

# **Sure-Weld®/Sure-Flex™**

## **Mechanically Fastened and Adhered Roofing Systems**

### **Installation Details**

January 2017

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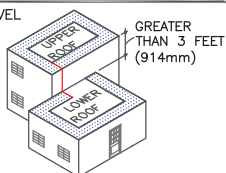
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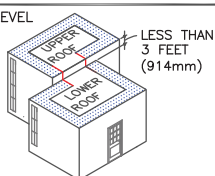
# GUIDELINES FOR ROOF PERIMETER ZONES FOR MECHANICALLY ATTACHED ROOF SYSTEM

PERIMETER ZONES

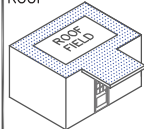
## SPLIT LEVEL ROOFS



## SPLIT LEVEL ROOFS

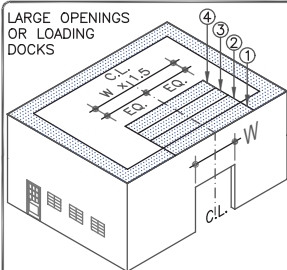


## CANOPY ROOF

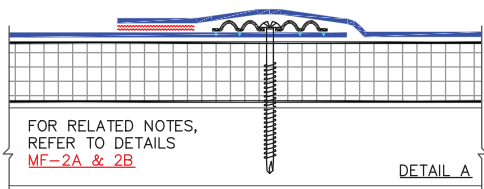
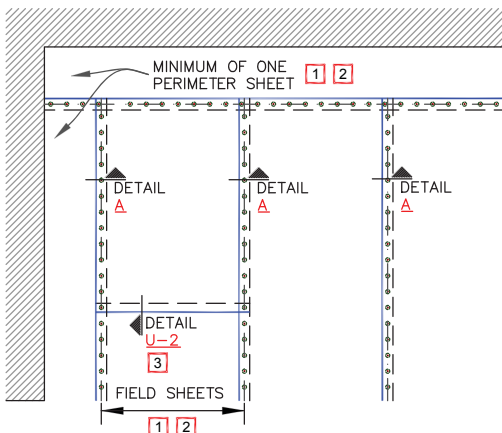


INSTALL PERIMETER SHEETS OVER THE ENTIRE OVERHANG (PROJECTION ROOF) AREA, EXTENDING ONTO THE MAIN ROOF DECK WHEN AT THE SAME LEVEL AS SHOWN.

## LARGE OPENINGS OR LOADING DOCKS



4 PERIMETER SHEETS CENTERED OVER LARGE OPENINGS



FOR RELATED NOTES, REFER TO DETAILS MF-2A & 2B

## NOTES:

1. WHEN USING 10' (3048mm) OR 12' (3658mm) WIDE TPO FIELD SHEETS, 6' (1829mm) WIDE PERIMETER SHEETS ARE UTILIZED. WHEN USING 8' (2438mm) WIDE TPO FIELD SHEETS, 4' (1219mm) WIDE PERIMETER SHEETS ARE USED. WHEN USING 10' (3048mm) WIDE PVC FIELD SHEETS, 5' (1524mm) WIDE PERIMETER SHEETS ARE UTILIZED. WHEN USING 81" (2057mm) WIDE PVC FIELD SHEETS, 40.5" (1029mm) WIDE PERIMETER SHEETS ARE USED.
2. REFER TO CARLISLE SPECIFICATIONS FOR REQUIRED NUMBER OF PERIMETER SHEETS, SHEET WIDTH AND MEMBRANE FASTENING DENSITY.
3. END LAPS DO NOT REQUIRE MECHANICAL FASTENING AND SHALL BE OVERLAPPED 2" (51mm) MINIMUM. REFER TO THERMOPLASTIC DETAIL U-2.

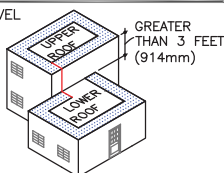
<p>— THERMOPLASTIC REINFORCED MEMBRANE</p> <p>— APPROVED INSULATION</p> <p>— SEE NOTE(S)</p> <p>0</p>	<p><b>MEMBRANE SECUREMENT</b></p> <p>For additional information, refer to Specifications</p>	<p>DETAIL NO.</p> <p><b>MF-2</b></p> <p>THERMOPLASTIC UNIVERSAL</p>
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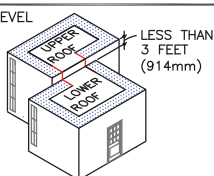
# GUIDELINES FOR ROOF PERIMETER ZONES FOR MECHANICALLY ATTACHED ROOF SYSTEM

PERIMETER ZONES

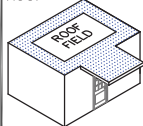
## SPLIT LEVEL ROOFS



## SPLIT LEVEL ROOFS

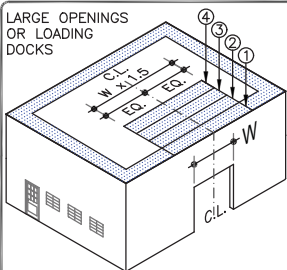


## CANOPY ROOF

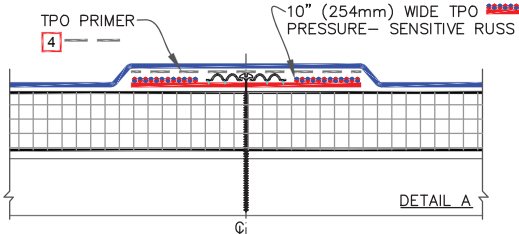
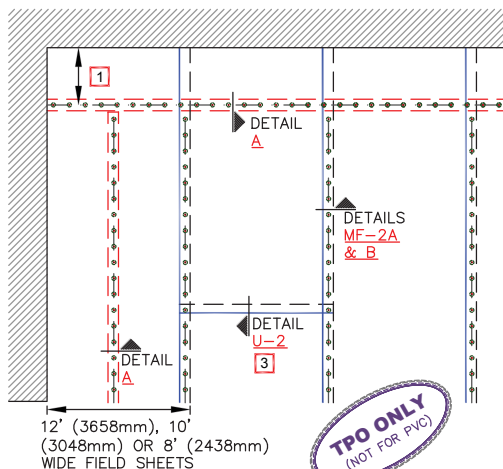


INSTALL PERIMETER SHEETS OVER THE ENTIRE OVERHANG (PROJECTION ROOF) AREA, EXTENDING ONTO THE MAIN ROOF DECK WHEN AT THE SAME LEVEL AS SHOWN.

## LARGE OPENINGS OR LOADING DOCKS

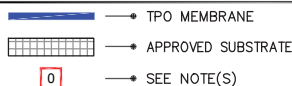


4 PERIMETER SHEETS CENTERED OVER LARGE OPENINGS



## NOTES:

1. PRESSURE-SENSITIVE RUSS SHALL BE POSITIONED 5' (1524mm) TO 6' (1829mm) FROM THE PERIMETER EDGE WHEN USING 10' (3048mm) OR 12' (3658mm) WIDE TPO FIELD SHEETS. WHEN USING 8' (2438mm) WIDE TPO FIELD SHEETS, PRESSURE-SENSITIVE RUSS SHALL BE POSITIONED 4' (1219mm) FROM THE PERIMETER EDGE.
2. REFER TO CARLISLE SPECIFICATIONS FOR REQUIRED NUMBER OF PERIMETER SHEETS, SHEET WIDTH AND MEMBRANE FASTENING DENSITY.
3. END LAPS DO NOT REQUIRE MECHANICAL FASTENING AND SHALL BE OVERLAPPED 2" (51mm) MINIMUM. REFER TO THERMOPLASTIC DETAIL U-2.
4. TPO PRIMER MUST BE APPLIED TO THE BACK SIDE OF MEMBRANE SURFACE PRIOR TO ADHERING MEMBRANE TO PRESSURE-SENSITIVE RUSS.



## TPO MEMBRANE SECUREMENT WITH PRESSURE-SENSITIVE RUSS

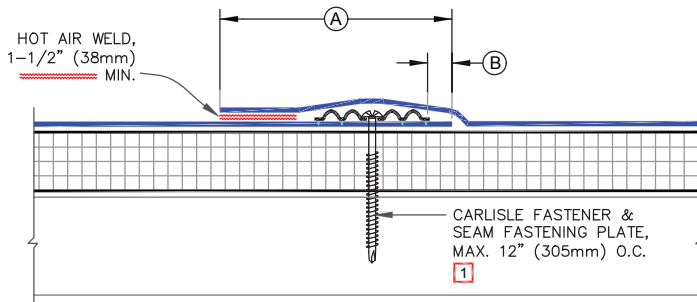
For additional information, refer to Specifications



DETAIL NO.

MF-2.1

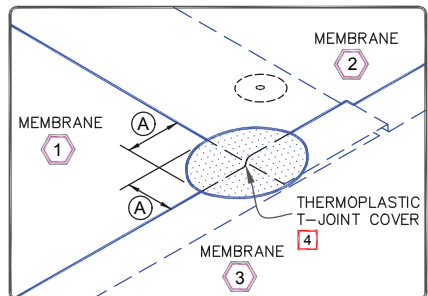
THERMOPLASTIC TPO



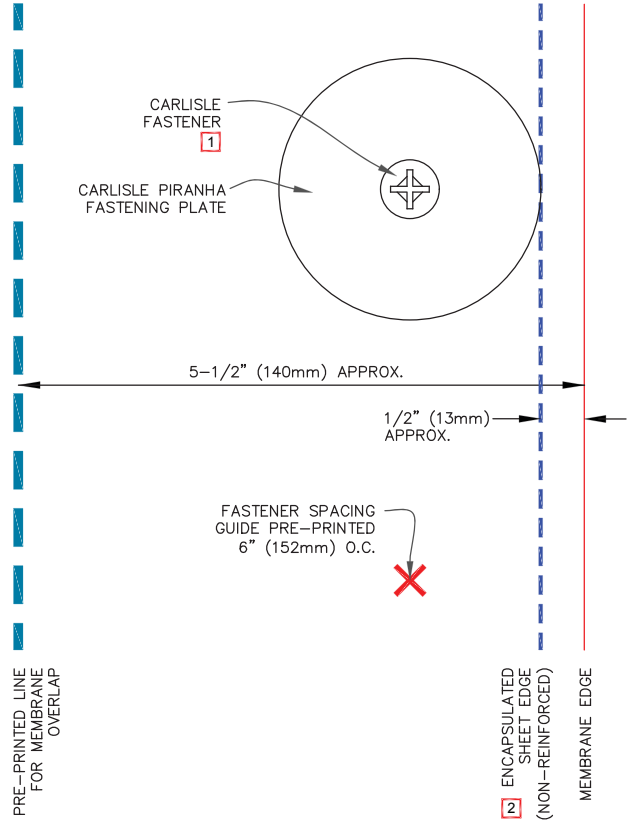
NOTES:

1. ON MECHANICALLY FASTENED SYSTEMS, HP-X FASTENERS AND PIRANHA PLATES OR HP-XTRA FASTENERS AND PIRANHA XTRA PLATES ARE REQUIRED OVER STEEL AND WOOD DECKS. ON CONCRETE DECKS, CD-10 OR HD 14-10 FASTENERS ARE USED WITH PIRANHA PLATES.
2. POSITION SEAM FASTENING PLATES BEYOND NON-REINFORCED ENCAPSULATED EDGE.
3. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
4. WHEN USING 60 OR 80-MIL MEMBRANE, APPLY A 4-1/2" (114mm) DIAMETER THERMOPLASTIC T-JOINT COVER AT ALL FIELD SPLICE INTERSECTIONS.

DIMENSIONS	mm	
(A)	5-1/2"	140 APPROX.
(B)	1/2"	13 APPROX.



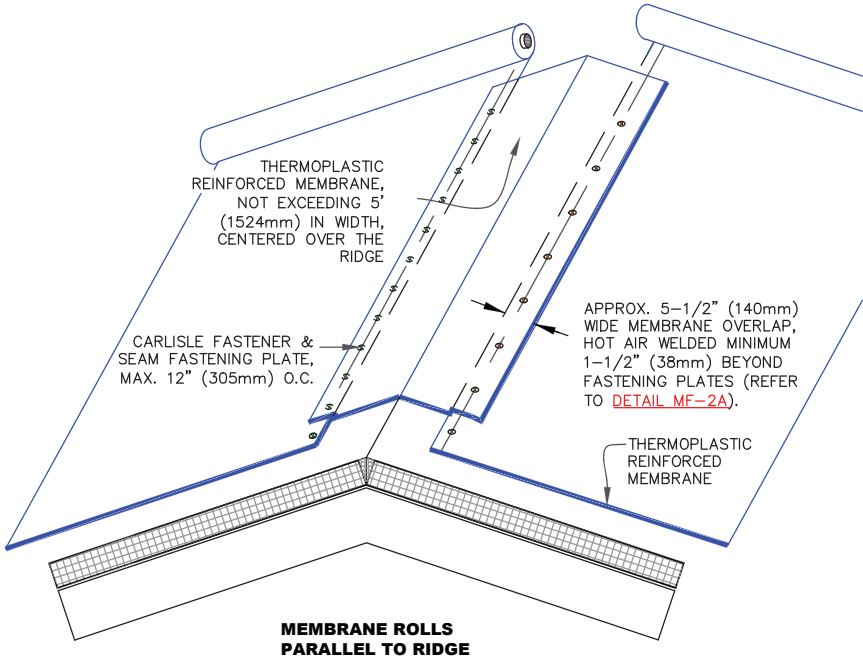
<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 2px; background-color: blue; margin-right: 5px;"></div> <div>→ THERMOPLASTIC REINFORCED MEMBRANE</div> </div> <div style="display: flex; align-items: center;"> <div style="width: 20px; height: 10px; border: 1px solid black; background-color: #cccccc; margin-right: 5px;"></div> <div>→ APPROVED INSULATION</div> </div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid red; padding: 2px; color: red; margin-right: 5px;">0</div> <div>→ SEE NOTE(S)</div> </div>	<p><b>MECHANICALLY FASTENED MEMBRANE SPLICE</b></p> <p>For additional information, refer to Specifications</p>	<div style="display: flex; align-items: center;"> <div style="border: 1px solid red; padding: 5px; margin-right: 10px;"> <div style="font-size: 24px; font-weight: bold; text-align: center;">TP</div> </div> <div> <p>DETAIL NO.</p> <p style="font-size: 24px; font-weight: bold; text-align: center;">MF-2A</p> <p>THERMOPLASTIC UNIVERSAL</p> </div> </div>
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NOTES:

- ON MECHANICALLY FASTENED SYSTEMS, HP-X FASTENERS AND PIRANHA PLATES OR HP-XTRA FASTENERS AND PIRANHA XTRA PLATES ARE REQUIRED OVER STEEL AND WOOD DECKS. ON CONCRETE DECKS, CD-10 OR HD 14-10 FASTENERS ARE USED WITH PIRANHA PLATES.
- POSITION SEAM FASTENING PLATES BEYOND NON-REINFORCED ENCAPSULATED EDGE.

