Elevate MAX PVC T-Joint Cover | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2135 | Elevate MAX PVC Vinyl Rib | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2136 | Elevate MAX PVC Walkway Pad | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2138 | Elevate MAX PVC Clad Metal | No | No | No | No | No | Yes | Yes |
| 825 | XR Stick | No | Yes | No | Yes | Yes | No | Yes |
| 831 | I.S.O. Spray R | No | Yes | No | Yes | Yes | No | Yes |
| 836A | Twin Jet | No | Yes | No | Yes | Yes | No | Yes |
| 836B | Twin Jet Y | No | Yes | No | Yes | Yes | No | Yes |
| - | Type III Hot Asphalt | No | No | No | No | Yes | No | No |
| - | Type IV Hot Asphalt | No | No | No | No | Yes | No | No |

**NOTE:**
Do not mix Elevate PVC/PVC KEE membranes with Elevate MAX PVC membranes.

# General Design Criteria

## Applicability

- Parameters of this manual outline the minimum requirements for the Elevate Roofing Systems Warranty, including Elevate PVC, Elevate PVC XR, Elevate PVC KEE, Elevate PVC KEE XR, Elevate PVC KEE XRT, Elevate MAX PVC and Elevate MAX PVC

XR systems, including adhered, mechanically attached and InvisiWeld™ secured systems. Reference to Elevate Application Guides, Technical Information Sheets and other published information is necessary to ensure that the completed roofing system is installed in compliance with Elevate requirements. Local code and insurance requirements may require specific enhancements.

- Extended warranties, 15 and 20-year, and wind warranties in excess of 55 MPH, may require special consideration or enhancement regarding fasteners, insulation, membrane gauge and securement, some of which can be found in this manual and in the Elevate Attachment Guide. If a proposed installation falls outside this specification, contact a Regional Technical Coordinator for additional information.
- Statements in this design guide are provided in good faith with the expectation that a design professional be consulted prior to any job decisions being made.
- Elevate roof systems may or may not be applicable, without special consideration, if subject to local, regional, or national building code requirements or testing agency restrictions.
  - It is the building owner's or the design professional's responsibility to consult with the controlling code agency official(s) to determine the specific requirements of each project and each system.
  - Contact a Regional Technical Coordinator at 800-428-4511 when local codes conflict with Elevate recommendations.

> **!** Certain situations may arise where Elevate specifications and/or roofing requirements cannot be applied. It may not be possible for Elevate to issue the desired warranty for projects that deviate from current Elevate requirements and standards, unless a written deviation request for approval has been received, reviewed, and approved by a Regional Technical Coordinator prior to application of the proposed system.

- The following conditions require special consideration and may not be warrantable. Contact a Regional Technical Coordinator for information if any of the following conditions are present:
  - Roofs that exceed the maximum slope and height limits for the particular roof system assembly, see table below.
  - Projects that require wind coverage greater than 55 mph
  - Roofs located where localized wind phenomenon may occur, reference ASCE-7 wind maps
  - Roofs located in down-slope, foothills of mountain ranges or escarpments
  - Mechanically attached systems located within 5 miles (8.3 Km) of the ocean coastline or within 1500' (457 m) of a Great Lake shoreline
  - Geographical areas susceptible to hurricanes
  - Roofs subject to chemical or process byproduct discharge
  - Roofs with non-linear slopes such as arches, domes, barrels, etc.
  - Buildings with large openings in a wall (greater than 10% of the any one wall surface) that could be left open in a storm
  - Roofs subject to heavy or repeated traffic in an area
  - Roofs subject to positive pressure situations such as: pressurized buildings, air infiltrating decks, canopies, overhangs, airplane hangars, distribution centers, etc.
  - Buildings with high interior humidity such as swimming pools
  - Roof decks that do not provide adequate fastener pullout resistance
- Cold storage, freezer facilities and swimming pools constitute a special condition. A designer familiar with cold storage, indoor swimming pool construction and vapor migration should be consulted in the design of the roof system and integration with the rest of the structure envelope.

> **!** The unlimited slope in the chart below only refers to the potential maximum installation slope. When using a mechanical hot air welder there are practical slope limitations. Safety is the first order to consider with any project. Consult with the equipment manufacturer on the performance of the individual machine.

Table 2: Elevate PVC Membranes – Maximum Red Shield Warranty Terms

| ELEVATE PVC MEMBRANES – MAXIMUM RED SHIELD WARRANTY TERMS[1,2] | | | | |
|---|---|---|---|---|
| System | Product | Slope | Maximum Height | Max. Warranty Term (Years) |
| Adhered | Elevate PVC .050" (1.3 mm) | Unlimited | 250' (76.2 m) | 15 |
| | Elevate PVC .060" (1.5 mm) | Unlimited | 250' (76.2 m) | 20 |
| | Elevate PVC .080" (2.0 mm) | Unlimited | 250' (76.2 m) | 20 |
| | Elevate PVC XR .060" (1.5 mm) | Max. 4:12 (33.3%) | 250' (76.2 m) | 20 |
| | Elevate PVC XR .080" (2.0 mm) | Max. 4:12 (33.3%) | 250' (76.2 m) | 20 |
| Mechanically Attached | Elevate PVC .050" (1.3 mm) | Max. 4:12 (33.3%) | 120 ′ (36.6 m) | 15 |
| | Elevate PVC or PVC XR .060" (1.5 mm) | Max. 4:12 (33.3%) | 120 ′ (36.6 m) | 20 |
| | Elevate PVC or PVC XR .080" (2.0 mm) | Max. 4:12 (33.3%) | 120 ′ (36.6 m) | 20 |
| InvisiWeld | Elevate PVC .050" (1.3 mm) | Max. 4:12 (33.3%) | 120 ′ (36.6 m) | 15 |
| | Elevate PVC .060" (1.5 mm) | Max. 4:12 (33.3%) | 120 ′ (36.6 m) | 20 |
| | Elevate PVC .080" (2.0 mm) | Max. 4:12 (33.3%) | 120 ′ (36.6 m) | 20 |

**NOTE:**
1. Elevate PVC Water Based Bonding Adhesive is limited to 15-year maximum warranty coverage.
2. Elevate Jet Bond PVC Spray Adhesive is only approved for use with Elevate PVC and Elevate MAX PVC (non-fleece) Membrane.

* Includes Minimum Thickness Membranes

Table 3: Elevate PVC KEE Membranes – Maximum Red Sheild Warranty Terms

| ELEVATE PVC KEE MEMBRANES – MAXIMUM RED SHIELD WARRANTY TERMS* | | | | |
|---|---|---|---|---|
| System | Product | Slope | Maximum Height | Max. Warranty Term (Years) |
| Adhered | Elevate PVC KEE .050" (1.3 mm) | Unlimited | 250' (76.2 m) | 15 |
| | Elevate PVC KEE .060" (1.5 mm) | Unlimited | 250' (76.2 m) | 20 |
| | Elevate PVC KEE .080" (2.0 mm) | Unlimited | 250' (76.2 m) | 30 |
| | Elevate PVC KEE XR .050" (1.3 mm) | Max. 4:12 (33.3%) | 250' (76.2 m) | 20 |
| | Elevate PVC KEE XR .060" (1.5 mm) | Max. 4:12 (33.3%) | 250' (76.2 m) | 20 |
| | Elevate PVC KEE XR .080" (2.0 mm) | Max. 4:12 (33.3%) | 250' (76.2 m) | 30 |
| | Elevate PVC KEE XRT .050" (1.3 mm) | Max. 4:12 (33.3%) | 250' (76.2 m) | 20 |
| | Elevate PVC KEE XRT .060" (1.5 mm) | Max. 4:12 (33.3%) | 250' (76.2 m) | 20 |
| | Elevate PVC KEE XRT .080" (2.0 mm) | Max. 4:12 (33.3%) | 250' (76.2 m) | 30 |
| **NOTE:** Water Based Bonding Adhesive is limited to 15-year maximum warranty coverage. | | | | |
| Mechanically Attached | Elevate PVC KEE or PVC KEE XR .050" (1.3 mm) | Max. 4:12 (33.3%) | 120' (36.6 m) | 15 |
| | Elevate PVC KEE or PVC KEE XR .060" (1.5 mm) | Max. 4:12 (33.3%) | 120' (36.6 m) | 20 |
| | Elevate PVC KEE or PVC KEE XR .080" (2.0 mm) | Max. 4:12 (33.3%) | 120' (36.6 m) | 20 |
| InvisiWeld | Elevate PVC KEE .050" (1.3 mm) | Max. 4:12 (33.3%) | 120' (36.6 m) | 15 |
| | Elevate PVC KEE .060" (1.5 mm) | Max. 4:12 (33.3%) | 120' (36.6 m) | 20 |
| | Elevate PVC KEE .080" (2.0 mm) | Max. 4:12 (33.3%) | 120' (36.6 m) | 20 |

* Includes Minimum Thickness Membranes

Table 4: Elevate MAX PVC Membranes – Maximum Red Sheild Warranty Terms

| ELEVATE MAX PVC MEMBRANES – MAXIMUM RED SHIELD WARRANTY TERMS | | | | |
|---|---|---|---|---|
| System | Product | Slope | Maximum Height | Max. Warranty Term (Years) |
| Adhered | Elevate MAX PVC .050" (1.3 mm) | Unlimited | 250' (76.2 m) | 20 |
| | Elevate MAX PVC .060" (1.5 mm)* | Unlimited | 250' (76.2 m) | 25 |
| | Elevate MAX PVC .080" (2.0 mm) | Unlimited | 250' (76.2 m) | 30 |
| | Elevate MAX PVC XR .050" (1.3 mm) | Max. 4:12 (33.3%) | 250' (76.2 m) | 20 |
| | Elevate MAX PVC XR .060" (1.5 mm) | Max. 4:12 (33.3%) | 250' (76.2 m) | 25 |
| | Elevate MAX PVC XR .080" (2.0 mm) | Max. 4:12 (33.3%) | 250' (76.2 m) | 30 |
| Mechanically Attached | Elevate MAX PVC or MAX PVC XR .050" (1.3 mm) | Max. 4:12 (33.3%) | 120' (36.6 m) | 15 |
| | Elevate MAX PVC* or MAX PVC XR .060" (1.5 mm) | Max. 4:12 (33.3%) | 120' (36.6 m) | 25 |
| | Elevate MAX PVC or MAX PVC XR .080" (2.0 mm) | Max. 4:12 (33.3%) | 120' (36.6 m) | 30 |
| InvisiWeld | Elevate MAX PVC .050" (1.3 mm) | Max. 4:12 (33.3%) | 120' (36.6 m) | 15 |
| | Elevate MAX PVC .060" (1.5 mm)* | Max. 4:12 (33.3%) | 120' (36.6 m) | 25 |
| | Elevate MAX PVC .080" (2.0 mm) | Max. 4:12 (33.3%) | 120' (36.6 m) | 30 |
| * Includes Minimum Thickness Membranes | | | | |

## Consultation

- Elevate recommends that a design professional be involved in the design process. For additional assistance, contact a Regional Technical Coordinator for consultation with respect to any necessary deviations from current Elevate requirements and standards.
- For recommendations on any specific project, about the applicability, or appropriateness, of any material's suitability for use or use of products in conjunction with any other specific material, follow these steps:
  - Consult the Elevate Website: www.elevatecommercialbp.com.
  - Consult this manual, Elevate PVC Application Guides, and specific Technical Information Sheets (TIS).
  - Consult with the building owner or his design professional.
  - Consult with a Regional Technical Coordinator for information.
- Statements in this design guide are provided in good faith with the expectation that a design professional be consulted prior to any job decisions being made.

## Design

- As a supplier of roofing systems, Elevate does not perform engineering or design functions and does not approve or make comments regarding them.
- Elevate recommends that a design professional be consulted to ensure proper design, (i.e., roof system selection) installation, and conformance to building codes, insurance requirements, etc.
- Refer to the Elevate Attachment Guide for additional requirements for securing insulations and membranes.

!

The following are just a few of the conditions, which may influence the need for a design professional:

- Structural conditions that might not be sufficient to support the anticipated load of the completed roof installation
- Structural conditions to support the dynamic loading of the roof system
- The need to review the proposed system assembly for its applicability on specific projects
- The requirements of building codes for the need of a thermal barrier
- The requirements of building codes for the need of a vapor retarder
- The requirements of building codes for the need of an air barrier
- When considering the effect of loads on the structure/decking due to the loading/staging of materials as a part of system installation. The design professional should specify the load limitations to be observed by the Elevate licensed applicator.

## Warranty

**Pre-Warranty Issuance Requirements include:**

- Submit an Electronic Pre-Installation Notice (P.I.N.) along with an approved roof drawing, 14 days prior to project start and receive an acknowledgement from Elevate of acceptance or necessary enhancements to meet Elevate requirements to receive a warranty.
- The Elevate roof system must be installed by a current licensed Elevate applicator.
- Upon inspection and acceptance of the installed roof system by a Elevate Technical Representative, the warranty will be issued and dated based on the completion date of the roof installation reported by the roofing contractor.
- Elevate inspections are to confirm the installation details for the roofing system for compliance with Elevate's documents of record for warranty requirements. The inspection is not intended as an inspection for the benefit of the building owner or the design professional with respect to contract, building codes or compliance with specifications other than Elevate.

The following warranties include the Elevate brand materials and the workmanship of the licensed Elevate applicator when the system is installed according to Elevate's technical specifications.

1. Red Shield™ Warranty
   - 5 – 25 years for qualifying systems
   - Includes labor and materials to repair warranted leaks.
   - Non-prorated with No Dollar Limit (NDL)
   - Includes all Elevate-branded products used in the roofing system. Excludes non-Elevate branded products and any materials not provided by Elevate. Use of non-Elevate branded products may prevent warranty issuance.

2. Extended Warranty Coverage
   - A Red Shield Warranty is eligible for the following extended coverage. Contact Elevate Technical Services for limitations.
   - **Increased Wind Speed** [72 – 120 mph (116 – 193 km/h), depending on system criteria]
   - **Cut and Puncture Protection (CPP)** warranty coverage is available with Elevate PVC and PVC KEE Membranes.
     - Use of 60 mil or greater Elevate PVC, PVC XR, PVC KEE, PVC KEE XR, MAX PVC or MAX PVC XR membrane system and additional cost per square foot. Please see the warranty pricing guide for current pricing.
     - Use of 80 mil Elevate PVC, PVC XR, PVC KEE, PVC KEE XR, MAX PVC or MAX PVC XR membrane and HailGard cover board.
       **NOTE:** Roof walkway pad or paver is required at all roof access points.
   - **Hail Coverage**
     - Up to 2" hail coverage requires a minimum 80 mil adhered Elevate PVC XR, PVC KEE XR, PVC KEE XRT or MAX PVC XR membrane and an approved, adhered high density (HD) coverboard.
     - Severe Hail (SH) or Very Severe Hail (VSH) requires an approved Factory Mutual assembly. Factory Mutual SH or VSH rating does not imply Red Shield Hail warranty coverage. Additional requirements may apply.
     - Elevate PVC, PVC KEE or MAX PVC InvisiWeld and Mechanically Attached roofing systems do not qualify for hail coverage.
     - Contact a Regional Technical Coordinator for additional information.

3. Red Shield Platinum Warranty
   - 30 years for qualifying systems
   - Includes labor and materials to repair warranted leaks.
   - Non-prorated with No Dollar Limit (NDL)
   - Includes all Elevate-branded products used in the roofing system. Excludes non-Elevate branded products and any materials not provided by Elevate. Use of non-Elevate branded products may prevent warranty issuance.

4. Elevate Membrane Limited Warranty
   - 5 – 30 years
   - Provides replacement membrane for leaks caused by manufacturing defects or premature weathering
   - Limited to owner's original cost of the membrane

5. Other Elevate Warranties
   - Paint Finish Warranty for all Elevate branded metal roofing products or UNA-CLAD™ metal, including edge metal

**!**

Certain situations may arise where Elevate specifications and/or roofing requirements cannot be applied. It may not be possible for Elevate to issue the desired warranty for projects that deviate from current Elevate requirements and standards, unless a written request for approval has been received, reviewed, and approved by a Elevate Regional Technical Coordinator prior to application of the proposed system.

A Elevate warranty cannot be issued if any of the following conditions exist:
- Non-roofing applications such as plaza deck construction, waterproofing, pond liners, etc.
- Roofing applications for single-family residences
- Other non-approved applications

# Quality Assurance

## Job Site Considerations

- All safety regulations required by OSHA and other agencies having jurisdiction must be followed.
- During the construction process, the roofing contractor is responsible for ensuring that all components of the Elevate roof system, including the finished areas are protected from damage, including, but not limited to:
  - Damage that may result from the continued construction process
  - Direct contact with continuous steam or heat sources when the in-service temperature is in excess of 150 °F (66 °C) for Elevate PVC products
  - Asphalt, coal tar, oil base or plastic roof cements, and re-saturated roof products, which are not to be used in direct contact with the waterproofing components of the Elevate PVC Roofing Systems
  - Discharges, such as petroleum products, greases, oils (mineral and vegetable), animal fats and other byproducts, which may come in contact with the membrane

- Cold weather application:
  - When the outside temperature is below 40 °F (4.4 °C), installation of Elevate roof systems may require additional application precautions:
    - Adhesives and sealants should remain in an environment between 60 °F and 80 °F (15.5 °C and 26.6 °C) until ready for use
    - Materials should be used within four hours of removal from a heated storage area. If materials are not used within that time period, they should be returned to the heated storage area until the temperature of the material returns to 60 °F (15.5 °C). Typically, this is 24 hours
  - For additional information and guidelines, see the Elevate PVC Application Guide, Elevate Technical Services Cold Weather Bulletins, and the NRCA Roofing and Waterproofing Manual.

## Asphalt Products

- See the Elevate Asphalt Design Guide and the Elevate Asphalt Application Guide for additional information. Contact between asphalt, Elevate PVC, PVC XR, PVC KEE, PVC KEE XR, MAX PVC, and MAX PVC XR membrane and/or accessories should be avoided.
- Elevate PVC KEE XRT membrane is acceptable for use with asphalt products. Avoid asphalt contamination of weld, seam and flashing areas when using with non-Elevate PVC KEE XRT products.
- Asphalt for insulation, roofing plies, or base sheets must be Elevate SEBS Mopping Asphalt or either ASTM D 312 Type III or Type IV. Asphalt selection must be suitable for the roof slope. All asphalt must be tested in accordance with ASTM D 312 and be certified by the supplier that it meets the minimum requirements for the specific type and application. Asphalt selection must be suitable for the roof slope.
- Assure that all health and safety measures are followed when installing hot asphalt to protect the installers as well as occupants of the building. Assure compliance to all building codes and safety regulations when using hot asphalt.
- Asphalt properties may change when stored at high temperatures and/or for long periods of time. Asphalt may become harder or may experience what is known as "fallback". Fallback is the degradation of the asphalt to the point that its physical properties (i.e., softening point) deteriorate which could then cause roof slippage. To reduce the chances for fallback, the following recommendations should be implemented:
  - Use higher softening point asphalt
  - Decrease the kettle temperature as much as possible, while maintaining the minimum application temperature
  - Use material as quickly as possible, thus reducing exposure time
  - Insulate all lines and equipment used to transport asphalt
- Asphalt primer: Asphalt primer must meet ASTM D-41.
- Apart from SEBS asphalt, Elevate does not manufacture or supply asphalt and does not warrant products not sold by or supplied by Elevate.

## Phased Construction

- Phased Construction is defined by the NRCA as "The installation of a roof system in two or more separate time intervals." The need for temporary roofing is determined by the design professional.
- A better option than the use of phased construction would be the use of a temporary roof, which allows for the delayed installation of the roof system until more suitable weather, or until other trades can complete their projects. A temporary roof can be designed and installed in the same way as a vapor retarder and can then become a vapor retarder.

> **!** Elevate does not recommend phased construction. Phased construction results in unprotected roof sections, which can allow moisture into the base plies or trap moisture, dust, or debris between the plies of the roof system. These application defects may increase the incidence of blistering in the Elevate roof system.

## Temporary Roofing

- If installation of the roof system is required during unsuitable weather, or before completion of wood blocking, curbs, penetrations, or the erection of walls, a temporary roof may need to be installed.
- If a temporary roof is needed due to construction requirements, Elevate recommends installing a modified asphalt base sheet or two fiberglass roofing plies in an appropriate adhesive over an approved substrate, to be used as the temporary roof. This temporary roof can serve to protect the interior of the building during the early stages of construction. It may then be removed or repaired, if necessary, and can be left as a vapor retarder prior to the installation of the finished Elevate roofing system.
- If roof insulation is installed under the temporary roof, the insulation shall be inspected for wet or damaged areas, so that such areas may be removed and replaced prior to installation of the Elevate roof system.
- When a temporary roof is specified as a vapor retarder, precaution shall be exercised in protecting the temporary roof from other construction tradesmen. Damage to the temporary roof may impair its effectiveness as a vapor retarder. If a vapor retarder is installed as a temporary roof during construction, the vapor retarder shall be examined and repaired as necessary to ensure watertight integrity prior to installation of the remainder of the roof system.
- For additional information regarding temporary roofs, refer to the NRCA's Roofing and Waterproofing Manual or contact a Regional Technical Coordinator for Technical Information.

### Hybrid Roofing

- Hybrid roofing consists of an appropriate thermoplastic fleece backed membrane and appropriate modified bitumen membrane. Hybrid systems which include Elevate PVC KEE XRT membrane are acceptable for warranty in approved applications. Contact a Regional Technical Coordinator for more details.
- Elevate PVC KEE XRT may be adhered with appropriate low rise foam adhesives or acceptable hot asphalt products.
- Hybrid Roofing is often installed with the modified bitumen system installed first followed by the installation of a fleece back thermoplastic membrane. The following requirements must be met prior to application of the thermoplastic membrane.
    - Inspect pre-installed portion of the system prior to application of thermoplastic membrane.
    - Remove/replace wet or damaged sections of existing system components.
    - Ensure substrate is clean, dry, and free of contaminants prior to membrane application.
    - Avoid asphalt contact with non-compatible membranes.
    - Avoid asphalt contamination of seams, welding areas and flashing areas.

## Vapor Retarder / Air Barrier

| | |
|---|---|
| ! | The determination of the necessity and location for a vapor retarder or an air barrier is a project specific requirement, which is the responsibility of the building owner or his design professional. The proper assessment of the building, the need for, and the proper design and installation of, an air barrier and vapor retarder are critical to the long-term operation of the roofing system. |

| | |
|---|---|
| ! | Elevate does not review or calculate dew point analyses and therefore does not accept responsibility for damage due to recurrence rate or location of the dew point. Although not all projects require a vapor retarder, a design review should be considered for all projects. |
| | The inclusion of an air barrier or vapor retarder may affect the Underwriters Laboratories or Factory Mutual rating of the roof system. |
| | The inclusion of an air barrier or vapor retarder may affect the Elevate system requirements and consequently the Red Shield warranty. Contact a Regional Technical Coordinator for technical information prior to application of the proposed system. |

### Vapor Retarder

To control moisture, a vapor retarder may be necessary to protect certain roofing components when high interior humidity is of concern. Some examples are:

- When high interior relative humidity is present.
- When vapor drive may be expected to form a dew point under the roof membrane or in the insulation. Building usages with high humidity interiors where vapor drive may occur, such as swimming pools, laundry facilities, paper mills, and bottling plants.

In these types of environments, there is substantial upward vapor drive, and the potential exists for extreme amounts of moisture accumulation within the roof assembly. If an effective vapor retarder is not included at the proper location in the roof assembly, so that the retarder is warmer than the dew point, condensation will cause damage from the moisture retained in the roof assembly.

This movement is reversed in some air-conditioned buildings in humid summer conditions. This is especially true in southern states.

Vapor retarders are installed because water vapor causes several types of roof assembly failures such as:

- Reduced R-value, since wet insulation becomes a conductor of heat rather than an insulator.
- Deterioration of the roof membrane, insulation, structural decks, and associated building components.
- Delamination of roof components from trapped moisture, which freezes and thaws, eventually evaporating under solar heat with the resulting vapor pressure causing blisters and delamination.

The following is a partial listing which might influence the need for a vapor retarder:

- Building usage as related to vapor drive.
- External temperature in relation to internal temperature.
- The humidity of the interior and/or exterior air.
- Building code requirements.
- Construction generated moisture, particularly during winter when temporary propane heat is required.

A vapor retarder's effectiveness generally depends upon the following factors:

- The vapor retarder's perm (permeance) rating shall be as close to zero as possible.
- The adequacy of design of the vapor retarder membrane.
- The integrity of the vapor retarder's seals at perimeters and penetrations.

- The integrity of the vapor retarder's membrane after other tradesmen finish their projects during construction or any subsequent roof or equipment alterations.
- The vapor retarder's location within the insulated roof assembly.

Construction roof traffic shall be restricted to prevent damage to the vapor retarder. In the event damage does occur, repair the vapor retarder damage with the same roof components and quantities as specified for the vapor retarder installation.

Contact one of the four generally accepted agencies for help in determining the need for a vapor retarder. They are:

- National Roofing Contractors Association (NRCA) guidelines
- U. S. Army Corp of Engineering Cold Regions Research and Engineering Laboratory (CRREL) guidelines
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- Oak Ridge National Laboratory (ORNL)

## Vapor Retarder Properties

A vapor retarder is defined as a building envelope element that limits diffusion of moisture into an assembly. Diffusion is water vapor migration in a material. Its rate depends on two factors:

- Water vapor pressure difference across the roof assembly.
- Resistance of materials along the migration path.

Some materials have more resistance than others. Placing a high-resistance material in a roof assembly may help control moisture migration.

Vapor retarders are intended to limit moisture diffusion. Therefore, the main property requirement of a vapor retarder is low water vapor permeance. Water vapor permeance is defined as:

> *"The time of water vapor transmission through a unit area of flat materials or construction induced by a unit vapor pressure difference between two specified surfaces, under specified temperature and humidity conditions".*

## Design

The roof system designer is generally responsible for the design requirements of the roof deck, vapor retarder, and rigid insulation along with the roof system. This is more important when specifying roof systems over high humidity buildings. The need for a vapor retarder, as well as the type, placement and location of a vapor retarder should be determined by a professional architect or engineer. The list below are examples of common vapor retarder applications.

- Elevate V-Force FR Vapor Barrier Membrane does not require a primer when applied to an approved flat substrate. Some conditions where residual asphalt and adhesives are present SA-Solvent Based (SB) Primer may be required. Contact a Regional Technical Coordinator for more information.
- Elevate V-Force™ Vapor Barrier Membrane (self-adhered) applied to an approved flat substrate that has been primed with SA Water Based Primer, SA-LVOC Primer, or SA Solvent Based Primer. See the V-Force and appropriate Primer Technical Information Sheets (TIS) on the Elevate website for application information.
- Mopped Elevate Type IV M or VI Ply Sheet over a nailed Elevate MB Base Sheet
- Mechanically attached fiberglass or polyester venting base sheet with 18" (457 mm) side and end laps mopped with hot asphalt.
- Existing dry and sound un-insulated built-up roof system (all splits and blisters repaired).
- Mopped Elevate Type IV M or VI Ply Sheet over an existing dry and sound un-insulated built-up roof system. If gravel surfaced, then gravel shall be removed by power brooming, vacuuming, and spudding.
- 2 plies of Mopped Elevate Type IV M or VI Ply Sheet set in hot asphalt over an acceptable mechanically attached barrier board.
- 2 plies of Mopped Elevate Type IV M or VI Ply Sheet set in hot asphalt directly on a properly prepared structural concrete deck.
- Adhered Elevate SBS Base Sheet set in hot asphalt, cold adhesive, or SBS Torch Base heat fused, over an acceptable mechanically attached barrier board.
- Adhered Elevate SBS Base Sheet set in hot asphalt, cold adhesive, or SBS Torch Base heat fused, directly on a properly prepared structural concrete deck.
- Six (6) mil polyethylene sheeting taped at laps and to penetrations and perimeters.

The roof system designer must:

- Assure that the methods of attachment of the roof system to the vapor retarder selected are compatible.
- Assure that the vapor retarder will extend continuously and evenly throughout the roof plane to provide a complete seal against the intrusion of moist air from the building interior. Integration of the wall and roof air retarder systems is essential.
- Consider the effect of construction moisture on a new roof system, particularly during winter, when temporary propane heat is required.

## V-Force FR Application

Elevate V-Force FR Vapor Barrier Membrane may be applied directly to properly prepared substrate as outlined in the table below. The substrates must be clean, dry, and smooth. Some substrates may require special preparation. Review the Technical Information Sheet (TIS), Application Instructions and details for application requirements and additional information. Reference the V-Force FR Requirements – Increased Wind Speed section in this guide for information related to extended wind speeds. V-Force FR adhered direct to steel will not be approved on projects with special wind regions or coastal areas. When uplift and fire requirements are specified, alternate applications may be required.

**Table 2: V-Force FR – Acceptable Substrates**

| V-FORCE FR – ACCEPTABLE SUBSTRATES | |
|---|---|
| **Acceptable Substrate** | **NOTE** |
| Structural Concrete | Clean, dry, and properly cured. Free of any contaminants or sources of puncture. |
| Steel Deck | Processing Oils must be removed. Clean, dry, and free of contaminants.<br>Beads of adhesive must sit on top of deck flute.<br>**NOTE:** Factory Mutual (FM) does not recognize direct to steel deck adhesion of this product.<br>(Max. 20 Years when not fastened through.) |
| Plywood or OSB | Clean, dry, and free of any contaminants or sources of puncture. |
| DensDeck® Prime<br>DensDeck StormX® Prime | Clean, dry, and free of any contaminants or sources of puncture. |
| Securock® Gypsum Fiber<br>Securock Cement<br>Securock UltraLight Coated Glass-Mat | |
| DEXcell FA® Glass Mat<br>DEXcell® Cement Board<br>DEXcell FA VSH® Glass Mat | |
| Structodek® HD | |
| ISOGARD™ HD | |
| ISOGARD HD Composite | |
| Resista™ / ISOGARD CG | |
| HailGard / ISOGARD HG | |
| Existing Smooth Surface BUR, SBS or APP Modified Bitumen | Clean, dry, and free of any contaminants or sources of puncture. |

**NOTE:**
1. All substrates except metal decks must be primed with SA-Solvent Based (SB) Primer.
2. Hot/Cold asphalt cannot be used to adhere roofing material to V-Force Vapor Barrier membrane.
3. On steel deck assemblies, beads should be spaced to be located over the top flute of the steel deck. (Max. 20 Years)
4. Spatter application of Twin Jet Y is not approved for insulation adhesion direct to V-Force FR.

**Table 3: V-Force FR – Acceptable Adhesives for Insulation Attachment**

| V-FORCE FR – ACCEPTABLE ADHESIVES FOR INSULATION ATTACHMENT | | | | |
|---|---|---|---|---|
| **TIS Number** | **Adhesive** | **Bead Spacing (o.c.) (55 mph)** | | |
| | | **Field** | **Perimeter** | **Corner** |
| 812 | I.S.O. Twin Pack | 12” (304.8 mm) | 6” (152.4 mm) | 4” (101.6 mm) |
| 819 | I.S.O. Stick | | | |
| 831 | I.S.O. Spray R | | | |
| 836A | Twin Jet | | | |
| 836B | Twin Jet Y | | | |

**NOTE:**
1. All substrates except metal decks must be primed with SA-Solvent Based (SB) Primer.
2. Hot/Cold asphalt cannot be used to adhere roofing material to V-Force FR Vapor Barrier membrane.
3. On steel deck assemblies, beads should be spaced to be located over the top flute of the steel deck. (Max. 20 Years)

## V-Force™ Application

Elevate V-Force Vapor Barrier Membrane may be applied directly to properly prepared substrate as outlined in the table below. The substrates must be clean, dry, and smooth. Some substrates may require special preparation including cleaning and/or priming. Review the Technical Information Sheet (TIS), Application Guide and details for application requirements and additional information. Reference the V-Force Requirements – Increased Wind Speed section in this guide for information related to extended wind speeds. V-Force adhered direct to steel will not be approved on projects with special wind regions or coastal areas. When uplift and fire requirements are specified, alternate applications may be required.