<div style="display: flex; justify-content: space-between;"> <div>  THERMOPLASTIC REINFORCED MEMBRANE   APPROVED INSULATION  <div style="border: 1px solid black; padding: 2px; display: inline-block;">0</div> SEE NOTE(S)         </div> <div style="text-align: center;"> <b>FASTENER AND PLATE PLACEMENT</b>            For additional information, refer to Specifications         </div> <div style="text-align: right;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> </div> <div style="margin-left: 10px;">           DETAIL NO.  <b>MF-2B</b>            THERMOPLASTIC UNIVERSAL         </div> </div> </div>		
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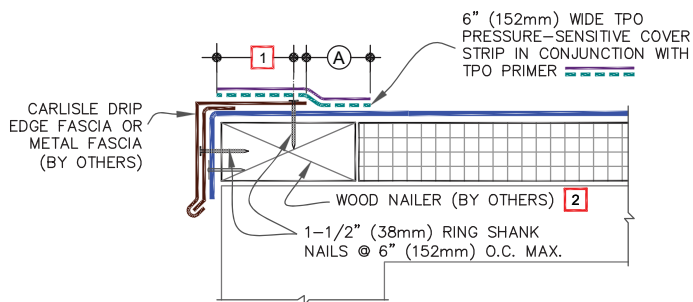
NOTES

1. RIDGE MEMBRANE ATTACHMENT IS ONLY REQUIRED WHEN ROOF SLOPE EXCEEDS 3" (76mm) TO ONE HORIZONTAL FOOT.
2. POSITION FASTENING PLATES 1/2" (13mm) MINIMUM TO 1" (25mm) MAXIMUM FROM THE EDGE OF THE DECK MEMBRANE.
3. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
4. REFER TO CARLISLE SPECIFICATIONS FOR REQUIRED NUMBER OF PERIMETER SHEETS, SHEET WIDTH AND MEMBRANE FASTENING DENSITY.
5. ON MECHANICALLY FASTENED SYSTEMS, HP-X FASTENERS AND PIRANHA PLATES OR HP-XTRA FASTENERS AND PIRANHA XTRA PLATES ARE REQUIRED OVER STEEL AND WOOD DECKS. ON CONCRETE DECKS, CD-10 OR HD 14-10 FASTENERS ARE USED WITH PIRANHA PLATES.
6. AS AN OPTION TO USING PERIMETER SHEETS, 10" (254mm) WIDE TPO PRESSURE-SENSITIVE RUSS MAY BE USED BENEATH TPO FIELD SHEETS ONLY FOR PERIMETER SECUREMENT.

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CAUTION

DETAIL NOT FOR USE ON 25 OR 30-YEAR WARRANTY PROJECTS. ACCEPTABLE EDGING SHALL CONFORM WITH THERMOPLASTIC UNIVERSAL DETAILS U-1B, U-1C, U-1D, U-1E OR U-1F.

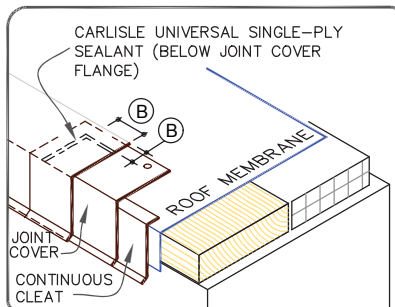


**TPO ONLY**  
(NOT FOR PVC)

## NOTES:

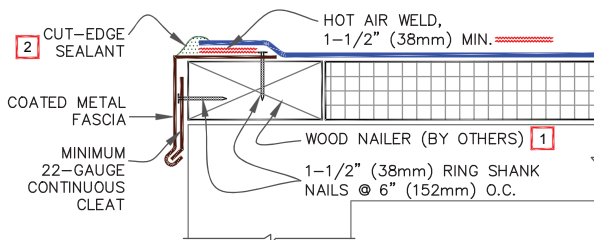
- METAL FASCIA DECK FLANGE MUST BE TOTALLY COVERED BY TPO PRESSURE-SENSITIVE COVER STRIP WITH MINIMUM 2" (51mm) COVERAGE PAST NAIL HEADS.
- WOOD NAILER MUST EXTEND PAST TOTAL WIDTH OF METAL FASCIA DECK FLANGE.
- TO REMOVE FINISHING OILS, SCRUB METAL FLANGE WITH WEATHERED MEMBRANE CLEANER; ALLOW TO DRY PRIOR TO APPLYING TPO PRIMER.
- APPLY TPO PRIMER TO METAL FLANGE AND MEMBRANE SURFACE PRIOR TO INSTALLING TPO PRESSURE-SENSITIVE COVER STRIP.
- WHEN METAL FASCIA BY OTHERS IS USED, FASTENER TYPE AND FASTENING FREQUENCY SHALL BE RECOMMENDED BY METAL EDGE MANUFACTURER.
- TO ENSURE TPO PRESSURE-SENSITIVE COVER STRIP CONFORMS TO STEP-OFFS, HEAT COVER STRIP AT SPLICE INTERSECTIONS PRIOR TO ROLLING.

DIMENSIONS		mm	
(A)	2"	51	MIN.
(B)	1/2"	13	TO
	1"	25	



 → TPO MEMBRANE  → APPROVED SUBSTRATE  → SEE NOTE(S)	<b>SecurSeal DRIP EDGE FASCIA</b> For additional information, refer to Specifications		DETAIL NO. <b>U-1A</b> THERMOPLASTIC TPO
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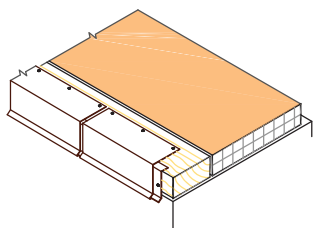
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## NOTES:

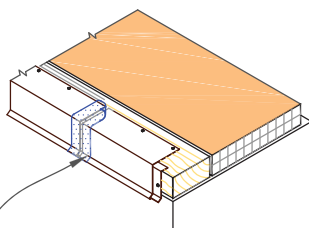
1. WOOD NAILER MUST EXTEND PAST TOTAL WIDTH OF METAL FASCIA DECK FLANGE.
2. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.

1



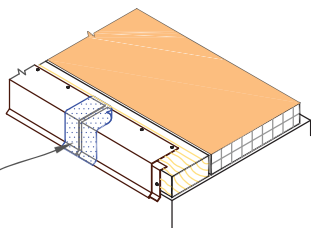
INSTALL CONTINUOUS CLEAT AND COATED METAL WITH 1/8"-1/4" (3-6mm) JOINTS BETWEEN ADJOINING SECTIONS.

2



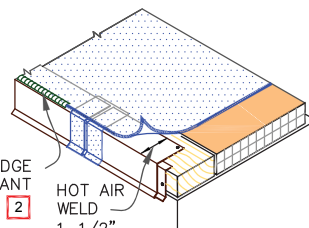
HEAT WELD 3" (76mm) WIDE PIECE OF NON-REINFORCED THERMOPLASTIC MEMBRANE OVER JOINT

3



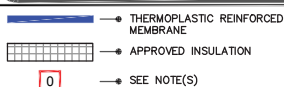
HEAT WELD 6" (152mm) WIDE PIECE OF NON-REINFORCED MEMBRANE OVER JOINT

4



CUT-EDGE SEALANT  
HOT AIR WELD  
1-1/2" MIN.

POSITION FIELD MEMBRANE AND HEAT WELD COATED METAL A MINIMUM OF 1-1/2" (38mm) AS SHOWN.



### SecurWELD COATED DRIP EDGE FASCIA

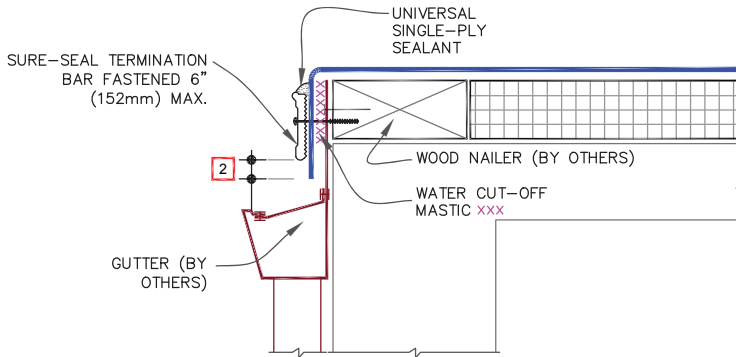
For additional information, refer to Specifications



DETAIL NO.

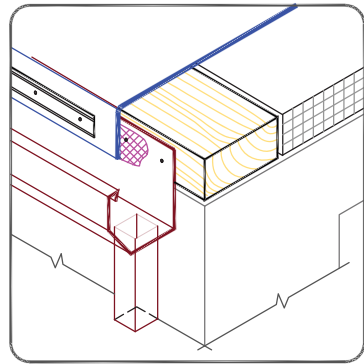
U-1B

THERMOPLASTIC UNIVERSAL



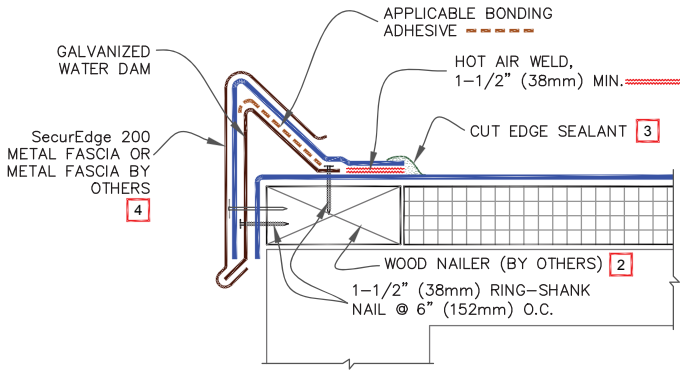
## NOTES:

1. FASTENING OF METAL TERMINATION BAR MUST PROVIDE CONSTANT COMPRESSION ON WATER CUT-OFF MASTIC.
2. ALLOW MEMBRANE SHEET TO EXTEND 1/2" (13mm) MINIMUM BELOW THE METAL TERMINATION BAR.



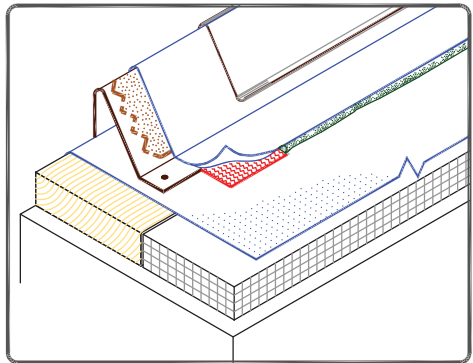
<p>  THERMOPLASTIC REINFORCED MEMBRANE   APPROVED INSULATION   SEE NOTE(S) </p>	<b>METAL BAR EDGE TERMINATION</b> For additional information, refer to Specifications		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p><b>TP</b></p> </div> <div> DETAIL NO.  <b>U-1C</b>  THERMOPLASTIC UNIVERSAL </div> </div>
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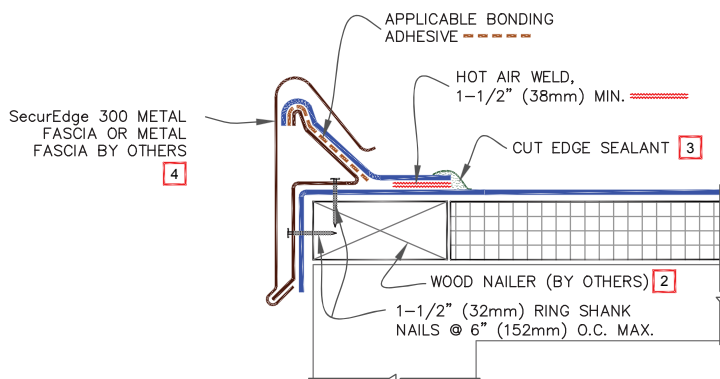
NOTES:

1. REFER TO [SecurEdge 200 INSTRUCTION MANUAL](#) FOR STEP-BY-STEP INSTALLATION PROCEDURES.
2. WOOD NAILER MUST EXTEND PAST TOTAL WIDTH OF SecurEdge DECK FLANGE.
3. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
4. WHEN METAL FASCIA BY OTHERS IS USED, FASTENER TYPE AND FASTENING FREQUENCY SHALL BE RECOMMENDED BY METAL EDGE MANUFACTURER.