**Table 5: V-Force – Acceptable Substrates**

| V-FORCE – ACCEPTABLE SUBSTRATES | |
|---|---|
| **Acceptable Substrate** | **Notes** |
| Structural Concrete | Clean, dry, and properly cured. Free of any contaminants or sources of puncture. |
| Steel Deck | Processing Oils must be removed. Clean, dry, and free of contaminants.<br>Beads must<br>**NOTE:** Factory Mutual (FM) does not recognize direct to steel deck adhesion of this product. |
| Plywood or OSB | Clean, dry, and free of any contaminants or sources of puncture. |
| DensDeck® Prime<br>DensDeck StormX® Prime | Clean, dry, and free of any contaminants or sources of puncture. |
| Securock® Gypsum Fiber<br>Securock Cement<br>Securock UltraLight Coated Glass-Mat | |
| DEXcell FA® Glass Mat<br>DEXcell Cement Board<br>DEXcell FA VSH® Glass Mat | |
| Structodek® HD | |
| ISOGARD™ HD | |
| ISOGARD HD Composite | |
| Resista™ / ISOGARD CG | |
| HailGard / ISOGARD HG | |
| Existing Smooth Surface BUR, SBS or APP Modified Bitumen | Clean, dry, and free of any contaminants or sources of puncture. |

**NOTE:**
1. All substrates except metal decks must be primed with either Elevate SA-Water Based (WB) Primer, SA-LVOC Primer or SA-Solvent Based (SB) Primer.
2. Hot asphalt cannot be used to adhered roofing material to V-Force Vapor Barrier membrane.

**Table 6: V-Force – Acceptable Adhesives for Insulation Attachment**

| V-FORCE – ACCEPTABLE ADHESIVES FOR INSULATION ATTACHMENT | | | | |
|---|---|---|---|---|
| **TIS Number** | **Adhesive** | **Bead Spacing (o.c.) (55 mph)** | | |
| | | **Field** | **Perimeter** | **Corner** |
| 812 | I.S.O. Twin Pack | 12" (304.8 mm) | 6" (152.4 mm) | 4" (101.6 mm) |
| 819 | I.S.O. Stick | | | |
| 831 | I.S.O. Spray R | | | |
| 836A | Twin Jet | | | |
| 836B | Twin Jet Y | | | |

**NOTE:**
1. All substrates except metal decks must be primed with either Elevate SA-Water Based (WB) Primer, SA-LVOC Primer or SA-Solvent Based (SB) Primer.
2. Hot asphalt cannot be used to adhere roofing material to V-Force Vapor Barrier membrane.
3. On steel deck assemblies, beads should be spaced to be located over the top flute of the steel deck.

## Air Barrier

The need for an air barrier, as well as the type, placement and location of the air barrier must be determined by a professional architect or engineer.

- Air barriers systems are a component of building envelope systems that control the movement of air into and out of buildings.
- An air barrier may consist of a single material or of two or more materials which, when installed as a system, make up an air impermeable, structurally adequate barrier.
- Air barrier systems are generally comprised of building components and materials that have an air permeability not exceeding 0.004 cfm/sf under a pressure differential of .3" (7.6 mm) water.
- No single component or material has the capability to provide a complete air barrier system for a building; therefore, air barrier systems include many components and materials that are interfaced with each other. Elevate recommends that the individual manufacturers of these products provide written certification that their products, when used together, meet this requirement.
- An air barrier is required for projects with large wall openings that are greater than 10% of the total wall areas that can be left open in a storm. Criteria to be determined based upon Elevate review.
- If the air barrier is to perform its intended role, it must meet a number of requirements:
  - **Continuity:** the assembly must be linked together to ensure that there is no break in the air tightness of the envelope.
  - **Structural Integrity:** The air barrier must be capable of resisting the imposed load or must be supported by one that can. It must be capable of resisting the strongest wind load acting as either pressure or suction without rupturing or breaking away from its support. The air barrier and its support must be sufficiently rigid to resist displacement.
  - **Air Impermeability:** A major requirement of an air barrier is that it offers a high resistance to airflow.
  - **Durability:** Durability depends largely on how a material reacts to a specific environment such as moisture, temperature, ultra-violet radiation, and to the presence of other materials (incompatibility).

## Sloped Roofs – Asphalt Vapor or Air Barrier Systems Attachment

The building owner or the design professional intending to specify back-nailing should consider geographic location, specific job conditions, accepted area application practices, and the type and grade of materials specified when creating an actual specification for a project.

- When the slope of the roof exceeds ½": 12" (4.2%), and hot asphalt attachment is specified, Elevate requires Elevate SEBS Mopping Asphalt or Type IV asphalt be used.
- Contact a Regional Technical Coordinator for additional requirements regarding roof slopes over 3": 12" (25%).
- For roof slopes up to and including ½": 12" (4.2%), the side laps can be installed parallel or perpendicular to the slope.
- For roofs slopes greater than ½": 12" (4.2%), the membrane must run parallel to the slope and be back-nailed as follows:

**Table 7: Back-Nailing Requirements for Sloped Roofs**

| BACK-NAILING REQUIREMENT FOR SLOPED ROOFS | | | | | |
|---|---|---|---|---|---|
| **Base Sheet** | **Attachment** | **<½" (4.2%)** | **>½" <1" (4.2% - 8.3%)** | **>1"< 2" (8.3% -16.7%)** | **>2"< 3" (16.7% - 25%)** |
| Any Applicable Elevate Base Sheet | Hot Asphalt or Mechanically Attached | NFR | Nailers 32' o.c. | Nailers 32' o.c. | Nailers 16' o.c. |
| | | | Full Length Sheet | Full Length Sheet | ½ Length Sheet |
| Any Applicable Elevate Base Sheet | Heat Fused, Hot Asphalt, Mechanically Attached, or Elevate Multi-Purpose MB Cold Adhesive | NFR | NFR | NFR | Nailers 32' o.c. |
| | | | | | Full Length Sheet |
| Any Applicable Elevate Base Sheet | Self-Adhered, Heat Fused, Hot Asphalt, Mechanically Attached, or Elevate Multi-Purpose MB Cold Adhesive | NFR | NFR | NFR | Nailers 32' o.c. |
| | | | | | Full Length Sheet |
| Refer to Elevate MB-BN-1 for detailed back-nailing requirements. | | | | | |
| **NOTE:** ½" = 12.7 mm; 3" = 76.2 mm; 1" = 25.4 mm; 16' = 4.9 m; 2" = 50.8 mm; 32' = 9.7 m; NFR = No Fastener Required at This Slope | | | | | |

## Insulation Stops and Back-Nailing Nailing Strips

- Back-nailing nailing strips are required on all roofs with slopes greater than 16.6% (2:12).
- Insulation stops and are recommended on all roofs with slopes greater than 16.6% (2:12).
- Back-nailing nailing strips and Insulation stops shall be a minimum of 3 ½" (89 mm) wide and the same thickness as the roof insulation.
- Back-nailing nailing strips and Insulation stops must be attached to resist a force of 200 lbf per lineal foot (2.9 kN/m) minimum.
- Insulation stops and back-nailing nailing strips are not needed when system is applied directly to a wood deck or a similar nailable substrate.

- Contact a Regional Technical Coordinator for information regarding back-nailing requirements utilizing approved insulation less than 1" (25.4 mm).

### Back-Nailing Modified Asphalt Base Sheets

**Non-Nailable Decks and Nailable Decks with Insulation**

Cut the sheet to conform to nailer spacing. Using capped nails, nail the end lap across the width of the sheet, with the first nail spaced ¾" (19.05 mm) from the leading edge of the sheet. The remaining nails are to be spaced approximately 3" (76.2 mm) on center. The nails should be staggered across the width of the nailer. Elevate fasteners and plates may be used in lieu of cap nails. Four per end lap are required.

**Nailable Decks with No Insulation**

Cut the sheet to conform to nailer spacing. Using capped nails or Elevate fasteners and plates, nail the end lap across the width of the sheet, with the first nail spaced ¾" (19.05 mm) from the leading edge of the sheet. The remaining nails are to be spaced approximately 3" (76.2 mm) on center. The nails should be staggered across the width of the nailer. Elevate fasteners and plates may be used in lieu of cap nails. Four per end lap are required.

**Fastener Information**

Cap nails must have 1" (25.4 mm) diameter heads with steel head only. The shank must be a minimum 11-gauge (2.3 mm) annular ring or spiral shank and be FM Approved.

### Back-Nailing Type IV and Type VI Fiberglass Roofing Plies

- Using capped nails or Elevate fasteners and plates, back-nail 3" (76.2 mm) o.c. from the back edge of each felt along the nailer ensuring that the nails are covered by a minimum of two plies of felt. The nails should be staggered across the width of the nailer.
- Cap nails must be FM Approved and have 1" (25.4 mm) diameter steel heads. The shank must be a minimum of 11-gauge (2.3 mm) annular ring or spiral.

### Cap Nails

- Cap nails must be FM Approved and have 1" (25.4 mm) diameter steel heads. The shank must be a minimum of 11-gauge (2.3 mm) annular ring or spiral.
- Cap nails cannot be used to attach insulation or for 20 year or greater systems.
- Elevate insulation plates and fasteners may be used in lieu of cap nails.
- It is the roof system designer's responsibility to:
  - Assure that the methods of attachment of the roof system to the vapor retarder selected are compatible.
  - Assure that the vapor retarder will extend continuously and evenly throughout the roof plane to provide a complete seal against the intrusion of moist air from the building interior. Integration of the wall and roof air retarder systems is essential.
  - Take the appropriate steps necessary to deal with the effect of construction moisture on a new roofing system, particularly during winter, when temporary propane heat is required.

## Substrate and Substrate Requirement

### General

- The Elevate PVC, PVC XR, PVC KEE, PVC KEE XR, PVC KEE XRT, MAX PVC or MAX PVC XR roof system depends on a suitable substrate to perform its intended function of weatherproofing the building.

| | |
|---|---|
| ! | It is the roofing contractor's responsibility to ensure that the substrate is acceptable for the Elevate roof system. |
| | Elevate does not approve of or recognize the results of destructive testing by others for the purposes of project close-out or to satisfy contract requirements. Any damage caused by such testing may prevent Elevate from issuing a warranty. Elevate is not responsible for costs associated with repairs or enhancements performed to the roof system as a result of testing. |

- The substrate to which the Elevate roof system is installed must:
  - Be structurally sound
  - Be dry, smooth, flat, and clean
  - Be free of sharp fins, or foreign materials that could damage the membrane
  - Meet the minimum requirements for the system
- When using asphalt to adhere insulation to a structural concrete substrate, the concrete must be primed with an ASTM D 41 asphalt primer. The primer is applied at a rate of 1 ½ to 2 gallons per 100 $ft^2$ (0.61 to 0.82 $L/m^2$).

## Fastener Pullout / Adhesive Requirements

- Substrates for membrane and or the insulation attachment are required to provide sufficient pullout resistance for the fasteners and the roof system.
- In the case where the structural deck does not meet the minimum fastener pullout requirements contact a Regional Technical Coordinator for Technical Information.

**Table 8: Minimum Fastener Pullout Resistance for Specific Systems**

| MINIMUM FASTENER PULLOUT RESISTANCE FOR SPECIFIC SYSTEMS | |
|---|---|
| **System** | **Minimum Fastener Pullout** |
| Adhered Membrane Systems with Insulation Mechanically Attached to Deck | 300 lb (136.1 Kg) |
| Single-Ply Mechanically Attached and InvisiWeld | 400 lb (181.4 Kg) |
| Base Sheet Mechanically Attached to Deck | 300 lb (136.1 Kg) |
| Base Sheet Nailed to Deck (Cap nail or LWC Fastener) | 40 lb (18.1 Kg) |
| Contact a Elevate Regional Technical Coordinator for Technical Information when the structural deck does not meet the minimum fastener pullout requirements. | |

- See the Elevate Attachment Guide for the minimum adhesive pull test requirements for insulation adhesives.
- Pullout Tests: Due to the variety of physical conditions that can affect pullout resistance, Elevate recommends that on-site tests be conducted by an independent testing laboratory, the manufacturer's representative, or the roofing contractor, to determine actual pullout values. The following deck type are those which may not provide sufficient pullout resistance:
  - Steel decks thinner than 22 ga (0.76 mm)
  - Concrete less than 2,500 psi (20,684 kPa)
  - Plywood or oriented strand board less than 7/16" (11.11 mm) thickness
  - Wood plank less than ¾" (19.05 mm) thickness
  - All poured or pre-cast gypsum, cementitious wood fiber and lightweight insulating concrete decks
  - Existing masonry or brick
  - Any other substrate that does not have a published pullout capacity greater than the minimum required for the applicable roof system.
- The sections of the substrate where integrity is most in question should be used for testing. Test areas should include the corners, drain areas, and perimeters. The minimum number of pullout test recommended is as follows:

**Table 9: Recommended Number of Pull-Outs Tests**

| RECOMMENDED NUMBER OF PULL-OUT TESTS | |
|---|---|
| **Roof Size** | **Number of Pull-Out Tests** |
| Less Than 10,000 $ft^2$ (Less Than 1,000 $m^2$) | 6 |
| 10,000 $ft^2$ - 50,000 $ft^2$ (1,000 $m^2$ – 5,000 $m^2$) | 10 |
| 50,000 $ft^2$ - 100,000 $ft^2$ (5,000 $m^2$ – 10,000 $m^2$) | 20 |
| Over 100,000 $ft^2$ (10,000 $m^2$) | 1 per 5,000 $ft^2$ (500 $m^2$) |

- When new construction or other conditions prevent preliminary on-site pullout tests, the fastener manufacturer should supply estimated pullout values for design and bid purposes. On-site verification of the pullout capacity must be confirmed prior to system installation. (Consider requesting a unit price bid for potential increased fastening requirement.)

## Moisture Considerations

- The roofing contractor is responsible for ensuring that the substrate is suitable to receive an Elevate roof system. Substrates must be properly cured to meet current industry standards before installing roofing components.
- Elevate suggests a moisture survey be conducted to determine the moisture content of any existing roof system component. All damaged and/or wet components of the existing system that would be detrimental to the new Elevate roof system must be removed and replaced in kind, prior to its installation.
- Failure to remove existing roof system components that cause damage to the new Elevate roofing system constitutes a non-warrantable condition.
- The best diagnostic technique is by taking and evaluating a series of roof cores.
- Three techniques are currently available to evaluate the roof by indirect / non-invasive means. Results of these studies must still be correlated with roof cores. These techniques provide measurements of factors that can be associated with the presence of moisture.
  - Nuclear moisture detection
  - Infrared thermography
  - Electric capacitance

## Drainage and Slope

| | |
|---|---|
| ! | Building codes may require a specific minimum slope for drainage. It is the building owner or his design professional's responsibility to consult with the controlling code agency official(s) to determine the specific requirements of each project and each system. |
| | When interior drains are necessary, they must be installed at the low points of a sloped roof deck or insulation and maintained in a working condition. |

- The NRCA and prevailing building codes recommends that a minimum roof slope of ¼" (6.35 mm) per foot be obtained to facilitate proper drainage and maximize long-term performance of the roof system. Elevate recommends following the NRCA guidelines. The minimum Elevate requirement is POSITIVE drainage.
- Ponding water is defined as a condition existing on any area of the roof where water remains more than forty-eight (48) hours after precipitation.
- Adequacy of drainage provisions, placement, sizing and/or number of drains required is the responsibility of the building owner or his design professional. Drainage conditions should meet the requirements of applicable codes as well as standard industry recommendations.
- In re-roofing or re-cover situations, analysis of the existing drainage conditions is the responsibility of the building owner or his design professional. Existing deck deflection or ponding water may necessitate upgrading of the drainage provisions, including relocation of existing drains, possible addition of new drains, increased bar joist support etc. Elevate does not design roof drainage systems or assume any liability for the adequacy (or lack of) roof drainage systems or facilities.
- Proper and adequate drainage of the roof surface is required to assure the long-term performance of the roofing system. Drains should be of sufficient number, size, and located to provide satisfactory and rapid drainage of the entire roof surface (within 24 to 48 hours of precipitation). Although, a minimum roof slope of ¼" (6.4 mm) per foot is recommended, other slopes are acceptable to receive a Red Shield warranty provided positive drainage is attained.
- Tapered ISO 95+ GL/ISOGARD GL provides an effective and economical solution where substrate slope will not permit efficient drainage. When properly installed, it can extend the life of the roof assembly by eliminating problems associated with ponded water. Tapered ISO 95+ GL/ISOGARD GL is available in slopes from 1/16" (1.59 mm) to ½" (12.7 mm) per foot. Elevate provides a variety of technical support services for the installation of tapered insulation through the Elevate Tapered Engineering Design Department.
- The following are just some of the reasons why proper roof drainage is important:
  - Standing water can result in deck deflection and possible structural damage
  - Water on the roof can promote vegetation, fungal and bacterial growth
  - In the event of an opening in the roof membrane, standing water can significantly worsen the damage to the roof system, the building itself, and the interior contents
  - It is required by many, if not all, building codes
  - Proper drainage of the roof system prevents premature deterioration of the roof membrane and roof components

## Wood Nailers

- For new construction projects, wood nailers must be kiln-dried (Southern Pine, Douglas Fir) structural grade #2 or better.
- **Wood nailers by others:** Make these specifications and details available when others will install nailers. Work that compromises the integrity of the system may jeopardize the warranty.

| | |
|---|---|
| ! | Due to EPA regulations regarding treated wood, new treatments for lumber may be highly corrosive to fasteners. Contact the fastener manufacturer for their recommendations on fasteners if attaching nailers that have been treated with the more corrosive materials. |
| | Chemical treating for fire resistance or other purposes (other than pressure treating for rot resistance, i.e., CCA, ACZA, CBA, ACQ or other copper treatments) may affect the performance of the Elevate membrane and accessories. Contact a Regional Technical Coordinator for Technical Information when using chemically treated lumber that will contact the membrane. |

- For re-roof projects and new construction projects where a poured-in-place deck will be used, wood nailers must be pressure treated for rot resistance, #2 or better lumber. Asphaltic or creosote-treated lumber is not acceptable. Lumber treated with other wood preservatives such as Pentachlorophenol, Copper Naphthenate or Copper 8-quinolinolate will adversely affect the membrane when in direct contact and are, therefore, unacceptable.
- Elevate requires Wood nailers at the following locations:
  - All roof edges
  - Metal penetration pockets
  - Wood nailers must totally support all sheet metal flanges and be at least ½" (12.7 mm) wider to roof side
  - Refer to Elevate details for other location requirements
- The wood nailer may be omitted when all metal flanges on roof curbs are less than 12" (304.8 mm) on a side OR when placed on and secured directly to the deck.
- The building owner or his design professional must specify a wood nailer attachment system that will resist a minimum force of 200 lb/ft (2.9 N/m) in any direction. Elevate fasteners are required for all roofing applications. For further clarification, please refer to Factory Mutual Loss Prevention Data Sheet 1-49.

| | |
|---|---|
| ! | If forces at the building perimeters are greater than 200 lb/ft (2.9 N/m) due to increased wind speed as dictated by code requirements and calculated using either ASCE-7 or ANSI/SPRI ES-1, then the securement of the nailers must also be increased to accommodate the calculated loads. |

### Expansion Joints

The determination of the necessity and location for expansion joints is a project specific requirement, which is the responsibility of the building owner or his design professional. Expansion joints must not restrict the flow of water. Elevate offers Thermoplastic expansion joint details for single-ply systems, they can be found on the Elevate website. Alternate expansion details can be reviewed by the Regional Technical Coordinator. Typical consideration for selection criteria may include one or more of the following:

- Where expansion, contraction or deflection joints are provided in the building structural system
- Roof expansion joints must be located to accommodate movements caused by building structural movement
- Where structural framing elements such as joists, rafters, purlins, or steel decking change direction
- Deck material changes (e.g., from steel to concrete deck). Where different types of roof decks such as concrete and steel abut each other
- Where additions are connected to existing buildings
- At junctions where interior heating conditions change such as a heated space abutting an unheated space
- Where movement between vertical walls and the roof deck is anticipated
- Roof areas greater than 200' (61 m) on any direction
- Coordination and sequencing of expansion joint closure systems and their continuity, compatibility and function of seal is the responsibility of the design team

  **NOTE:** The conditions above may not be all inclusive. Other conditions may exist in which expansion joints should be considered as determined by a design professional.

## Fasteners

### General

Refer to the Technical Information Sheet (TIS) that references the specific fastener being used, and for the deck penetration requirements of that fastener. All fasteners must be suitable for the existing deck type.

- Roofing systems rely on the attachment of the components to the deck substrate to perform its basic functions. Wind creates uplift forces on the roof; therefore, the overall holding power of the fasteners is critical. Elevate recommends that the use of any fastener be investigated should there be concerns about the structural integrity of the deck. Some of the items to be considered include:
  - How the fastener(s) might affect the deck
  - The capability of the deck to hold the fasteners and roof system in place in a wind related event
- The structural integrity of the deck may have been weakened over time; thus, the choice of fastener and roof attachment methods and frequency should be considered in determining the best solution to the given deck and situation.

| | |
|---|---|
| ! | Regarding fastener selection: |
| | Elevate requires that a suitable insulation or cover board be installed over any substrate that would damage the membrane due to the additional loading of the ballast system. Ballasted Elevate PVC and PVC KEE membranes are not approved for Red Shield Warranty coverage.<br>This includes, but is not limited to:<br>▪ Fasteners / plates used for insulation attachment<br>▪ Fasteners / plates used for existing membrane or insulation securement |
| | For re-cover or partial tear-off, HD fasteners are required for 15-year or greater warranties, except into wood decks. |

Table 10: Acceptable Fastener Uses

| ACCEPTABLE FASTENER USES | | | |
|---|---|---|---|
| Elevate Fastener | | For the attachment of: | |
| TIS No. | Fastener | Elevate Batten Strips | Termination Bars |
| | | See the specific fastener TIS for detailed application data | |
| 1001 | All-Purpose Fastener* | ✓ | |
| 1002 | Heavy-Duty Fastener | ✓ | ✓ |
| 1005 | Concrete Drive Fastener | ✓ | ✓ |
| | | Do not use with polymer batten strips. | |
| 1006 | Polymer Fastener | ✓ | |
| | | (Special battens and plates required, not approved for in seam attachment.) | |
| 1009 | HD Plus Fastener | ✓ | |
| | | Elevate Metal Batten Strips in Wide Weld mechanically attached systems. | |
| 1011 | Purlin Fastener | ✓ | |
| | | ▪ The Elevate Purlin Fastener can be used in conjunction with Elevate 2" Metal Plates, Elevate V-Plates, or batten strips. | |
| ✓ = Acceptable | | | |

Table 11: Acceptable Fastener Plates Uses

| ACCEPTABLE FASTENER PLATE USES | | |
|---|---|---|
| TIS No. | Elevate Plates | For the attachment of: Elevate PVC, Elevate PVC XR Elevate PVC KEE, Elevate PVC KEE XR and Elevate PVC KEE XRT Elevate MAX PVC and Elevate MAX PVC XR |
| | | .050" (1.27 mm), .060" (1.52 mm), .080" (2.03 mm) |
| 1106 | Insulation Fastening Plate | For attaching insulation to approved substrates as required by Elevate Specifications and Details. |
| 1107 | Polymer Fastener Insulation Plate | For attaching insulation to approved substrates as required by Elevate Specifications and Details. |
| 1108 | HD Seam Plate | For attaching membranes to approved substrates as required by Elevate Specifications and Details. |
| 1109 | HD Plus Seam Plate | For attaching membranes to approved substrates as required by Elevate Specifications and Details. |
| 1111 | InvisiWeld PVC Coated Insulation Fastening Plate | For attaching insulation and appropriate non-fleece membrane (when induction bonded) to approved substrates. May be utilized as base tie-in and wall flashing attachment as permitted by Elevate Specifications and Details. |
| 1112 | Lite Deck Plate | For attaching insulation to approved substrates as required by Elevate Specifications and Details. |
| ✓ = Acceptable | | |

Table 12: Acceptable Elevate Batten Bar, Termination Bar and Drain Bar Uses

| ACCEPTABLE ELEVATE BATTEN BAR, TERMINATION BAR AND DRAIN BAR USES | |
|---|---|
| Elevate Batten and Termination Bars | For the attachment of: Elevate PVC, Elevate PVC XR, Elevate PVC KEE, Elevate PVC KEE XR and Elevate PVC KEE XRT Elevate MAX PVC and Elevate MAX PVC XR |
| | .050" (1.27 mm), .060" (1.52 mm), .080" (2.03 mm) |
| Coiled Metal Batten Strip | For anchoring membrane at perimeter enhancement strips and wall flashings to approved substrates as required by Elevate Specifications and Details (not permitted for in-seam attachment). |
| Metal Batten Strip | For anchoring membrane at perimeter enhancement strips and wall flashings to approved substrates as required by Elevate Specifications and Details (not permitted for in-seam attachment. |
| Termination bar | For anchoring and sealing flashing terminations to approved substrates as required by Elevate Specifications and Details. |
| Aluminum Drain Bar | For terminating the membrane roof edge to approved substrates as required by Elevate Specifications and Details. |
| ✓ = Acceptable | |

# Decks

| | |
|---|---|
| ! | If present, it is required that Phenolic foam insulation be removed. Once removed, a visual inspection of the deck condition and other components is required; all deteriorated components must be replaced as necessary. |
| | It is the building owner or their design professional's responsibility to determine the condition of the deck. |
| | Sprayed-In-Place Polyurethane Foam (PUF) roofing systems require a COMPLETE TEAR-OFF of the polyurethane foam system. |

## Platinum Retrofit or Re-Cover Applications

Roofing systems cannot receive a Red Shield Platinum warranty if the existing roof remains in place. A complete removal of the existing roof system, including the membrane, insulation and flashings is required.

## General

- Structural roof decks should be properly designed and constructed to provide sufficient strength to support the anticipated dead and live loads along with the loads anticipated due to the construction traffic without excessive deflection or movement.
- Roof replacement usually involves more complexity than new construction roofing. Such contingencies as: rusted or deteriorated decks, rotted wood components, rooftop equipment that cannot be moved or shut down, and numerous other conditions are often encountered.
  - All holes, deformations, depressions, etc., must be reinforced and /or smoothed prior to the roof application.
  - Determination and acceptance of a deck for re-roofing is the responsibility of the building owner or his design professional.
  - The deck should provide slope to drain.
- Refer to the fastener pullout section for fastening requirements of Mechanically Attached Systems should pullout values be less than 400 lbf (181.4 kg).
- Even existing concrete roof decks may contain latent amounts of moisture that may affect the insulation and the roof system. To help protect the roofing components, an Elevate Venting Base Sheet or other vapor retarder material may be installed in accordance with the manufacturer's instructions. The installation of a vapor retarder should be considered regardless of the method of attachment of the insulation or membrane attachment, hot asphalt or adhesive attachment of insulation or the membrane system.

## Classifications

Structural decks can be classified as nailable or non-nailable (sometimes both) for purposes of mechanically attaching or nailing insulation or base sheets. Nailable decks include wood and new decks of gypsum and lightweight insulating concrete. These decks are soft enough so that the above-deck components can be secured with fasteners. Cementitious wood fiber and poured or precast structural concrete decks have been referred to as non-nailable. The term non-nailable is misleading. Elevate has fasteners that are approved for these decks. Structural decks can be classified as combustible or non-combustible for the purposes of fire ratings and code requirements.

**Table 13: Structural Deck Classifications**

| STRUCTURAL DECK CLASSIFICATIONS | | |
|---|---|---|
| **Deck** | **Nailable or Non-nailable** | **Combustible or Non-combustible** |
| Steel | Non-nailable | Non-combustible |
| Concrete | Both | Non-combustible |
| Wood | Nailable | Combustible |
| Cementitious Wood Fiber Decks | Both | Non-combustible |
| Gypsum | Nailable | Non-combustible |
| Light weight insulated concrete | Nailable | Non-combustible |

## Steel Decks

- Elevate recommends that steel decks be a minimum 22 ga (0.76 mm).
- Factory Mutual Research-Approved steel decks are currently available in 22 ga (.0295" 0.794 mm), 20 ga (.0358", 0.909 mm) and 18 ga (0.0474", 1.204 mm) thick sheets with 1.5" (38 mm) deep corrugations. The corrugations (ribs) are cold rolled in the sheets. The deck has a 6" (152 mm) module, that is, the ribs are 6" (152 mm) on center. All fastening Approvals and recommendations are based on this profile. (Approved and recommended spacing's are such that the fasteners will engage the top flange of the deck). Another common configuration is 3" (76 mm) deep deck, which usually has an 8" (203 mm) module.
- When mechanically attaching insulation, steel decks are required to have a minimum fastener pullout of 300 lb per fastener for adhered roofing systems.
- Elevate single-ply membranes may not be adhered or fastened directly to a steel deck.

- On steel decks, the edges of insulation boards running parallel with the deck are required to be supported by the top flange of the metal deck. The board should have a minimum 1½" bearing on the steel deck flange. Cantilevering insulation boards over deck flutes can result in fracturing insulation boards, reducing the support for the membrane, making it susceptible to puncture.
- All deteriorated components must be replaced, in kind.
- For retrofit of metal buildings, refer to Metal Building Recover Specifications. Direct attachment of Elevate mechanically attached or adhered membrane roofing systems to metal roofs (regardless of gauge) without an acceptable cover board is strictly prohibited.

**Table 14: Acceptable Fasteners for Steel Decks**

| ACCEPTABLE FASTENERS FOR STEEL DECKS | |
|---|---|
| **Insulation** | **Deck Penetration** |
| All-Purpose Fastener | ¾" (19.05 mm) through deck<br>*AP and #12 fasteners are approved for warranty purposes. If uplift validation is required HD fasteners may be required. |
| Heavy Duty Fastener | |
| Pre-Assembled #12 Fastener and Plate | |
| AP AccuTrac™ Kits (#12 Fasteners and insulation Plate) | |
| IsoFast™ #12 Belted Fasteners and Insulation Plates | |
| HD AccuTrac Kits™ | |
| All-Purpose Stainless-Steel Fastener | |
| Elevate #12 Fastener | |
| HailGard Fastener (No Insulation Plate) | ¾" (19.05 mm) through deck |
| **Membrane** | |
| Heavy Duty Fasteners and Plates | ¾" (19.05 mm) through deck |
| Heavy Duty Plus Fasteners and Plates | 1" (25.4 mm) through deck |

**Table 15: Acceptable insulation Adhesives for Use Direct to Steel Decks**

| ACCEPTABLE INSULATION ADHESIVES FOR USE DIRECT TO STEEL DECKS | |
|---|---|
| I.S.O. Spray™ R<br>I.S.O. Stick™<br>I.S.O. Twin Pack™<br>Twin Jet<br>Twin Jet Y | **NOTE:**<br>▪ The deck must be clean, free of all processing oils and other contaminates.<br>▪ Bead spacing should be spaced to ensure top flute adhesion is made.<br>▪ Use only 4' x 4' (1.2 m x 1.2 m) insulation boards with adhesives.<br>▪ Factory Mutual (FM) does not recognize adhesion of insulation direct to steel deck. |

## Structural Concrete Decks

- Elevate recommends that the concrete deck be a minimum 2,500 psi (17,236 KPa).
- Contact a Regional Technical Coordinator for fastening requirements for Mechanically Attached Systems should pullout values be less than 400 lbf (181.4 kg).
- When mechanically attaching insulation, structural concrete roof decks require a minimum fastener pullout of 300 lb (1.8 kN) per fastener for adhered roofing systems.

> **!** The suitability of mechanically fastening insulation or membrane to any hollow core, pre-stressed or post-tensioned structural concrete deck assembly is the responsibility of the design professional. Special consideration needs to be given to the relationship between the deck attachment allowances and Elevate mechanical attachment requirements.