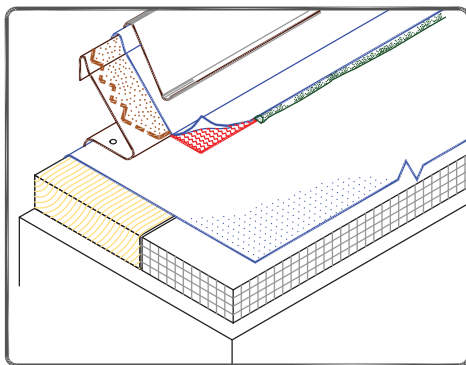
<div><div></div></div> <div><div></div></div> <div><div>0</div></div>	<div><div></div>→ THERMOPLASTIC REINFORCED MEMBRANE</div> <div><div></div>→ APPROVED INSULATION</div> <div><div></div>→ SEE NOTE(S)</div>	<div><div><div>CARLISLE SecurEdge 200</div><div>For additional information, refer to Specifications</div></div></div> <div><div><div><div><div>TP</div></div><div>DETAIL NO.</div><div>U-1D</div></div><div>THERMOPLASTIC UNIVERSAL</div></div></div>
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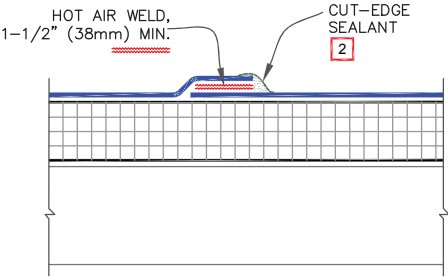
## NOTES:

1. REFER TO [SecurEdge 300 INSTRUCTION MANUAL](#) FOR STEP-BY-STEP INSTALLATION PROCEDURES.
2. WOOD NAILER MUST EXTEND PAST TOTAL WIDTH OF SecurEdge DECK FLANGE.
3. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
4. WHEN METAL FASCIA BY OTHERS IS USED, FASTENER TYPE AND FASTENING FREQUENCY SHALL BE RECOMMENDED BY METAL EDGE MANUFACTURER.



	<b>CARLISLE SecurEdge 300</b> For additional information, refer to Specifications	 DETAIL NO. <b>U-1E</b> THERMOPLASTIC UNIVERSAL

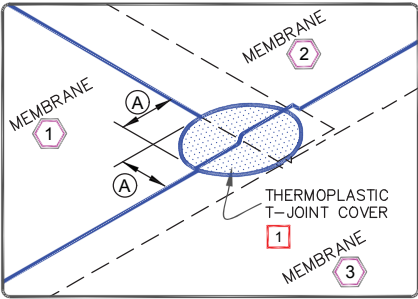




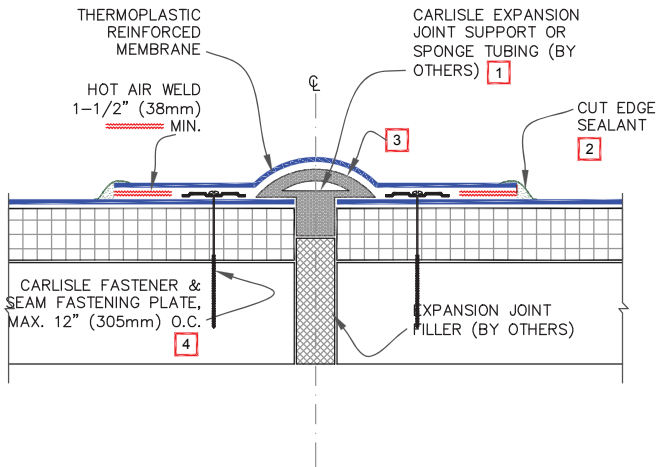
DIMENSIONS		mm	
(A)	2-1/4"	57	MIN.

NOTES:

- 1. WHEN USING 60 OR 80-MIL MEMBRANE, APPLY A 4-1/2" (114mm) DIAMETER "T-JOINT" COVER AT ALL FIELD SPLICE INTERSECTIONS.
- 2. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.



<div><div></div><div>→ THERMOPLASTIC REINFORCED MEMBRANE</div></div> <div><div></div><div>→ APPROVED INSULATION</div></div> <div><div>0</div><div>→ SEE NOTE(S)</div></div>	<b>MEMBRANE SPLICE</b>	<div><div>TP</div><div>THERMOPLASTIC UNIVERSAL</div></div> <div>DETAIL NO. <b>U-2</b></div>
	For additional information, refer to Specifications	



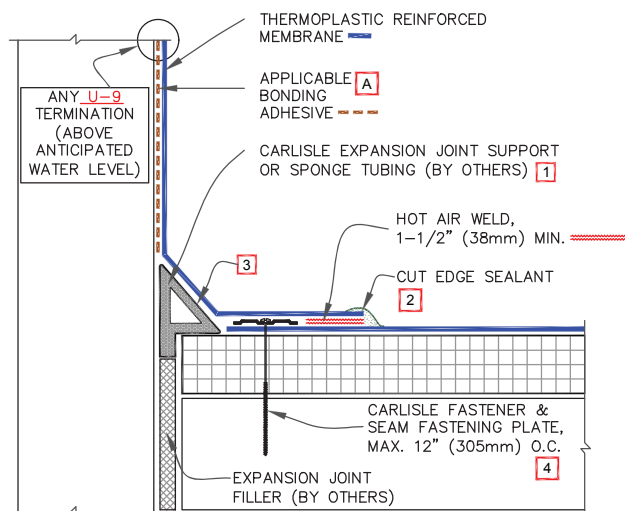
**NOTES:**

1. WHEN CARLISLE EXPANSION JOINT SUPPORT IS USED, WIDTH OF JOINT SHALL BE A MINIMUM OF 3/4" (19mm) AND SHALL NOT EXCEED 3" (75mm).
2. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
3. MEMBRANE FLASHING SHALL NOT BE ADHERED OVER THE EXPANSION JOINT SUPPORT OR SPONGE TUBING.
4. ON MECHANICALLY FASTENED SYSTEMS, HP-X FASTENERS AND PIRANHA PLATES OR HP-XTRA FASTENERS AND PIRANHA XTRA PLATES ARE REQUIRED OVER STEEL AND WOOD DECKS. ON CONCRETE DECKS, CD-10 OR HD 14-10 FASTENERS ARE USED WITH PIRANHA PLATES.

<p>— THERMOPLASTIC REINFORCED MEMBRANE</p> <p>— APPROVED INSULATION</p> <p>— SEE NOTE(S)</p>	<p><b>DECK-TO-DECK EXPANSION DETAIL</b></p> <p>For additional information, refer to Specifications</p>	<p>DETAIL NO.</p> <p><b>U-3A</b></p> <p>THERMOPLASTIC UNIVERSAL</p>
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CAUTION

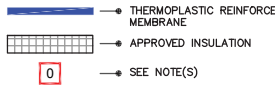
WHEN A WARRANTY WIND SPEED GREATER THAN 90MPH IS SPECIFIED, CARLISLE FASTENERS AND SEAM FASTENING PLATES SHALL NOT EXCEED 6" (152mm) ON CENTER FOR ADHERED MEMBRANE ASSEMBLIES.



**TPO MEMBRANE ONLY**  
 USE OF CAV-GRIP ADHESIVE  
 MAY ALSO BE USED FOR UP  
 TO 20 YEAR WARRANTY

## NOTES:

1. WHEN CARLISLE EXPANSION JOINT SUPPORT IS USED, WIDTH OF JOINT SHALL BE A MINIMUM OF 3/4" (19mm) AND SHALL NOT EXCEED 2" (51mm).
2. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
3. MEMBRANE FLASHING SHALL NOT BE ADHERED OVER THE EXPANSION JOINT SUPPORT OR SPONGE TUBING.
4. ON MECHANICALLY FASTENED SYSTEMS, HP-X FASTENERS AND PIRANHA PLATES OR HP-XTRA FASTENERS AND PIRANHA XTRA PLATES ARE REQUIRED OVER STEEL AND WOOD DECKS. ON CONCRETE DECKS, CD-10 OR HD 14-10 FASTENERS ARE USED WITH PIRANHA PLATES.

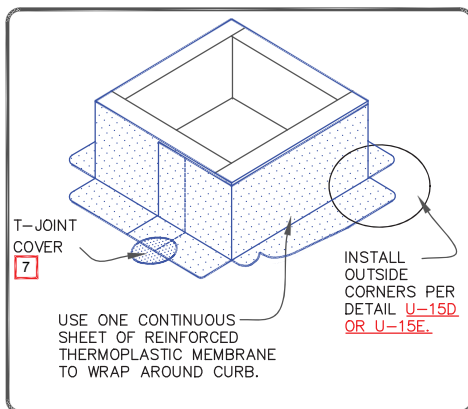
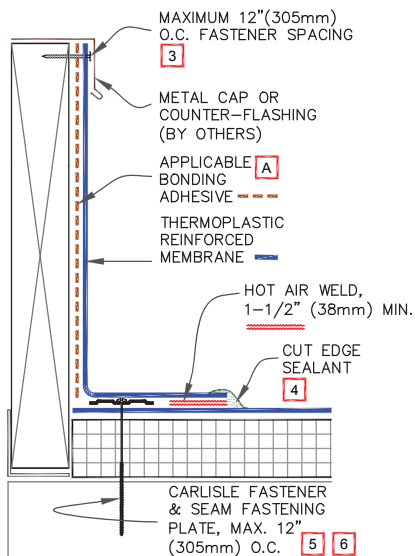
 <p>— THERMOPLASTIC REINFORCED MEMBRANE</p> <p>— APPROVED INSULATION</p> <p>— SEE NOTE(S)</p>	<p><b>DECK-TO-WALL EXPANSION DETAIL</b></p> <p>For additional information, refer to Specifications</p>	<p>DETAIL NO.</p> <p><b>U-3B</b></p> <p>THERMOPLASTIC UNIVERSAL</p>
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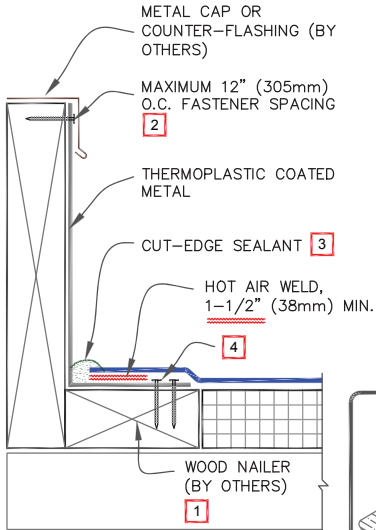
## NOTES:

1. WHEN USING TPO MEMBRANE, BONDING ADHESIVE IS **NOT** REQUIRED WHEN THE FLASHING HEIGHT IS 12" (305mm) OR LESS AND THE MEMBRANE IS FASTENED "AS SHOWN" ON TOP OF THE CURB. WHEN CARLISLE TERMINATION BAR IS USED BENEATH THE COUNTER-FLASHING, BONDING ADHESIVE CAN BE ELIMINATED WHEN THE MEMBRANE HEIGHT IS 18" (457mm) OR LESS.
2. APPLICABLE BONDING ADHESIVE FOR PVC OR TPO. IN CASE OF TPO, CAV-GRIP ADHESIVE MAY ALSO BE USED ON VERTICAL PORTION.
3. WHEN MECHANICAL FASTENERS ARE USED TO PENETRATE THE METAL COUNTER-FLASHING, USE EPDM WASHERS, APPLY WATER CUT-OFF MASTIC UNDER THE COUNTER-FLASHING OR CAULK THE FASTENER HEADS.
4. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
5. REFER TO CARLISLE SPECIFICATIONS FOR ACCEPTABLE CARLISLE FASTENERS AND PLATES.
6. MECHANICAL SECUREMENT MAY BE INSTALLED INTO THE VERTICAL SUBSTRATE.
7. WHEN USING 60 OR 80 MIL (1.52mm OR 2.03mm) THICK CURB FLASHING, THE INTERSECTIONS BETWEEN SPLICES MUST OVERLAP WITH A THERMOPLASTIC "T-JOINT" COVER.

**TPO MEMBRANE ONLY**  
 USE OF CAV-GRIP ADHESIVE  
 MAY ALSO BE USED FOR UP  
 TO 20 YEAR WARRANTY



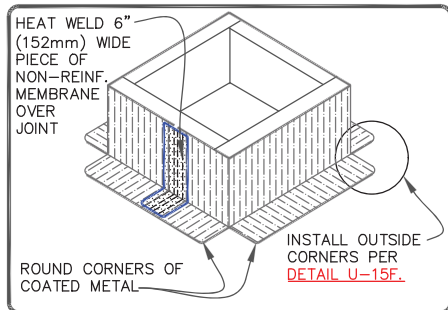
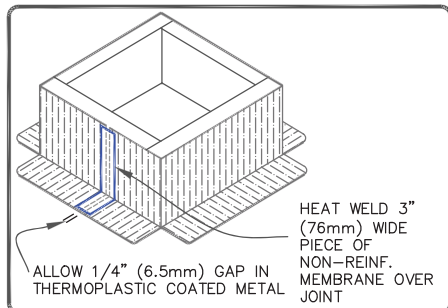
<p>— THERMOPLASTIC REINFORCED MEMBRANE</p> <p>— APPROVED INSULATION</p> <p><b>O</b> — SEE NOTE(S)</p>	<p><b>CURB FLASHING</b></p> <p>For additional information, refer to Specifications</p>	<p>DETAIL NO.</p> <p><b>U-5A</b></p> <p>THERMOPLASTIC UNIVERSAL</p>
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APPLICABLE BONDING ADHESIVE FOR PVC OR TPO. IN CASE OF TPO, CAV-GRIP ADHESIVE MAY ALSO BE USED ON VERTICAL PORTION.