- Verify with the building owner or the owner's design professional about the suitability of mechanical fastening into pre-stressed and post-tensioned structural concrete.
- Newly poured decks must be sufficiently cured to allow adhesion to the substrate surface. Cure times vary. A roof consultant, structural engineer, or concrete industry professional should be contacted to perform moisture tests if the readiness of concrete is in question.
- Pre-cast concrete panels may not always be a suitable substrate to receive insulation due to the potential for irregularities, even if the joints are grouted. It may sometimes be necessary to consider pouring a leveling layer of structural or lightweight concrete over the panels prior to roofing.
- Concrete additives can have a negative impact on the adhesion of asphaltic membranes and insulation products. The concrete supplier/installer should certify that any additives in the mix will not render the deck unsuitable for roofing application for warranted systems.
- Elevate does not accept for warranty any concrete substrates that have been sealed with chemical sealers or silicon surface treatments.

Table 16: Single-Ply Adhesion / Attachment to Structural Concrete Roof Decks

| SINGLE-PLY ADHESION/ATTACHMENT TO STRUCTURAL CONCRETE ROOF DECKS | |
|---|---|
| **Elevate PVC or PVC KEE** | |
| Adhered | The Elevate PVC or PVC KEE* Membrane may be attached directly to poured-in-place structural concrete using Elevate PVC LVOC Bonding Adhesive or Elevate PVC Water Based Bonding Adhesive* (max 15-year warranty).<br>** Elevate PVC Water Based Bonding Adhesive is not intended for use with Elevate PVC KEE non-fleece backed membrane.* |
| | The Elevate PVC (non-fleece) Membrane may be adhered directly to poured-in-place structural concrete using Elevate Jet Bond PVC Spray Adhesive. The Elevate Jet Bond PVC Spray Adhesive is only approved for use with Elevate PVC (non-fleece) Membrane. |
| Mechanically Attached | Requires protection mat or insulation. |
| **Elevate PVC XR or PVC KEE XR** | |
| Adhered | The Elevate PVC XR or PVC KEE XR Membrane may be attached directly to poured-in-place structural concrete using Elevate PVC Water Based Bonding Adhesive (max 15-year warranty), I.S.O. Spray R, XR Stick, Twin Jet or Twin Jet Y. |
| **Elevate PVC KEE XRT** | |
| Adhered | The Elevate PVC KEE XRT Membrane may be attached directly to poured-in-place structural concrete using Elevate PVC Water Based Bonding Adhesive (max 15-year warranty), I.S.O. Spray R, XR Stick, Twin Jet, Twin Jet Y or appropriate Hot Asphalt. |
| **Elevate MAX PVC** | |
| Adhered | The Elevate MAX PVC Membrane may be attached directly to poured-in-place structural concrete using Elevate PVC LVOC Bonding Adhesive or Elevate PVC Water Based Bonding Adhesive* (max 15-year warranty). |
| | The Elevate PVC (non-fleece) Membrane may be adhered directly to poured-in-place structural concrete using Elevate Jet Bond PVC Spray Adhesive. The Elevate Jet Bond PVC Spray Adhesive is only approved for use with Elevate PVC (non-fleece) Membrane. |
| Mechanically Attached | Requires protection mat or insulation. |
| **Elevate MAX PVC** | |
| Adhered | The Elevate MAX PVC XR Membrane may be attached directly to poured-in-place structural concrete using Elevate PVC Water Based Bonding Adhesive (max 15-year warranty), XR Stick, Twin Jet or Twin Jet Y. |

! **NOTE:** When mopping direct to concrete decking, precautions must be taken to protect everything below from dripping hazards of the hot asphalt!

Table 17: Acceptable Fasteners for Structural Concrete Decks

| ACCEPTABLE FASTENERS FOR STRUCTURAL CONCRETE DECKS | |
|---|---|
| **Insulation** | **Deck Penetration** |
| Heavy Duty | 1" (25.4 mm) min. into the structural concrete deck |
| HailGard Fastener (No Insulation Plate) | |
| Elevate Concrete Drive | 1 ¼" (31.75 mm) min. into the structural concrete deck |
| **Membrane** | |
| Heavy Duty Fasteners and Plates | 1" (25.4 mm) min. into deck |
| Concrete Drives | 1 ¼" (31.75 mm) min. into concrete deck |

Table 18: Acceptable Insulation Adhesives for Use Direct to Structural Concrete Decks

| ACCEPTABLE INSULATION ADHESIVES FOR USE DIRECT TO STRUCTURAL CONCRETE DECKS | |
|---|---|
| I.S.O. Spray R<br>I.S.O. Stick<br>I.S.O. Twin Pack<br>Twin Jet<br>Twin Jet Y | **NOTE:**<br>▪ The deck must be clean, free of all processing oils and other contaminates.<br>▪ Use only 4′ x 4′ (1.2 m x 1.2 m) insulation boards with adhesives.<br>▪ Primer may be required. |

## Wood Decks: Plywood, OSB and Wood Plank

- Elevate recommends that plywood and OSB decks have a minimum 7/16" (11.11 mm) thickness.
- A minimum of 1" (25.4 mm) ISO 95+ GL / ISOGARD GL is required when installing Elevate PVC KEE or MAX PVC (80 mil min.) systems over wood decks for Platinum (30-Year) warranties. (A thermal barrier may be required depending on local building codes and/or specific project requirements.)
- Adhered and mechanically attached Elevate PVC, PVC KEE or MAX PVC single-ply systems may be installed directly to a OSB or plywood deck when:
  - The surface is structurally sound, smooth, flat, clean, dry, and free of sharp fins, loose splinters or foreign materials that may damage the membrane.
  - The deck is secured using threaded fasteners that provide a smooth profile, meeting FM 4470 and the guidelines found in "Designing Commercial Roofs to Withstand Wind Uplift Forces" document, which can be found at apawood.org. **NOTE:** Nails are not permitted.
  - Tongue and groove panels are recommended.
  - Adhering over "H" clips is not recommended. Validate if used proper adhesion is achieved around clips.

> ! Fire treated plywood may be used provided it has not been treated with Ammonium Phosphates.

- Contact a Regional Technical Coordinator for fastening requirements for Mechanically Attached Systems should pullout values be less than 400 lbf (181.4 kg).
- When mechanically attaching insulation to wood decks, the required fastener pullout is 300 lb (1.8 kN) per fastener minimum for adhered roofing systems.
- When nailing a base sheet, wood decks are required to have a minimum per fastener pullout of 40 lb (0.24 kN) for cap nails.

**Table 19: Single-Ply Adhesion / Attachment to Wood Roof Decks**

| SINGLE-PLY ADHESION/ATTACHMENT TO WOOD ROOF DECKS | |
|---|---|
| **Elevate PVC and PVC KEE** | |
| Adhered | The Elevate PVC and PVC KEE* Roofing System Membrane may be adhered directly to a wood deck using Elevate PVC LVOC Bonding Adhesive or Elevate PVC Water Based Bonding Adhesive* (max 15-yr warranty). **Elevate PVC Water Based Bonding Adhesive is not intended for use with Elevate PVC KEE non-fleece backed membrane.* |
| | The Elevate PVC (non-fleece) Membrane may be adhered directly to a wood deck using Elevate Jet Bond PVC Spray Adhesive. The Elevate Jet Bond PVC Spray Adhesive is only approved for use with Elevate PVC (non-fleece) Membrane. |
| Mechanically Attached or Invisiweld | The Elevate PVC and PVC KEE Roofing System Membrane may be mechanically attached directly to a wood deck using the appropriate Elevate fasteners and plates. **NOTE:** Invisiweld applications are not intended to be used over a non-insulated substrate. A suitable insulation board or cover board should be used when installing the system. OSB and Plywood cover boards should not be used with induction welded systems. |
| **Elevate PVC XR and PVC KEE XR** | |
| Adhered | The Elevate PVC XR and PVC KEE XR Membrane may be adhered directly to a wood deck using Elevate PVC Water Based Bonding Adhesive (max 15-year warranty), I.S.O. Spray R, XR Stick, Twin Jet or Twin Jet Y. |
| Mechanically Attached | The Elevate PVC XR and PVC KEE XR Roofing System Membrane may be mechanically attached directly to a wood deck using the appropriate fasteners and plates. |
| **Elevate PVC KEE XRT** | |
| Adhered | The Elevate PVC KEE XRT Membrane may be adhered directly to a wood deck using Elevate PVC Water Based Bonding Adhesive (max 15-year warranty), I.S.O. Spray R, XR Stick, Twin Jet or Twin Jet Y. |
| Mechanically Attached | The Elevate PVC KEE XRT Roofing System Membrane may be mechanically attached directly to a wood deck using the appropriate fasteners and plates. |
| **Elevate MAX PVC** | |
| Adhered | The Elevate MAX PVC Roofing System Membrane may be adhered directly to a wood deck using Elevate PVC LVOC Bonding Adhesive, Elevate Jet Bond PVC Adhesive or Elevate PVC Water Based Bonding Adhesive* (max 15-yr warranty). |
| Mechanically Attached or Invisiweld | The Elevate MAX PVC Roofing System Membrane may be mechanically attached directly to a wood deck using the appropriate Elevate fasteners and plates. **NOTE:** Invisiweld applications are not intended to be used over a non-insulated substrate. A suitable insulation board or cover board should be used when installing the system. OSB and Plywood cover boards should not be used with induction welded systems. |
| **Elevate MAX PVC XR** | |
| Adhered | The Elevate MAX PVC XR Membrane may be adhered directly to a wood deck using Elevate PVC Water Based Bonding Adhesive (max 15-year warranty), XR Stick, Twin Jet or Twin Jet Y. |
| Mechanically Attached | The Elevate MAX PVC XR Roofing System Membrane may be mechanically attached directly to a wood deck using the appropriate fasteners and plates. |

Table 20: Acceptable Fasteners for Approved Wood Roof Decks

| ACCEPTABLE FASTENERS FOR APPROVED WOOD ROOF DECKS | |
|---|---|
| **Insulation** | **Deck Penetration** |
| All-Purpose* | 1" (25.4 mm) into or through deck<br><br>*AP and #12 fasteners are approved for warranty purposes. If uplift validation is required HD fasteners may be required. |
| Heavy Duty | |
| Pre-Assembled #12 Fastener and Plate* | |
| AP AccuTrac™ Kits (#12 Fasteners and Insulation Plates)* | |
| IsoFast™ #12 Belted Fasteners and Insulation Plates* | |
| HD AccuTrac Kits™ | |
| All-Purpose Stainless-Steel Fastener | |
| Heavy Duty (HD) ISOGARD™ HG / HailGard Fastener (No Insulation Plate) | |
| Elevate #12 Fastener | |
| **Membrane** | |
| All Purpose Fasteners and Plates (20-year max.) | 1" (25.4 mm) through deck |
| Heavy Duty Fasteners and Plates | |
| IsoFast™ #15 Belted Fasteners and Seam Plates | |
| All-Purpose Stainless-Steel Fastener | |

Table 21: Acceptable Insulation Adhesives for Approved Wood Roof Decks

| ACCEPTABLE INSULATION ADHESIVES FOR APPROVED WOOD ROOF DECKS | |
|---|---|
| I.S.O. Spray R<br>I.S.O. Stick<br>I.S.O. Twin Pack<br>Twin Jet<br>Twin Jet Y | **NOTE:**<br>▪ The deck must be clean, free of all processing oils and other contaminates.<br>▪ Use only 4′ x 4′ (1.2 m x 1.2 m) insulation boards with adhesives. |

## Cementitious Wood Fiber Decks

- Mechanically Attached Membrane Systems are not approved into Cementitious Wood Fiber Decks.
- When mechanically attaching insulation, cementitious wood fiber decks are required to have a fastener pullout of 300 lb (1.8 kN) for each fastener for adhered roofing systems.
- Elevate recommends that cementitious wood fiber deck have a minimum 2" (50.8 mm) thickness.
- Elevate PVC, PVC KEE, and Elevate MAX PVC Membranes cannot be installed directly to a cementitious wood fiber deck. The membrane must be adhered to an acceptable Elevate insulation or cover board.

Table 22: Acceptable Fasteners for Cementitious Wood Fiber Decks

| ACCEPTABLE FASTENERS FOR CEMENTITIOUS WOOD FIBER DECKS | |
|---|---|
| **Insulation** | **Deck Penetration** |
| Polymer Fasteners and Plates | 1 ½" (38.1 mm) into deck |
| Elevate Lite Deck Fastener | 2" (50.8 mm) into deck |
| **Membrane** | |
| Not Approved | |

Table 23: Acceptable Insulation Adhesives for Attachment to Cementitious Wood Fiber Decks

| ACCEPTABLE INSULATION ADHESIVES FOR ATTACHMENT TO CEMENTITIOUS WOOD FIBER DECKS | |
|---|---|
| I.S.O. Spray R<br>I.S.O. Stick<br>I.S.O. Twin Pack<br>Twin Jet<br>Twin Jet Y | **NOTE:**<br>▪ The deck must be clean, free of all processing oils and other contaminates.<br>▪ Use only 4′ x 4′ (1.2 m x 1.2 m) insulation boards with adhesives. |

## Gypsum Roof Decks

- Elevate recommends that the gypsum roof deck have a minimum 2" (50.8 mm) thickness.
- Mechanically Attached Membrane Systems are not approved into Gypsum Decks.
- When attaching insulation to a gypsum roof deck, a fastener pullout of 300 lb (1.8 kN) per Elevate Polymer Fastener is required for adhered roofing systems.
- When mechanically attaching a base sheet to a gypsum roof deck, a fastener pullout of 40 lb (.24 kN) per Elevate LWC Base Sheet Fastener is required.
- Elevate PVC, PVC KEE and Elevate MAX PVC Membranes cannot be installed directly to a gypsum roof deck. The membrane must be adhered to an acceptable Elevate insulation or cover board.

**Table 24: Acceptable Fasteners for Gypsum Roof Decks**

| ACCEPTABLE FASTENERS FOR GYPSUM ROOF DECKS | |
|---|---|
| **Insulation** | **Deck Penetration** |
| Polymer Fasteners and Plates | 1½" (38.1 mm) into deck |
| Elevate Lite Deck Fastener | 2" (50.8 mm) into deck |
| **Membrane** | |
| Not Approved | |
| **Base Sheet Attachment** | |
| 1.2" (30.5 mm) and 1.7" (43 mm) LWC Base Sheet Fastener<br>LWC Base-Ply Fastener<br>Two Piece Impact Nail<br>Polymer Fastener and appropriate plate or batten strip | |

**Table 25: Acceptable Insulation Adhesives for Attachment Direct to Gypsum Roof Decks**

| ACCEPTABLE INSULATION ADHESIVES FOR ATTACHMENT DIRECT TO GYPSUM ROOF DECKS | |
|---|---|
| I.S.O. Spray R<br>I.S.O. Stick<br>I.S.O. Twin Pack<br>Twin Jet<br>Twin Jet Y | **NOTE:**<br>▪ The deck must be clean, free of all processing oils and other contaminates.<br>▪ Use only 4′ x 4′ (1.2 m x 1.2 m) insulation boards with adhesives. |

## Lightweight Insulating Concrete Roof Decks

> **!** Elevate suggests a vapor retarder be considered over any Lightweight Concrete roof deck, especially over Lightweight Concrete with Aggregate. However, where not specifically required in the chart below, the determination of the necessity and placement of a vapor retarder is project-specific and rests with the building owner or their design professional.

- Elevate recommends that lightweight insulating concrete have a minimum 2" (50.8 mm) thickness.
- Contact a Regional Technical Coordinator for fastening requirements for Mechanically Attached Systems should pullout values be less than 400 lbf (181.4 kg). All mechanically attached membrane systems must attach into or through a structural concrete deck or steel form pan.
- When mechanically attaching insulation through lightweight insulating concrete, into a structural deck, a fastener pullout of 300 lb (1.8 kN) per fastener is required for adhered roofing systems.
- When mechanically attaching a base sheet to lightweight insulating concrete using Elevate 1.7" LWC Base Ply fasteners, a fastener pullout of 40 lb (.24 kN) per fastener is required.
- A properly prepared, existing, dry, and sound, un-insulated built-up roof system (all splits and blisters repaired) can function as a vapor retarder in a warranted Red Shield system but will not be included within Red Shield warranty coverage.

Table 26: Single-Ply Adhesion / Attachment to Lightweight Insulating Concrete Roof Decks

| SINGLE-PLY ADHESION/ATTACHMENT TO LIGHTWEIGHT INSULATING CONCRETE ROOF DECKS | | |
|---|---|---|
| **New System with Insulation** | | **New System without Insulation** |
| **Elevate PVC and PVC KEE** | | |
| Adhered | Insulation Required; Vapor Retarder Recommended | Not allowed |
| Mechanically Attached | Insulation Required; Vapor Retarder Recommended | A vapor retarder is not required, provided that the deck is clean, smooth, dry, and free of sharp edges, fins, loose or foreign materials, oil, grease, and other materials that may damage the membrane. |
| **Elevate PVC XR, PVC KEE XR and PVC KEE XRT*** | | |
| Adhered | Insulation Required; Vapor Retarder Recommended | Cellular Lightweight Concrete: Elevate PVC XR membrane may be adhered directly to a Cellular Lightweight Insulating Concrete Roof Deck using Elevate PVC Water based Bonding Adhesive (max 15-year warranty), I.S.O. Spray R, XR Stick, Twin Jet or Twin Jet Y. A positive adhesion test is required. A vapor retarder is not required, provided that the deck is clean, smooth, dry, free of sharp edges, fins, loose or foreign materials, oil, grease, and other materials that may damage the membrane |
| Adhered with Hot Asphalt* | PVC KEE XRT **Membrane Only:** Insulation Required; Vapor Retarder Recommended | Not allowed |
| Mechanically Attached | Insulation Required; Vapor Retarder Recommended | A vapor retarder is not required, provided that the deck is clean, smooth, dry, and free of sharp edges, fins, loose or foreign materials, oil, grease, and other materials that may damage the membrane. |
| **Elevate MAX PVC** | | |
| Adhered | Insulation Required; Vapor Retarder Recommended | Not allowed |
| Mechanically Attached | Insulation Required; Vapor Retarder Recommended | A vapor retarder is not required, provided that the deck is clean, smooth, dry, and free of sharp edges, fins, loose or foreign materials, oil, grease, and other materials that may damage the membrane. |
| **Elevate MAX PVC XR** | | |
| Adhered | Insulation Required; Vapor Retarder Recommended | Cellular Lightweight Concrete: Elevate MAX PVC XR membrane may be adhered directly to a Cellular Lightweight Insulating Concrete Roof Deck using Elevate PVC Water based Bonding Adhesive (max 15-year warranty), XR Stick, Twin Jet or Twin Jet Y. A positive adhesion test is required. A vapor retarder is not required, provided that the deck is clean, smooth, dry, free of sharp edges, fins, loose or foreign materials, oil, grease, and other materials that may damage the membrane |
| Adhered with Hot Asphalt | Not allowed | Not allowed |
| Mechanically Attached | Insulation Required; Vapor Retarder Recommended | A vapor retarder is not required, provided that the deck is clean, smooth, dry, and free of sharp edges, fins, loose or foreign materials, oil, grease, and other materials that may damage the membrane. |

Table 27: Acceptable Fasteners for Lightweight Insulation Concrete Roof Decks

| ACCEPTABLE FASTENERS FOR LIGHTWEIGHT INSULATION CONCRETE ROOF DECKS | |
|---|---|
| **Acceptable Fastener** | **Minimum Penetration** |
| **Acceptable Fasteners into Steel Pan** | |
| Elevate Heavy Duty (HD's)<br>Elevate HailGard | ¾" (19.05 mm) Minimum penetration of fastener through steel pan |
| **Acceptable Fasteners into Structural Concrete Substrate** | |
| Elevate Heavy Duty (HD's)<br>Elevate HailGard | 1" (25.4 mm) into concrete deck |
| Elevate Concrete Drives | 1 ¼" (31.75 mm) into concrete deck |
| **Acceptable Fasteners for attaching Base Sheet to Light Weight Insulating Concrete** | |
| Elevate 1.7" (43 mm) LWC Base Ply Fastener | Full |
| Elevate Lite Deck Fastener | 2" (50.8 mm) into deck |

## Special Considerations for Partial Tear Off and Retrofit/Recover Applications

! **30 YEAR SYSTEMS REQUIRE COMPLETE TEAR OFF**
**(Min. 80 mil PVC KEE, PVC KEE XR, PVC KEE XRT or Elevate MAX PVC and MAX PVC XR required.)**

! If present, it is required that Phenolic foam insulation be removed. Once removed, a visual inspection of the deck condition and other components is required; all deteriorated components must be replaced as necessary. It is the building owner or their design professional's responsibility to determine the condition of the deck.

- A **Partial Tear Off** is the removal of the existing roofing membrane, installing a new layer of insulation over the existing in-place insulation, and installing a new membrane roofing system over the new insulation.
- A **Retrofit** or **Recover** is the installation of a new membrane roofing system (including insulation) over an existing roofing membrane.
- The effect of existing moisture on the performance of the new system may be significant depending upon the roofing components selected. Therefore, a moisture survey should be conducted to determine the moisture content of the existing roof system components. All components of the existing system that would be detrimental to the new Elevate roof system must be removed and replaced in kind prior to installation.
- Limitations in flashing heights may be encountered. Existing building features (e.g., door or window locations, weep holes, and through-wall flashings) may not allow sufficient clearance to provide proper termination above the potential water level, additional insulation, or other details. Detailed consideration of these conditions is critical to the integrity of the roofing system. **Contact a Elevate Regional Technical Coordinator for Technical Information or assistance.**
- Confirm the structural integrity of the existing deck and specify repair or replacement as required.
- Existing roof components are not included in the Red Shield warranty.
- Verify that the attachment of the existing roof system is acceptable for the specific new Elevate roof system.

Table 28: Special Considerations for Partial Tear Off and Retrofit / Recover Applications

| SPECIAL CONSIDERATIONS FOR PARTIAL TEAR OFF AND RETROFIT/RECOVER APPLICATIONS | |
|---|---|
| **Deck** | **Special Considerations** |
| **Steel Decks and Nailable Decks**<br>(Wood Plank, Plywood, OSB, Gypsum, Cement Wood Fiber, Poured in Place Concrete Decks) | The attachment of the existing system may not be sufficient if the existing insulation is not mechanically fastened or not fastened correctly, or if the existing system contains fasteners that may be corroded. It is strongly recommended that the existing roof system be mechanically attached to the structural deck according to local code, Insurance and Elevate requirements, and prior to installing the new insulation. |
| **Non-Nailable Decks**<br>(Poured in Place Concrete Decks, Pre-cast Concrete Decks, Post-Tension Concrete Decks, Hollow Core) | If the existing insulation or membrane is not adequately adhered to the deck, it is strongly recommended that the existing roof system be removed to the deck. |

| | |
|---|---|
| ! | The suitability of mechanically fastening insulation or membrane to any hollow core, pre-stressed or post-tensioned structural concrete deck assembly is the responsibility of the design professional. Special consideration needs to be given to the relationship between the deck attachment allowances and Elevate mechanical attachment requirements. |
| | All recover or retrofit systems using adhesives for insulation attachment require a pull test to verify adhesion. Refer to the Elevate Attachment Guide for adhesion pull test requirements for Elevate insulation adhesives. |
| | When using fasteners, verify that the substrate has sufficient fastener pullout resistance to meet system requirements. |

### Partial Tear Off

| | |
|---|---|
| ! | **30 YEAR SYSTEMS REQUIRE COMPLETE TEAR OFF**<br>**(Min. 80 mil PVC KEE, PVC KEE XR, PVC KEE XRT or Elevate MAX PVC or MAX PVC XR required.)** |

- **Partial Tear Off and Recover** is the removal of the existing membrane, installing a new layer of insulation over the existing in place insulation and a new membrane over the new insulation.
- The existing insulation must be suitable for use as a component of the new roof system. The existing insulation must be:
  - Dry and free of trapped moisture.
  - Re-secured as necessary to meet Elevate, local code, or other specified wind uplift requirements.
  - An acceptable substrate for the new insulation and the new membrane.
- If existing insulation is to remain, all damaged or wet components must be removed and replaced, in kind, prior to installing the new roof system.
- Existing roof components are not included in the Red Shield warranty.

## Retrofit/Recover Applications

| | |
|---|---|
| ! | **30 YEAR SYSTEMS REQUIRE COMPLETE TEAR OFF**<br>**(Min. 80 mil PVC KEE, PVC KEE XR, PVC KEE XRT or Elevate MAX PVC or MAX PVC XR required.)** |

### Existing Smooth Surface Built-Up or Modified Bitumen Roofs

- Elevate PVC XR, PVC KEE XR or Elevate MAX PVC XR membrane may be adhered to a properly prepared smooth surface BUR or modified bitumen roof. The existing smooth surface BUR or modified bitumen roof must not have been coated or re-saturated.
- New insulation or cover board required, except when installing a Elevate PVC XR, PVC KEE XR or Elevate MAX PVC XR membrane system.
- All damaged or wet components must be removed and replaced, in kind, prior to installing the new roof system. Existing roof components are not included in the Red Shield warranty.

### Mineral Surfaced Modified Bitumen

- Elevate PVC XR, PVC KEE XR, PVC KEE XRT or Elevate MAX PVC XR membrane may be adhered to a properly prepared granulated modified bitumen roof.
- Insulation, cover board, or protection mat required, except when installing a Elevate PVC XR, PVC KEE XR, PVC KEE XRT or Elevate MAX PVC XR membrane system.
- All damaged or wet components must be removed and replaced, in kind, prior to installing the new roof system.
- Existing roof components are not included in the Red Shield warranty.

### Asphalt Built Up and Modified Roofs with Flood Coat and Gravel

- New insulation or cover board is required. Use of 4' x 4' (1.2 m x 1.2 m) boards is recommended.
- All damaged or wet components must be removed and replaced, in kind, prior to installing the new roof system.
- Existing roof components are not included in the Red Shield warranty.
- The removal of loose gravel may be required to meet local building code requirements or for structural consideration. If loose gravel is removed, some method of leveling may be required to provide a suitable substrate for new insulation.

### Coal Tar Built-Up Roofs

- New insulation or cover board is required.
- All damaged or wet components must be removed and replaced, in kind, prior to installing the new roof system.
- Flow of existing coal tar into the building may occur when new fasteners penetrate an existing coal tar pitch membrane and substrate.

| | |
|---|---|
| ! | Flow of existing coal tar into the building may occur when new fasteners penetrate an existing coal tar pitch membrane and substrate. |

- The removal of loose gravel may be required to meet local building code requirements or for structural consideration. If loose gravel is removed, some method of leveling may be required to provide a suitable substrate for the insulation.
- Existing roof components are not included in the Red Shield warranty.

## Existing Single-Ply System

- New insulation or cover board is required.
- Recover over single-ply roofing systems require that all existing base tie-ins be removed or cut prior to the new roof installation.
- All damaged or wet components must be removed and replaced, in kind, prior to installing the new roof system.
- Existing roof components are not included in the Red Shield warranty.

## Fanfold Insulation

- Fanfold insulation is approved for use when recover applications call for mechanically attached membrane applications of Elevate PVC, PVC KEE and MAX PVC membrane systems.
- Fanfold must be Type VIII with a minimum thickness of 1/2 (12.7 mm) and must meet the following minimum physical properties outlined below.
- Existing gravel surfaced roofs should be spud/scraped clean and vacuumed.
- Existing single-ply membrane should be cut into 10' x 10' (3.05 m x 3.05 m) grids and all flashings and base tie-ins should be detached/removed before attaching Fanfold with appropriate fasteners and insulation plates. Those may include Elevate #12 Insulation Fasteners, All Purpose Fasteners and Heavy-Duty Fasteners with Elevate Insulation Plates, as well as IsoFast™ Bested Fasteners and Insulation Plates or AP AccuTrac® Kits.
- InvisiWeld applications are not allowed when Fanfold is the immediate substrate.
- Damaged or wet components of the existing roofing system must be removed/replaced.
- Fanfold must have a suitable facer. "Bare" EPS must never come into contact with PVC or PVC KEE membranes, or with residual asphalt.
- Adjacent Fanfold sheets should be laid parallel and staggered ever 2' (0.61 m).
- For projects requiring performance validation, switch to an appropriate Elevate insulation and/or cover board.
- Check with local building code authorities for requirements for partial tear-offs and recovers.
- The maximum Red Shield™ Warranty term for systems including Fanfold is 20 years. Wind speeds up to 72 MPH may be approved based on project characteristics. Hail and Cut & Puncture Protection are not available when Fanfold is used in lieu of an Elevate insulation and/or cover board.
- Contact a Regional Technical Coordinator for more information.

**Table 29: EPS Warranty Coverage**

| EPS WARRANTY COVERAGE | | | | | |
|---|---|---|---|---|---|
| **Product and Coverage** | **Product Data** | | | | |
| **Alleguard ½" (12.7 mm) Fanfold Rigid Board Insulation**<br>(TIS 967)<br>Maximum 20-year, 55 mph Warranty | **Facer:** | | | | |
| | Poly/Poly | | Poly/Foil | | |
| | **Type (ASTM C578 (CAN/ULC-S701) and Density (lb/ft³ (kg/m³)):** | | | | |
| | FF13 | FF15 (HD) | FF20 (HD) | FF30 (HD) | FF40 (HD) |
| | VIII (1) | II (2) | II (2) | IX (3) | XIV (3) |
| | 1.15 (18) | 1.35 (22) | 1.50 (24) | 2.0 (32) | 2.5 (40) |
| **Alleguard Flute Fill Rigid Insulation**<br>(TIS 968)<br>(Square or Beveled Edge)<br>Maximum 20-year, 55 mph Warranty | Facer: **Non-Faced** | | | | |
| | **Type (ASTM C578 (CAN/ULC-S701) and Density (lb/ft³ (kg/m³)):** | | | | |
| | FL13 | FL15 (HD) | FL20 (HD) | FL25 (HD) | |
| | VIII (1) | II (2) | II (2) | IX (3) | |
| | 1.25 (20) | 1.35 (22) | 1.50 (24) | 1.80 (29) | |

**NOTE:**
1. Performance validation (uplift and/or fire) may not be available when EPS insulation is used.
2. 3/8" (9.53 mm) thick fanfold approved for ballast reskin applications only.

Table 30: EPS Installation Requirements for Warranty

| EPS INSTALLATION REQUIREMENTS FOR WARRANTY | |
|---|---|
| **Product** | **Minimum Installation Requirements** |
| **Alleguard Fanfold Rigid Board Insulation** (TIS 967) | ▪ Preliminarily fastened with appropriate fasteners and plates at a minimum of 5 fasteners and plates per 32 $ft^2$ (2.97 $m^2$) into appropriate substrate.<br>▪ Approved for use in appropriate re-cover applications only. |
| **Alleguard Flute Fill Rigid Insulation** (TIS 968) | ▪ Loose laid or preliminarily attached with appropriate fastener and plates. |

**NOTE:**
1. EPS direct to deck application is acceptable but may not meet building code or Factory Mutal (FM) requirements.
2. Performance validation (uplift and/or fire) may not be available when EPS insulation is used.
3. Non-Faced EPS shall not be in direct contact with bonding adhesives, asphalt products, PVC, or PVC KEE membrane.
4. EPS Insulation not to be used directly underneath EPDM membranes unless under ballasted conditions.

### Preparation of Existing Gravel, Smooth, and Granule Surfaced Asphalt Membrane

! **30 YEAR SYSTEMS REQUIRE COMPLETE TEAR OFF**
**(Min. 80 mil PVC KEE, PVC KEE XR, PVC KEE XRT or Elevate MAX PVC or MAX PVC XR required.)**

- Verify that the attachment of the existing roof system is acceptable. If existing insulation is not mechanically fastened, contains fasteners that may be corroded or loose, or the attachment may not be sufficient, consideration should be given to re-attaching the roof system prior to installing the new insulation.
- When adhering insulation to a gravel surfaced roof, all loose gravel or granules must be removed by vacuuming and/or, power brooming. After all loose gravel has been removed; spud the remaining gravel smooth to provide a level bonding surface.
- If adhering the insulation or cover board with asphalt, prime the surface using an ASTM D 41 asphalt primer.
- The existing assembly should be re-secured as necessary to meet local code and insurance or design wind uplift requirements.

! Sprayed In-Place polyurethane foam (PUF) roofing systems require a **COMPLETE TEAR-OFF** of the Sprayed In-Place polyurethane foam system.

Existing roofs over Phenolic Insulation require a **COMPLETE TEAR-OFF** of the entire roof system to the structural deck. When Phenolic insulation is removed, a visual inspection of the deck condition and other components is required; all deteriorated components must be replaced as necessary.

## Base Sheet

### General

- Depending on the base sheet and the substrate, base sheets may be attached with fasteners, hot asphalt, or heat fusing as required by the specifications.
- The Elevate modified base sheets and base plies must be installed so that all laps shed water.
- Where the slope exceeds ½" (12.7 mm) in 12" (304.8 mm), (4.2%) and hot asphalt is required, Elevate recommends that Elevate SEBS Mopping Asphalt or Type IV asphalt be used.
- Elevate does not manufacture or supply Type III or Type IV asphalt and does not warrant the performance of products not supplied by Elevate.

Table 31: Allowable Base Sheet Attachments

| ALLOWABLE BASE SHEET ATTACHMENTS | | | |
|---|---|---|---|
| **Substrate to Which Base Sheet or Base Ply Will Be Attached** | **Attachment Method** | | |
| | **Mechanically Attached** | **Heat Weld** | **Hot Asphalt** |
| **Decks** | | | |
| Structural Concrete | ✓ | ✓ | ✓ |
| Plywood or Oriented Strand Board | ✓ | | |
| Wood Planking | ✓ | | |
| Poured or Pre-Cast Gypsum | ✓ | | |
| Cementitious Wood Fiber | ✓ | | |
| Lightweight insulating concrete Decks and Fills (See LWC Deck section for additional requirements) | ✓ | | |

| | | | |
|---|---|---|---|
| **Recover** | | | |
| Existing Smooth Surface Built-Up or Modified Bitumen Roofs | | ✓ | ✓ |
| Asphalt Gravel Surfaced Built-Up Roofs | | | ✓ |
| Mineral Surface Built-Up or Modified Bitumen Roofs | | ✓ | ✓ |
| **New Insulation / Cover Board** | | | |
| ISOGARD HD | ✓ | | |
| STRUCTODEK HD Wood Fiber Board | ✓ | | ✓ |
| HailGard / ISOGARD HG | ✓ | | |
| DensDeck | ✓ | | |
| DensDeck Prime | ✓ | ✓ | ✓ |
| DensDeck StormX Prime | ✓ | ✓ | ✓ |
| Securock Gypsum-Fiber | ✓ | ✓ | ✓ |
| Securock UltraLight Glass-Mat | | | |
| Securock Cement | ✓ | ✓ | ✓ |
| Securock UltraLight Coated Glass-Mat | | | |
| DEXcell™ Glass Mat | ✓ | | |
| DEXcell FA Glass Mat | ✓ | ✓ | ✓ |
| DEXcell Cement Board | ✓ | ✓ | ✓ |
| DEXcell FA VSH Glass Mat | ✓ | ✓ | ✓ |
| **NOTE:** Reference must be made to other sections of the Single Ply Design Guide, the Asphalt Design Guide, Detail Drawings, and Technical Information Sheets (TIS) for additional and/or specific requirements. | | | |
| ✓ = Acceptable | | | |

**Table 32: Allowable Fasteners – Base Sheet Attachment**

## ALLOWABLE FASTENERS – BASE SHEET ATTACHMENT

| TIS | Fastener | Deck Type | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Steel | Structural Concrete | Plywood/OSB/Wood Plank | Cementitious Wood Fiber | Gypsum | LWC/Steel Pan | LWC/Concrete |
| 1001 | All-Purpose Fastener | ✓ | - | ✓ | - | - | - | - |
| 1002 | Heavy Duty Fastener | ✓ | ✓ | ✓ | - | - | ✓[1] | ✓[1] |
| 1003 | Pre-Assembled #12 Fastener and Plate | ✓ | - | ✓ | - | - | - | - |
| 1005 | Concrete Drive Fastener | - | ✓ | - | - | - | - | ✓[1] |
| 1006 | Polymer Fastener | - | - | - | ✓ | ✓ | - | - |
| 1012 | LWC Base-Ply Fasteners | - | - | - | - | ✓ | ✓ | ✓ |
| 1014 | IsoFast™ #15 Belted Fasteners and Membrane Plates | ✓ | - | ✓ | - | - | ✓[1] | - |
| 1017 | All-Purpose Stainless-Steel Fastener | ✓ | - | ✓ | - | - | - | - |
| 1020 | Two Piece Impact Nail | - | - | - | ✓ | ✓ | ✓ | ✓ |

**NOTE:**
1. Must penetrate steel pan or structural concrete.

**!** Roofing plies or base sheets cannot be fully mopped to polyiso insulation. A suitable overlay must be used to separate the polyiso insulation from the adhered, hot asphalt applied, ply.
The following are overlays over polyiso that are generally acceptable when attaching any ply sheet with hot asphalt:
- A compatible cover board
- Approved Dens Deck or Securock product
- A base sheet mechanically attached through the polyiso insulation into the structural deck

# Insulation

## General

- Insulation must provide a suitable substrate for the proposed roof system as well as insulating the building.
- Insulation thickness requirements may vary for code compliance. Contact the local code or insurance official before contacting a Regional Technical Coordinator for Technical Information.
- Refer to Insulation or Cover Board Technical Information Sheet (TIS) for specific spanning capabilities.
- Refer to the Elevate Attachment Guide for adhesion pull test requirements for Elevate insulation adhesives.

> **!** Only Elevate brand insulation can be included in the Red Shield warranty.

## Attachment

- Insulation may be installed by various methods including fasteners, adhesives, and asphalt. It is acceptable to combine fastener and adhesive attachment methods in multi-layer applications.
- Tapered insulation below the 1" (25.4 mm) minimum thickness must be fastened at a rate of one (1) fastener and plate per two (2) $ft^2$ (0.22 m). If possible, install the tapered insulation first, covered by the flat stock.
- Refer to specific Elevate Technical Information Sheets (TIS) for installation and fastening requirements.
- When a composite of two insulation layers is installed, the fastening pattern required for the top board thickness must be used. A common fastener may be used to install multilayer applications. Some restrictions apply to fastener length depending on the standards used.

> **!** Ballasted systems are not allowed when the membrane is installed directly onto a hard surface, such as DensDeck, SECUROCK, DEXcell, OSB, Gypsum, ISOGARD HD or concrete.
>
> Ballasted systems are not allowed when the membrane is installed directly to a layer of mechanically attached insulation.

**Table 33: Insulation / Cover Board Attachment Options by Deck and Recover / Retrofit**

| INSULATION/COVER BOARD ATTACHMENT OPTIONS BY DECK AND RECOVER/RETROFIT | | | | | | | |
|---|---|---|---|---|---|---|---|
| Substrate to Which Insulation / Cover Board Will Be Attached or Adhered | Attachment Method | | | | | | |
| | Mechanically Attached | I.S.O. SPRAY R | Twin Jet | Twin Jet Y | I.S.O. Twin Pack | I.S.O. Stick | Hot Asphalt |
| | | Adhesive attachment may require a primer and an adhesive pull test. See the Elevate Attachment Guide and Product Technical Information Sheets. | | | | | |
| **Decks** | | | | | | | |
| Steel | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | N/A |
| Structural Concrete | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Plywood or Oriented Strand Board | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | N/A |
| Wood Planking | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | N/A |
| Poured or Pre-Cast Gypsum | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | N/A |
| Cementitious Wood Fiber | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | N/A |
| Lightweight Insulating Concrete Decks (See LWC Deck Section for additional requirements) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | N/A |
| **Recover/Retrofit (Excluding Platinum Systems)** | | | | | | | |
| Existing Smooth Surface Built-Up Roof or Modified Bitumen Roofs | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Coal Tar Built-Up Roofs | N/A | N/A | ✓ | ✓ | ✓ | ✓ | N/A |
| Asphalt Gravel Surfaced Built-Up Roof | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Mineral Surface Built-Up Roof or Modified Bitumen Roof | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Vapor Barrier** | | | | | | | |
| V-Force FR Vapor Barrier Membrane | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | N/A |
| V-Force Vapor Barrier Membrane | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | N/A |

| Sprayed Urethane Roof (PUF) – Complete Tear-Off Required | |
|---|---|
| Existing Roof with Phenolic Insulation | Complete tear-off required. When Phenolic insulation is removed, a visual inspection of the deck condition and other components is required, and all deteriorated components must be replaced as necessary. |

**NOTE:**
- Elevate recommends mechanically attaching a Cover board over existing insulation. The responsibility of identifying and removing damaged or wet insulation is that of the contractor.
- Refer to the Elevate Attachment Guide for adhesion pull test requirements for insulation adhesives.

✓ = Acceptable N/A = Not Applicable

## Multiple Layers of Insulation

- Where overall insulation thickness is 2" (50.8 mm) or greater, Elevate recommends installing the insulation in two (2) or more layers.
- Insulation may be installed in one or multiple layer applications for the Red Shield warranty. If installed in multiple layers, the joints of each succeeding and adjoining layer should be staggered from the joints of previous layers by a minimum of 6" (152.4 mm) in each direction.
- When a composite of two insulation layers is installed, the fastening pattern required is dependent on the top board type and thickness. A common fastener may be used to simultaneously fasten all layers to the structural deck.

**Table 34: Insulation / Cover Board Attachment to Insulation Options by Insulation Type**

**INSULATION/COVER BOARD ATTACHMENT TO INSULATION OPTIONS BY INSULATION TYPE**

| Base Layer of Insulation to Which Insulation / Cover Board Will Be Adhered | Insulation / Cover Board to Insulation Attachment Method | | | | | |
|---|---|---|---|---|---|---|
| | I.S.O. SPRAY R | Twin Jet | Twin Jet Y | I.S.O. Twin Pack | I.S.O. Stick | Hot Asphalt |
| ISO 95+ GL / ISOGARD GL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓* |
| Resista / ISOGARD CG | ✓ | ✓ | ✓ | ✓ | ✓ | ✓* |
| ISOGARD HD | ✓ | ✓ | ✓ | ✓ | ✓ | ✓* |
| STRUCTODEK HD Wood Fiberboard | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DensDeck | N/A | N/A | N/A | N/A | N/A | N/A |
| DensDeck Prime | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DensDeck StormX Prime | ✓ | ✓ | ✓ | ✓ | ✓ | N/A |
| SECUROCK Gypsum-Fiber | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Securock UltraLight Glass-Mat | N/A | N/A | N/A | N/A | N/A | N/A |
| Securock Cement | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Securock UltraLight Coated Glass-Mat | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Perlite Insulation | N/A | N/A | N/A | N/A | N/A | ✓ |
| Asphalt Base Sheet | ✓ | ✓ | ✓ | ✓ with primer | ✓ with primer | ✓ |
| DEXcell FA Glass Mat | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DEXcell Cement Board | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DEXcell FA VSH Glass Mat | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| V-Force FR Vapor Barrier Membrane | ✓ | ✓ | ✓ | ✓ | ✓ | N/A |
| V-Force Vapor Barrier Membrane | ✓ | ✓ | ✓ | ✓ | ✓ | N/A |

**NOTE:**
- Elevate recommends mechanically attaching a Cover board over existing insulation. The responsibility of identifying and removing damaged or wet insulation is that of the contractor.
- Refer to the Elevate Attachment Guide for adhesion pull test requirements for insulation adhesives.

*** Board to board attachment acceptable but membrane to board securement with hot asphalt not approved.**

✓ = Acceptable N/A = Not Applicable

## Mechanical Attachment of Insulation and Cover Board to Approved Substrates

- Insulation must be fastened with appropriate Elevate fasteners and insulation plates.
- Elevate All Purpose (AP) Fasteners, Elevate AP AccuTrac Kits, Elevate ISOFast#12 Belted Fasteners and Insulation Plates, and Elevate Pre-Assembled #12 Fasteners and plates are not acceptable for use on any warranties greater than 20 years for new construction, re-cover, or partial tear off applications into steel decking and the system type is adhered.
- Insulation must be installed in accordance with the fastening rate and pattern for the applicable system, as shown in Elevate attachment specifications.
- Fastening rates and patterns may vary for code or regulatory compliance. Contact a local code or insurance official before contacting a Regional Technical Coordinator for Technical Information.

- When a composite of two insulation layers is installed, the fastening pattern required is dependent on the top board type and thickness. A common fastener may be used to simultaneously fasten all layers to the structural deck.
- In areas where tapered insulation thickness is below the 1" (25.4 mm) minimum thickness, insulation must be fastened at a rate of one (1) fastener and plate per two (2) $ft^2$ (0.22 $m^2$).
- Elevate's published reduced fastening rates for ISO 95+ GL / ISOGARD GL insulation, under selected conditions, will not affect the products' performance. However, the reduced fastening rate may allow insulation board movement that may result in interior building noise.

**Table 35: Allowable Fasteners – Insulation Attachment**

**ALLOWABLE FASTENERS – INSULATION ATTACHMENT**

| TIS | Fastener | Deck Type | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Steel | Structural Concrete | Plywood/OSB/Wood Plank | Cementitious Wood Fiber | Gypsum | LWC/Steel Pan | LWC/Concrete |
| 1001 | All-Purpose Fastener | ✓ | - | ✓ | - | - | - | - |
| 1002 | Heavy Duty Fastener | ✓ | ✓ | ✓ | - | - | ✓[1] | ✓[1] |
| 1003 | Pre-Assembled #12 Fastener and Plate | ✓ | - | ✓ | - | - | - | - |
| 1005 | Concrete Drive Fastener | - | ✓ | - | - | - | - | ✓[1] |
| 1006 | Polymer Fastener | - | - | - | ✓ | ✓ | - | - |
| 1007 | AP AccuTrac™ Kits (#12 Fasteners and insulation Plate) | ✓ | - | ✓ | - | - | - | - |
| 1013 | IsoFast™ #12 Belted Fasteners and Insulation Plates | ✓ | - | ✓ | - | - | - | - |
| 1016 | HD AccuTrac Kits™ | ✓ | - | ✓ | - | - | - | - |
| 1017 | All-Purpose Stainless-Steel Fastener | ✓ | - | ✓ | - | - | - | - |
| 1019 | Heavy Duty (HD) ISOGARD™ HG / HailGard™ Fastener | ✓ | ✓ | ✓ | - | - | - | - |
| 1026 | Elevate #12 Fastener | ✓ | - | ✓ | - | - | - | - |
| 1027 | Elevate Lite Deck Fastener | - | - | - | ✓ | ✓ | ✓ | ✓ |

**NOTE:**
1. Must penetrate steel pan or structural concrete.
2. Contact an Elevate Regional Technical Coordinator for special conditions not covered above.

**Table 36: Insulation Attachment Fastener – Warranty Coverage**

**INSULATION ATTACHMENT FASTENER – WARRANTY COVERAGE**

| TIS | Fastener | Warranty Coverage by Deck Type | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Steel | Structural Concrete | Plywood/OSB/Wood Plank | Cementitious Wood Fiber | Gypsum | LWC/Steel Pan | LWC/Concrete |
| 1001 | All-Purpose Fastener | 20 | - | 20 | - | - | - | - |
| 1002 | Heavy Duty Fastener | 30 | 30 | 30 | - | - | 30 | 30 |
| 1003 | Pre-Assembled #12 Fastener and Plate[1] | 20 | - | 20 | - | - | - | - |
| 1005 | Concrete Drive Fastener | - | 30 | - | - | - | - | 30 |
| 1006 | Polymer Fastener | - | - | - | 30 | 30 | - | - |
| 1007 | AP AccuTrac™ Kits (#12 Fasteners and insulation Plate) | 20 | - | 20 | - | - | - | - |
| 1013 | IsoFast™ #12 Belted Fasteners and Insulation Plates | 20 | - | 20 | - | - | - | - |
| 1016 | HD AccuTrac Kits™ | 20 | - | 20 | - | - | - | - |
| 1017 | All-Purpose Stainless-Steel Fastener | 20 | - | 20 | - | - | - | - |
| 1019 | Heavy Duty (HD) ISOGARD™ HG / HailGard™ Fastener | 30 | 30 | 30 | - | - | - | - |
| 1026 | Elevate #12 Fastener | 20 | - | 20 | - | - | - | - |
| 1027 | Elevate Lite Deck Fastener | - | - | - | 20 | 20 | 20 | 20 |

**NOTE:** Contact an Elevate Regional Technical Coordinator for special conditions not covered above.

## Minimum Number of Fasteners and Plates Per Insulation Board

- Refer to Elevate Attachment Guide for the required patterns for proper placement of approved fasteners and plates for insulation on Elevate minimum roofing systems specifications. These fastening patterns apply to the following flat or tapered insulations. The most common fastener density and pattern requirements are shown on this Technical Information Sheet. For non-standard fastener densities, contact a Regional Technical Coordinator for information.
- Certain specifications and job conditions may call for increased densities of fasteners in the perimeters and corners of roofs.

**Table 37: Minimum Number of Fasteners and Plates per Insulation Board**

| MINIMUM NUMBER OF FASTENERS AND PLATES PER INSULATION BOARD | | | | | |
|---|---|---|---|---|---|
| System | | Insulation | Insulation Thickness | Number of Fasteners per 4' x 4' Board | Number of Fasteners per 4' x 8' Board |
| Adhered Systems | **Elevate MAX PVC**<br>**Elevate MAX PVC XR**<br>**Elevate PVC**<br>**Elevate PVC KEE**<br>**Elevate PVC XR**<br>**Elevate PVC KEE XR**<br>**Elevate PVC KEE XRT** | ISO 95+ GL / ISOGARD GL | .5" - 1.4" | 8 | 16 |
| | | | 1.5" – 1.9" | 6 | 12 |
| | | | 2" or greater | 4 | 8 |
| | | ISOGARD HD | 0.5" | 6 | 12 |
| | | HailGard / ISOGARD HG | 1.5" – 1.9" | 6 | 12 |
| | | | 2" or greater | 4 | 8 |
| | | STRUCTODEK HD Fiberboard (max 20-year) | .5" | 8 | 16 |
| | | Securock Gypsum-Fiber | ¼" | 5 | 10 |
| | | | ½" | 4 | 8 |
| | | | ⅝" | 4 | 8 |
| | | Securock UltraLight Glass-Mat | ¼" | 5 | 10 |
| | | | ½" | 4 | 8 |
| | | | ⅝" | 4 | 8 |
| | | Securock Cement | ¼" | 5 | 10 |
| | | | ⅝" | 4 | 8 |
| | | Securock UltraLight Coated Glass-Mat | ¼" | 5 | 10 |
| | | | ½" | 4 | 8 |
| | | | ⅝" | 4 | 8 |
| | | DensDeck Prime | ¼" | 6 | 12 |
| | | | ½" | 4 | 8 |
| | | | ⅝" | 4 | 8 |
| | | DensDeck StormX Prime | ⅝" | 4 | 8 |
| | | DEXcell FA Glass Mat | ¼" | 6 | 12 |
| | | | ½" | 4 | 8 |
| | | | ⅝" | 4 | 8 |
| | | DEXcell Cement Board | 7/16" | 5 | 10 |
| | | | ⅝" | 4 | 8 |
| | | DEXcell FA VSH Glass Mat | ⅝" | 4 | 8 |
| Mechanically Fastened Membrane | **Elevate MAX PVC**<br>**Elevate MAX PVC XR**<br>**Elevate PVC**<br>**Elevate PVC KEE**<br>**Elevate PVC XR**<br>**Elevate PVC KEE XR**<br>**Elevate PVC KEE XRT**<br>New Construction<br>**Not** over a BUR, Modified, or Adhered Single-Ply System | All Elevate Approved Insulations | All Approved Thicknesses | 4 | 5 |
| | **Elevate MAX PVC**<br>**Elevate MAX PVC XR**<br>**Elevate PVC** | ISO 95+ GL / ISOGARD GL | .5" - 1.4" | 8 | 16 |
| | | | 1.5" – 1.9" | 6 | 12 |
| | | | 2" or greater | 4 | 8 |

| | | | | |
|---|---|---|---|---|
| **Elevate PVC KEE**<br>**Elevate PVC XR**<br>**Elevate PVC KEE XR**<br>**Elevate PVC KEE XRT**<br>New Construction with an Air barrier or a recover over existing loose laid or Mechanically Attached Single-Ply System | ISOGARD HD | ½" | 6 | 12 |
| | STRUCTODEK HD Fiberboard (max 20-year) | .5" | 8 | 16 |
| | HailGard / ISOGARD HG | 1.5" – 1.9" | 6 | 12 |
| | DensDeck | ¼" | 8 | 16 |
| | | ½" | 6 | 12 |
| | | ⅝" | 4 | 8 |
| | DensDeck Prime | ¼" | 8 | 16 |
| | | ½" | 6 | 12 |
| | | ⅝" | 4 | 8 |
| | DensDeck StormX Prime | ⅝" | 4 | 8 |
| | SECUROCK Gypsum-Fiber | ¼" | 8 | 16 |
| | | ½" | 6 | 12 |
| | | ⅝" | 4 | 8 |
| | Securock UltraLight Glass-Mat | ¼" | 5 | 10 |
| | | ½" | 4 | 8 |
| | | ⅝" | 4 | 8 |
| | Securock Cement | ¼" | 5 | 10 |
| | | ⅝" | 4 | 8 |
| | Securock UltraLight Coated Glass-Mat | ¼" | 5 | 10 |
| | | ½" | 4 | 8 |
| | | ⅝" | 4 | 8 |
| | DEXcell Glass Mat | ¼" | 8 | 16 |
| | | ½" | 6 | 12 |
| | | ⅝" | 4 | 8 |
| | DEXcell FA Glass Mat | ¼" | 8 | 16 |
| | | ½" | 6 | 12 |
| | | ⅝" | 4 | 8 |
| | DEXcell Cement Board | 7/16" | 5 | 10 |
| | | ⅝" | 4 | 8 |
| | DEXcell FA VSH Glass Mat | ⅝" | 4 | 8 |

**NOTE:** Uplift requirements for the project may require increased fastening rates than those listed above. The rates listed in these tables are for warranty purposes only. Contact a Regional Technical Coordinator for rates related to special warranty terms or conditions.
¼" = 6.4 mm; ½" = 12.7 mm; ⅝" = 16 mm; 1" = 25.4 mm; 1.4" = 35.6 mm; 1.5" = 38.1 mm; 1.9" = 48.2 mm; 2" = 50.8 mm

**Table 38: Minimum Fastener Pullout Resistance for Specific Systems**

| MINIMUM FASTENER PULLOUT RESISTANCE FOR SPECIFIC SYSTEMS | |
|---|---|
| **System** | **Minimum Fastener Pullout** |
| Adhered Membrane Systems with Insulation Mechanically Attached to Deck | 300 lb (136.1 Kg) |
| Single-Ply Mechanically Attached. | 400 lb (181.4 Kg) |
| Base Sheet Mechanically Attached to Deck | 300 lb (136.1 Kg) |
| Base Sheet Nailed to Deck (Cap nail or Elevate LWC Fastener) | 40 lb (18.1 Kg) |

**NOTE:** In the case where the structural deck does not meet the minimum fastener pullout requirements contact a Elevate Regional Technical Coordinator.

## Asphalt Attachment of Insulation / Cover Board to Substrate

- The proposed insulation or cover board must be compatible with the roof substrate, the proposed bitumen and the requirements of the Elevate roof system.
- Hot steep asphalt (ASTM D 312 Type III or Type IV) may be used to attach insulation beneath a ballasted, adhered or mechanically attached roof system.
- When using hot asphalt for attachment:
  - The insulation must be no larger than 4' X 4' (1.2 m X 1.2 m)
  - Stagger all insulation joints from adjoining boards and subsequent layers by 6" (153 mm)
- Assure that all health and safety measures are followed when installing hot asphalt to protect the installers as well as occupants of the building.
- Expanded or extruded polystyrene insulation cannot be attached or adhered to with hot asphalt.

Table 39: Approved Substrates for use with Asphalt Attachment of Insulation / Cover Board

| APPROVED SUBSTRATES FOR USE WITH ASPHALT ATTACHMENT OF INSULATION/COVER BOARD | | |
|---|---|---|
| Approved base sheets that have been attached in accordance with Elevate requirements | | ✓ |
| Approved base plies that have been adhered in accordance with Elevate requirements | | ✓ |
| Compatible insulations | ISO 95+ GL / ISOGARD GL | ✓ |
| Compatible Cover Boards | Approved DensDeck, Securock and DEXcell Products (DensDeck must be primed with ASTM D 41) | ✓ |
| Poured-in-Place or pre-cast structural concrete decks that has been primed with ASTM D 41 primer | | ✓ |
| Existing properly prepared asphalt membrane roofing systems. | Uncoated smooth or granular surfaced BUR | ✓ |
| | Granule surfaced SBS modified asphalt roofing systems | ✓ |
| | Gravel surface Built-Up roofing systems | ✓ |
| ✓ = Acceptable | | |

## Adhesive Attachment of Insulation / Cover Board to Substrate

- Ensure that all safety measures are followed when installing insulation adhesives to protect the installer as well as the occupants of the building.
- Elevate insulation adhesives must be applied in accordance with the installation instructions and Technical Information Sheets (TIS).
- Elevate I.S.O. Twin Pack, Elevate I.S.O. Stick, Elevate Twin Jet, Elevate Twin Jet Y, and Elevate I.S.O. SPRAY R Adhesive:
  - The insulation must be no larger than 4' X 4' (1.2 m X 1.2 m)
  - Stagger all insulation joints from adjoining and adjacent boards and adjacent layers, 6" (153 mm) minimum.
- Refer to the Elevate Roofing Systems Adhered Insulation Layout Guide at the end of this section for adhesion pull test requirements for Elevate I.S.O. Twin Pack, Elevate I.S.O. Stick, I.S.O. SPRAY R, Elevate Twin Jet and Elevate Twin Jet Y.
- Existing decks containing residual asphalt must be cleaned and scraped as smooth as possible.
- Existing decks shall be smooth, flat, clean, dry, free of sharp fins, or foreign materials.

Table 40: Allowable Adhesive Attachment of Insulation / Cover Board to Structural Deck

| ALLOWABLE ADHESIVE ATTACHMENT OF INSULATION / COVER BOARD TO STRUCTURAL DECK | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Structural Deck to Which Insulation or Cover Board Will Be Adhered | Twin Jet | | | Twin Jet Y | | | I.S.O. SPRAY R | | | I.S.O. Twin Pack | | | I.S.O. Stick | | |
| | Acceptable | Pull Test Required | Not Acceptable | Acceptable | Pull Test Required | Not Acceptable | Acceptable | Pull Test Required | Not Acceptable | Acceptable | Pull Test Required | Not Acceptable | Acceptable | Pull Test Required | Not Acceptable |
| Steel [1] | ✓ | | | ✓ | | | ✓ | | | | ✓ | | | ✓ | |
| New Structural Concrete [2] | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| Existing Structural Concrete [3] | | ✓ | | | ✓ | | ✓ | | | | ✓ | | | ✓ | |
| Plywood, OSB, Wood Planking | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| Cementitious Wood Fiber | | ✓ | | | ✓ | | ✓ | | | ✓ | | | ✓ | | |
| Poured or Pre-Cast Gypsum | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | |
| Cellular Lightweight Insulating Concrete (Celcore or Elastizell) [4] | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | |
| Lightweight Insulating Concrete Decks (See LWC Deck section for additional requirements) [4] | | | | | | | | ✓ | | | ✓ | | | ✓ | |
| ✓ = Acceptable | | | | | | | | | | | | | | | |

**NOTE:**
1. New steel decks require cleaning to remove processing oils.
2. New poured decks must have a minimum 28-day drying/curing time and be dry from “weather”.
3. Existing concrete containing residual asphalt must be cleaned and scraped smooth as possible.
4. New poured decks must have a minimum 28-day drying/curing time and be dry from “weather”.

Table 41: Allowable Adhesive Attachment of Insulation / Cover Bard to Base Layer of Insulation

## ALLOWABLE ADHESIVE ATTACHMENT OF INSULATION/COVER BOARD TO BASE LAYER OF INSULATION

| New Base Layer of Insulation or Asphalt Base Sheet to Which Insulation or Cover Board Will Be Adhered | Twin Jet | | | Twin Jet Y | | | I.S.O. SPRAY R | | | I.S.O. Twin Pack | | | I.S.O. Stick | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Acceptable | Pull Test Required | Not Acceptable | Acceptable | Pull Test Required | Not Acceptable | Acceptable | Pull Test Required | Not Acceptable | Acceptable | Pull Test Required | Not Acceptable | Acceptable | Pull Test Required | Not Acceptable |
| ISO 95+ GL / ISOGARD GL Resista / ISOGARD CG | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| ISOGARD HD | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| STRUCTODEK HD Fiberboard | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| HailGard / ISOGARD HG | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ |
| DensDeck | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ |
| DensDeck Prime | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| DensDeck StormX Prime | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| Securock Gypsum Fiber | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| Securock UltraLight Glass-Mat | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ |
| Securock Cement | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| Securock UltraLight Coated Glass Mat | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| DEXcell Glass Mat | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ |
| DEXcell FA Glass Mat | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| DEXcell Cement | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| DEXcell FA VSH Glass Mat | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| Perlite Insulation | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ |
| V-Force FR Vapor Barrier Membrane | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| V-Force Vapor Barrier Membrane | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | |
| Approved Elevate Asphalt Base Sheets | | ✓ | | | ✓ | | ✓ | | | ✓ | | | ✓ | | |

✓ = Acceptable

**NOTE:**
1. Maximum 4' x 4' (1.2 m x 1.2 m) boards only unless noted otherwise.
2. Maximum 4′ x 8′ (1.2 m x 2.4 m), codes may require 4′ x 4′ (1.2 m x 1.2 m)

Table 42: Allowable Adhesive Attachment of Insulation / Cover Board to Retrofit / Recover

## ALLOWABLE ADHESIVE ATTACHMENT OF INSULATION/COVER BOARD TO RETROFIT/RECOVER

| Recover / Retrofit to Which Insulation or Cover Board Will Be Adhered | Twin Jet | | | Twin Jet Y | | | I.S.O. SPRAY R | | | I.S.O. Twin Pack | | | I.S.O. Stick | | | NOTE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Acceptable | Pull Test Required | Not Acceptable | Acceptable | Pull Test Required | Not Acceptable | Acceptable | Pull Test Required | Not Acceptable | Acceptable | Pull Test Required | Not Acceptable | Acceptable | Pull Test Required | Not Acceptable | |
| Smooth Surface BUR | | ✓ | | | ✓ | | ✓ | | | | ✓ | | | ✓ | | Primer may be required. |
| Existing Asphalt Roofs<br>Gravel Surfaced BUR<br>Mineral Surface BUR<br>Mineral Surface Modified | | ✓ | | | ✓ | | ✓ | | | | ✓ | | | ✓ | | All interruptions in the existing roof membrane must be re-sealed to prevent air infiltration. Primer may be required. |
| Coal Tar Pitch BUR | | ✓ | | | ✓ | | | | ✓ | | ✓ | | | ✓ | | Aged and oxidized. Primer may be required. |
| Existing Single-Ply Systems | | | ✓ | | | ✓ | | | ✓ | | | ✓ | | | ✓ | Primer may be required. |

✓ = Acceptable

### Application Rate

- Elevate Twin Pack Adhesive is generally installed in ½" (12.7 mm) beads spaced 12" (305 mm) o.c. Application rates will increase as job requirements become more demanding.
- Primer may be required, depending on the substrate.

### Criteria for Field Testing Elevate I.S.O. Twin Pack and I.S.O. Stick Adhesive for Adhesion to Deck Substrate

1. Prepare an area large enough to allow a 4' x 4' (1.2 m x 1.2 m) insulation board to be laid in place. Follow manufacturer's guidelines for surface preparation and list of acceptable substrates or contact a Regional Technical Coordinator for Technical Information.
2. Secure the board to the substrate with adhesive per recommended application rates and methods: 12" (304.8 mm) o.c., ½" (12.7 mm) to ¾" (19.05 mm) bead, weighted for 5 minutes minimum).
3. Allow the adhesive a minimum of 60 minutes to cure. This period should be sufficient in almost any temperature to indicate the adhesion values required for the test.
4. After the adhesive has been allowed to cure, pull up on the adhered board by placing a hand under the corner or end of the board in the same direction as the ribbons. Make sure that the board is lifted by hand. Using tools to scrape the board may disbond the adhesive from the deck. This will not show whether the adhesive is performing under uplift considerations. (If a tool is used, it should be used to pry or pop the board up).
5. Observe the insulation and deck. The desired result is a delamination of the surface or board facer with adhesive and facer residue remaining on the deck or the board breaks apart remaining adhered to the deck at the ribbons. If the board is lifted and the adhesive pulls/peels off the deck or decking are pulled up with the board, this is considered an unacceptable substrate.