## NOTES:

1. WOOD NAILER MUST EXTEND PAST TOTAL WIDTH OF COATED METAL DECK FLANGE.
2. WHEN MECHANICAL FASTENERS ARE USED TO PENETRATE THE METAL COUNTER-FLASHING, USE EPDM WASHERS, APPLY WATER CUT-OFF MASTIC UNDER COUNTER-FLASHING OR CAULK THE FASTENER HEAD.
3. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
4. FASTEN COATED METAL USING 1-1/2" (38mm) MIN. RING SHANK NAILS AT 6" (152mm) STAGGERED APPROX. 1/2" (13mm).



	— THERMOPLASTIC REINFORCED MEMBRANE
	— APPROVED INSULATION
<b>0</b>	— SEE NOTE(S)

## COATED METAL CURB FLASHING

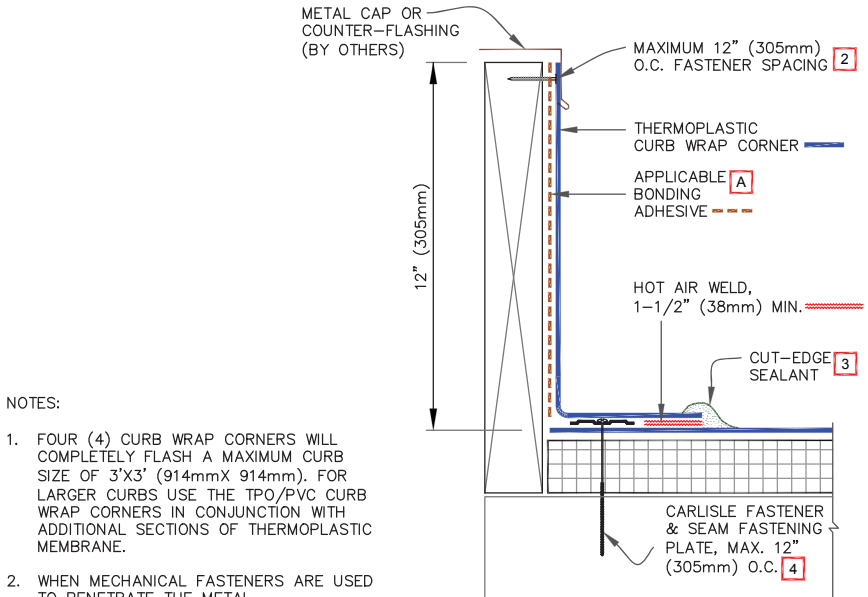
For additional information, refer to Specifications



DETAIL NO.

**U-5B**

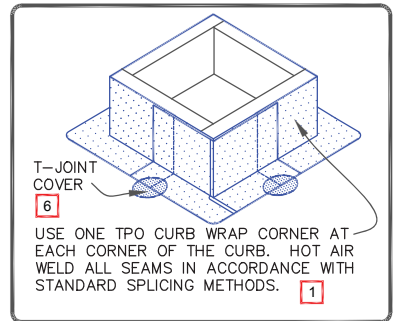
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## NOTES:

- FOUR (4) CURB WRAP CORNERS WILL COMPLETELY FLASH A MAXIMUM CURB SIZE OF 3'X3' (914mmX 914mm). FOR LARGER CURBS USE THE TPO/PVC CURB WRAP CORNERS IN CONJUNCTION WITH ADDITIONAL SECTIONS OF THERMOPLASTIC MEMBRANE.
- WHEN MECHANICAL FASTENERS ARE USED TO PENETRATE THE METAL COUNTER-FLASHING, USE EPDM WASHERS, APPLY WATER CUT-OFF MASTIC UNDER COUNTER-FLASHING OR CAULK FASTENER HEAD.
- APPROXIMATELY 1/8" (3mm) BEAD OF CUT-EDGE SEALANT IS REQUIRED ON THE CUT EDGES OF THE TPO/PVC FIELD WRAP CORNER.
- REFER TO CARLISLE SPECIFICATIONS FOR ACCEPTABLE CARLISLE FASTENERS AND PLATES.
- CUSTOM SIZES ARE AVAILABLE FOR CURB FLASHING HEIGHTS GREATER THAN 12" (305mm).
- IF THE PRE-FABRICATED CURB WRAP IS A "CFA" LABELED PART, NO "T-JOINT" COVERS ARE REQUIRED. SEE [INSET 1](#).
- APPLICABLE BONDING ADHESIVE FOR PVC OR TPO. IN CASE OF TPO, CAV-GRIP ADHESIVE MAY ALSO BE USED ON VERTICAL PORTION.

**TPO MEMBRANE ONLY**  
 [A] USE OF CAV-GRIP ADHESIVE  
 MAY ALSO BE USED FOR UP  
 TO 20 YEAR WARRANTY



	— THERMOPLASTIC REINFORCED MEMBRANE
	— APPROVED INSULATION
[0]	— SEE NOTE(S)

### PRE-FABRICATED SURE-WELD TPO OR SURE-FLEX PVC CURB WRAP CORNERS

For additional information, refer to Specifications

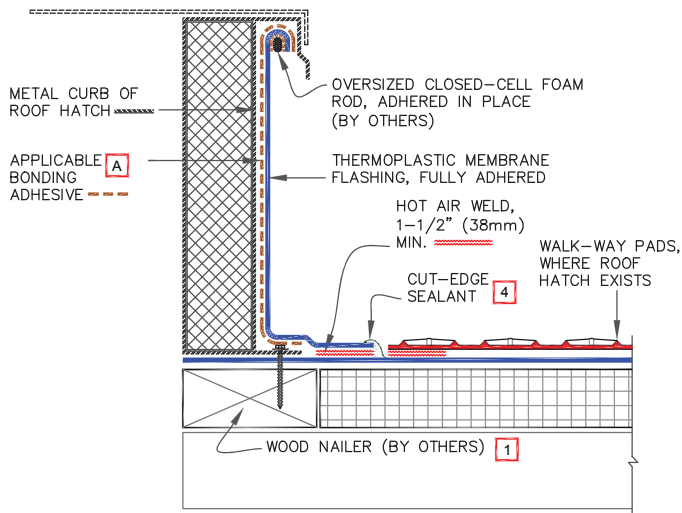


DETAIL NO.

U-5C

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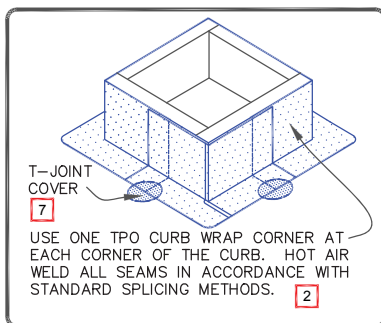




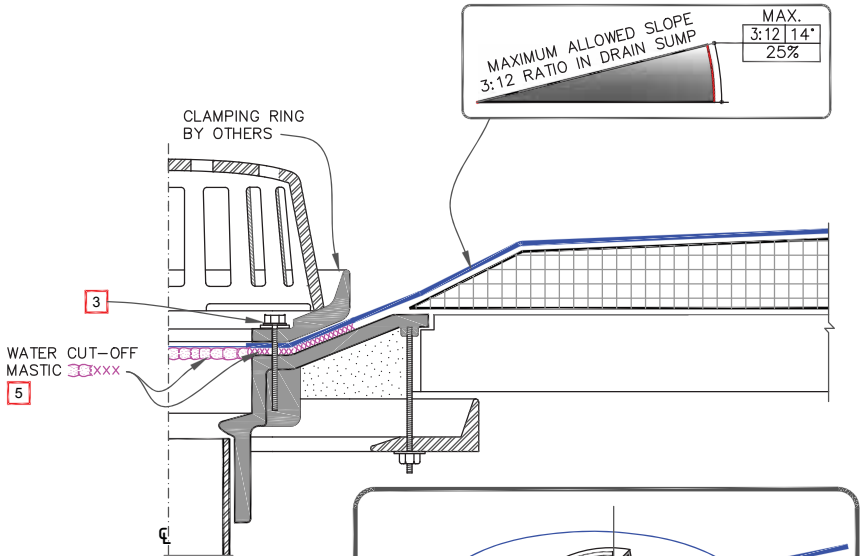
## NOTES:

- WOOD NAILER MUST EXTEND PAST TOTAL WIDTH OF CURB FLANGE.
- FOUR (4) CURB WRAP CORNERS WILL COMPLETELY FLASH A MAXIMUM CURB SIZE OF 3'X3' (914mmX 914mm). FOR LARGER CURBS USE THE TPO CURB WRAP CORNERS IN CONJUNCTION WITH ADDITIONAL SECTIONS OF SURE-WELD TPO MEMBRANE.
- IF CURB WRAP CORNER IS NOT USED, THEN USE U-15G DETAIL FOR OUTSIDE CORNERS.
- APPROXIMATELY 1/8" (3mm) BEAD OF CUT-EDGE SEALANT IS REQUIRED ON THE CUT EDGES OF THE TPO FIELD WRAP CORNER.
- REFER TO CARLISLE SPECIFICATIONS FOR ACCEPTABLE CARLISLE FASTENERS AND PLATES.
- CUSTOM SIZES ARE AVAILABLE FOR CURB FLASHING HEIGHTS GREATER THAN 12" (305mm).
- IF THE PRE-FABRICATED TPO CURB WRAP IS A "CFA" LABELED PART, NO "T-JOINT" COVERS ARE REQUIRED.
- APPLICABLE BONDING ADHESIVE FOR PVC OR TPO. IN CASE OF TPO, CAV-GRIP ADHESIVE MAY ALSO BE USED ON VERTICAL PORTION.

**TPO MEMBRANE ONLY**  
 (A) USE OF CAV-GRIP ADHESIVE  
 MAY ALSO BE USED FOR UP  
 TO 20 YEAR WARRANTY

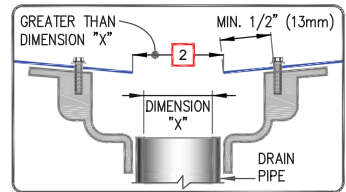
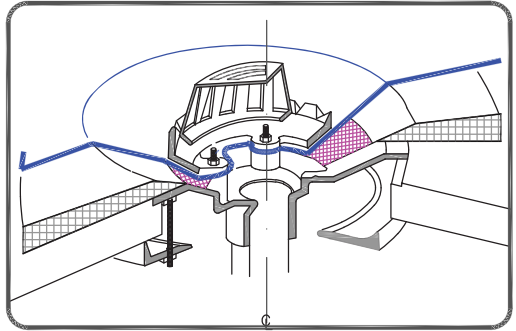


	<b>SELF-FLASHING CURB</b>  For additional information, refer to Specifications	DETAIL NO. <b>U-5D</b> THERMOPLASTIC UNIVERSAL



## NOTES:

1. ROOF DRAIN SIZE AND NUMBER OF DRAINS SHALL BE IN ACCORDANCE WITH THE LOCAL CODES.
2. THE HOLE IN THE MEMBRANE SHALL EXCEED THE DIAMETER OF THE DRAIN PIPE, BUT SHALL BE NO LESS THAN 1/2" (13mm) FROM THE ATTACHMENT POINTS OF THE DRAIN CLAMPING RING.
3. ALL BOLTS OR CLAMPS MUST BE IN PLACE TO PROVIDE CONSTANT COMPRESSION ON WATER CUT-OFF MASTIC.
4. REMOVE EXISTING LEAD, FLASHING MATERIAL & ENSURE THE DRAIN RING IS COMPLETELY CLEAN DOWN TO BARE METAL.
5. USE ONE FULL TUBE OF WATER CUT-OFF MASTIC FOR EACH DRAIN, COVERING THE ENTIRE DRAIN BOWL & UNDER THE DRAIN RING.