## Roof Membrane

### Membrane Securement Options for Elevate PVC and PVC KEE Membrane Systems

- The following outlines the various securement options for individual system types. Compliance with all installation criteria is required to issue a Red Shield Warranty. Additional attachment requirements may be necessary to comply with design criteria, insurance requirements or local building code.
- An air barrier is required for projects with large wall openings that are greater than 10% of any one wall area that could be left open in a storm. Criteria for enhancements to be determined based upon Elevate's review. Contact a Regional Technical Coordinator for Technical Information.

**Table 43: Approved Immediate Substrates for Elevate PVC and PVC KEE Membranes**

| APPROVED IMMEDIATE SUBSTRATES FOR ELEVATE PVC AND PVC KEE MEMBRANES | | | | |
|---|---|---|---|---|
| New Elevate Insulation or Approved Elevate Base Sheet to Which Membrane Can Be Applied | Elevate PVC and PVC KEE | | Elevate PVC XR and PVC KEE XR/XRT (Horizontal Substrates) | |
| | Adhered | Mechanically Attached | PVC Water Based Bonding Adhesive (max 15-year warranty) | I.S.O. Spray R XR Stick Twin Jet Twin Jet Y |
| ISO 95+ GL / ISOGARD GL, Resista / ISOGARD CG | ✓ | ✓ | ✓ | ✓ |
| ISOGARD HD | ✓ | ✓ | ✓ | ✓ |
| STRUCTODEK HD Fiberboard (Maximum 20-Year Warranty) | ✓ | ✓ | ✓ | ✓ |
| HailGard / ISOGARD HG | ✓ | ✓ | ✓ | ✓ |
| DensDeck | | ✓ | | |
| DensDeck Prime | ✓ | ✓ | ✓ | ✓ |
| DensDeck StormX Prime Roof Board | ✓ | ✓ | ✓ | ✓ |
| Securock Gypsum-Fiber | ✓ | ✓ | ✓ | ✓ |
| Securock UltraLight Glass-Mat | | ✓ | | |
| Securock Cement | ✓ | ✓ | ✓ | ✓ |
| Securock UltraLight Coated Glass-Mat | ✓ | ✓ | ✓ | ✓ |
| DEXcell Glass Mat | | ✓ | | |
| DEXcell FA Glass Mat | ✓ | ✓ | ✓ | ✓ |
| DEXcell Cement Board | ✓ | ✓ | ✓ | ✓ |
| DEXcell FA VSH Glass Mat | ✓ | ✓ | ✓ | ✓ |
| Perlite Insulation | | | | |
| EPS/XPS Insulation | | | | |

| | | | | |
|---|---|---|---|---|
| Fiberglass Insulation | | | | |
| Approved Elevate Asphalt Base Sheet | ✓ | | | ✓ |
| Structural Concrete | ✓ | ✓ | ✓ | ✓ |
| Plywood or Oriented Strand Board | ✓ | ✓ | ✓ | ✓ |
| Wood Planking | ✓ | ✓ | ✓ | ✓ |
| Poured or Pre-Cast Gypsum | | | | ✓ |
| Cementitious Wood Fiber | | | | |
| Lightweight Insulating Concrete Decks<br>(See LWC Deck Section for additional requirements) | | ✓ | ✓ | ✓ |

| Properly Prepared Recover / Retrofit Substrate to Which Membrane Will Be Directly Applied | Elevate PVC and PVC KEE | | Elevate PVC XR and PVC KEE XR/XRT (Horizontal Substrates) | | |
|---|---|---|---|---|---|
| | Adhered | Mechanically Attached | PVC Water Based Bonding Adhesive (max 15-year warranty) | XR Stick<br>I.S.O. Spray R<br>Twin Jet<br>Twin Jet Y | Mechanically Attached |
| Smooth Surface<br>Built-Up or Modified Bitumen<br>(Maximum 15-Year Warranty) | N/A | Protection mat required | N/A | ✓ | ✓ |
| Mineral Surface<br>Built-Up or Modified Bitumen<br>(Maximum 15-Year warranty) | N/A | Protection mat required | N/A | ✓ | ✓ |
| ✓ = Acceptable | | | | | |

**Table 44: Approved Immediate Substrates for Elevate MAX PVC Membranes**

## APPROVED IMMEDIATE SUBSTRATES FOR ELEVATE MAX PVC MEMBRANES

| New Elevate Insulation or Approved Elevate Base Sheet to Which Membrane Can Be Applied | Elevate MAX PVC | | Elevate MAX PVC XR (Horizontal Substrates) | |
|---|---|---|---|---|
| | Adhered | Mechanically Attached | PVC Water Based Bonding Adhesive (max 15-year warranty) | I.S.O. Spray R<br>XR Stick<br>Twin Jet<br>Twin Jet Y |
| ISO 95+ GL / ISOGARD GL, Resista / ISOGARD CG | ✓ | ✓ | ✓ | ✓ |
| ISOGARD HD | ✓ | ✓ | ✓ | ✓ |
| STRUCTODEK HD Fiberboard<br>(Maximum 20-Year Warranty) | ✓ | ✓ | ✓ | ✓ |
| HailGard / ISOGARD HG | ✓ | ✓ | ✓ | ✓ |
| DensDeck | | ✓ | | |
| DensDeck Prime | ✓ | ✓ | ✓ | ✓ |
| DensDeck StormX Prime Roof Board | ✓ | ✓ | ✓ | ✓ |
| Securock Gypsum-Fiber | ✓ | ✓ | ✓ | ✓ |
| Securock UltraLight Glass-Mat | | ✓ | | |
| Securock Cement | ✓ | ✓ | ✓ | ✓ |
| Securock UltraLight Coated Glass-Mat | ✓ | ✓ | ✓ | ✓ |
| DEXcell Glass Mat | | ✓ | | |
| DEXcell FA Glass Mat | ✓ | ✓ | ✓ | ✓ |
| DEXcell Cement Board | ✓ | ✓ | ✓ | ✓ |
| DEXcell FA VSH Glass Mat | ✓ | ✓ | ✓ | ✓ |
| Perlite Insulation | | | | |
| EPS/XPS Insulation | | | | |
| Fiberglass Insulation | | | | |
| Approved Elevate Asphalt Base Sheet | ✓ | | | ✓ |
| Structural Concrete | ✓ | ✓ | ✓ | ✓ |
| Plywood or Oriented Strand Board | ✓ | ✓ | ✓ | ✓ |
| Wood Planking | ✓ | ✓ | ✓ | ✓ |
| Poured or Pre-Cast Gypsum | | | | ✓ |
| Cementitious Wood Fiber | | | | |

| | | | | |
|---|---|---|---|---|
| Lightweight Insulating Concrete Decks<br>(See LWC Deck section for additional requirements) | | ✓ | ✓ | ✓ |

| Properly Prepared Recover / Retrofit Substrate to Which Membrane Will Be Directly Applied | Elevate MAX PVC | | Elevate MAX PVC XR/XRT (Horizontal Substrates) | | |
|---|---|---|---|---|---|
| | Adhered | Mechanically Attached | PVC Water Based Bonding Adhesive (max 15-year warranty) | XR Stick Twin Jet Twin Jet Y | Mechanically Attached |
| Smooth Surface<br>Built-Up or Modified Bitumen<br>(Maximum 15-Year Warranty) | N/A | Protection mat required | N/A | ✓ | ✓ |
| Mineral Surface<br>Built-Up or Modified Bitumen<br>(Maximum 15-Year warranty) | N/A | Protection mat required | N/A | ✓ | ✓ |
| ✓ = Acceptable | | | | | |

**Table 45: Acceptable Adhesives for Elevate Membranes**

## ACCEPTABLE ADHESIVES FOR ELEVATE MEMBRANES

| Adhered Single-Ply System | PVC Water Based Bonding Adhesive (max 15-year warranty) | PVC LVOC Bonding Adhesive | Jet Bond PVC Spray Adhesive | I.S.O. Spray R | XR Stick | Twin Jet | Twin Jet Y |
|---|---|---|---|---|---|---|---|
| Elevate PVC Membrane | ✓ | ✓ | ✓ | N/A | N/A | N/A | N/A |
| Elevate PVC XR Membrane (Horizontal Substrates) | ✓ | N/A | N/A | ✓ | ✓ | ✓ | ✓ |
| Elevate PVC KEE Membrane | N/A | ✓ | N/A | N/A | N/A | N/A | N/A |
| Elevate PVC KEE XR Membrane (Horizontal Substrates) | ✓ | N/A | N/A | ✓ | ✓ | ✓ | ✓ |
| Elevate PVC KEE XRT Membrane (Horizontal Substrates) | ✓ | N/A | N/A | ✓ | ✓ | ✓ | ✓ |
| Elevate MAX PVC Membrane | ✓ | ✓ | ✓ | N/A | N/A | N/A | N/A |
| Elevate MAX PVC XR Membrane (Horizontal Substrates) | ✓ | N/A | N/A | ✓ | ✓ | ✓ | ✓ |
| ✓ = Acceptable | | | | | | | |

**Table 46: Allowable Fasteners – Membrane Attachment**

## ALLOWABLE FASTENERS – MEMBRANE ATTACHMENT

| TIS | Fastener | Deck Type | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Steel | Structural Concrete | Plywood/OSB/Wood Plank | Cementitious Wood Fiber | Gypsum | LWC/Steel Pan | LWC/Concrete |
| 1001 | All-Purpose Fastener | - | - | ✓ | - | - | - | - |
| 1002 | Heavy Duty Fastener | ✓ | ✓ | ✓ | - | - | ✓[1] | ✓[1] |
| 1005 | Concrete Drive Fastener | - | ✓ | - | - | - | - | ✓[1] |
| 1009 | Heavy Duty Plus Fastener | ✓ | - | - | - | - | - | - |
| 1011 | Purlin Fasteners Black E-Coated | 16-gauge Structural Steel Purlins | | | | | | |
| 1014 | IsoFast™ #15 Belted Fasteners and Membrane Plates | ✓ | - | ✓ | - | - | ✓[1] | - |
| 1017 | All-Purpose Stainless-Steel Fastener | - | - | ✓ | - | - | - | - |

**NOTE:**
1. Must penetrate steel pan or structural concrete.
2. Contact an Elevate Regional Technical Coordinator for special conditions not covered above.

Table 47: Membrane Attachment Fastener – Warranty Coverage

| MEMBRANE ATTACHMENT FASTENER – WARRANTY COVERAGE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Deck Type | | | | | | |
| TIS | Fastener | Steel | Structural Concrete | Plywood/ OSB/ Wood Plank | Cementitious Wood Fiber | Gypsum | LWC over Steel Pan | LWC over Concrete |
| 1001 | All-Purpose Fastener | - | - | 20 | - | - | - | - |
| 1002 | Heavy Duty Fastener | 30 | 30 | 30 | - | - | 30 | 30 |
| 1005 | Concrete Drive Fastener | - | 30 | - | - | - | - | 30 |
| 1009 | Heavy Duty Plus Fastener | 30 | - | - | - | - | - | - |
| 1011 | Purlin Fasteners Black E-Coated | 20 (16-gauge Structural Steel Purlins) | | | | | | |
| 1017 | All-Purpose Stainless-Steel Fastener | - | - | 20 | - | - | - | - |
| **NOTE:** Contact an Elevate Regional Technical Coordinator for special conditions not covered above. | | | | | | | | |

## Mechanically Attached Systems

Within Elevate Specifications, reference is made to Elevate Mechanically Attached Systems. Mechanically Attached Elevate PVC, PVC XR, PVC KEE, PVC KEE XR, PVC KEE XRT, MAX PVC and MAX PVC Roofing Systems include:

- Mechanically Anchored System – using appropriate Elevate Fasteners and HD Seam Plates
- Elevate PVC, PVC KEE, or MAX PVC InvisiWeld System – using appropriate Elevate Fasteners and PVC InvisiWeld Plates

> **!** Elevate recommends that when installing mechanically attached membranes over steel decks, the field attachment should run perpendicular the deck panels.

### General

- See the Elevate Attachment Guide for specific membrane layout requirements.
- Due to the nature of mechanically attached roofing systems, some fluttering or billowing of the membrane can be expected and may produce sound under certain conditions.
- Appropriate Elevate Seam Plates or Batten Strips (Wide Weld Systems only) must be used with Elevate Fasteners to secure the Elevate Mechanically Attached System membrane.
- Where the deck will not provide a minimum fastener pullout resistance of 400 lb (1.8 kN), Elevate has designed a system of alternate fastener spacing to be used based on fastener pullout capacity. See table below and contact a Regional Technical Coordinator for more information.
- Consult with local building code and insurance officials or design professionals to determine if more stringent securements are required. Below is the minimum attachment requirement to receive a Red Shield Warranty.

Table 48: Fastener Pullout Values and Spacing

| FASTENER PULLOUT VALUES AND SPACING | | |
|---|---|---|
| Min. Pullout Value | Fastener Spacing for Field | Fastener Spacing for Perimeter |
| 400 lbf (1.8 kN) or greater | 12" (304.8 mm) o.c | 12" (304.8 mm) o.c. |
| 300 lbf to 399 lbf (1.3 kN to 1.8kN) | 9" (228.6 mm) o.c. | 6" (152.4 mm) o.c. |
| 200 lbf to 299 lbf (0.9 kN to 1.3 kN) | 6" (152.4 mm) o.c. | 6" (152.4 mm) o.c. |
| less than 200 lbf (0.9 kN) | This system is not applicable | |

- The fastener spacing in the above tables assumes that decking is dry and free of any deterioration. Elevate recommends that pullout testing be completed by the Elevate Licensed Applicator on all re-roof projects, regardless of deck type to confirm pullout resistance.
- For decks other than those listed above, contact a Regional Technical Coordinator for Technical Information.
- Perimeter Attachment Selection:
  - Roof perimeter areas must be attached in accordance with the Elevate Attachment Guide.
  - As an alternate to mechanical attachment, the perimeter area may be adhered.
  - The adhered perimeter area must cover the same area as if the perimeters were mechanically attached, as indicated in the Elevate Attachment Guide.
  - The adhered perimeter area must be prepared in accordance with the substrate and insulation requirements of the Elevate Adhered roof system.
  - The adhered perimeter area must be isolated from the mechanically attached field of the roof by a continuous row of Elevate Fasteners and Seam Plates.

! For retrofit of metal buildings, refer to the Metal Building Recover Guide. Direct attachment of Elevate Mechanically Attached Roofing Systems to metal roofs (regardless of gauge) is strictly prohibited.

### Membrane Lap Splicing (Elevate PVC, PVC KEE and MAX PVC Membrane)

- Splice Elevate PVC, PVC KEE and MAX PVC membranes by heat welding the side and end laps with a hot air welder. Refer to the Elevate Application Guides for additional welding information.
- If reinforced PVC, PVC KEE or MAX PVC membrane thickness is greater than .050" (1.27 mm), appropriate T-joint patches must be installed at all reinforced membrane seam intersections. For specific instructions, refer to the Elevate Roofing Systems Application Guide and appropriate Elevate Lap Splice Details.
- Refer to Elevate details and application specifications for specific requirements.

### Membrane Lap Splicing (Elevate PVC XR, PVC KEE XR, PVC KEE XRT and MAX PVC XR Membrane)

- Splice Elevate PVC XR, PVC KEE XR, PVC KEE XRT and MAX PVC XR membrane side laps by heat welding with a hot air welder. Refer to the Elevate Application Guide for additional welding information. In the absence of a selvage edge follow end lap splicing procedure noted in step below.
- End laps are to be completed by butting the PVC XR, PVC KEE XR, PVC KEE XRT or MAX PVC XR membrane sheets together and hot air welding an 8" (203.2 mm) wide strip of appropriate membrane or cover strip to complete the end lap splice.
  **NOTE:** When PVC KEE XRT membrane is installed with hot asphalt use of Elevate PVC 8" Cover Strip is required. Standard Elevate PVC, PVC KEE and MAX PVC membranes are not compatible with asphalt products.
- If reinforced PVC, PVC KEE or MAX PVC membrane thickness is greater than .050" (1.14 mm), appropriate T-joint patches must be installed at all reinforced membrane seam intersections. For specific instructions, refer to the Elevate Roofing Systems Application Guide and appropriate Elevate Lap Splice Details.

## Flashings

Elevate metal must be used and installed per Elevate details and standards for warranty inclusion. ES-1 certified metal and details are required for increased wind speed warranties over 80 mph. Contractors participating in the Elevate ES-1 Metal Cleat Program may receive up to 90 mph coverage for qualifying products. To meet Elevate's technical specifications, all edge metal, metal copings and edge systems whether field fabricated, shop fabricated, or factory formed should be designed in compliance with the International Building Code (IBC) and be tested/installed in accordance with ANSI/SPRI/FM4435/ES-1 standard and requirements. Reference the table below and the Attachment and Supplemental Increased Wind Speed Guide for more available warranty terms and wind speed coverage options.

Table 49: Elevate Edge Metal and Flashing Warranty Breakdown

| ELEVATE EDGE METAL AND FLASHING WARRANTY BREAKDOWN | | | |
|---|---|---|---|
| **Material** | **Edge Metal Warranty Term** | **Included in Red Shield** | **Notes** |
| Non-Elevate Metal | None | N/A | |
| Non-Elevate Factory Formed | None | No | |
| Elevate Metal (Flat/Coil) | Product Finish Warranty Up to 35 Years | No | Must be purchased from Elevate. |
| Elevate Metal – Field Fabricated | Max. 20-Years, 55 mph | Yes | Installed per current NRCA, SMACNA or other appropriate details/guidelines. |
| Elevate Metal – Field Fabricated | Max. 20-Years, 80 mph | Yes | Installed per current Elevate details/guidelines. |
| Elevate Metal – Shop Fabricated (ES-1 Metal Cleat Program) | Max. 20-Years, up to 90 mph | Yes | Installed per current Elevate details/guidelines. Factory Cleat required (ANSI/SPRI ES-1). |

NOTE:
1. See warranty sample for specific coverage.
2. See appropriate edge metal tables below for warranty coverage based on specific engineered edge metal system offerings.

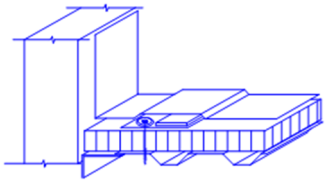
### Design Considerations

- Many factors affect the performance of the flashing system. Extended warranties may require special flashing applications and details. Design drawings for several common applications are available from the Elevate Elevate Technical Database Web Site. Contact a Regional Technical Coordinator for Technical Information.
- Flashing is a roofing element used to prevent water from penetrating the exterior surface of a roof or to intercept and lead water off it. Flashings divert the water to the roof membrane. The roof membrane then carries it to the roof drainage system. Typically, a flashing intercepts water flowing down parapets, down walls of higher adjacent construction and down roof penetrations. There are four typical locations where a flashing is needed:

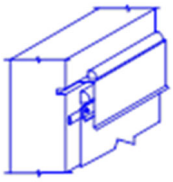
- Terminations
- Junctions
- Projections
- Joints

- In any flashing detail, there are up to three different flashing components:
  - Base flashing
  - Counter Flashing
  - Cap flashing

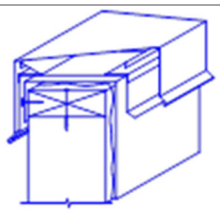
**Base Flashing**
An extension of the roofing membrane or a different material that is bonded to the roof to form a waterproof joint. It extends upward along the vertical surface to divert water onto the membrane. The base flashing should reach a higher level than that reached by water on the roof. In some situations, water may have to be temporarily stored on the roof. This may occur during heavy rainfalls, where the drain size is inadequate, where local building regulations require controlled flow drains, or where ice and snow restrict drainage.



**Counter Flashing**
Counter Flashing is used, in some situations, to carry water onto the base flashing and the membrane. This may be the case where a wall rises above a roof surface. The counter flashing covers the vertical termination of the base flashing. It provides protection for the base flashing and may serve to shed water. Where required, the counter Flashing is secured to the parapet or wall cladding.



**Cap Flashing**
Cap flashings are horizontal coverings for parapets and expansion joints. Cap flashing should be sloped toward the roof and secured to allow differential movement. Failure to provide for adequate flashing height at the design stage may result in serious problems that cannot be corrected subsequently.



- Limitations in flashing heights may be encountered. Existing building features (i.e., door or window locations, weep holes, through-wall flashings, etc.) may not allow sufficient clearance to provide proper termination above the potential water level, additional insulation, or other details. Detailed consideration of these conditions is critical to the integrity of the roofing system. Contact a Regional Technical Coordinator for assistance.

## Wall/Curb Flashing Materials and Requirements

- The following chart lists the flashing requirements for Elevate Single-Ply systems.
- Refer to the Elevate PVC and PVC KEE Application Guide and PVC/PVC KEE and MAX PVC detail drawings sections for additional information.
- All membrane base tie-ins must be attached to substrates which provide a minimum of 200 lbf (89 kN) force in any direction.

**Table 50: Wall / Curb Flashing Materials and Requirements**

| WALL/CURB FLASHING MATERIALS AND REQUIREMENTS | | | |
|---|---|---|---|
| **Membrane** | | **Detail** | **Detail Description** |
| Elevate PVC and | Elevate PVC KEE | All Flashings | Curbs, walls, and expansion joints must be anchored with appropriate base tie-in detail using HD Seam Plates and approved fasteners. Curbs and walls must be flashed using minimum 0.050" Elevate PVC or PVC KEE membrane. Flashings must be sealed with heat welded details. Details may include Elevate PVC Coated Metal. |
| | | Roof Edges | Appropriate Elevate Factory Formed Edge Metal System or Non-Factory Formed Edge Conditions. Non-Factory Formed Edge Conditions may include Elevate Drain Bar, Elevate Drain Bar, Elevate Termination Bar, Elevate PVC Coated Metal and Elevate Approved Details. |
| | | Parapets | Elevate Coping System |
| Elevate PVC XR and | Elevate PVC KEE XR | All Flashings | Anchor membrane at the base of curbs, walls and expansion joints with appropriate base tie-in details using foam adhesive (XR Stick, Twin Jet, Twin Jet Y, or I.S.O. Spray R) with Elevate PVC XR or PVC KEE XR membrane, or HD Seam Plates and HD Fasteners. Standard PVC or PVC KEE membrane required for all vertical flashings. Details may include Elevate PVC Coated Metal. |
| | | Roof Edges | Appropriate Elevate Factory Formed Edge Metal System or Non-Factory Formed Edge Conditions. Non-Factory Formed Edge Conditions may include Elevate Drain Bar, Elevate Drain Bar, Elevate Termination Bar, Elevate PVC Coated Metal and Elevate Approved Details. See PVC XR Specific details for additional information. |
| | | Parapets | Elevate Coping System |

| | | |
|---|---|---|
| Elevate PVC XRT | All Flashings | Anchor membrane at the base of curbs, walls and expansion joints with appropriate base tie-in details using HD Seam Plates and HD Fasteners. Standard PVC or PVC KEE membrane required for all vertical flashings. Details may include Elevate PVC Coated Metal. |
| | Roof Edges | Appropriate Elevate Factory Formed Edge Metal System or Non-Factory Formed Edge Conditions. Non-Factory Formed Edge Conditions may include Elevate Drain Bar, Elevate Drain Bar, Elevate Termination Bar, Elevate PVC Coated Metal and Elevate Approved Details. See PVC KEE XRT Specific details for additional information. |
| | Parapets | Elevate Coping System |
| | All Flashings | Anchor membrane at the base of curbs, walls and expansion joints with appropriate base tie-in details using HD Seam Plates and HD Fasteners. Standard PVC or PVC KEE membrane required for all vertical flashings. Details may include Elevate PVC Coated Metal. |
| Elevate PVC InvisiWeld / Elevate PVC KEE InvisiWeld | All Flashings | Curbs, walls, and expansion joints must be anchored with appropriate base tie-in details, using HD Seam Plates or PVC Invisiweld Plates. See current PVC Invisiweld details for available base tie-in options. Curbs and walls must be flashed using a minimum 0.050" Elevate PVC or PVC KEE membrane. Flashings must be sealed with welded details and may include Elevate PVC Coated Metal. |
| | Roof Edges | Appropriate Elevate Factory Formed Edge Metal System or Non-Factory Formed Edge Conditions. Non-Factory Formed Edge Conditions may include Elevate Drain Bar, Elevate Drain Bar, Elevate Termination Bar, Elevate PVC Coated Metal and Elevate Approved Details. |
| | Parapets | Elevate Coping System |
| Elevate MAX PVC | All Flashings | Curbs, walls, and expansion joints must be anchored with appropriate base tie-in detail using HD Seam Plates and approved fasteners. Curbs and walls must be flashed using minimum 0.050" Elevate MAX PVC membrane. Flashings must be sealed with heat welded details. Details may include Elevate MAX PVC Coated Metal. |
| | Roof Edges | Appropriate Elevate Factory Formed Edge Metal System or Non-Factory Formed Edge Conditions. Non-Factory Formed Edge Conditions may include Elevate Drain Bar, Elevate Drain Bar, Elevate Termination Bar, Elevate PVC Coated Metal and Elevate Approved Details. |
| | Parapets | Elevate Coping System |
| Elevate MAX PVC XR | All Flashings | Anchor membrane at the base of curbs, walls and expansion joints with appropriate base tie-in details using foam adhesive (XR Stick, Twin Jet or Twin Jet Y) with Elevate MAX PVC XR membrane, or HD Seam Plates and HD Fasteners. Standard MAX PVC membrane required for all vertical flashings. Details may include Elevate MAX PVC Coated Metal. |
| | Roof Edges | Appropriate Elevate Factory Formed Edge Metal System or Non-Factory Formed Edge Conditions. Non-Factory Formed Edge Conditions may include Elevate Drain Bar, Elevate Drain Bar, Elevate Termination Bar, Elevate PVC Coated Metal and Elevate Approved Details. See Elevate MAX PVC XR Specific details for additional information. |
| | Parapets | Elevate Coping System |
| Elevate MAX PVC InvisiWeld | All Flashings | Curbs, walls, and expansion joints must be anchored with appropriate base tie-in details, using HD Seam Plates or PVC Invisiweld Plates. See current PVC Invisiweld details for available base tie-in options. Curbs and walls must be flashed using a minimum 0.050" Elevate MAX PVC membrane. Flashings must be sealed with welded details and may include Elevate MAX PVC Coated Metal. |
| | Roof Edges | Appropriate Elevate Factory Formed Edge Metal System or Non-Factory Formed Edge Conditions. Non-Factory Formed Edge Conditions may include Elevate Drain Bar, Elevate Drain Bar, Elevate Termination Bar, Elevate PVC Coated Metal and Elevate Approved Details. |
| | Parapets | Elevate Coping System |

## Penetrations (Pipes, Conduits, Etc.)

! Penetrations shall be placed to maintain a minimum distance away from obstructions (walls, curbs, etc.) to allow for proper installation of flashing details. Minimum 12" (304.8 mm) of clearance is required for penetrations when located near obstructions and/or details (base tie-in, flashing, etc.). Liquid flashing may be used as an alternative to standard flashings if the membrane and system application allows.

**Pipe Flashings (Elevate Universal Pipe Flashing or Elevate PVC Reinforced Split Pipe Boot):**

Wherever possible, all round rigid pipe penetrations ranging in size from 1" (25.4 mm) outside diameter to 4 1/2" (114.3 mm) outside diameter should be flashed with pre-molded Elevate PVC Universal Pipe Flashings or Elevate PVC Reinforced Split Pipe Boots. If it is not possible to fit a PVC pre-manufactured flashing onto the pipe due to site conditions, the pipe should be covered with a PVC or PVC KEE field-fabricated flashing in accordance with Elevate Details.

**Pipe Flashings (Elevate MAX PVC Stack Flashing (Open or Closed):**

Wherever possible, all round rigid pipe penetrations ranging in size from 2" (50.8 mm) outside diameter to 16" (406.4 mm) outside diameter should be flashed with Elevate MAX PVC Stack Flashings. If it is not possible to fit a MAX PVC Stack Flashing onto the pipe due to site conditions, the pipe should be covered with a MAX PVC field-fabricated flashing in accordance with Elevate Details. Elevate MAX PVC Stack Flashings come in Open or Closed options, review appropriate details and TIS 2131 for more information.

**Flexible penetrations (electrical and braided cables, etc.):**

Flexible penetrations or conduits may not be flashed with pre-molded, field-fabricated flashings or penetration pockets. Flexible penetrations must be installed through a rigid gooseneck, a sheet metal enclosure or other isolating structure.

## Penetration Pockets

The following types of penetrations require the installation of the appropriate Penetration Pocket detail:

- Rigid pipes with an outside diameter less than 1" (25 mm) and up to 4" (102 mm)
- Clusters of pipes
- Unusual shapes, e.g., structural beams, channels, or angles

A minimum clearance of 1" (25.4 mm) between penetrations and on all sides of the penetration pocket, is required to assure adequate allowance for the appropriate pourable sealer around each penetration.

**Elevate PVC Coated Metal Pitch Pan Detail (Elevate PVC Coate Metal – Field Fabricated):**
Elevate PVC, PVC XR, PVC KEE, PVC KEE XR and PVC KEE XRT systems with the penetration conditions listed above require the use of the Elevate PVC Coated Metal Penetration Pocket and filled the appropriate filler material and topped with the appropriate Elevate Pourable Sealer.

**Elevate MAX PVC Metal Pitch Pan (Elevate MAX PVC and MAX PVC XR):**
Elevate MAX PVC and MAX PVC XR systems with the penetration conditions listed above require the use of the Elevate MAX PVC Metal Pitch Pan and filled the appropriate filler material and topped with the appropriate Elevate Pourable Sealer.

## Curbs and Terminations

- All flashing terminations above the field of the roof membrane (except penetration pockets and Pre-Molded Elevate accessories) should provide a minimum design height of at least 8" (203.2 mm).
- There are situations where minimum design height cannot be met. In these situations, minimum flashing height should be no lower than the potential water level that could be reached because of a deluging rain. Wherever a vertical termination height is 5" (127 mm) or less, an Elevate Termination Bar detail that is subsequently counter-flashed, is required. Do not flash over existing through-wall flashings, weep holes or scuppers.
- Termination must be made directly to a sound, watertight, rigid, vertical substrate. For retrofit conditions, existing loose flashing materials must be removed or overlaid with ⅝" (15.88 mm) exterior grade plywood. Termination bars are not to be installed into gypsum or wood substrates.
- When using a surface-mounted termination, (i.e., termination bar or surface-mounted counter-flashing) ensure a consistent seal along the wall interface. The wall surface above the termination must be waterproof.
- Gypsum board, used as a substrate for flashings, must be moisture resistant exterior grade with laminated fiberglass facers and recommended for this application by the gypsum board manufacturer. Base tie-ins must be made into the deck because gypsum does not provide the required minimum fastener pullout resistance of 200 lbf (0.9 kN).
- Uneven substrates such as stucco, cobblestone, textured masonry, or corrugated metal panels, etc. are not suitable to receive flashings. Such surfaces must be prepared to provide an acceptable substrate by attaching minimum ⅝" (15.88 mm) exterior grade or pressure treated plywood. Attach as required for structural integrity.
- DensGlass® Gold is not an acceptable substrate for any Elevate membrane wall flashing system.