	— THERMOPLASTIC REINFORCED MEMBRANE
	— APPROVED INSULATION
	— SEE NOTE(S)

**ROOF DRAIN (DRAIN SUMP UP TO 3 INCHES TO 1 HORIZONTAL FOOT)**

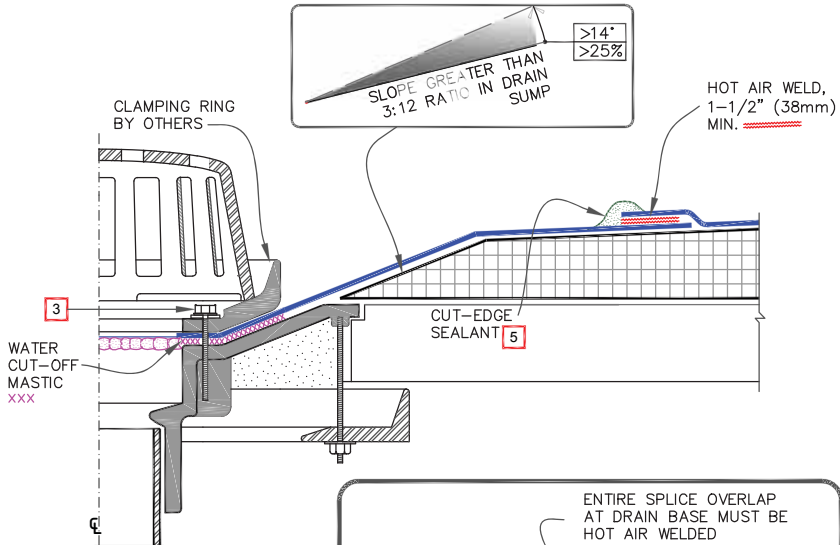
For additional information, refer to Specifications



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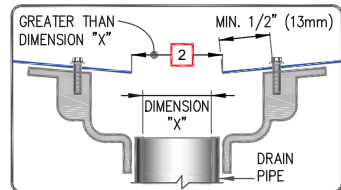
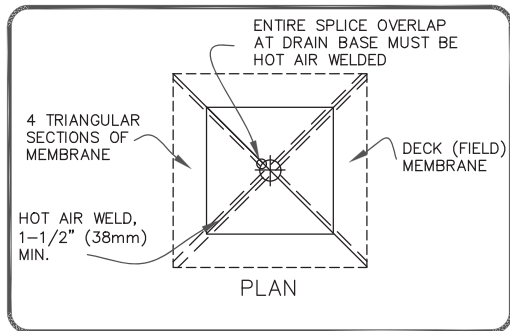
**U-6A**

THERMOPLASTIC UNIVERSAL



## NOTES:

1. ROOF DRAIN SIZE AND NUMBER OF DRAINS SHALL BE IN ACCORDANCE WITH THE LOCAL CODES.
2. THE HOLE IN THE MEMBRANE SHALL EXCEED THE DIAMETER OF THE DRAIN PIPE, BUT SHALL BE NO LESS THAN 1/2" (13mm) FROM THE ATTACHMENT POINTS OF THE DRAIN CLAMPING RING.
3. ALL BOLTS OR CLAMPS MUST BE IN PLACE TO PROVIDE CONSTANT COMPRESSION ON WATER CUT-OFF MASTIC.
4. REMOVE EXISTING LEAD, FLASHING MATERIAL & ENSURE THE DRAIN RING IS COMPLETELY CLEAN DOWN TO BARE METAL.
5. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.



	→ THERMOPLASTIC REINFORCED MEMBRANE
	→ APPROVED INSULATION
	→ SEE NOTE(S)

**ROOF DRAIN (DRAIN SUMP GREATER THAN 3 INCHES TO 1 HORIZONTAL FOOT) - OPTION 1**

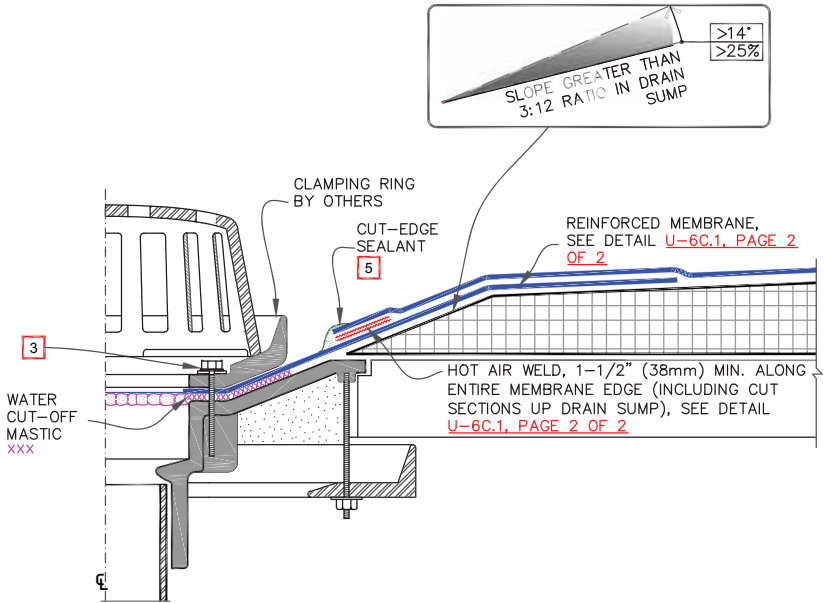
For additional information, refer to Specifications



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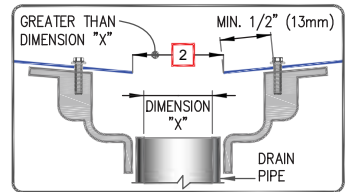
U-6B

THERMOPLASTIC UNIVERSAL



## NOTES:

1. ROOF DRAIN SIZE AND NUMBER OF DRAINS SHALL BE IN ACCORDANCE WITH THE LOCAL CODES.
2. THE HOLE IN THE MEMBRANE SHALL EXCEED THE DIAMETER OF THE DRAIN PIPE, BUT SHALL BE NO LESS THAN 1/2" (13mm) FROM THE ATTACHMENT POINTS OF THE DRAIN CLAMPING RING.
3. ALL BOLTS OR CLAMPS MUST BE IN PLACE TO PROVIDE CONSTANT COMPRESSION ON WATER CUT-OFF MASTIC.
4. REMOVE EXISTING LEAD, FLASHING MATERIAL & ENSURE THE DRAIN RING IS COMPLETELY CLEAN DOWN TO BARE METAL.
5. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.



	→ THERMOPLASTIC REINFORCED MEMBRANE
	→ APPROVED INSULATION
[0]	→ SEE NOTE(S)

**ROOF DRAIN (DRAIN SUMP GREATER THAN 3 INCHES TO 1 HORIZONTAL FOOT) - OPTION 2, PAGE 1 OF 2**

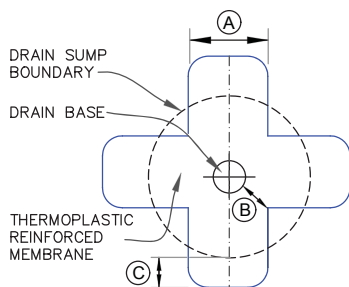
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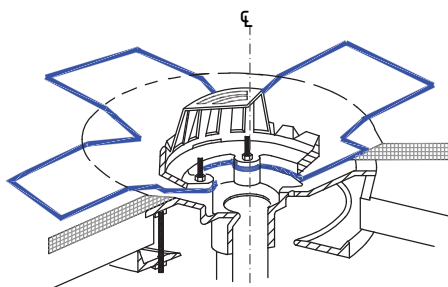
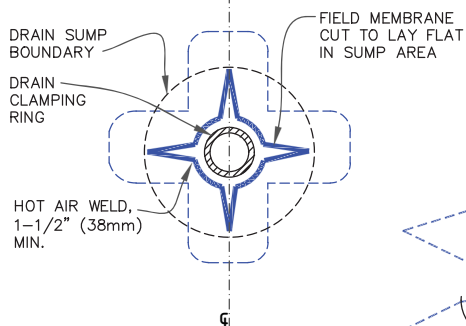
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U-6C

THERMOPLASTIC UNIVERSAL

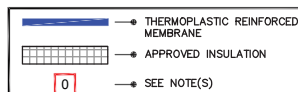
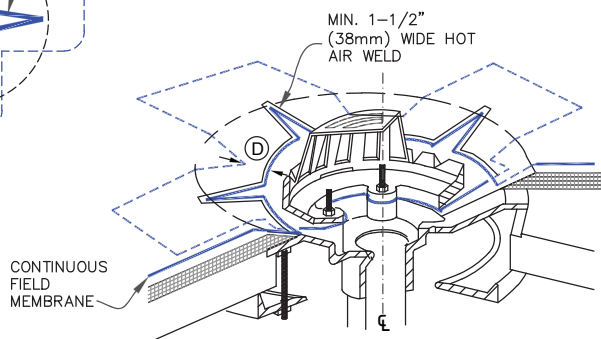


CUT SECTION OF THERMOPLASTIC REINFORCED MEMBRANE AS SHOWN AND POSITION INTO DRAIN SUMP. EXTEND MEMBRANE OUT OF DRAIN SUMP APPROXIMATELY 6" (152mm) (ROUND CORNERS).



EXTEND THERMOPLASTIC MEMBRANE ONTO MEMBRANE SECTION POSITIONED AT DRAIN SUMP AND CUT AS SHOWN TO LAY FLAT IN SUMP. HOT AIR WELD A MINIMUM OF 1-1/2" (38mm) COMPLETELY SURROUNDING AREA.

DIMENSIONS		mm	
(A)	12"	305	MIN.
(B)	6"	152	MIN.
(C)	6"	152	APPROX.
(D)	3"	76	MIN.



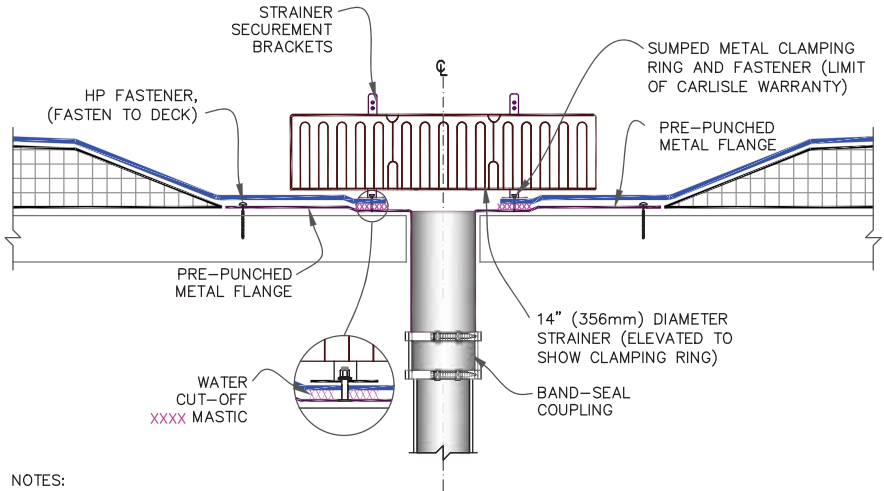
**ROOF DRAIN (DRAIN SUMP GREATER THAN 3 INCHES TO 1 HORIZONTAL FOOT) - OPTION 2, PAGE 2 OF 2**

For additional information, refer to Specifications



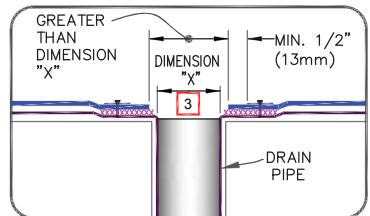
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**U-6C.1**

THERMOPLASTIC UNIVERSAL

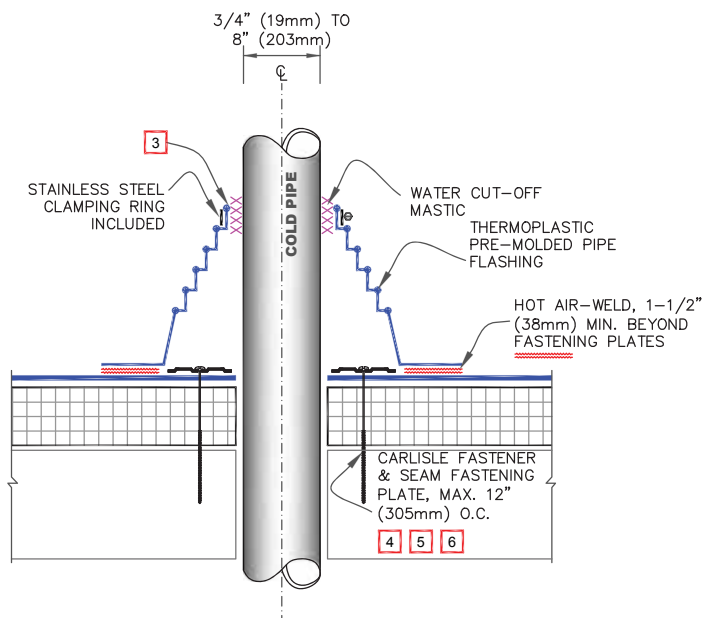


**NOTES:**

1. ROOF DRAIN SIZE AND NUMBER OF DRAINS SHALL BE IN ACCORDANCE WITH THE LOCAL CODES.
2. ALL BOLTS OR CLAMPS MUST BE IN PLACE TO PROVIDE CONSTANT COMPRESSION ON WATER CUT-OFF MASTIC.
3. THE HOLE IN THE MEMBRANE SHALL EXCEED THE DIAMETER OF THE DRAIN PIPE, BUT SHALL BE NO LESS THAN 1/2" (13mm) FROM THE ATTACHMENT POINTS OF THE DRAIN CLAMPING RING.
4. FIELD SPLICES MUST BE LOCATED AT LEAST 6" (152mm) OUTSIDE THE DRAIN SUMP.
5. INSULATION TAPER SHALL NOT BE GREATER THAN 2" (51mm) IN 12" (305mm) HORIZONTAL.



<p>  THERMOPLASTIC REINFORCED MEMBRANE   APPROVED INSULATION   SEE NOTE(S)         </p>	<p><b>ADD-ON DRAIN</b></p> <p>For additional information, refer to Specifications</p>	<p> </p> <p>DETAIL NO. <b>U-6D</b></p> <p>THERMOPLASTIC UNIVERSAL</p>
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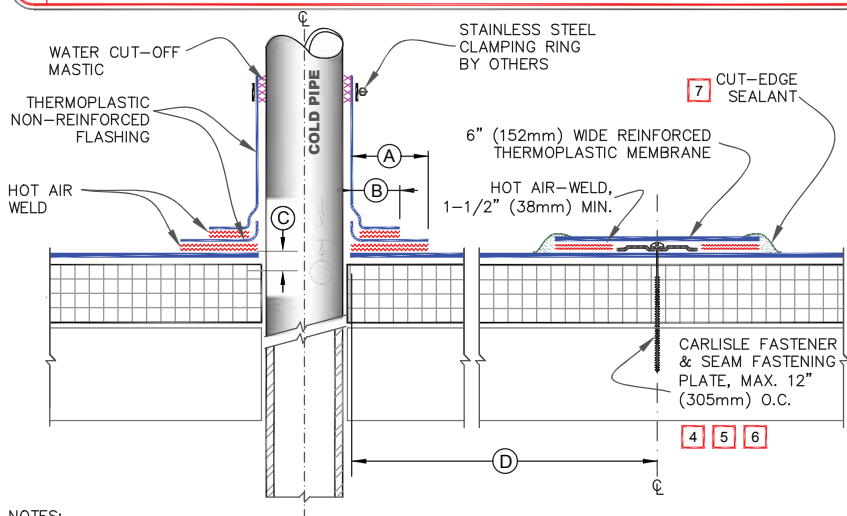
## NOTES:

1. REMOVE ALL EXISTING LEAD AND FLASHING MATERIAL BEFORE INSTALLING PRE-MOLDED PIPE FLASHING.
2. TEMPERATURE OF THE PIPE PENETRATION MUST NOT EXCEED 140°F (60°C) WHEN USING PVC AND 160°F (71°C) WHEN USING TPO FLASHING.
3. PIPE SEAL MUST HAVE INTACT RIB AT TOP EDGE, REGARDLESS OF PIPE DIAMETER.
4. INSTALL A MINIMUM OF 4 FASTENERS AND PLATES AROUND THE PIPE, EQUALLY SPACED. IF FASTENERS AND PLATES CANNOT BE INSTALLED AS SHOWN, THEY MAY ALSO BE POSITIONED OUTSIDE THE PIPE MAXIMUM 12" (305mm) O.C. AND FLASHED WITH THERMOPLASTIC REINFORCED MEMBRANE/CUT-EDGE SEALANT. REFER TO [DETAIL U-8B](#).
5. FASTENERS AND PLATES ARE NOT REQUIRED ON ADHERED SYSTEMS UNLESS PIPE DIAMETER EXCEEDS 18" (457mm).
6. ON MECHANICALLY FASTENED SYSTEMS, HP-X FASTENERS AND PIRANHA PLATES OR HP-XTRA FASTENERS AND PIRANHA XTRA PLATES ARE REQUIRED OVER STEEL AND WOOD DECKS. ON CONCRETE DECKS, CD-10 OR HD 14-10 FASTENERS ARE USED WITH PIRANHA PLATES.

	<b>PRE-MOLDED PIPE FLASHING</b>  For additional information, refer to Specifications	DETAIL NO. <b>U-8A</b> THERMOPLASTIC UNIVERSAL

CAUTION

DETAIL NOT FOR USE ON 25 OR 30-YEAR WARRANTY PROJECTS, PRE-FABRICATED/PRE-MOLDED ACCESSORIES MUST BE UTILIZED. ACCEPTABLE PIPE FLASHINGS SHALL CONFORM WITH THERMOPLASTIC UNIVERSAL DETAILS U-8A, 8C OR 8D.



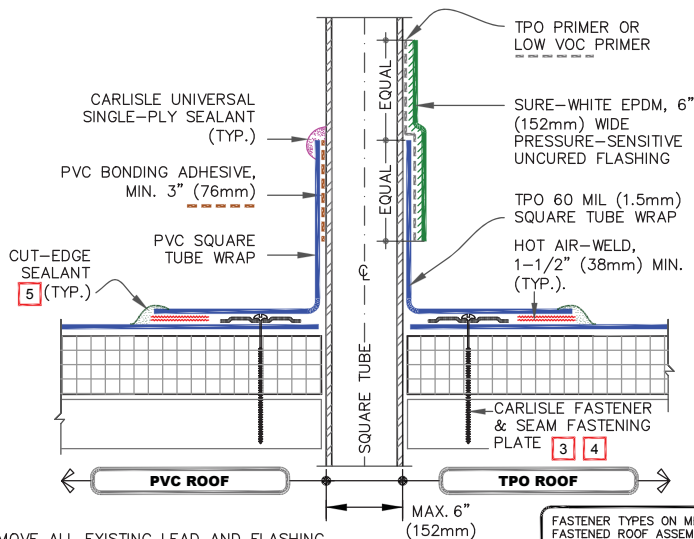
## NOTES:

1. REMOVE ALL EXISTING LEAD AND FLASHING MATERIAL BEFORE INSTALLING FIELD FABRICATED PIPE FLASHING.
2. TEMPERATURE OF THE PIPE PENETRATION MUST NOT EXCEED 140°F (60°C) WHEN USING PVC AND 160°F (71°C) WHEN USING TPO FLASHING.
3. THERMOPLASTIC NON-REINFORCED FLASHING WRAPPED AROUND PIPE SHALL HAVE MINIMUM 1-1/2" (38mm) VERTICAL HOT AIR WELD.
4. INSTALL A MINIMUM OF 4 SEAM FASTENING PLATES FOR PIPES WITH A DIAMETER UP TO 6" (152mm). ADDITIONAL SEAM FASTENING PLATES WILL BE REQUIRED FOR PIPES GREATER THAN 6" (152mm) IN DIAMETER AND SHALL BE SPACED 12" (305mm) ON CENTER MAXIMUM.
5. FASTENERS/PLATES ARE NOT REQUIRED ON ADHERED SYSTEMS UNLESS PIPE DIAMETER EXCEEDS 18" (500mm).
6. ON MECHANICALLY FASTENED SYSTEMS, HP-X FASTENERS AND PIRANHA PLATES OR HP-XTRA FASTENERS AND PIRANHA XTRA PLATES ARE REQUIRED OVER STEEL AND WOOD DECKS. ON CONCRETE DECKS, CD-10 OR HD 14-10 FASTENERS ARE USED WITH PIRANHA PLATES.
7. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.

DIMENSIONS	mm	
(A)	1-1/2"	38 TO
	2"	51
(B)	1"	25 MIN.
(C)	1/2"	13 MIN.
(D)	12"	305 APPROX.

	<b>FIELD FABRICATED PIPE FLASHING</b> For additional information, refer to Specifications		DETAIL NO. <b>U-8B</b> THERMOPLASTIC UNIVERSAL
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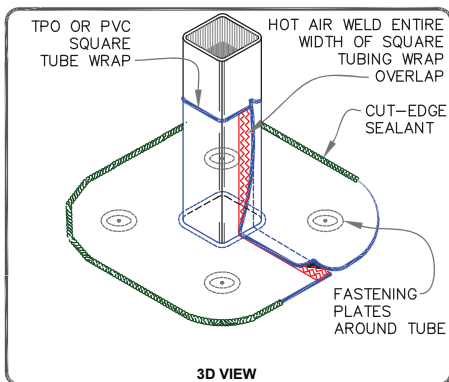


## NOTES:

1. REMOVE ALL EXISTING LEAD AND FLASHING MATERIAL BEFORE INSTALLING PRE-FABRICATED SQUARE TUBE WRAP.
2. TEMPERATURE OF THE PIPE PENETRATION MUST NOT EXCEED 140°F (60°C) WHEN USING PVC AND 160°F (71°C) WHEN USING TPO FLASHING.
3. INSTALL A MINIMUM OF 4 SEAM FASTENING PLATES FOR TUBE SIDE DIMENSIONS UP TO 6" (152mm).
4. FASTENERS AND PLATES ARE NOT REQUIRED ON ADHERED SYSTEM. SEE TABLE FOR MF SYSTEM.
5. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
6. REGARDLESS OF THE FIELD MEMBRANE THICKNESS, THERMOPLASTIC "T-JOINT" COVERS ARE REQUIRED OVER THE SPLICE INTERSECTIONS OF THE SPLIT PIPE SEAL. IF PRE-FABRICATED SPLIT PIPE SEAL IS A "CFA" (CERTIFIED FABRICATED ACCESSORY) LABELED PART, NO "T-JOINT" COVERS ARE REQUIRED.

## FASTENER TYPES ON MECHANICALLY FASTENED ROOF ASSEMBLY

DECK TYPE	FASTENERS	PLATES
STEEL & WOOD DECK	HP-X	PIRANHA
	OR	
	HP-XTRA	PIRANHA XTRA
CONCRETE DECK	CD-10 OR HD 14-10	PIRANHA



	→ THERMOPLASTIC REINFORCED MEMBRANE
	→ APPROVED INSULATION
	→ SEE NOTE(S)

## PRE-FABRICATED SQUARE TUBE WRAP

For additional information, refer to Specifications

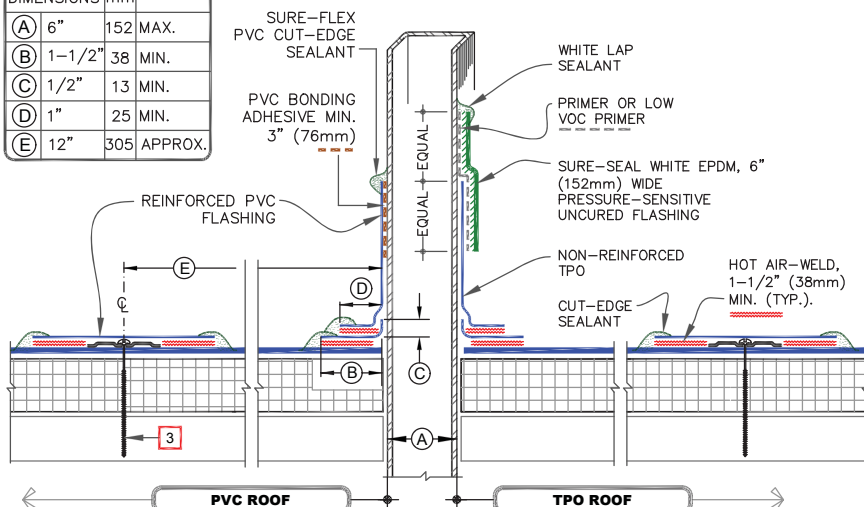


DETAIL NO.

U-8C

THERMOPLASTIC UNIVERSAL

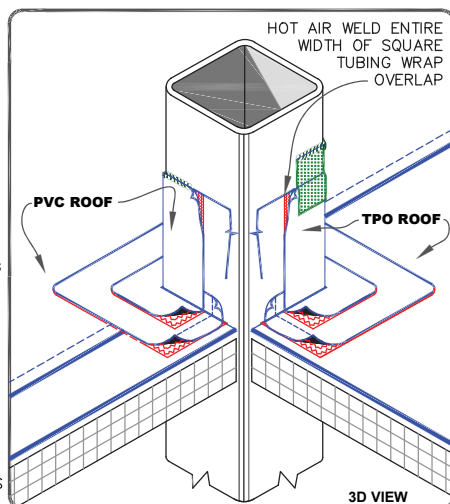
DIMENSIONS	mm	
(A)	6"	152 MAX.
(B)	1-1/2"	38 MIN.
(C)	1/2"	13 MIN.
(D)	1"	25 MIN.
(E)	12"	305 APPROX.



FASTENER TYPES ON MECHANICALLY FASTENED ROOF ASSEMBLY		
DECK TYPE	FASTENERS	PLATES
STEEL & WOOD DECK	HP-X	PIRANHA
	OR	
	HP-XTRA	PIRANHA XTRA
CONCRETE DECK	CD-10 OR HD 14-10	PIRANHA

## NOTES:

1. REMOVE ALL EXISTING LEAD AND FLASHING MATERIAL BEFORE INSTALLING PRE-FABRICATED SQUARE TUBE WRAP.
2. TEMPERATURE OF THE TUBE PENETRATION MUST NOT EXCEED 140°F (60°C) WHEN USING PVC AND 160°F (71°C) WHEN USING TPO FLASHING.
3. CARLISLE FASTENERS & SEAM FASTENING PLATES FOR MECHANICALLY FASTENED SYSTEM (NOT REQUIRED ON ADHERED SYSTEM). SEE TABLE ABOVE.
4. REGARDLESS OF THE FIELD MEMBRANE THICKNESS, THERMOPLASTIC "T-JOINT" COVERS ARE REQUIRED OVER THE SPLICE INTERSECTIONS OF THE SPLIT PIPE SEAL. IF PRE-FABRICATED SPLIT PIPE SEAL IS A "CFA" LABELED PART, NO "T-JOINT" COVERS ARE REQUIRED.