## Sheet Metal Work

- Coping, gravel stops, drain bars, counter flashings etc., must be supplied by Elevate. If Elevate is not able to supply a given sheet metal product or design, it must be installed per current Elevate details but will not be included as part of the Red Shield Warranty.
- See Elevate Attachment Guide and Supplemental Increased Wind Speed Warranty Attachment Guide for information on edge metal requirements and wind speed coverage.
- The installed membrane roofing system must be made watertight before sheet metal application.
- It is the owner's responsibility to maintain non- Elevate sheet metal in a watertight condition.
- Make these specifications available to the sheet metal fabricator/contractor.
- Attachment:
  - Counter flashings, copings, and other perimeter or penetration metal work must be properly fastened and sealed by the roofing contractor or others.
  - All sheet metal work not supplied by Elevate should be fabricated and installed in accordance with the most stringent requirements from one of the following organizations, the Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA), the National Roofing Contractors Association (NRCA), ANSI/SPRI or Dade County.

| | |
|---|---|
| ! | Some specific roofing details in the Elevate Technical Specifications may exceed SMACNA recommendations. For such details, follow Elevate requirements. |
| | Refer to ANSI/SPRI ES-1 for information on enhanced wind design for metal edge treatments and performance criteria. |
| | Extended wind speed warranties require enhanced edge details. Contact a Regional Technical Coordinator for Technical Information. |

- If a metal flashing product by others is submitted via a deviation request for inclusion in the warranty coverage, the following are minimum requirements for consideration:
  - The sheet metal work must be shop or factory formed or extruded.
  - Minimum requirements regarding sheet metal work material are 24 ga (0.61 mm) G-90 Kynar pre-finished steel or 0.040" (1 mm) aluminum (mill finished, pre-finished or anodized).
  - A deviation request for inclusion of sheet metal work in warranty coverage must accompany the PIN form submitted by the installing contractor.
  - The deviation request must include shop drawings of the sheet metal work to be included and a roof plan showing the installed location and linear dimension for each profile.
  - Should the deviation request be granted, the installing contractor will be responsible to Elevate Solutions and Products US, LLC. for a period of two-years from the date of Elevate's inspection and acceptance under their installer's agreement.
- Metal work not in conformance with Elevate specifications and details or which compromises the integrity of the roof system may jeopardize issuance of the warranty for the entire project. Elevate does not warrant the performance of products Elevate does not supply.
- Elevate PVC and PVC KEE may require the specific use of Elevate PVC coated metal.
- Elevate MAX PVC may require the specific use of Elevate MAX PVC Coated Metal.
- Elevate PVC XR, PVC KEE XR and MAX PVC XR membrane may require special consideration, see XR specific details or contact a Regional Technical Coordinator for Technical Information.

# Walkways

## Locations

Walkways help protect the membrane from damage due to necessary rooftop service traffic.

- Walkway systems on warranted Elevate roofs are required at all access points (ladders, hatches, doorways, etc.) and are recommended for use:
  - On roof areas that are subject to foot traffic more frequently than once per month
  - Around all serviceable rooftop units
- It is the responsibility of the building owner to maintain walkway systems.
- Traffic related roof damage is not covered by the Red Shield Warranty. In areas of extreme traffic, contact a Regional Technical Coordinator for options to enhance the roof system to prevent or mitigate damage to roofing components.

## Walkway Material

- For Elevate PVC, PVC XR, PVC KEE, PVC KEE XR, PVC KEE XRT, MAX PVC and MAX PVC XR Roofing Systems, approved walkways are to be utilized in the areas indicated above. Walkways are to be installed in accordance with the instructions provided in the Technical Information Sheet or Application Guide for each product.
- Elevate walkway may be constructed using Elevate PVC Walkway Pads, Elevate PVC X-Tread Walkway Pads, Elevate MAX PVC Walkway Pads, or Elevate approved pavers (with sacrificial membrane layer).
- Concrete pavers, with an additional layer of membrane installed beneath the paver for protection, may be substituted for walkway pads on adhered membrane systems with adhered insulation or cover board as the top layer. Consult details and guides for additional information.
- Contact a Regional Technical Coordinator for information regarding other materials designated as a walking surface.

# Warranty

**! THESE CHARTS ARE ONLY A SUMMARY OF GENERAL WARRANTY COVERAGE**

## General

- Consult this Single Ply Design Guide opening section: 1.01 - General Design Criteria - Initial Design Considerations and Warranty requirements.
- For new construction or complete tear-off, Elevate AP, HD (or Polymer Fasteners and Polymer Fastener Plates when appropriate) may be used for mechanical attachment of insulation to the appropriate deck.
- For new construction or complete tear-off, Elevate AP Fasteners and Plates are approved for insulation attachment on warranties up to 20 years on adhered or mechanically attached systems into Steel or Wood decks only. Pull tests should be conducted on re-roof/re-cover conditions. When uplift performance validation is required Elevate Heavy-Duty Fasteners and Plates may be required. When increased wind speed or special warranty considerations are requested Heavy-Duty Fasteners and plates or other upgraded installation guidelines may be required.
- All Purpose (AP) Fasteners and Plates are approved for in seam attachment on Wood Decks only. When uplift performance validation is required Elevate Heavy-Duty Fasteners and Plates may be required. When increased wind speed or special warranty considerations are requested Heavy-Duty Fasteners and plates or other upgraded installation guidelines may be required.
- For re-cover or partial tear off, Elevate HD fasteners are required for 15 or 20-year warranties, except into wood decks. When uplift performance validation is required Elevate Heavy-Duty Fasteners and Plates may be required. When increased wind speed or special warranty considerations are requested Heavy-Duty Fasteners and plates or other upgraded installation guidelines may be required.
- Tie-Ins to other roofing systems are not warranted by Elevate.
- Failure of a flashing or termination to an intermediate element (e.g., metal panel, insulation, surface treatment, etc.), which itself could fail and admit moisture beneath the membrane is beyond the limits of the Red Shield warranty.
- Upon Elevate's inspection and acceptance of the installed roof system, the requested warranty can be issued. Elevate's inspection is not intended as an inspection for the benefit of the owner or design professional with respect to contract, building codes or compliance with specifications other than Elevate's. Warranted Elevate roofing systems are to be installed only on commercial, industrial, institutional, or multi-family commercial housing structures in the United States and Canada. Issuance of a warranty for projects outside the US and Canada must be submitted to Regional Technical Coordinator for consideration prior to bidding. Individual residential construction does not qualify for a Red Shield Warranty. Only Elevate supplied components are eligible to be covered as part of the Red Shield Warranty.
- It is the owner's responsibility to expose the membrane if warranty service is required when access is impaired. Such impairment includes, but is not limited to:
  - Design features, such as window washer systems, which require the installation of traffic surface units more than 80 lb (36.3 kg) per unit
  - Any equipment, ornamentation, building service units and other roof top surfacing materials that are not defined as part of the membrane assembly
  - Intricately placed or multicolored ballast configurations
  - Individual pavers utilized as ballast, which weigh more than 80 lb (36.3 kg) per unit, unless otherwise required by Elevate for wind uplift resistance
  - Interlocking paver systems that utilize mechanical clips, strapping, adhesive, etc.
  - Rooftop equipment that does not provide Elevate with reasonable access to the membrane
  - Severely ponded water, snow, ice, and other unrelated materials

The following table shows the types and minimum thicknesses of Elevate insulation acceptable for use as an immediate substrate for Elevate roofing membranes in Red Shield Warranties. Other approved insulations may be allowed below the immediate substrate insulation.

Table 51: Acceptable Insulations for Red Shield Warranties

| ACCEPTABLE INSULATIONS FOR RED SHIELD WARRANTIES | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Insulation | Elevate ISOGARD GL / ISO 95+ GL (Flat or Taper) | Elevate Composite | Elevate ISOGARD HG / HailGard | STRUCTODEK HD Fiberboard (Max 20-year warranty) | ISOGARD HD | DensDeck Products | SECUROCK Gypsum-Fiber | DEXcell Products |
| Thickness | Minimum insulation thickness as an immediate substrate for Elevate Single-Ply Roofing Systems | | | | | | | |
| | 1" (25.4 mm) | 1.5" (38.1 mm) | 1.5" (38.1 mm) | ½" or 1" (12.7 or 25.4 mm) | ½" (12.7 mm) | ¼" (6.35 mm) | ¼" (6 .35 mm) | ¼" (6 .35 mm) |

**NOTE:**
1. DenDeck, Securock UltraLight Glass-mat and DEXcell Glass Mat roof boards are not approved for use with adhered membranes.
2. DensDeck, Securock UltraLight Glass-mat and DEXCell Glass Mat roof board is approved for use with mechanical attachment only.

Table 52: Elevate PVC or PVC XR System / Membrane / Flashing Options by Warranty Term

| ELEVATE PVC OR PVC XR SYSTEM / MEMBRANE / FLASHING OPTIONS BY WARRANTY TERM* | | |
|---|---|---|
| Warranty Term | Acceptable Roof System/Membrane(s) | Acceptable Flashing Options(s) |
| 5, 10, or 15 YEAR RED SHIELD | ▪ 50, 60 or 80 mil Elevate PVC<br>▪ 50, 60 or 80 mil Elevate PVC XR<br>▪ Elevate PVC InvisiWeld | ▪ 50, 60 or 80 mil Elevate PVC<br>▪ Elevate PVC Coated Metal<br>▪ Elevate PVC InvisiWeld |
| 20 YEAR RED SHIELD | ▪ 60 or 80 mil Elevate PVC<br>▪ 60 or 80 mil Elevate PVC XR<br>▪ 60 or 80 mil Elevate PVC InvisiWeld | ▪ 60 or 80 mil Elevate PVC<br>▪ Elevate PVC Coated Metal<br>▪ Elevate PVC InvisiWeld |
| *This includes the PVC and PVC XR Minimum Thickness PVC Sheets | | |

Table 53: Elevate PVC KEE or PVC KEE XR System / Membrane / Flashing Options by Warranty Term

| ELEVATE PVC KEE OR PVC KEE XR SYSTEM / MEMBRANE / FLASHING OPTIONS BY WARRANTY TERM* | | |
|---|---|---|
| Warranty Term | Acceptable Roof System/Membrane(s) | Acceptable Flashing Options(s) |
| 5, 10, or 15 YEAR RED SHIELD | ▪ 50, 60 or 80 mil Elevate PVC KEE<br>▪ 50, 60 or 80 mil Elevate PVC KEE XR or PVC KEE XRT<br>▪ Elevate PVC InvisiWeld | ▪ 50, 60 or 80 mil Elevate PVC KEE<br>▪ Elevate PVC Coated Metal<br>▪ Elevate PVC InvisiWeld |
| 20 YEAR RED SHIELD | ▪ 60 or 80 mil Elevate PVC KEE<br>▪ 60 or 80 mil Elevate PVC KEE XR or PVC KEE XRT<br>▪ 60 or 80 mil Elevate PVC InvisiWeld | ▪ 60 or 80 mil Elevate PVC KEE<br>▪ Elevate PVC Coated Metal<br>▪ Elevate PVC InvisiWeld |
| 25 – 30 YEAR RED SHIELD** | ▪ 80 mil Elevate PVC KEE<br>▪ 80 mil Elevate PVC KEE XR or PVC KEE XRT | ▪ 80 mil Elevate PVC KEE<br>▪ Elevate PVC Coated Metal |
| *This includes the PVC KEE and PVC KEE XR Minimum Thickness PVC Sheets<br>**25 – 30 Year Red Shield Warranty only approved for 80 mil PVC KEE, PVC KEE or PVC KEE XRT membrane systems. | | |

Table 54: Elevate MAX PVC and MAX PVC XR System / Membrane / Flashing Options by Warranty Term

| ELEVATE MAX PVC AND MAX PVC XR SYSTEM / MEMBRANE / FLASHING OPTIONS BY WARRANTY TERM* | | |
|---|---|---|
| Warranty Term | Acceptable Roof System/Membrane(s) | Acceptable Flashing Options(s) |
| 5, 10, or 15 YEAR RED SHIELD | ▪ 50, 60 or 80 mil Elevate MAX PVC<br>▪ 50, 60 or 80 mil Elevate MAX PVC XR<br>▪ 50, 60 or 80 mil Elevate MAX PVC InvisiWeld*** | ▪ 50, 60 or 80 mil Elevate MAX PVC<br>▪ Elevate MAX PVC Coated Metal<br>▪ Elevate MAX PVC InvisiWeld |
| 20 YEAR RED SHIELD | ▪ 60 or 80 mil Elevate MAX PVC<br>▪ 60 or 80 mil Elevate MAX PVC XR<br>▪ 60 or 80 mil Elevate MAX PVC InvisiWeld*** | ▪ 60 or 80 mil Elevate MAX PVC<br>▪ Elevate MAX PVC Coated Metal<br>▪ Elevate MAX PVC InvisiWeld |
| 25 – 30 YEAR RED SHIELD** | ▪ 80 mil Elevate MAX PVC<br>▪ 80 mil Elevate MAX PVC XR | ▪ 80 mil Elevate MAX PVC<br>▪ Elevate MAX PVC Coated Metal |
| *This includes the Elevate MAX PVC Minimum Thickness PVC Sheets<br>**25 – 30 Year Red Shield Warranty only approved for 80 mil Elevate MAX PVC or MAX PVC XR membrane systems.<br>***50 mil Elevate MAX PVC Membrane used with InvisiWeld applications limited to 15-year warranty coverage. | | |

Table 55: Elevate Warranty Summary Eligibility for Licensed Applicators

| ELEVATE WARRANTY SUMMARY ELIGIBILITY FOR LICENSED APPLICATORS | | |
|---|---|---|
| **Warranty Name** | **Specification** | **Coverage** |
| Red Shield Warranty<br>5, 10, 15 or 20 Years | Elevate specifications for the term requested. | Repair leaks in the roofing system caused by Elevate branded materials or the workmanship used to install them. No dollar limit to Elevate expenditures to honor the warranty. |
| Red Shield or Red Shield Platinum Warranty<br>25 or 30 Year Warranty* | Elevate Specifications for the term requested. ***80 mil PVC KEE, PVC KEE XR, PVC KEE XRT or Elevate MAX PVC or MAX PVC XR Membrane adhered only** | Repair leaks in the roofing system caused by Elevate branded materials or the workmanship used to install them. No dollar limit to Elevate expenditures to honor the warranty. |
| Cut and Puncture – Red Shield and Red Shield Platinum | Elevate PVC, PVC KEE or Elevate MAX PVC (80 mil. minimum) adhered to ISOGARD GL/ISOGARD CG insulation. | Repair leaks in the roof system caused by Elevate branded materials or the workmanship used to install them, plus damage by cut or puncture. No dollar limit to repair warranted leaks. |
| Red Shield Warranty – up to 2" Hail | Elevate PVC XR, PVC KEE XR, PVC KEE XRT, or Elevate MAX PVC XR (80 mil. minimum) adhered to high density (HD) cover board. | Repair leaks in the roof system caused by Elevate branded materials or workmanship used to install them, plus damage caused by up to 2" hail. No dollar limit to repair warranted leaks. |
| Red Shield **W** – **W**ind | Elevate PVC, PVC KEE or Elevate MAX PVC (60 mil. minimum) adhered or attached to appropriate substrate. | Repair leaks in roof system caused by Elevate branded materials or workmanship used to install them, plus damage caused by winds up to 120 mph. No dollar limit to repair warranted leaks. |
| Red Shield **PW** – **P**uncture and **W**ind | Elevate PVC, PVC KEE or Elevate MAX PVC (80 mil. minimum) adhered or attached to appropriate substrate. | Repair leaks in the roof system caused by Elevate branded materials or workmanship used to install them, plus damage caused by cut or puncture and winds up to120 mph. No dollar limit to repair warranted leaks. |
| Red Shield **PWH** – **P**uncture, **H**ail and **W**ind | Elevate PVC KEE XR, PVC KEE XRT or Elevate MAX PVC XR (80 mil. minimum) adhered to HailGard/ISOGARD HG Insulation. | Repair leaks in the roof system caused by Elevate branded materials or workmanship used to install them, plus damage caused by cuts or puncture, winds up to 120 mph or hail. No dollar limit to repair warranted leaks. |

**NOTE:**
1. See the Warranty Pricing Guide for pricing information. ISOGARD HG Composite Insulation is required for PHW. Hail Coverage, Cut & Puncture protection, and extended wind speed coverage for other immediate substrates are priced separately.
2. **DO NOT** mix Elevate PVC/PVC KEE membranes with Elevate MAX PVC membranes.

Table 56: Elevate PVC and PVC XR Membrane Only Warranty Summary

| ELEVATE PVC AND PVC XR MEMBRANE ONLY WARRANTY SUMMARY | | | | | |
|---|---|---|---|---|---|
| **Membrane** | **Thickness (mil)** | **Max. Term (Years)** | **MAS** | **Adhered** | **Invisiweld** |
| Elevate PVC* | 50 | 15 | ✓ | ✓ | ✓ |
| | 60 | 20 | ✓ | ✓ | ✓ |
| | 80 | 20 | ✓ | ✓ | ✓ |
| Elevate PVC XR | 60 | 20 | ✓ | ✓ | N/A |
| | 80 | 20 | ✓ | ✓ | N/A |

* Includes standard and minimum thickness membranes.
N/A = Not an approved attachment method for this membrane.

Table 57: Elevate PVC KEE and PVC KEE XR Membrane Only Warranty Summary

| ELEVATE PVC KEE AND PVC KEE XR MEMBRANE ONLY WARRANTY SUMMARY | | | | | |
|---|---|---|---|---|---|
| Membrane | Thickness (mil) | Max. Term (Years) | MAS | Adhered | Invisiweld |
| Elevate PVC KEE* | 50 | 20 | ✓ | ✓ | ✓ |
| | 60 | 20 | ✓ | ✓ | ✓ |
| | 80 | 30 | 20 | ✓ | 20 |
| Elevate PVC KEE XR* | 50 | 20 | ✓ | ✓ | N/A |
| | 60 | 20 | ✓ | ✓ | N/A |
| | 80 | 30 | 20 | ✓ | N/A |
| Elevate PVC KEE XRT | 50 | 20 | ✓ | ✓ | N/A |
| | 60 | 20 | ✓ | ✓ | N/A |
| | 80 | 30 | ✓ | ✓ | N/A |

* Includes standard and minimum thickness membranes.
N/A = Not an approved attachment method for this membrane.

Table 58: Elevate PVC and MAX PVC XR Membrane Only Warranty Summary

| ELEVATE MAX PVC AND MAX PVC XR MEMBRANE ONLY WARRANTY SUMMARY* | | | | | |
|---|---|---|---|---|---|
| Membrane | Thickness (mil) | Max. Term (Years) | MAS | Adhered | Invisiweld |
| Elevate MAX PVC | 50 | 20 | ✓ | ✓ | ✓ |
| | 60 | 20 | ✓ | ✓ | ✓ |
| | 80 | 30 | ✓ | ✓ | ✓ |
| Elevate MAX PVC XR | 50 | 20 | ✓ | ✓ | N/A |
| | 60 | 20 | ✓ | ✓ | N/A |
| | 80 | 30 | ✓ | ✓ | N/A |

* Includes standard and minimum thickness membranes.
N/A = Not an approved attachment method for this membrane.

## Other Considerations

### Leak Detection – Wire Grid System

A leak detection grid system refers to a network of sensors or conductors arranged in a grid pattern, installed beneath a surface like a roof, designed to detect the presence of moisture or leaks by creating an electrical circuit when water contacts the grid, allowing for pinpoint location of the leak within the monitored area.

- Wire mesh provided by others for use in an electronic leak detection systems (ELD) is allowed in warranted Elevate membrane systems provided the mesh is placed beneath an acceptable cover board. The mesh may not come in direct contact with the Elevate membrane to prevent compromising system uplift resistance or physical damage to the membrane.
- Elevate assumes no liability for ELD products or services provided by others. Only Elevate branded and Elevate provided products are included within warranty coverage. Validation of uplift performance and fire ratings may not be possible when ELD systems are used.
- Low Voltage scanning platforms can be utilized in the following systems: TPO, PVC and modified bitumen.
  **NOTE:** Full compatibility shall be validated by the user with the ELD system provider.

### Leak Detection – Conductive Primer

Conductive primer enables electronic leak detection (ELD) of conventional roofing assemblies by creating the required conductivity directly below the membrane.

- A conductive primer provided by others for use in an ELD is allowed in a warranted adhered single-ply Elevate system. Warranted wind speeds for projects using a conductive primer are limited to 72 MPH unless performance can be validated via a tested assembly.
- Elevate assumes no liability for ELD products or services provided by others. Only Elevate branded and Elevate provided products are included within warranty coverage.
- Conductive primer can be utilized in the following systems: TPO, PVC, EPDM and modified bitumen.
  **NOTE:** Full compatibility shall be validated by the user with the ELD system provider.

# Thermoplastic Detail Lists

**Detail Table 1: Base Tie-In Details**

| Base Tie-In Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| UT-BT-01 | PVC-BT-01 | TPM-BT-01 | TPM-BT-01 - BASE TIE-IN WITH HD SEAM PLATE FASTENED TO DECK |
| UT-BT-02 | PVC-BT-02 | TPM-BT-02 | TPM-BT-02 - BASE TIE-IN WITH HD SEAM PLATE TO WALL OR CURB |
| UT-BT-03 | N/A | TPM-BT-03 | TPM-BT-03 - BASE TIE-IN WITH QUICKSEAM RPF AND 2" METAL PLATES FASTENED TO DECK |
| UT-BT-04 | N/A | TPM-BT-04 | TPM-BT-04 - BASE TIE-IN WITH QUICKSEAM RPF AND 2" METAL PLATES FASTENED TO WALL/CURB |
| UT-BT-05 | PVC-BT-03 | TPM-BT-05 | TPM-BT-05 - BASE TIE-IN WITH HD PLATE - DECK OBSTRUCTION |
| UT-BT-06 | N/A | TPM-BT-06 | TPM-BT-06 - BASE TIE-IN WITH QUICKSEAM RPF AND 2" METAL PLATES - DECK OBSTRUCTION |
| UT-BT-07 | PVC-BT-04 | TPM-BT-07 | TPM-BT-07 - BASE TIE-IN AT CURB / PARAPET WITH EXISTING CANT |
| UT-BT-08 | PVC-BT-05 | TPM-BT-08 | TPM-BT-08 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITH BRAKE) |
| UT-BT-09 | PVC-BT-06 | TPM-BT-09 | TPM-BT-09 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITH BRAKE) |
| UT-BT-09A | PVC-BT-06A | TPM-BT-09A | TPM-BT-09A - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITH BRAKE) - INSTALLATION STEPS 1 AND 2 |
| UT-BT-09B | PVC-BT-06B | TPM-BT-09B | TPM-BT-09B - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITH BRAKE) - INSTALLATION STEPS 3 AND 4 |
| UT-BT-10 | PVC-BT-07 | TPM-BT-10 | TPM-BT-10 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL |
| UT-BT-11 | PVC-BT-08 | TPM-BT-11 | TPM-BT-11 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL SPLICE |
| UT-BT-11A | PVC-BT-08A | TPM-BT-11A | TPM-BT-11A - BASE TIE-IN WITH THERMOPLASTIC COATED METAL SPLICE - INSTALLATION STEPS 1 AND 2 |
| UT-BT-11B | PVC-BT-08B | TPM-BT-11B | TPM-BT-11B - BASE TIE-IN WITH THERMOPLASTIC COATED METAL SPLICE - INSTALLATION STEPS 3 AND 4 |
| UT-BT-12 | N/A | TPM-BT-12 | TPM-BT-12 - BASE TIE-IN AT WELDED WATERTIGHT CURB (FLANGES UNDER 2") |
| UT-BT-13 | N/A | TPM-BT-13 | TPM-BT-13 - BASE TIE-IN AT WELDED WATERTIGHT CURB (FLANGES UNDER 2"-3") |
| UT-BT-14 | N/A | TPM-BT-14 | TPM-BT-14 - QUICKSEAM RPF LAYOUT AT OUTSIDE CORNER |
| UT-BT-15 | N/A | TPM-BT-15 | TPM-BT-15 - QUICKSEAM RPF LAYOUT AT INSIDE CORNER |
| UT-BT-16 | PVC-BT-09 | TPM-BT-16 | TPM-BT-16 - THERMOPLASTIC MEMBRANE SECUREMENT AT OUTSIDE CORNER |
| UT-BT-17 | PVC-BT-10 | TPM-BT-17 | TPM-BT-17 - THERMOPLASTIC MEMBRANE SECUREMENT AT INSIDE CORNER |
| UT-BT-18 | N/A | TPM-BT-18 | TPM-BT-18- TIE-IN ULTRAPLY TPO SYSTEM TO EXISTING THERMOPLASTIC SYSTEM (MONOLITHIC SUBSTRATE) |
| UT-BT-19 | N/A | TPM-BT-19 | TPM-BT-19 - TIE-IN ULTRAPLY TPO SYSTEM TO EXISTING THERMOPLASTIC SYSTEM (NON-MONOLITHIC SUBSTRATE) |
| UT-BT-20 | N/A | TPM-BT-20 | TPM-BT-20 - TIE-IN ULTRAPLY TPO SYSTEM TO EXISTING EPDM SYSTEM (MONOLITHIC SUBSTRATE) |
| UT-BT-21 | N/A | TPM-BT-21 | TPM-BT-21 - TIE-IN ULTRAPLY TPO SYSTEM TO EXISTING EPDM SYSTEM (NON-MONOLITHIC SUBSTRATE) |
| UT-BT-22 | N/A | TPM-BT-22 | TPM-BT-22 - TIE-IN ULTRAPLY TPO SYSTEM TO EXISTING ASPHALT SYSTEM (MONOLITHIC SUBSTRATE) |
| UT-BT-23 | N/A | TPM-BT-23 | TPM-BT-23 - TIE-IN ULTRAPLY TPO SYSTEM TO EXISTING ASPHALT SYSTEM (NON-MONOLITHIC SUBSTRATE) |
| UT-BT-24 | N/A | TPM-BT-24 | TPM-BT-24 - TIE-IN WITH METAL ROOF DECK |
| N/A | PVC-LS-10 | TPM-BT-25 | TPM-BT-25 - TIE-IN LAP SPLICE WELDED NEW TO EXISTING PVC - MECHANICALLY ATTACHED |
| N/A | PVC-LS-11 | TPM-BT-26 | TPM-BT-26 - TIE-IN LAP SPLICE PVC CLAD METAL NEW TO EXISTING PVC - MECHANICALLY ATTACHED |
| N/A | PVC-LS-12 | TPM-BT-27 | TPM-BT-27 - TIE-IN LAP SPLICE VERTICAL SEPARATION WITH COPING NEW TO EXISTING PVC |
| N/A | PVC-LS-13 | TPM-BT-28 | TPM-BT-28 - TIE-IN LAP SPLICE TIE-IN NEW PVC TO EXISTING PVC - MONOLITHIC SUBSTRATE |
| N/A | PVC-LS-14 | TPM-BT-29 | TPM-BT-29 - TIE-IN LAP SPLICE - VERTICAL SEPARATION WITH COPING - NEW PVC OR PVC KEE TO EXISTING SINGLE-PLY |
| UT-LS-16 | N/A | TPM-BT-30 | TPM-BT-30 - TIE-IN LAP SPLICE - VERTICAL SEPARATION WITH COPING - NEW TPO TO EXISTING SINGLE-PLY |
| NEW | N/A | TPM-BT-31 | TPM-BT-31 - TRANSITION - ULTRAPLY TPO MEMBRANE - ADHERED TO MECHANICALLY ATTACHED |
| NEW | NEW | TPM-BT-32 | TPM-BT-32 - TRANSITION - ELEVATE THERMOPLASTIC MEMBRANE - ADHERED TO MECHANICALLY ATTACHED |
| **Platinum Base Tie-In Details** | | | |
| PUT-BT-01 | PKE-BT-01 | PTPM-BT-01 | PTPM-BT-01 - BASE TIE-IN WITH SEAM PLATES FASTENED TO DECK |
| PUT-BT-02 | PKE-BT-02 | PTPM-BT-02 | PTPM-BT-02 - BASE TIE-IN WITH SEAM PLATES FASTENED TO WALL OR CURB |
| ADD | PKE-BT-03 | PTPM-BT-03 | PTPM-BT-03 - BASE TIE-IN WITH SEAM PLATE - DECK OBSTRUCTION |
| PUT-BT-07 | PKE-BT-04 | PTPM-BT-07 | PTPM-BT-07 - BASE TIE-IN CURB/PARAPET WITH EXISTING CANT |
| PUT-BT-08 | PKE-BT-05 | PTPM-BT-08 | PTPM-BT-08 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITH BREAK) |
| PUT-BT-09 | PKE-BT-06 | PTPM-BT-09 | PTPM-BT-09 - THERMOPLASTIC COATED METAL WITH SPLICE (WITH BREAK) |
| ADD | PKE-BT-06A | PTPM-BT-09A | PTPM-BT-09A - THERMOPLASTIC COATED METAL WITH SPLICE (WITH BREAK) - INSTALLATION STEPS 1 AND 2 |
| ADD | PKE-BT-06B | PTPM-BT-09B | PTPM-BT-09B - THERMOPLASTIC COATED METAL WITH SPLICE (WITH BREAK) - INSTALLATION STEPS 3 AND 4 |
| PUT-BT-10 | PKE-BT-07 | PTPM-BT-10 | PTPM-BT-10 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITH BREAK) |
| PUT-BT-11 | PKE-BT-08 | PTPM-BT-11 | PTPM-BT-11 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL SPLICE |
| ADD | PKE-BT-08A | PTPM-BT-11A | PTPM-BT-11A - BASE TIE-IN WITH THERMOPLASTIC COATED METAL SPLICE - INSTALLATION STEPS 1 AND 2 |
| ADD | PKE-BT-08B | PTPM-BT-11B | PTPM-BT-11B - BASE TIE-IN WITH THERMOPLASTIC COATED METAL SPLICE - INSTALLATION STEPS 3 AND 4 |
| PUT-BT-16 | PKE-BT-09 | PTPM-BT-16 | PTPM-BT-16 - MEMBRANE SECUREMENT AT OUTSIDE CORNER |
| PUT-BT-17 | PKE-BT-10 | PTPM-BT-17 | PTPM-BT-17 - MEMBRANE SECUREMENT AT INSIDE CORNER |
| ADD | PKE-LS-12 | PTPM-BT-18 | PTPM-BT-18 - TIE-IN LAP SPLICE - VERTICAL SEPARATION WITH COPING - NEW THERMOPLASTIC MEMBRANE TO EXISTING THERMOPLASTIC MEMBRANE |