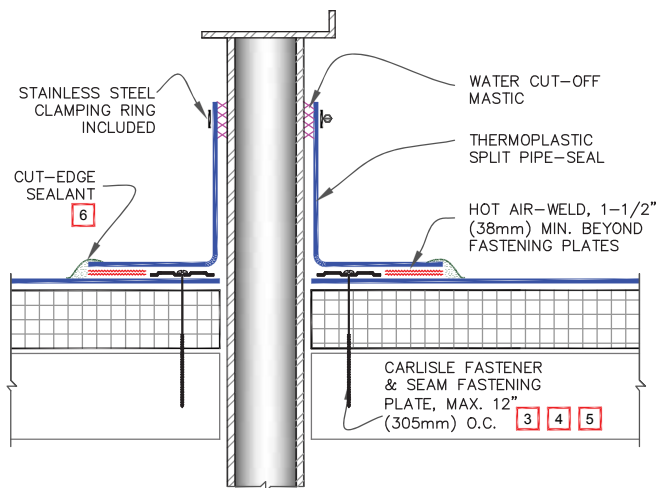


	— THERMOPLASTIC REINFORCED MEMBRANE
	— APPROVED INSULATION
	— SEE NOTE(S)

**FIELD-FABRICATED SQUARE TUBE FLASHING**

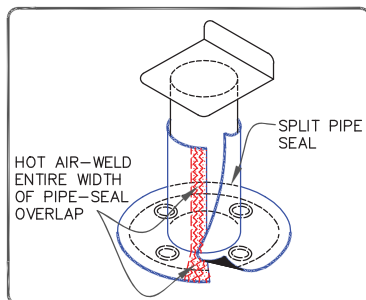
For additional information, refer to Specifications

	DETAIL NO.
	U-8D
THERMOPLASTIC UNIVERSAL	



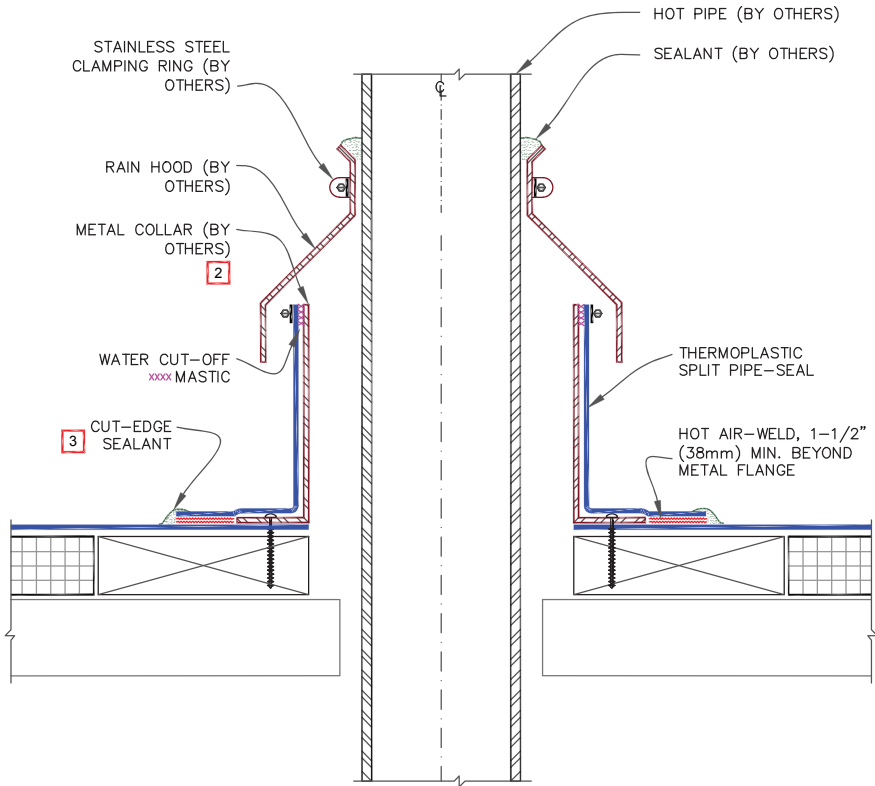
## NOTES:

1. REMOVE ALL EXISTING LEAD AND FLASHING MATERIAL BEFORE INSTALLING SPLIT PIPE FLASHING.
2. TEMPERATURE OF THE PIPE PENETRATION MUST NOT EXCEED 140°F (60°C) WHEN USING PVC AND 160°F (71°C) WHEN USING TPO.
3. INSTALL A MINIMUM OF 4 FASTENERS AND PLATES AROUND THE PIPE, EQUALLY SPACED. IF FASTENERS AND PLATES CANNOT BE INSTALLED AS SHOWN, THEY MAY ALSO BE POSITIONED OUTSIDE THE PIPE MAXIMUM 12" (305mm) O.C. AND FLASHED WITH THERMOPLASTIC REINFORCED MEMBRANE/CUT-EDGE SEALANT. REFER TO [DETAIL U-8B](#).
4. FASTENERS AND PLATES ARE NOT REQUIRED ON ADHERED SYSTEMS UNLESS PIPE DIAMETER EXCEEDS 18" (457mm).
5. ON MECHANICALLY FASTENED SYSTEMS, HP-X FASTENERS AND PIRANHA PLATES OR HP-XTRA FASTENERS AND PIRANHA XTRA PLATES ARE REQUIRED OVER STEEL AND WOOD DECKS. ON CONCRETE DECKS, CD-10 OR HD 14-10 FASTENERS ARE USED WITH PIRANHA PLATES.
6. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
7. REGARDLESS OF THE FIELD MEMBRANE THICKNESS, THERMOPLASTIC "T-JOINT" COVERS ARE REQUIRED OVER THE SPLICE INTERSECTIONS OF THE SPLIT PIPE SEAL. IF PRE-FABRICATED SPLIT PIPE SEAL IS A "CFA" LABELED PART, NO "T-JOINT" COVERS ARE REQUIRED.



<p>  THERMOELASTIC REINFORCED MEMBRANE   APPROVED INSULATION   SEE NOTE(S) </p>	<p><b>PRE-FABRICATED SPLIT PIPE SEAL</b></p> <p>For additional information, refer to Specifications</p>	<p>DETAIL NO.</p> <p><b>U-8E</b></p> <p>THERMOPLASTIC UNIVERSAL</p>
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# **THERMOPLASTIC MEMBRANE** **PVC/TPO**



**NOTES:**

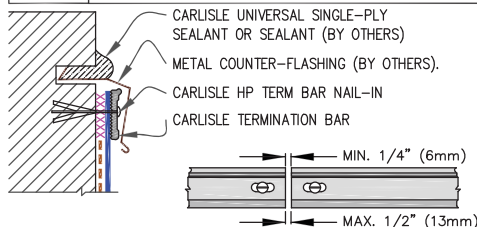
1. REMOVE ALL EXISTING LEAD AND FLASHING MATERIAL BEFORE INSTALLING PIPE FLASHING.
2. TEMPERATURE OF THE METAL COLLAR MUST NOT EXCEED 140°F (60°C) WHEN USING PVC AND 160°F (71°C) WHEN USING TPO.
3. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
4. REGARDLESS OF THE FIELD MEMBRANE THICKNESS, THERMOPLASTIC "T-JOINT" COVERS ARE REQUIRED OVER THE SPLICE INTERSECTIONS OF THE SPLIT PIPE SEAL. IF PRE-FABRICATED SPLIT PIPE SEAL IS A "CFA" LABELED PART, NO "T-JOINT" COVERS ARE REQUIRED.

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# THERMOPLASTIC MEMBRANE

# PVC/TPO

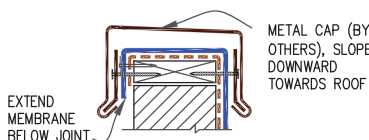
## 9A MECHANICAL TERMINATION WITH COUNTER FLASHING



### NOTES:

1. APPLY ON HARD SMOOTH SURFACE ONLY; NOT FOR USE ON EXPOSED WOOD.
2. DO NOT WRAP TERMINATION BAR AROUND CORNERS.
3. DETAIL REQUIRED FOR USE ON WARRANTY PROJECTS EXCEEDING 20-YEARS. MAY BE USED FOR ANY PROJECT REGARDLESS OF WARRANTY.

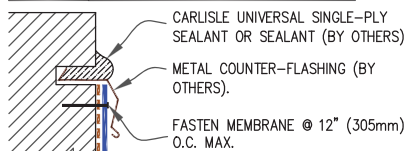
## 9B SHEET METAL COPING (BY OTHERS)



### NOTES:

1. FOR CARLISLE SecurEdge COPING, REFER TO INSTALLATION INSTRUCTIONS PUBLISHED SEPARATELY.
2. MEMBRANE MUST BE EXTENDED TO CORNERS TO PROVIDE COMPLETE COVERAGE OF THE TOP WALL SURFACE.

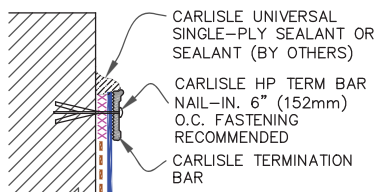
## 9C COUNTER FLASHING TERMINATION



### NOTES:

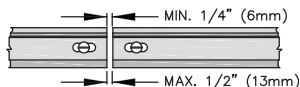
1. WHEN MECHANICAL FASTENERS ARE USED TO PENETRATE THE METAL COUNTER-FLASHING, USE EPDM WASHERS, APPLY WATER CUT-OFF MASTIC UNDER THE COUNTER-FLASHING OR CAULK THE FASTENER HEADS.
2. DETAIL NOT FOR USE ON WARRANTY PROJECTS EXCEEDING 10-YEARS.

## 9D MECHANICAL TERMINATION



### NOTES:

1. APPLY ON HARD SMOOTH SURFACE ONLY; NOT FOR USE ON EXPOSED WOOD.
2. DO NOT WRAP COMPRESSION TERMINATION BAR AROUND CORNERS.
3. DETAIL NOT FOR USE ON WARRANTY PROJECTS EXCEEDING 20-YEARS.



APPLICABLE BONDING ADHESIVE. USE OF CAV-GRIP MAY ALSO BE USED FOR UP TO 20 YEAR WARRANTY

xxx WATER CUT-OFF MASTIC- MUST BE HELD UNDER CONSTANT COMPRESSION.

	→ THERMOPLASTIC REINFORCED MEMBRANE
	→ APPROVED INSULATION
	→ SEE NOTE(S)

## MEMBRANE TERMINATIONS PAGE 1 OF 2

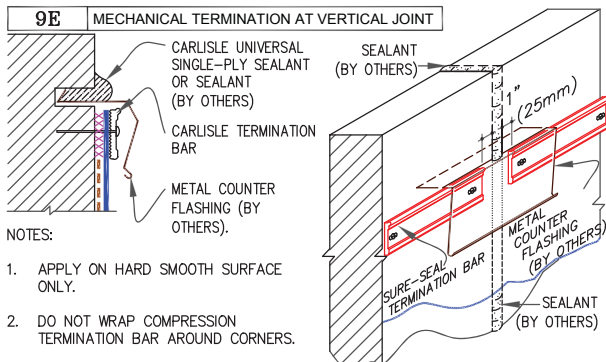
For additional information, refer to Specifications



DETAIL NO.

U-9

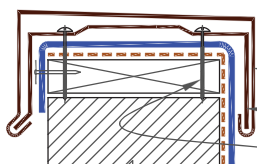
THERMOPLASTIC UNIVERSAL

**9E MECHANICAL TERMINATION AT VERTICAL JOINT**

3. VERTICAL JOINTS IN THE PRE-CAST PANEL AS WELL AS ALL GAPS AT THE JUNCTION OF THE TILT-UP PANEL AND ROOF DECK MUST BE FULLY SEALED TO PREVENT AIR INFILTRATION.
4. CONTINUOUS COUNTER FLASHING REQUIRED FOR WARRANTY PROJECTS EXCEEDING 20-YEARS.
5. DETAIL REQUIRED FOR USE ON WARRANTY PROJECTS EXCEEDING 20-YEARS. THIS DETAIL MAY BE USED FOR ANY PROJECT REGARDLESS OF WARRANTY.

**9F SecurEDGE COPING****OPTION 1**

SecurEDGE 300



NOTES:

1. MEMBRANE MUST BE EXTENDED AT CORNERS TO PROVIDE COMPLETE COVERAGE OF THE TOP WALL SURFACE. REFER TO [DETAIL U-9B](#).
2. REFER TO [SecurEdge COPING INSTALLATION INSTRUCTION](#) MANUAL FOR STEP-BY-STEP INSTRUCTION PROCEDURES.

**COPING**

20 GA. GALVANIZED ANCHOR CLIPS @ 6 FEET (1829mm) O.C.

CONCEALED SPLICE PLATE AT EACH JOINT OF COPING

FORMED COPING 10 FEET (3048mm) LENGTH

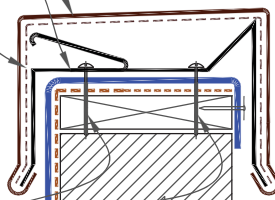
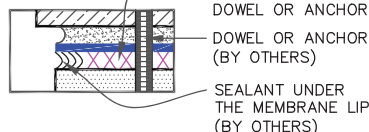
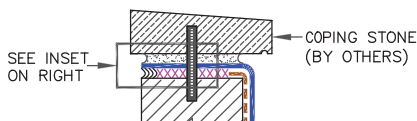
ANCHOR CLEAT

SURE-SEAL HP FASTENER

HEX-HEAD FASTENERS

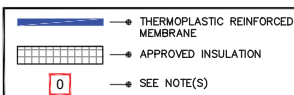
**OPTION 2**

SecurEDGE 200

**9G COPING STONE TERMINATION**

APPLICABLE BONDING ADHESIVE. USE OF CAV-GRIP MAY ALSO BE USED FOR UP TO 20 YEAR WARRANTY

xxx WATER CUT-OFF MASTIC- MUST BE HELD UNDER CONSTANT COMPRESSION.