**Detail Table 2: Corner Details**

| Corner Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| UT-C-01 | PVC-C-01 | TPM-C-01 | TPM-C-01 - OUTSIDE CORNER |
| UT-C-01A | PVC-C-01A | TPM-C-01A | TPM-C-01A - OUTSIDE CORNER FIELD FABRICATED WITH THERMOPLASTIC UNSUPPORTED FLASHING |
| UT-C-02 | N/A | TPM-C-02 | TPM-C-02 - OUTSIDE CORNER AT WELDED WATERTIGHT CURB USING QUICKSEAM FLASHING (FLANGES UNDER 2") |
| UT-C-02A | N/A | TPM-C-02A | TPM-C-02A - OUTSIDE CORNER AT WELDED WATERTIGHT CURB USING QUICKSEAM FLASHING (FLANGES UNDER 2") - STEPS 1 & 2 |
| UT-C-02B | N/A | TPM-C-02B | TPM-C-02B - OUTSIDE CORNER AT WELDED WATERTIGHT CURB USING QUICKSEAM FLASHING (FLANGES UNDER 2") - STEPS 3 & 4 |
| UT-C-03 | N/A | TPM-C-03 | TPM-C-03 - OUTSIDE CORNER AT WELDED WATERTIGHT CURB (FLANGES 2" - 3") |
| UT-C-03A | N/A | TPM-C-03A | TPM-C-03A - OUTSIDE CORNER AT WELDED WATERTIGHT CURB (FLANGES 2" - 3") - INSTALLATION STEPS 1 AND 2 |
| UT-C-03B | N/A | TPM-C-03B | TPM-C-03B - OUTSIDE CORNER AT WELDED WATERTIGHT CURB (FLANGES 2" - 3") - INSTALLATION STEPS 3 AND 4 |
| UT-C-04 | PVC-C-02 | TPM-C-04 | TPM-C-04 - INSIDE CORNER WITH SEPARATE WALL FLASHING |
| UT-C-05 | ADD | TPM-C-05 | TPM-C-05 - INSIDE CORNER WITH CONTINUOUS WALL FLASHING |
| UT-C-05A | N/A | TPM-C-05A | TPM-C-05A - INSIDE CORNER |
| UT-C-05B | PVC-C-05B | TPM-C-05B | TPM-C-05B - INSIDE CORNER - FABRICATED WITH THERMOPLASTIC UNSUPPORTED FLASHING |
| UT-C-06 | PVC-C-04 | TPM-C-06 | TPM-C-06 - OUTSIDE CORNER WITH THERMOPLASTIC COATED METAL (WITH BRAKE) |
| UT-C-06A | PVC-C-04A | TPM-C-06A | TPM-C-06A - OUTSIDE CORNER WITH THERMOPLASTIC COATED METAL (WITH BRAKE) - INSTALLATION STEPS |
| UT-C-07 | PVC-C-05 | TPM-C-07 | TPM-C-07 - OUTSIDE CORNER WITH THERMOPLASTIC COATED METAL |
| UT-C-07A | PVC-C-05A | TPM-C-07A | TPM-C-07A - OUTSIDE CORNER WITH THERMOPLASTIC COATED METAL - INSTALLATION STEPS |
| UT-C-08 | PVC-C-06 | TPM-C-08 | TPM-C-08 - INSIDE CORNER WITH THERMOPLASTIC COATED METAL (WITH BRAKE) |
| UT-C-08A | PVC-C-06A | TPM-C-08A | TPM-C-08A - INSIDE CORNER WITH THERMOPLASTIC COATED METAL (WITH BRAKE) - INSTALLATION STEPS 1 AND 2 |
| UT-C-08B | PVC-C-06B | TPM-C-08B | TPM-C-08B - INSIDE CORNER WITH THERMOPLASTIC COATED METAL (WITH BRAKE) - INSTALLATION STEPS 3 AND 4 |
| UT-C-09 | PVC-C-07 | TPM-C-09 | TPM-C-09 - INSIDE CORNER WITH THERMOPLASTIC COATED METAL |
| UT-C-09A | PVC-C-07A | TPM-C-09A | TPM-C-09A - INSIDE CORNER WITH THERMOPLASTIC COATED METAL - INSTALLATION STEPS |
| UT-C-10 | N/A | TPM-C-10 | TPM-C-10 - CURB FLASHING WITH ULTRAPLY TPO REINFORCED CURB CORNERS |
| UT-C-11 | N/A | TPM-C-11 | TPM-C-11 - CURB FLASHING WITH ULTRAPLY TPO CUSTOM CURB FLASHING |
| **Platinum Corner Details** | | | |

| | | | |
|---|---|---|---|
| PUT-C-01 | PKE-C-01 | PTPM-C-01 | PTPM-C-01 - OUTSIDE CORNER |
| PUT-C-05 | PKE-C-02 | PTPM-C-05 | PTPM-C-05 - INSIDE CORNER |
| PUT-C-06 | PKE-C-04 | PTPM-C-06 | PTPM-C-06 - OUTSIDE CORNER WITH THERMOPLASTIC COATED METAL (WITH BREAK) |
| PUT-C-07 | PKE-C-05 | PTPM-C-07 | PTPM-C-07 - OUTSIDE CORNER WITH THERMOPLASTIC COATED METAL |
| PUT-C-08 | PKE-C-06 | PTPM-C-08 | PTPM-C-08 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITH BREAK) |
| PUT-C-09 | PKE-C-07 | PTPM-C-09 | PTPM-C-09 - INSIDE CORNER WITH THERMOPLASTIC COATED METAL |

**Detail Table 3: Drain and Scupper Details**

| Drian & Scupper Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| UT-D-01 | PVC-D-01 | TPM-D-01 | TPM-D-01 - ROOF DRAIN |
| UT-D-02 | PVC-D-02 | TPM-D-02 | TPM-D-02 - OVERFLOW ROOF DRAIN WITH WATER DAM |
| UT-D-03 | PVC-D-03 | TPM-D-03 | TPM-D-03 - DRAIN INSERT |
| UT-D-04 | PVC-D-04 | TPM-D-04 | TPM-D-04 - ROOF DRAIN WITH OVERFLOW ROOF DRAIN |
| UT-S-01 | N/A | TPM-S-01 | TPM-S-01 - THRU-WALL SCUPPER (WELDED SLEEVE) |
| UT-S-01A | N/A | TPM-S-01A | TPM-S-01A - THRU-WALL SCUPPER (WELDED SLEEVE) INSTALLATION STEPS 1 AND 2 |
| UT-S-01B | N/A | TPM-S-01B | TPM-S-01B - THRU-WALL SCUPPER (WELDED SLEEVE) INSTALLATION STEPS 3 AND 4 |
| UT-S-02 | N/A | TPM-S-02 | TPM-S-02 - OVERFLOW THRU-WALL SCUPPER (WELDED SLEEVE) |
| UT-S-02A | N/A | TPM-S-02A | TPM-S-02A - OVERFLOW THRU-WALL SCUPPER (WELDED SLEEVE) INSTALLATION STEPS 1 AND 2 |
| UT-S-02B | N/A | TPM-S-02B | TPM-S-02B - OVERFLOW THRU-WALL SCUPPER (WELDED SLEEVE) |
| UT-S-03 | N/A | TPM-S-03 | TPM-S-03 - THRU-WALL SCUPPER (NON-WELDED SLEEVE) |
| UT-S-03A | N/A | TPM-S-03A | TPM-S-03A - THRU-WALL SCUPPER (NON-WELDED SLEEVE) INSTALLATION STEPS 1 AND 2 |
| UT-S-03B | N/A | TPM-S-03B | TPM-S-03B - THRU-WALL SCUPPER (NON-WELDED SLEEVE) INSTALLATION STEPS 3 AND 4 |
| UT-S-03C | N/A | TPM-S-03C | TPM-S-03C - THRU-WALL SCUPPER (NON-WELDED SLEEVE) INSTALLATION STEP 5 |
| UT-S-04 | N/A | TPM-S-04 | TPM-S-04 - OVERFLOW THRU-WALL SCUPPER (NON-WELDED SLEEVE) |
| UT-S-04A | N/A | TPM-S-04A | TPM-S-04A - OVERFLOW THRU-WALL SCUPPER (NON-WELDED SLEEVE) INSTALLATION STEPS 1 AND 2 |
| UT-S-04B | N/A | TPM-S-04B | TPM-S-04B - OVERFLOW THRU-WALL SCUPPER (NON-WELDED SLEEVE) INSTALLATION STEPS 3 AND 4 |
| UT-S-04C | N/A | TPM-S-04C | TPM-S-04C - OVERFLOW THRU-WALL SCUPPER (NON-WELDED SLEEVE) INSTALLATION STEP 5 |
| UT-S-05 | PVC-S-01 | TPM-S-05 | TPM-S-05 - THRU-WALL THERMOPLASTIC COATED METAL SCUPPER |
| UT-S-05A | PVC-S-01A | TPM-S-05A | TPM-S-05A - THRU-WALL THERMOPLASTIC COATED METAL SCUPPER INSTALLATION STEPS 1 AND 2 |
| UT-S-05B | PVC-S-01B | TPM-S-05B | TPM-S-05B - THRU-WALL THERMOPLASTIC COATED METAL SCUPPER INSTALLATION STEPS 3 AND 4 |
| UT-S-06 | PVC-S-02 | TPM-S-06 | TPM-S-06 - OVERFLOW THRU-WALL THERMOPLASTIC COATED METAL SCUPPER |
| UT-S-06A | PVC-S-02A | TPM-S-06A | TPM-S-06A - OVERFLOW THRU-WALL THERMOPLASTIC COATED METAL SCUPPER INSTALLATION STEPS 1 AND 2 |
| UT-S-06B | PVC-S-02B | TPM-S-06B | TPM-S-06B - OVERFLOW THRU-WALL THERMOPLASTIC COATED METAL SCUPPER INSTALLATION STEPS 3 AND 4 |
| **Platinum Drain and Scupper Details** | | | |
| PUT-D-01 | PKE-D-01 | PTPM-D-01 | PTPM-D-01 - ROOF DRAIN |
| PUT-D-02 | PKE-D-02 | PTPM-D-02 | PTPM-D-02 - OVERFLOW ROOF DRAIN WITH WATER DAM |
| PUT-D-03 | PKE-D-03 | PTPM-D-03 | PTPM-D-03 - DRAIN INSERT |
| PUT-D-04 | PKE-D-04 | PTPM-D-04 | PTPM-D-04 - ROOF DRAIN WITH OVERFLOW ROOF DRAIN |
| PUT-S-05 | PKE-S-01 | PTPM-S-05 | PTPM-S-05 - THRU-WALL THERMOPLASTIC COATED METAL SCUPPER |
| N/A | PKE-S-01A | PTPM-S-05A | PTPM-S-05A - THRU-WALL THERMOPLASTIC COATED METAL SCUPPER - INSTALLATION STEPS 1 AND 2 |
| N/A | PKE-S-01B | PTPM-S-05B | PTPM-S-05B - THRU-WALL THERMOPLASTIC COATED METAL SCUPPER - INSTALLATION STEPS 2 AND 3 |
| PUT-S-06 | PKE-S-02 | PTPM-S-06 | PTPM-S-06 - OVERFLOW THRU WALL THERMOPLASTIC COATED METAL SCUPPER |
| N/A | PKE-S-02A | PTPM-S-06A | PTPM-S-06A - OVERFLOW THRU WALL THERMOPLASTIC COATED METAL SCUPPER - INSTALLATION STEPS 1 AND 2 |
| N/A | PKE-S-02B | PTPM-S-06B | PTPM-S-06B - OVERFLOW THRU WALL THERMOPLASTIC COATED METAL SCUPPER - INSTALLATION STEPS 3 AND 4 |

**Detail Table 4: Expansion Joint Details**

| Expansion Joint Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| UT-E-01 | N/A | TPM-E-01 | TPM-E-01 - EXPANSION JOINT (FIELD FABRICATED) WITH QUICKSEAM RPF - ROOF TO WALL |
| UT-E-02 | PVC-E-01 | TPM-E-02 | TPM-E-02 - EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SPLICE - ROOF TO WALL |
| UT-E-03 | N/A | TPM-E-03 | TPM-E-03 - EXPANSION JOINT (FIELD FABRICATED) WITH QUICKSEAM RPF AND WOOD NAILER - ROOF TO ROOF |
| UT-E-04 | PVC-E-02 | TPM-E-04 | TPM-E-04 - EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SPLICE AND WOOD NAILER - ROOF TO ROOF |
| UT-E-05 | N/A | TPM-E-05 | TPM-E-05 - EXPANSION JOINT (FIELD FABRICATED) WITH QUICKSEAM RPF – ROOF TO ROOF |
| UT-E-06 | PVC-E-03 | TPM-E-06 | TPM-E-06 - EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SPLICE - ROOF TO ROOF |
| UT-E-07 | N/A | TPM-E-07 | TPM-E-07 - EXPANSION JOINT (MANUFACTURED COVER) WITH QUICKSEAM RPF |
| UT-E-08 | PVC-E-04 | TPM-E-08 | TPM-E-08 - EXPANSION JOINT (MANUFACTURED COVER) WITH WELDED SPLICE |
| UT-E-09 | N/A | TPM-E-09 | TPM-E-09 - EXPANSION JOINT (FIELD FABRICATED) WITH QUICKSEAM RPF - CURB TO CURB |
| UT-E-10 | PVC-E-05 | TPM-E-10 | TPM-E-10 - EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SPLICE - CURB TO CURB |
| UT-E-11 | N/A | TPM-E-11 | TPM-E-11 - EXPANSION JOINT WITH SLIP PLATE - ROOF TO WALL |
| UT-E-12 | N/A | TPM-E-12 | TPM-E-12 - EXPANSION JOINT WITH SLIP PLATE - ROOF TO ROOF |
| **Platinum Expansion Joint Details** | | | |
| PKE-E-01 | PKE-E-01 | PTPM-E-02 | PTPM-E-02 - EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SPLICE ROOF TO WALL |
| PKE-E-02 | PKE-E-02 | PTPM-E-04 | PTPM -E-04 - EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SPLICE AND WOOD NAILER - ROOF TO ROOF |
| PKE-E-03 | PKE-E-03 | PTPM-E-06 | PTPM -E-06 - EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SPLICE - ROOF TO ROOF |
| PKE-E-04 | PKE-E-04 | PTPM-E-08 | PTPM -E-08 - EXPANSION JOINT (MANUFACTURED COVER) WITH WIDE WELD SPLICE |
| PKE-E-05 | PKE-E-05 | PTPM-E-10 | PTPM -E-10 - EXPANSION JOINT (FIELD FABRICATED) WIDE WELD SPLICE - CURB TO CURB |

**Detail Table 5: Lap Splice Details**

| Lap Splice Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| UT-LS-01 | PVC-LS-1 | TPM-LS-01 | TPM-LS-01 - LAP SPLICE WITH 1 1/2" AUTOMATIC WELDER |
| UT-LS-02 | PVC-LS-2 | TPM-LS-02 | TPM-LS-02 - LAP SPLICE WITH 2" HAND WELD |
| UT-LS-03 | N/A | TPM-LS-03 | TPM-LS-03 - LAP SPLICE WITH 5" CONTINUOUS WIDE WELD |
| UT-LS-04 | PVC-LS-3 | TPM-LS-04 | TPM-LS-04 - LAP SPLICE FASTENER LAYOUT FOR STANDARD WELD SEAM |
| UT-LS-05 | N/A | TPM-LS-05 | TPM-LS-05 - LAP S SPLICE FASTENER LAYOUT FOR WIDE WELD SEAM |
| UT-LS-06 | PVC-LS-4 | TPM-LS-06 | TPM-LS-06 - LAP SPLICE WITH HEADLAP UNDER FIELD SEAM USING T-JOINT COVER |
| UT-LS-07 | N/A | TPM-LS-07 | TPM-LS-07 - LAP SPLICE WITH HEADLAP UNDER FIELD SEAM USING TPO QUICKSEAM T-JOINT |
| UT-LS-08 | PVC-LS-5 | TPM-LS-08 | TPM-LS-08 - LAP SPLICE WITH HEADLAP OVER FIELD SEAM USING T-JOINT COVER |
| UT-LS-09 | N/A | TPM-LS-09 | TPM-LS-09 - LAP SPLICE WITH HEADLAP OVER FIELD SEAM USING TPO QUICKSEAM T-JOINT |
| UT-LS-10 | PVC-LS-6 | TPM-LS-10 | TPM-LS-10 - LAP SPLICE WITH HEADLAP UNDER CURB OR WALL FLASHING USING T-JOINT COVER |
| UT-LS-11 | N/A | TPM-LS-11 | TPM-LS-11 - LAP SPLICE WITH HEADLAP UNDER CURB OR WALL FLASHING USING TPO QUICKSEAM FLASHING |
| UT-LS-12 | PVC-LS-7 | TPM-LS-12 | TPM-LS-12 - LAP SPLICE AT CURB OR WALL FLASHING USING T-JOINT COVER |
| UT-LS-13 | N/A | TPM-LS-13 | TPM-LS-13 - LAP SPLICE AT FIELD TO CURB/WALL FLASHING TRANSITION USING T-JOINT COVER |
| UT-LS-14 | PVC-LS-8 | TPM-LS-14 | TPM-LS-14 - CUT EDGE TREATMENT APPLICATION |

| | | | |
|---|---|---|---|
| UT-LS-15 | PVC-LS-9 | TPM-LS-15 | TPM-LS-15 - LAP SPLICE AT EXPANSION JOINT TUBE |
| **Platinum Lap Splice Details** | | | |
| PUT-LS-09 | PKE-LS-01 | PTPM-LS-01 | PTPM-LS-01 - LAP SPICE WITH 1-1/2" AUTOMATIC WELDER |
| PUT-LS-02 | PKE-LS-02 | PTPM-LS-02 | PTPM-LS-02 - LAP SPLICE WITH 2" HAND WELD |
| ADD | PKE-LS-03 | PTPM-LS-03 | PTPM-LS-03 - LAP SPLICE - LAYOUT |
| PUT-LS-06 | PKE-LS-04 | PTPM-LS-04 | PTPM-LS-04 - LAP SPLICE WITH HEADLAP UNDER FIELD SEAM - T-JOINT COVER |
| PUT-LS-08 | PKE-LS-05 | PTPM-LS-05 | PTPM-LS-05 - LAP SPLICE WITH HEADLAP OVER FIELD SEAM - T-JOINT COVER |
| ADD | PKE-LS-06 | PTPM-LS-06 | PTPM-LS-06 - LAP SPLICE UNDER CURB OR WALL FLASHING - T-JOINT COVER |
| ADD | PKE-LS-07 | PTPM-LS-07 | PTPM-LS-07 - FLASHING LAP SPLICE WITH WELDED T-JOINT COVER AND ANGLE CHANGE PATCH |
| ADD | PKE-LS-08 | PTPM-LS-08 | PTPM-LS-08 - CUT EDGE SEALANT APPLICATION |
| ADD | PKE-LS-09 | PTPM-LS-09 | PTPM-LS-09 - LAP SPLICE AT EXPANSION JOINT TUBE |
| PUT-LS-03 | ADD | PTPM-LS-10 | PTPM-LS-10 - LAP SPLICE WITH CONTINUOUS WIDE WELD |

**Detail Table 6: Miscellaneous Details**

| Miscellaneous Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| UT-M-01 | UT-M-01 | TPM-M-01 | TPM-M-01 - THERMOPLASTIC WALKWAY PAD |
| UT-M-02 | UT-M-02 | TPM-M-02 | TPM-M-02 - CONCRETE WALKWAY PAVER |
| UT-M-03 | UT-M-03 | TPM-M-03 | TPM-M-03 - EQUIPMENT OR PIPE SUPPORT |
| UT-M-04 | UT-M-04 | TPM-M-04 | TPM-M-04 - WOOD SLEEPER |
| UT-M-05 | UT-M-05 | TPM-M-05 | TPM-M-05 - GREASE CATCH PAN |
| UT-M-06 | UT-M-06 | TPM-M-06 | TPM-M-06 - LIGHTNING ROD |
| UT-M-07 | UT-M-07 | TPM-M-07 | TPM-M-07 - X-TRED WALKWAY PAD |
| UT-M-08 | N/A | TPM-M-08 | TPM-M-08 - ULTRAPLY TPO WALKWAY PAD INSTALLATION OVER ADHERED MEMBRANE SYSTEM - STEP 1 OF 4 |
| UT-M-08A | N/A | TPM-M-08A | TPM-M-08A - ULTRAPLY TPO WALKWAY PAD INSTALLATION OVER ADHERED MEMBRANE SYSTEM - STEP 2 OF 4 |
| UT-M-08B | N/A | TPM-M-08B | TPM-M-08B - ULTRAPLY TPO WALKWAY PAD INSTALLATION OVER ADHERED MEMBRANE SYSTEM - STEP 3 OF 4 |
| UT-M-08C | N/A | TPM-M-08C | TPM-M-08C - ULTRAPLY TPO WALKWAY PAD INSTALLATION AT DIRECTION CHANGE OR MEMBRANE SEAM WITH QUICKSEAM TAPE - STEP 4 OF 4 |
| NEW | PVC-M-08 | TPM-M-09 | TPM-M-09 - FLASHING AT EQUIPMENT PAD WITH SELF ADHERED FLASHING |
| N/A | NEW | TPM-M-10 | TPM-M-10 - VINYL RIB INSTALLATION |

**Detail Table 7: Penetration Details**

| Penetration Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| UT-P-01 | N/A | TPM-P-01 | TPM -P-01 - PENETRATION WITH ULTRAPLY TPO LARGE PIPE FLASHING |
| UT-P-02 | PVC-P-01 | TPM-P-02 | TPM -P-02 - PENETRATION WITH THERMOPLASTIC UNIVERSAL PIPE FLASHING (SMALL) |
| UT-P-03 | N/A | TPM-P-03 | TPM -P-03 - PENETRATION WITH QUICKSEAM PIPE FLASHING |
| UT-P-04 | PVC-P-02 | TPM-P-04 | TPM -P-04 - PENETRATION WITH THERMOPLASTIC FLASHING (UNSUPPORTED) |
| UT-P-05 | PVC-P-03 | TPM-P-05 | TPM -P-05 - PENETRATION WITH THERMOPLASTIC MEMBRANE |
| UT-P-06 | PVC-P-04 | TPM-P-06 | TPM -P-06 - PENETRATION (HOT STACK) WITH THERMOPLASTIC FLASHING (UNSUPPORTED) |
| UT-P-07 | PVC-P-05 | TPM-P-07 | TPM -P-07 - PENETRATION (HOT STACK) WITH THERMOPLASTIC MEMBRANE |
| UT-P-08 | N/A | TPM-P-08 | TPM -P-08 - PENETRATION WITH TPO PENETRATION POCKET KIT |
| UT-P-09 | N/A | TPM-P-09 | TPM -P-09 - PENETRATION WITH QUICKSEAM 6 INCH PENETRATION POCKET |
| UT-P-10 | N/A | TPM-P-10 | TPM -P-10 - PENETRATION WITH FIELD FABRICATED ROUND PVC PENETRATION POCKET |
| UT-P-11 | PVC-P-06 | TPM-P-11 | TPM -P-11 - PENETRATION WITH THERMOPLASTIC COATED METAL PENETRATION POCKET TO WOOD NAILER |
| UT-P-12 | N/A | TPM-P-12 | TPM -P-12 - PENETRATION WITH METAL PENETRATION POCKET TO NAILER |
| UT-P-13 | N/A | TPM-P-13 | TPM -P-13 - PENETRATION WITH METAL PENETRATION POCKET TO DECK |
| UT-P-14 | N/A | TPM-P-14 | TPM -P-14 - PENETRATION WITH METAL PENETRATION POCKET TO NAILER FOR RECOVER OR REROOF |
| UT-P-15 | PVC-P-07 | TPM-P-15 | TPM -P-15 - MEMBRANE SECUREMENT AT PENETRATION WITH HD SEAM PLATES AND TARGET PATCH |
| UT-P-16 | PVC-P-08 | TPM-P-16 | TPM -P-16 - MEMBRANE SECUREMENT AT PENETRATION WITH HD SEAM PLATES AND COVER STRIPS |
| UT-P-17 | N/A | TPM-P-17 | TPM -P-17 - PENETRATION WITH ULTRAPLY QUICKSEAM PIPE FLASHING |
| UT-P-18 | N/A | TPM-P-18 | TPM -P-18 - SQUARE PENETRATION WITH SQUARE ULTRAPLY TPO CUSTOM PIPE BOOT |
| UT-P-19 | N/A | TPM-P-19 | TPM -P-19 - ROUND PENETRATION WITH CONICAL ULTRAPLY TPO CUSTOM PIPE BOOT |
| UT-P-20 | N/A | TPM-P-20 | TPM -P-20 - ROUND PENETRATION WITH ROUND ULTRAPLY TPO CUSTOM PIPE BOOT |
| UT-P-21 | N/A | TPM-P-21 | TPM -P-21 - ROUND PENETRATION WITH ULTRAPLY TPO SPLIT PIPE BOOT |
| N/A | PVC-P-09 | TPM-P-21A | TPM-P-21A - ROUND PENETRATION WITH PVC SPLIT PIPE BOOT |
| **Platinum Penetration Details** | | | |
| PUT-P-01 | N/A | PTPM-P-01 | PTPM-P-01 - PENETRATION WITH ULTRAPLY TPO LARGE PIPE FLASHING |
| PUT-P-02 | N/A | PTPM-P-02 | PTPM-P-02 - PENETRATION WITH ULTRAPLY TPO LARGE PIPE FLASHING |
| PUT-P-04 | N/A | PTPM-P-04 | PTPM-P-04 - PENETRATION WITH ULTRAPLY TPO FLASHING |
| PUT-P-09 | N/A | PTPM-P-09 | PTPM-P-09 - PENETRATION WITH TPO PENETRATION POCKET |
| PUT-P-11 | PKE-P-06 | PTPM-P-11 | PTPM-P-11 - PENETRATION WITH THERMOPLASTIC COATED METAL PENETRATION POCKET TO NAILER |
| PUT-P-13 | N/A | PTPM-P-13 | PTPM-P-13 - PENETRATION WITH METAL PENETRATION POCKET ATTACHED TO DECK |
| PUT-P-14 | N/A | PTPM-P-14 | PTPM-P-14 - PENETRATION WITH METAL PENETRATION POCKET TO NAILER FOR RE-COVER OR RE-ROOF |
| PUT-P-15 | N/A | PTPM-P-15 | PTPM-P-15 - PENETRATION HOT STACK WITH ULTRAPLY TPO PLATINUM MEMBRANE |
| N/A | PKE-P-01 | PTPM-P-16 | PTPM-P-16 - PENETRATION WITH ELEVATE PVC UNIVERSAL PIPE FLASHING |
| N/A | PKE-P-04 | PTPM-P-18 | PTPM-P-18 - PENETRATION (HOT STACK WITH ELEVATE PVC UNSUPPORTED FLASHING |
| ADD | PKE-P-07 | PTPM-P-19 | PTPM-P-19 - MEMBRANE SECUREMENT AT PENETRATION WITH HD SEAM PLATES AND TARGET PATCH |
| ADD | PKE-P-08 | PTPM-P-20 | PTPM-P-20 - MEMBRANE SECUREMENT AT PENETRATION WITH HD SEAM PLATES AND WELDED COVER STRIP |

**Detail Table 8: Perimeter Enhancement Details**

| Perimeter Enhancement Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| UT-PE-01 | PVC-PE-01 | TPM-PE-01 | TPM-PE-01 - BATTEN OR HD PLATE WITH 8" WELDED THERMOPLASTIC COVER STRIP AT PERIMETER ENHANCEMENT |
| UT-PE-02 | N/A | TPM-PE-02 | TPM-PE-02 - BATTEN OR HD PLATE WITH 9.5" ULTRAPLY TPO QUICKSEAM FLASHING AT PERIMETER ENHANCEMENT |
| UT-PE-03 | N/A | TPM-PE-03 | TPM-PE-03 - BATTEN WITH 5.5" ULTRAPLY TPO QUICKSEAM FLASHING AT PERIMETER ENHANCEMENT |
| UT-PE-04 | N/A | TPM-PE-04 | TPM-PE-04 - BATTEN OR HD PLATE WITH ULTRAPLY TPO QUICKSEAM R.M.A. AT PERIMETER ENHANCEMENT |
| UT-PE-05 | PVC-PE-02 | TPM-PE-05 | TPM-PE-05 - THERMOPLASTIC MEMBRANE ENHANCEMENT AT PERIMETER WITH INVISIWELD PLATES AND FASTENERS |
| UT-PE-06 | PVC-PE-03 | TPM-PE-06 | TPM-PE-06 - PERIMETER ENHANCEMENT - HD SEAM PLATE OR BATTEN STRIP WITH THERMOPLASTIC 8" COVER STRIP |
| UT-PE-07 | N/A | TPM-PE-07 | TPM-PE-07 - BATTEN STRIP OR HD PLATE AND FASTENER WITH ULTRAPLY TPO 9.5" QUICKSEAM FLASHING AT PERIMETER ENHANCEMENT |
| UT-PE-08 | N/A | TPM-PE-08 | TPM-PE-08 - ULTRAPLY TPO PEEL STOP EXAMPLE WITH STANDARD PLATES AND FASTENERS OR INVISIWELD PLATES |

**Detail Table 9: Roof Edge Details**

| Roof Edge Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| UT-RE-01 | PVC-RE-01 | TPM-RE-01 | TPM-RE-01 - THERMOPLASTIC ROOF EDGE WITH ANCHORGARD SP FASCIA |
| UT-RE-02 | N/A | TPM-RE-02 | TPM-RE-02 - TPO ROOF EDGE WITH ANCHORGARD SP FASCIA AND QUICKSEAM RPF STRIP |
| UT-RE-03 | N/A | TPM-RE-03 | TPM-RE-03 - TPO ROOF EDGE WITH ANCHORGARD - BALLASTED |
| UT-RE-04 | N/A | TPM-RE-04 | TPM-RE-04 - TPO ROOF EDGE WITH ANCHORGARD SP EXTENDED FASCIA AND ELEVATE BALLAST PAVER |
| UT-RE-05 | PVC-RE-02 | TPM-RE-05 | TPM-RE-05 - THERMOPLASTIC ROOF EDGE WITH ANCHORGARD SP EXTENDED FASCIA |
| UT-RE-06 | N/A | TPM-RE-06 | TPM-RE-06 - TPO ROOF EDGE WITH ANCHORGARD SP EXTENDED FACE AND QUICKSEAM RPF STRIP |
| UT-RE-07 | PVC-RE-03 | TPM-RE-07 | TPM-RE-07 - THERMOPLASTIC ROOF EDGE WITH ELEVATE EDGEGARD+ FASCIA - CRIMP-ON |
| UT-RE-08 | N/A | TPM-RE-08 | TPM-RE-08 - TPO ROOF EDGE WITH ELEVATE EDGEGARD+ AND QUICKSEAM RPF STRIP |
| UT-RE-09 | PVC-RE-04 | TPM-RE-09 | TPM-RE-09 - THERMOPLASTIC ROOF EDGE WITH ELEVATE EDGEGARD+ AND SEPARATE FLASHING |
| UT-RE-10 | PVC-RE-05 | TPM-RE-10 | TPM-RE-10 - THERMOPLASTIC ROOF EDGE WITH ELEVATE EDGEGARD+ - SNAP-ON VERSION |
| UT-RE-11 | N/A | TPM-RE-11 | TPM-RE-11 - TPO ROOF EDGE WITH ELEVATE EDGEGARD AND QUICKSEAM RPF STRIP |
| UT-RE-12 | PVC-RE-06 | TPM-RE-12 | TPM-RE-12 - THERMOPLASTIC ROOF EDGE WITH ELEVATE EDGEGARD AND SEPARATE FLASHING |
| UT-RE-13 | PVC-RE-07 | TPM-RE-13 | TPM-RE-13 - THERMOPLASTIC ROOF EDGE - GUTTER WITH ELEVATE DRAIN BAR |
| UT-RE-14 | N/A | TPM-RE-14 | TPM-RE-14 - ROOF EDGE - GUTTER WITH SLOTTED DRAIN BAR (BY OTHERS) |
| UT-RE-15 | N/A | TPM-RE-15 | TPM-RE-15 - TPO ROOF EDGE AT GUTTER WITH FLANGE - 20 YEARS |
| UT-RE-16 | N/A | TPM-RE-16 | TPM-RE-16 - TPO ROOF EDGE AT GUTTER WITH FLANGE - 25 YEARS |
| UT-RE-17 | PVC-RE-08 | TPM-RE-17 | TPM-RE-17 - ROOF EDGE - GUTTER WITH THERMOPLASTIC COATED METAL |
| UT-RE-18 | PVC-RE-09 | TPM-RE-18 | TPM-RE-18 - THERMOPLASTIC ROOF EDGE WITH ELEVATE DRAIN BAR |
| UT-RE-19 | N/A | TPM-RE-19 | TPM-RE-19 - TPO ROOF EDGE WITH SLOTTED DRAIN BAR - (BY OTHERS) |
| UT-RE-20 | N/A | TPM-RE-20 | TPM-RE-20 - TPO ROOF EDGE WITH FASCIAL METAL (BY OTHERS) |
| UT-RE-20A | N/A | TPM-RE-20A | TPM-RE-20A - TPO ROOF EDGE WITH ELEVATE DRIP EDGE SYSTEM |
| UT-RE-20B | N/A | TPM-RE-20B | TPM-RE-20B - TPO ROOF EDGE WITH ELEVATE GRAVEL STOP SYSTEM |
| New | New | TPM-RE-20C | TPM-RE-20C - THERMOPLASTIC ROOF EDGE WITH FASCIA METAL (BY OTHERS) WITH THERMOPLASTIC FLASHING STRIP |
| UT-RE-21 | N/A | TPM-RE-21 | TPM-RE-21 - TPO ROOF EDGE WITH FASCIA METAL BY OTHERS |
| UT-RE-21A | N/A | TPM-RE-21A | TPM-RE-21A - TPO ROOF EDGE WITH ELEVATE DRIP EDGE SYSTEM |
| UT-RE-21B | N/A | TPM-RE-21B | TPM-RE-21B - TPO ROOF EDGE WITH ELEVATE GRAVEL STOP SYSTEM |
| UT-RE-22 | PVC-RE-10 | TPM-RE-22 | TPM-RE-22 - ROOF EDGE WITH THERMOPLASTIC COATED METAL |
| UT-RE-23 | PVC-RE-11 | TPM-RE-23 | TPM-RE-23 - ROOF EDGE SPLICE WITH THERMOPLASTIC COATED METAL |
| UT-RE-23A | PVC-RE-11A | TPM-RE-23A | TPM-RE-23A - ROOF EDGE SPLICE WITH THERMOPLASTIC COATED METAL - INSTALLATION STEPS 1 AND 2 |
| UT-RE-23B | PVC-RE-11B | TPM-RE-23B | TPM-RE-23B - ROOF EDGE SPLICE WITH THERMOPLASTIC COATED METAL - INSTALLATION STEPS 3 AND 4 |
| UT-RE-24 | N/A | TPM-RE-24 | TPM-RE-24 - ROOF EDGE WITH TPO QUICKSEAM FLASHING - END SPLICE OVERLAP |
| UT-RE-25 | N/A | TPM-RE-25 | TPM-RE-25 - ROOF EDGE AT CORNER WITH TPO QUICKSEAM FLASHING |
| UT-RE-26 | N/A | TPM-RE-26 | TPM-RE-26 - ROOF EDGE WITH TPO QUICKSEAM FLASHING AT FIELD SEAM |
| UT-RE-27 | N/A | TPM-RE-27 | TPM-RE-27 - ROOF EDGE AT METAL SPLICE WITH TPO QUICKSEAM FLASHING COVER |
| **Platinum Roof Edge Details** | | | |
| PUT-RE-01 | PKE-RE-01 | PTPM-RE-01 | PTPM-RE-01 - THERMOPLASTIC MEMBRANE ROOF EDGE WITH ELEVATE ANCHORGARD SP FASCIA |
| PUT-RE-05 | PKE-RE-02 | PTPM-RE-05 | PTPM-RE-05 - THERMOPLASTIC MEMBRANE ROOF EDGE WITH ELEVATE ANCHORGARD SP EXTENDED FASCIA |
| PUT-RE-09 | PKE-RE-04 | PTPM-RE-09 | PTPM-RE-09 - THERMOPLASTIC MEMBRANE ROOF EDGE WITH ELEVATE EDGEGARD+ FASCIA - CRIMP-ON SINGLE-PLY |
| PUT-RE-12 | PKE-RE-06 | PTPM-RE-12 | PTPM-RE-12 - THERMOPLASTIC MEMBRANE ROOF EDGE WITH ELEVATE EDGEGARD+ FASCIA - SNAP-ON SINGLE-PLY |
| PUT-RE-13 | PKE-RE-07 | PTPM-RE-13 | PTPM-RE-13 - THERMOPLASTIC MEMBRANE ROOF EDGE WITH ELEVATE DRAIN BAR |
| PUT-RE-16 | PKE-RE-08 | PTPM-RE-16 | PTPM-RE-16 - THERMOPLASTIC MEMBRANE ROOF EDGE GUTTER WITH THERMOPLASTIC COATED METAL |
| NEW | NEW | PTPM-RE-16A | PTPM-RE-16A - THERMOPLASTIC MEMBRANE ROOF EDGE WITH THERMOPLASTIC COATED METAL |
| PUT-RE-17 | PKE-RE-09 | PTPM-RE-17 | PTPM-RE-17 - THERMOPLASTIC MEMBRANE ROOF EDGE WITH ELEVATE DRAIN BAR |

**Detail Table 10: Termination Details**

| Termination Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| UT-T-01 | PVC-T-01 | TPM-T-01 | TPM-T-01 - TERMINATION WITH ELEVATE TERMINATION BAR |
| UT-T-02 | PVC-T-02 | TPM-T-02 | TPM-T-02 - TERMINATION ON OUTSIDE OF PARAPET WALL WITH ELEVATE TERMINATION BAR |
| UT-T-03 | PVC-T-03 | TPM-T-03 | TPM-T-03 - TERMINATION WITH REGLET COUNTER-FLASHING |
| UT-T-04 | PVC-T-04 | TPM-T-04 | TPM-T-04 - TERMINATION WITH REGLET COUNTER-FLASHING AND ELEVATE TERMINATION BAR |
| UT-T-05 | PVC-T-05 | TPM-T-05 | TPM-T-05 - TERMINATION WITH SURFACE MOUNTED COUNTERFLASHING |
| UT-T-06 | PVC-T-06 | TPM-T-06 | TPM-T-06 - TERMINATION WITH SURFACE MOUNTED COUNTER-FLASHING AND TERMINATION BAR |
| UT-T-07 | PVC-T-07 | TPM-T-07 | TPM-T-07 - TERMINATION AT EIFS OR WALL CLADDING |
| UT-T-08 | PVC-T-08 | TPM-T-08 | TPM-T-08 - ELEVATE TERMINATION BAR AT ELEVATION CHANGE |
| UT-T-09 | PVC-T-09 | TPM-T-09 | TPM-T-09 - ELEVATE TERMINATION BAR AT TILT UP PANEL JOINT |
| UT-T-10 | PVC-T-10 | TPM-T-10 | TPM-T-10 - ELEVATE TERMINATION BAR AT TILT UP PANEL JOINT WITH REGLET COUNTER-FLASHING |
| UT-T-11 | PVC-T-11 | TPM-T-11 | TPM-T-11 - TERMINATION AT TOP OF WALL WITH COPING STONE |
| UT-T-12 | PVC-T-12 | TPM-T-12 | TPM-T-12 - TERMINATION AT TOP OF WALL WITH ELEVATE COPING |
| UT-T-12A | PVC-T-12A | TPM-T-12A | TPM-T-12A - TERMINATION AT TOP OF WALL WITH UNA-EDGE COPING |
| UT-T-13 | PVC-T-13 | TPM-T-13 | TPM-T-13 - TERMINATION AT TOP OF WALL WITH ELEVATE ANCHORGARD STANDARD |
| UT-T-14 | PVC-T-14 | TPM-T-14 | TPM-T-14 - TERMINATION AT R.T.U. (UNIT FLANGE ABOVE ROOF MEMBRANE) |
| UT-T-15 | PVC-T-15 | TPM-T-15 | TPM-T-15 - TERMINATION AT R.T.U. WITH COUNTER-FLASHING (UNIT FLANGE ABOVE MEMBRANE) |
| UT-T-16 | N/A | TPM-T-16 | TPM-T-16 - TERMINATION AT R.T.U. WITH QUICKSEAM RPF (UNIT FLANGE MOUNTED TO SUBSTRATE) |
| UT-T-17 | N/A | TPM-T-17 | TPM-T-17 - TERMINATION AT R.T.U. WITH QUICKSEAM RPF AND COUNTER-FLASHING (UNIT FLANGE MOUNTED TO SUBSTRATE) |
| UT-T-18 | PVC-T-16 | TPM-T-18 | TPM-T-18 - TERMINATION AT R.T.U. WITH SEPARATE FLASHING (UNIT FLANGE MOUNTED TO SUBSTRATE) |
| UT-T-19 | PVC-T-17 | TPM-T-19 | TPM-T-19 - TERMINATION AT R.T.U. WITH COUNTER-FLASHING AND SEPARATE FLASHING (UNIT FLANGE MOUNTED TO SUBSTRATE) |
| UT-T-20 | PVC-T-18 | TPM-T-20 | TPM-T-20 - TERMINATION AT SHINGLES |
| UT-T-21 | N/A | TPM-T-21 | TPM-T-21 - TPO MEMBRANE TERMINATION AT METAL ROOF PANEL |

| | | | |
|---|---|---|---|
| N/A | PVC-T-19 | TPM-T-21A | TPM-T-21A - PVC MEMBRANE TERMINATION AT METAL ROOF PANEL |
| UT-T-22 | PVC-T-20 | TPM-T-22 | TPM-T-22 - INTERMEDIATE WALL FLASHING ATTACHMENT (WITH COVER STRIP) |
| UT-T-23 | PVC-T-21 | TPM-T-23 | TPM-T-23 - INTERMEDIATE WALL FLASHING ATTACHMENT (WITH WELDED SPLICE) |
| UT-T-24 | PVC-T-24 | TPM-T-24 | TPM-T-24 - INTERMEDIATE WALL FLASHING ATTACHMENT (MEMBRANE NOT ADHERED TO WALL/CURB) |
| UT-T-25 | PVC-T-22 | TPM-T-25 | TPM-T-25 - TERMINATION AT TOP OF WALL WITH ELEVATE COPING OVER SELF ADHERED MEMBRANE |
| UT-T-25A | PVC-T-25A | TPM-T-25A | TPM-T-25A - TERMINATION AT TOP OF WALL WITH ELEVATE ONE COPING OVER SELF ADHERED MEMBRANE |
| **Platinum Termination Details** | | | |
| PUT-T-06 | PKE-T-06 | PTPM-T-06 | PTPM-T-06 - TERMINATION WITH SURFACE MOUNTED COUNTER-FLASHING AND TERMINATION BAR |
| PUT-T-11 | PKT-T-11 | PTPM-T-11 | PTPM-T-11 - TERMINATION AT TOP OF WALL WITH COPING STONE |
| PUT-T-12 | PKT-T-12 | PTPM-T-12 | PTPM-T-12 - TERMINATION AT TOP OF WALL WITH ELEVATE COPING |
| PUT-T-13 | PKT-T-13 | PTPM-T-13 | PTPM-T-13 - ALTERNATE TERMINATION AT TOP OF WALL WITH ELEVATE ANCHORGARD PLATINUM FASCIA |
| PUT-T-15 | PKT-T-15 | PTPM-T-15 | PTPM-T-15 - TERMINATION AT R.T.U. WITH COUNTER-FLASHING (UNIT FLANGE ABOVE MEMBRANE) |
| PUT-T-18 | PKT-T-16 | PTPM-T-18 | PTPM-T-18 - TERMINATION AT R.T.U. WITH SEPARATE FLASHING (UNIT FLANGE MOUNTED TO SUBSTRATE) |
| PUT-T-19 | PKT-T-17 | PTPM-T-19 | PTPM-T-19 - TERMINATION AT R.T.U. WITH WELDED SPLICE AND COUNTER-FLASHING (UNIT FLANGE MOUNTED TO SUBSTRATE) |
| PUT-T-23 | PKT-T-21 | PTPM-T-23 | PTPM-T-23 - INTERMEDIATE WALL FLASHING ATTACHMENT WITH WELDED SPLICE |

**Detail Table 11: Thermoplastic XR Base Tie-In Details**

| Thermoplastic XR Base Tie-In Details | | | |
|---|---|---|---|
| **Detail Number** | | | **Detail Name** |
| **TPO** | **PVC** | **Thermoplastic** | |
| UTXR-BT-01 | PVCXR-BT-01 | TPMXR-BT-01 | TPMXR-BT-01 - BASE TIE-IN WITH STANDARD THERMOPLASTIC MEMBRANE FLASHING AND HD SEAM PLATES FASTENED TO DECK |
| UTXR-BT-02 | PVCXR-BT-02 | TPMXR-BT-02 | TPMXR-BT-02 - BASE TIE-IN WITH HD SEAM PLATES FASTENED TO WALL OR CURB |
| UTXR-BT-03 | PVCXR-BT-03 | TPMXR-BT-03 | TPMXR-BT-03 - BASE TIE-IN AT CURB / PARAPET WITH EXISTING CANT |
| UTXR-BT-04 | PVCXR-BT-04 | TPMXR-BT-04 | TPMXR-BT-04 - TIE-IN AT SHINGLES |
| UTXR-BT-05 | PVCXR-BT-05 | TPMXR-BT-05 | TPMXR-BT-05 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITH BRAKE) |
| UTXR-BT-06 | PVCXR-BT-06 | TPMXR-BT-06 | TPMXR-BT-06 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITH BRAKE) SPLICE |
| UTXR-BT-07 | PVCXR-BT-07 | TPMXR-BT-07 | TPMXR-BT-07 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITHOUT BRAKE) |
| UTXR-BT-08 | PVCXR-BT-08 | TPMXR-BT-08 | TPMXR-BT-08 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITHOUT BRAKE) SPLICE |
| UTXR-BT-09 | PVCXR-BT-09 | TPMXR-BT-09 | TPMXR-BT-09 - MEMBRANE SECUREMENT AT OUTSIDE CORNER |
| UTXR-BT-10 | PVCXR-BT-10 | TPMXR-BT-10 | TPMXR-BT-10 - MEMBRANE SECUREMENT AT INSIDE CORNER |
| UTXR-BT-12 | PVCXR-BT-12 | TPMXR-BT-12 | TPMXR-BT-12 - BASE TIE-IN WITH FOAM ADHESIVE AND SEPARATE THERMOPLASTIC FLASHING |
| UTXR-BT-13 | PVCXR-BT-13 | TPMXR-BT-13 | TPMXR-BT-13 - BASE TIE-IN WITH HD SEAM PLATE INTO DECK WITH DECK OBSTRUCTION |
| **Platinum Thermoplastic XR Base Tie-In Details** | | | |
| ADD | PKEXR-BT-01 | PTPMXR-BT-01 | PTPMXR-BT-01 - BASE TIE-IN WITH STANDARD THERMOPLASTIC FLASHING AND HD SEAM PLATES FASTENED TO THE DECK |
| ADD | PKEXR-BT-02 | PTPMXR-BT-02 | PTPMXR-BT-02 - BASE TIE-IN WITH HD SEAM PLATES FASTENED TO WALL OR CURB |
| ADD | PKEXR-BT-03 | PTPMXR-BT-03 | PTPMXR-BT-03 - BASE TIE-IN CURB OR PARAPET WITH EXISTING CANT |
| ADD | PKEXR-BT-04 | PTPMXR-BT-04 | PTPMXR-BT-04 - TIE-IN AT SHINGLES |
| ADD | PKEXR-BT-05 | PTPMXR-BT-05 | PTPMXR-BT-05 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITH BRAKE) |
| ADD | PKEXR-BT-06 | PTPMXR-BT-06 | PTPMXR-BT-06 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITH BRAKE) SPLICE |
| ADD | PKEXR-BT-07 | PTPMXR-BT-07 | PTPMXR-BT-07 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITHOUT BRAKE) |
| ADD | PKEXR-BT-08 | PTPMXR-BT-08 | PTPMXR-BT-08 - BASE TIE-IN WITH THERMOPLASTIC COATED METAL (WITHOUT BRAKE) SPLICE |
| ADD | PKEXR-BT-09 | PTPMXR-BT-09 | PTPMXR-BT-09 - MEMBRANE SECUREMENT AT OUTSIDE CORNER |
| ADD | PKEXR-BT-10 | PTPMXR-BT-10 | PTPMXR-BT-10 - MEMBRANE SECUREMENT AT INSIDE CORNER |

**Detail Table 12: Thermoplastic XR Drain and Scupper Details**

| Thermoplastic XR Drain and Scupper Details | | | |
|---|---|---|---|
| **Detail Number** | | | **Detail Name** |
| **TPO** | **PVC** | **Thermoplastic** | |
| UTXR-D-01 | PVCXR-D-01 | TPMXR-D-01 | TPMXR-D-01 - ROOF DRAIN (TARGET PATCH REQUIRED) - THERMOPLASTIC XR ADHERED SYSTEM |
| UTXR-D-02 | PVCXR-D-02 | TPMXR-D-02 | TPMXR-D-02 - ROOF DRAIN (TARGET PATCH REQUIRED) - THERMOPLASTIC XR MECHANICALLY ATTACHED SYSTEM |
| **Platinum Thermoplastic XR Drain and Scupper Details** | | | |
| ADD | PKEXR-D-01 | PTPMXR-D-01 | PTPMXR-D-01 - ROOF DRAIN (TARGET PATCH REQUIRED) THERMOPLASTIC XR MEMBRANE ADHERED SYSTEM |

**Detail Table 13: Thermoplastic XR Lap Splice Details**

| Thermoplastic XR Lap Splice Details | | | |
|---|---|---|---|
| **Detail Number** | | | **Detail Name** |
| **TPO** | **PVC** | **Thermoplastic** | |
| UTXR-LS-01 | PVCXR-LS-01 | TPMXR-LS-01 | TPMXR-LS-01 - THERMOPLASTIC XR MEMBRANE SPLICE WITH CONTINUOUS WELD (WITH SELVEDGE EDGE) |
| UTXR-LS-02 | PVCXR-LS-02 | TPMXR-LS-02 | TPMXR-LS-02 - THERMOPLASTIC XR MEMBRANE SPLICE WITH WELDED COVER STRIP (WITHOUT SELVEDGE EDGE) |
| UTXR-LS-03 | PVCXR-LS-03 | TPMXR-LS-03 | TPMXR-LS-03 - LAP SPLICE WITH MECHANICAL ATTACHMENT |
| UTXR-LS-04 | PVCXR-LS-04 | TPMXR-LS-04 | TPMXR-LS-04 - THERMOPLASTIC XR MEMBRANE END LAP SPLICE OVER FIELD SEAM |
| UTXR-LS-05 | ADD | TPMXR-LS-05 | TPMXR-LS-05 - LAP SPLICE WITH HEADLAP UNDER FIELD SEAM USING T-JOINT COVER |
| UTXR-LS-06 | ADD | TPMXR-LS-06 | TPMXR-LS-06 - LAP SPLICE WITH HEADLAP OVER FIELD SEAM USING T-JOINT COVER |
| **Platinum Thermoplastic XR Lap Splice Details** | | | |
| ADD | PKEXR-LS-01 | PTPMXR-LS-01 | PTPMXR-LS-01 - THERMOPLASTIC XR MEMBRANE LAP SPLICE WITH CONTINUOUS WELD (WITH SELVEDGE EDGE) |
| ADD | PKEXR-LS-02 | PTPMXR-LS-02 | PTPMXR-LS-02 - THERMOPLASTIC XR MEMBRANE SPLICE WITH WELDED COVER STRIP (WITHOUT SELVEDGE EDGE) |
| ADD | PKEXR-LS-04 | PTPMXR-LS-04 | PTPMXR-LS-04 - THERMOPLASTIC XR MEMBRANE WITH END LAP SPLICE WITH WELDED COVER STRIP |

**Detail Table 14: Thermoplastic XR Perimeter Enhancement Details**

| Thermoplastic XR Perimeter Enhancement Details | | | |
|---|---|---|---|
| **Detail Number** | | | **Detail Name** |
| **TPO** | **PVC** | **Thermoplastic** | |
| NEW | NEW | TPMXR-PE-09 | TPMXR-PE-09 – PERIMETER ENHANCEMENT USING FLEECE BACK MEMBRANE STRIP ATTACHED WITH BATTEN OR HD PLATES WITH WELDED THERMOPLASTIC COVER STRIP |
| NEW | NEW | TPMXR-PE-10 | TPMXR-PE-10 - PERIMETER ENHANCEMENT WITH METAL BATTEN OR HD PLATES WITH XR FLEECE MEMBRANE PROTECTION STRIP (MECHANICALLY ATTACHED / HAIL COVERAGE) |

**Detail Table 15: Thermoplastic XR Roof Edge Details**

| Thermoplastic XR Roof Edge Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| UTXR-RE-01 | PVCXR-RE-01 | TPMXR-RE-01 | TPMXR-RE-01 - THERMOPLASTIC XR MEMBRANE ROOF EDGE WITH ANCHORGARD SP FASCIA |
| UTXR-RE-02 | PVCXR-RE-02 | TPMXR-RE-02 | TPMXR-RE-02 - THERMOPLASTIC XR MEMBRANE ROOF EDGE WITH ELEVATE EDGEGARD+ FASCIA AND SEPARATE FLASHING |
| UTXR-RE-03 | PVCXR-RE-03 | TPMXR-RE-03 | TPMXR-RE-03 - THERMOPLASTIC XR MEMBRANE ROOF EDGE GUTTER WITH ELEVATE DRAIN BAR |
| UTXR-RE-04 | N/A | TPMXR-RE-04 | TPMXR-RE-04 - ULTRAPLY TPO XR MEMBRANE ROOF EDGE WITH FASCIA METAL BY OTHERS |
| UTXR-RE-05 | PVCXR-RE-05 | TPMXR-RE-05 | TPMXR-RE-05 - ROOF EDGE WITH THERMOPLASTIC COATED METAL (WITH XR MEMBRANE SELVEDGE EDGE) |
| UTXR-RE-05A | PVCXR-RE-05A | TPMXR-RE-05A | TPMXR-RE-05A - ROOF EDGE WITH THERMOPLASTIC COATED METAL (WITH XR MEMBRANE SELVEDGE EDGE AT SPLICE - INSTALLATION STEPS 1 & 2) |
| UTXR-RE-05B | PVCXR-RE-05B | TPMXR-RE-05B | TPMXR-RE-05B - ROOF EDGE WITH THERMOPLASTIC COATED METAL (WITH XR MEMBRANE SELVEDGE EDGE AT SPLICE - INSTALLATION STEPS 3 & 4) |
| **Platinum Thermoplastic XR Roof Edge Details** | | | |
| ADD | PKEXR-RE-01 | PTPMXR-RE-01 | PTPMXR-LS-01 - THERMOPLASTIC XR ROOF EDGE WITH ANCHORGARD PLATINUM FASCIA |
| ADD | PKEXR-RE-02 | PTPMXR-RE-02 | PTPMXR-LS-02 - THERMOPLASTIC XR ROOF EDGE WITH ELEVATE EDGEGARD+ FASCIA ON SINGLE-PLY |
| ADD | PKEXR-RE-03 | PTPMXR-RE-03 | PTPMXR-LS-03 - THERMOPLASTIC XR ROOF EDGE GUTTER WITH ELEVATE DRAIN BAR |

**Detail Table 16: Thermoplastic InvisiWeld Details**

| Thermoplastic InvisiWeld Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| UT-IW-1A | PVC-IW-01 | TPM-IW-01 | TPM-IW-01 - THERMOPLASTIC COATED INVISIWELD PLATE |
| UT-IW-2 | PVC-IW-02 | TPM-IW-02 | TPM-IW-02 - THERMOPLASTIC MEMBRANE INVISIWELD ASSEMBLY |
| UT-IW-3 | PVC-IW-03 | TPM-IW-03 | TPM-IW-03 - THERMOPLASTIC MEMBRANE INVISIWELD METAL ROOF RETROFIT ASSEMBLY |
| UT-IW-4 | PVC-IW-04 | TPM-IW-04 | TPM-IW-04 - THERMOPLASTIC MEMBRANE INVISIWELD METAL ROOF RETROFIT PURLIN FASTENING EXAMPLE LAYOUT - 60' OR LESS |
| UT-IW-4A | PVC-IW-04A | TPM-IW-04A | TPM-IW-04A - THERMOPLASTIC MEMBRANE INVISIWELD METAL ROOF RETROFIT PURLIN FASTENING EXAMPLE LAYOUT - GREATER THAN 60' |
| UT-IW-5 | PVC-IW-05 | TPM-IW-05 | TPM-IW-05 - THERMOPLASTIC MEMBRANE INVISIWELD METAL RETROFIT RIDGE DETAIL |
| UT-IW-6 | PVC-IW-06 | TPM-IW-06 | TPM-IW-06 - THERMOPLASTIC MEMBRANE INVISIWELD METAL RETROFIT DETAIL |
| UT-IW-7 | PVC-IW-07 | TPM-IW-07 | TPM-IW-07 - THERMOPLASTIC MEMBRANE INVISIWELD INSULATION ATTACHMENT PATTERNS |
| UT-IW-8 | PVC-IW-08 | TPM-IW-08 | TPM-IW-08 - THERMOPLASTIC MEMBRANE REPAIR OVER INVISIWELD PLATE |
| UT-IW-9 | PVC-IW-09 | TPM-IW-09 | TPM-IW-09 - BASE TIE-IN USING THERMOPLASTIC COATED INVISIWELD PLATE - CONTINUOUS FLASHING |
| UT-IW-10 | PVC-IW-10 | TPM-IW-10 | TPM-IW-10 - BASE TIE-IN USING THERMOPLASTIC COATED INVISIWELD PLATE - SEPARATE FLASHING |
| UT-IW-11 | PVC-IW-11 | TPM-IW-11 | TPM-IW-11 - INVISIWELD ATTACHED WALL FLASHING SECUREMENT (MEMBRANE NOT ADHERED TO WALL OR CURB) |
| UT-IW-12 | PVC-IW-12 | TPM-IW-12 | TPM-IW-12 - THERMOPLASTIC MEMBRANE INVISIWELD PATTER LAYOUT - EXAMPLE BASED ON ROOF ZONES |

**Detail Table 17: Thermoplastic Metal Building Retrofit Details**

| Thermoplastic Metal Building Retrofit Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| **TPO** | **PVC** | **Thermoplastic** | |
| MBRT-LS-01 | ADD | TPM-MBR-LS-01 | TPM-MBR-LS-01 - IN-SEAM ATTACHMENT WITH PLATE INTO PURLIN |
| MBRT-LS-02 | N/A | TPM-MBR-LS-02 | TPM-MBR-LS-02 - QUICKSEAM R.M.A. STRIP ATTACHMENT INTO PURLIN |
| MBRT-LS-03 | ADD | TPM-MBR-LS-03 | TPM-MBR-LS-03 - MEMBRANE SECUREMENT USING INVISIWELD PLATE INTO PURLIN |
| UT-IW-13 | N/A | TPM-MBR-LS-04 | TPM-MBR-LS-04 - THERMOPLASTIC MEMBRANE METAL ROOF RETROFIT ASSEMBLY - R.M.A. ATTACHMENT |
| MBRT-RE-01 | ADD | TPM-MBR-RE-01 | TPM-MBR-RE-01 - ROOF EDGE AT EAVE OR RAKE USING THERMOPLASTIC COATED METAL |
| MBRT-RE-02 | N/A | TPM-MBR-RE-02 | TPM-MBR-RE-02 - ROOF EDGE AT EAVE OR RAKE USING METAL FASCIA AND QUICKSEAM FLASHING |
| MBRT-RE-03 | ADD | TPM-MBR-RE-03 | TPM-MBR-RE-03 - GUTTER DETAIL USING THERMOPLASTIC COATED METAL FASCIA |
| MBRT-RE-04 | ADD | TPM-MBR-RE-04 | TPM-MBR-RE-04 - GUTTER DETAIL USING METAL TERMINATION BAR |
| MBRT-RE-05 | ADD | TPM-MBR-RE-05 | TPM-MBR-RE-05 - ROOF EDGE AT EAVE OR RAKE USING ANCHORGARD NAILER-T |
| MBRT-T-01 | ADD | TPM-MBR-T-01 | TPM-MBR-T-01 - ROOF RIDGE IN-SEAM PLATE SECUREMENT |
| MBRT-T-02 | N/A | TPM-MBR-T-02 | TPM-MBR-T-02 - ROOF RIDGE SECUREMENT - R.M.A. STRIP |
| MBRT-T-03 | ADD | TPM-MBR-T-03 | TPM-MBR-T-03 - ROOF RIDGE - INVISIWELD SECUREMENT |
| MBRT-T-04 | ADD | TPM-MBR-T-04 | TPM-MBR-T-04 - ROOF RIDGE - EXISTING VENT CONDITION |

**Detail Table 18: Thermoplastic Membrane Layout Details**

| Thermoplastic Membrane Layout Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| **TPO** | **PVC** | **Thermoplastic** | |
| UT-120-1-06 | ADD | TPM-120-1-06 | LAYOUT TPM-120-1-06 ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-120-1-12 | ADD | TPM-120-1-12 | LAYOUT TPM-120-1-12 ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-120-2-06 | ADD | TPM-120-2-06 | LAYOUT TPM-120-2-06 ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-120-2-12 | PVC-120-2-12 | TPM-120-2-12 | LAYOUT TPM-120-2-12-ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-120-4-06 | ADD | TPM-120-4-06 | LAYOUT TPM-120-4-06-ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-120-4-12 | PVC-120-4-12 | TPM-120-4-12 | LAYOUT TPM-120-4-12-ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-148-2-06 | N/A | TPM-148-2-6 | LAYOUT TPM-148-2-06-ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-148-2-12 | N/A | TPM-148-2-12 | LAYOUT TPM-148-2-12-ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-148-4-06 | N/A | TPM-148-4-06 | LAYOUT TPM-148-4-06-ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-148-4-12 | N/A | TPM-148-4-12 | LAYOUT TPM-148-4-12-ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-96-1-06 | ADD | TPM-96-1-06 | LAYOUT TPM-96-1-06-ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-96-1-12 | ADD | TPM-96-1-12 | LAYOUT TPM-96-1-12-ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-96-2-06 | ADD | TPM-96-2-06 | LAYOUT TPM-96-2-06-ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |
| UT-96-2-12 | ADD | TPM-96-2-12 | LAYOUT TPM-96-2-12-ULTRAPLY TPO ATTACHMENT LAYOUT - PICTURE FRAME METHOD |

**Detail Table 19: Fleece Backed Thermoplastic Membrane and Modified Bitumen Hybrid Details**

| Fleece Backed Thermoplastic Membrane and Modified Bitumen Hybrid Details | | | |
|---|---|---|---|
| Detail Number | | | Detail Name |
| TPO | PVC | Thermoplastic | |
| NEW | NEW | XBH-BT-01 | XBH-BT-01 - BASE TIE-IN (DECK ATTACHMENT) - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-BT-02 | XBH-BT-02 - BASE TIE-IN (WALL ATTACHMENT) - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-D-01 | XBH-D-01 - ROOF DRAIN (TARGET PATCH REQUIRED) - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-D-01A | XBR-D-01A - ROOF DRAIN (TARGET PATCH REQUIRED) THERMOPLASTIC XR AND CUT BACK MOD-BIT HYBRID ADHERED SYSTEM |
| NEW | NEW | XBH-D-02 | XBH-D-02 - ROOF DRAIN (MEMBRANE INTO DRAIN) - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-D-03 | XPH-D-03 - ROOF DRAIN INSERT (MEMBRANE INTO DRAIN) - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-E-02 | XBH-E-02 - EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SEAM - ROOF TO WALL - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-E-04 | XBH-E-04 - EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SPICE AND WOOD NAILER - ROOF TO WALL - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-E-06 | XBH-E-06 - EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SPLICE - ROOF TO ROOF - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-E-08 | XBH-E-08 - EXPANSION JOINT (MANUFACTURED COVER) WITH WELDED SPLICE - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-E-10 | XPH-E-10 - EXPANSION JOINT (FIELD FABRICATED) WITH WELDED SPLICE - CURB TO CURB - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-RE-01 | XBH-RE-01 - ROOF EDGE WITH ANCHORGARD SP FASCIA - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-RE-02 | XBH-RE-02 - MEMBRANE ROOF EDGE WITH ELEVATE EDGEGARD + FASCIA AND SEPARATE FLASHING FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-RE-03 | XBH-RE-03 - ROOF EDGE WITH ELEVATE DRAIN BAR - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | N/A | XBH-RE-04 | XBH-RE-04 - ROOF EDGE WITH FASCIAL METAL BY OTHERS - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-T-14 | XBH-T-14 - TERMINATION AT R.T.U. (UNIT FLANGE ABOVE ROOF MEMBRANE) - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-T-15 | XBH-T-15 - TERMINATION AT R.T.U. WITH COUNTER-FLASHING (UNIT FLANGE ABOVE MEMBRANE) - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-T-18 | XBH-T-18 - TERMINATION AT R.T.U. WITH SEPARATE FLASHING (UNIT FLANGE MOUNTED TO SUBSTRATE) - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |
| NEW | NEW | XBH-T-19 | XBH-T-19 - TERMINATION AT R.T.U. WITH COUNTER-FLASHING AND SEPARATE FLASHING (UNIT FLANGE MOUNTED TO SUBSTRATE) - FLEECE BACKED THERMOPLASTIC AND MODIFIED BITUMEN HYBRID SYSTEM |

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