**MEMBRANE TERMINATIONS  
PAGE 2 OF 2**

For additional information, refer to Specifications



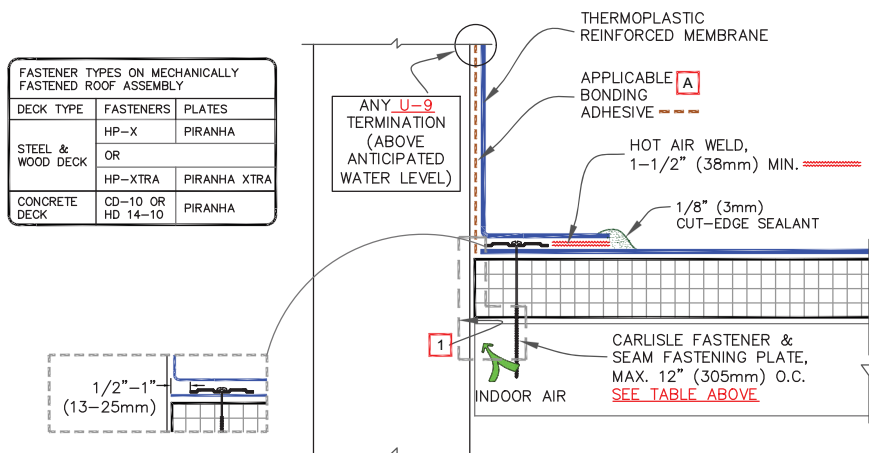
DETAIL NO.

U-9

THERMOPLASTIC UNIVERSAL

CAUTION

WHEN A WARRANTY WIND SPEED GREATER THAN 90MPH IS SPECIFIED, CARLISLE FASTENERS AND SEAM FASTENING PLATES SHALL NOT EXCEED 6" (152mm) ON CENTER FOR ADHERED MEMBRANE ASSEMBLIES.



## NOTES:

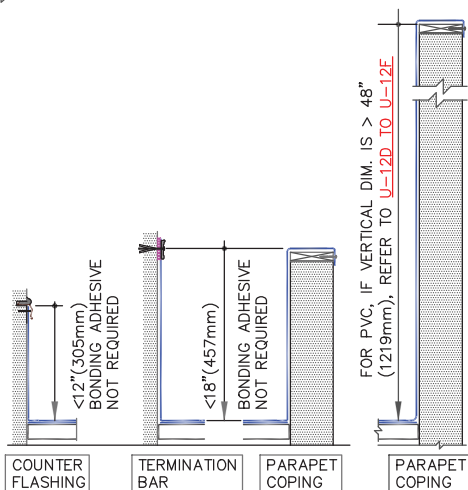
1. REFER TO SPEC SUPPLEMENTS:

- 1.1. TO BLOCK INDOOR AIR INFILTRATION AND HUMIDITY AT THE JUNCTION (G-01-11).
- 1.2. WHERE ROOF SYSTEM IS DESIGNED WITH A VAPOR RETARDER (G-08-11).

IN CASE WHERE FASTENERS MUST BE FASTENED INTO THE VERTICAL SURFACE, CARE MUST BE TAKEN TO CREASE THE MEMBRANE TIGHTLY INTO THE ANGLE CHANGE. PLACING THE PLATES TIGHT INTO THE ANGLE CHANGE WILL HELP HOLD THE MEMBRANE IN THE PROPER POSITION.

## TPO MEMBRANE ONLY

- A USE OF CAV-GRIP ADHESIVE MAY ALSO BE USED FOR UP TO 20 YEAR WARRANTY



	→ THERMOPLASTIC REINFORCED MEMBRANE
	→ APPROVED INSULATION
	→ SEE NOTE(S)

## PARAPET FLASHING - FASTENED INTO DECK

For additional information, refer to Specifications



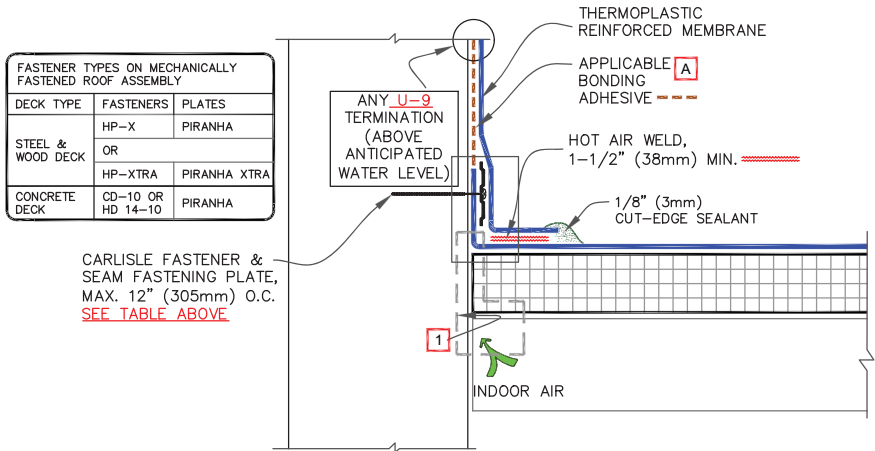
DETAIL NO.

U-12A

THERMOPLASTIC UNIVERSAL

CAUTION

WHEN A WARRANTY WIND SPEED GREATER THAN 90MPH IS SPECIFIED, CARLISLE FASTENERS AND SEAM FASTENING PLATES SHALL NOT EXCEED 6" (152mm) ON CENTER FOR ADHERED MEMBRANE ASSEMBLIES.

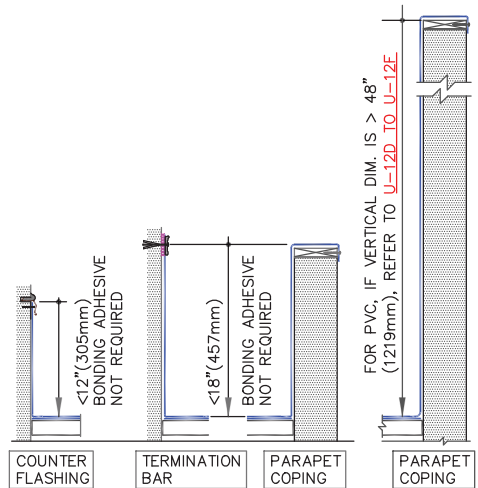




## NOTES:

1. REFER TO SPEC SUPPLEMENTS:
  - 1.1. TO BLOCK INDOOR AIR INFILTRATION AND HUMIDITY AT THE JUNCTION (G-01-11).
  - 1.2. WHERE ROOF SYSTEM IS DESIGNED WITH A VAPOR RETARDER (G-08-11).
2. CARE MUST BE TAKEN TO CREASE THE MEMBRANE TIGHTLY INTO THE ANGLE CHANGE. PLACING THE PLATES TIGHT INTO THE ANGLE CHANGE WILL HELP HOLD THE MEMBRANE IN THE PROPER POSITION.

## TPO MEMBRANE ONLY

- A USE OF CAV-GRIP ADHESIVE MAY ALSO BE USED FOR UP TO 20 YEAR WARRANTY



	→ THERMOPLASTIC REINFORCED MEMBRANE
	→ APPROVED INSULATION
<span style="border: 1px solid black; padding: 0 2px;">0</span>	→ SEE NOTE(S)

**PARAPET FLASHING - FASTENED INTO WALL**

For additional information, refer to Specifications



DETAIL NO.

**U-12A.1**

THERMOPLASTIC UNIVERSAL



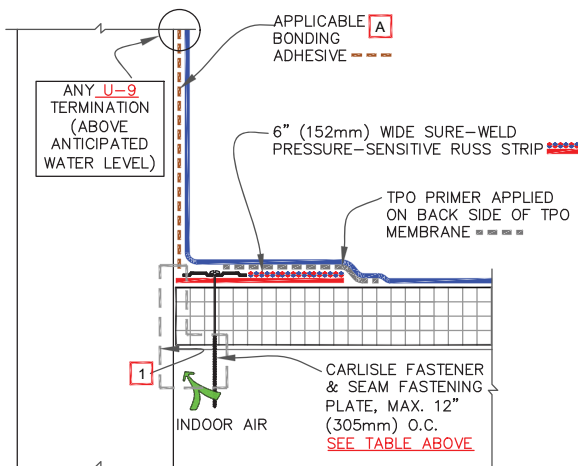
CAUTION

WHEN A WARRANTY WIND SPEED GREATER THAN 90MPH IS SPECIFIED, VERSICO FASTENERS AND SEAM FASTENING PLATES SHALL NOT EXCEED 6" (152mm) ON CENTER FOR ADHERED MEMBRANE ASSEMBLIES.

FASTENER TYPES ON MECHANICALLY FASTENED ROOF ASSEMBLY		
DECK TYPE	FASTENERS	PLATES
STEEL & WOOD DECK	HP-X	PIRANHA
	OR	
	HP-XTRA	PIRANHA XTRA
CONCRETE DECK	CD-10 OR HD 14-10	PIRANHA



NOTES:

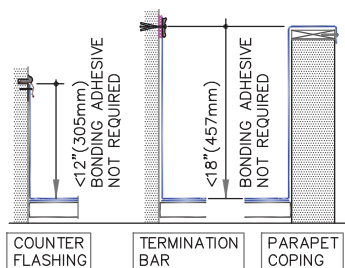
1. REFER TO SPEC. SUPPLEMENTS:

- 1.1. TO BLOCK INDOOR AIR INFILTRATION AND HUMIDITY AT THE JUNCTION (G-01-11).
- 1.2. WHERE ROOF SYSTEM IS DESIGNED WITH A VAPOR RETARDER (G-08-11).

2. FOR INSIDE CORNER AND RUSS APPLICATION SEE U-12B.1.

3. IN A CASE WHERE FASTENERS MUST BE FASTENED INTO THE VERTICAL SURFACE, CARE MUST BE TAKEN TO CREASE THE RUSS AS WELL AS THE MEMBRANE TIGHTLY INTO THE ANGLE CHANGE TO MAXIMIZE CONTACT BETWEEN THE TAPE AND MEMBRANE. MEMBRANE MUST BE ADHERED TO THE FULL WIDTH OF THE TAPE. PLACING THE PLATES TIGHT INTO THE ANGLE CHANGE WILL HELP HOLD THE RUSS IN THE PROPER POSITION.

**A** TPO MEMBRANE ONLY  
USE OF CAV-GRIP ADHESIVE  
MAY ALSO BE USED FOR UP  
TO 20 YEAR WARRANTY



	→ TPO MEMBRANE
	→ APPROVED SUBSTRATE
<b>0</b>	→ SEE NOTE(S)

**PARAPET FLASHING WITH  
PRESSURE-SENSITIVE  
RUSS, PAGE 1 OF 2**

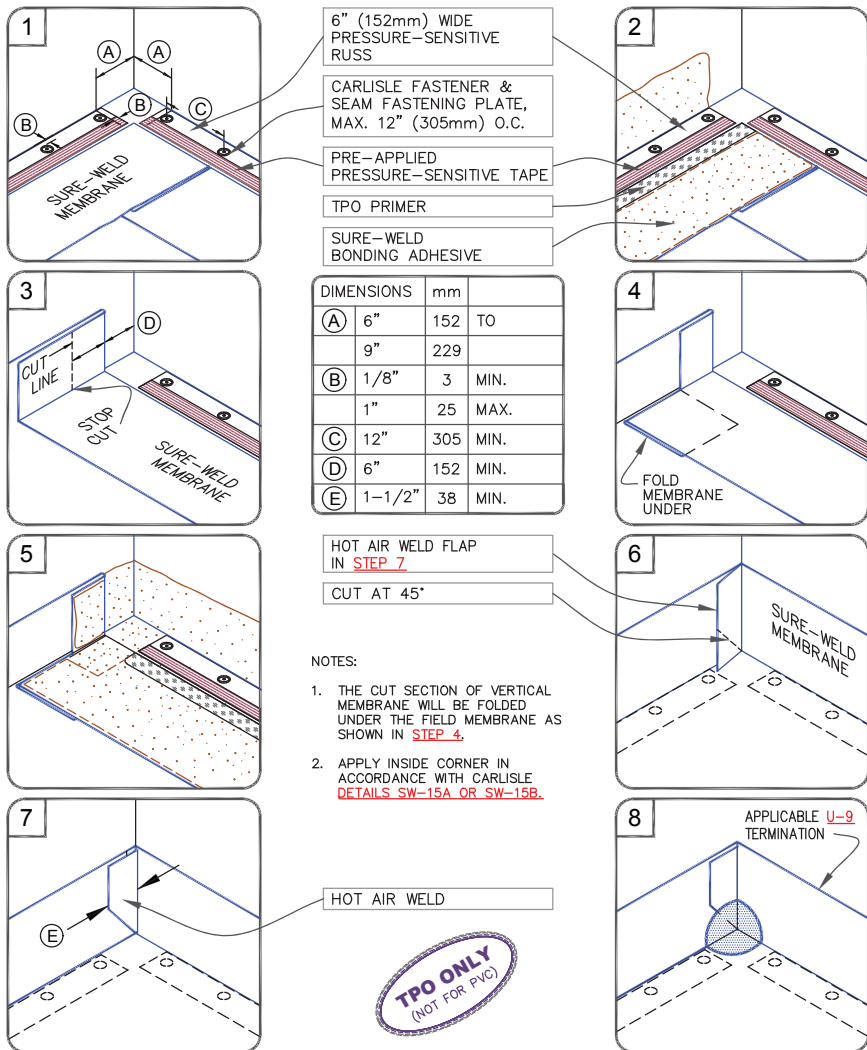
For additional information, refer to Specifications



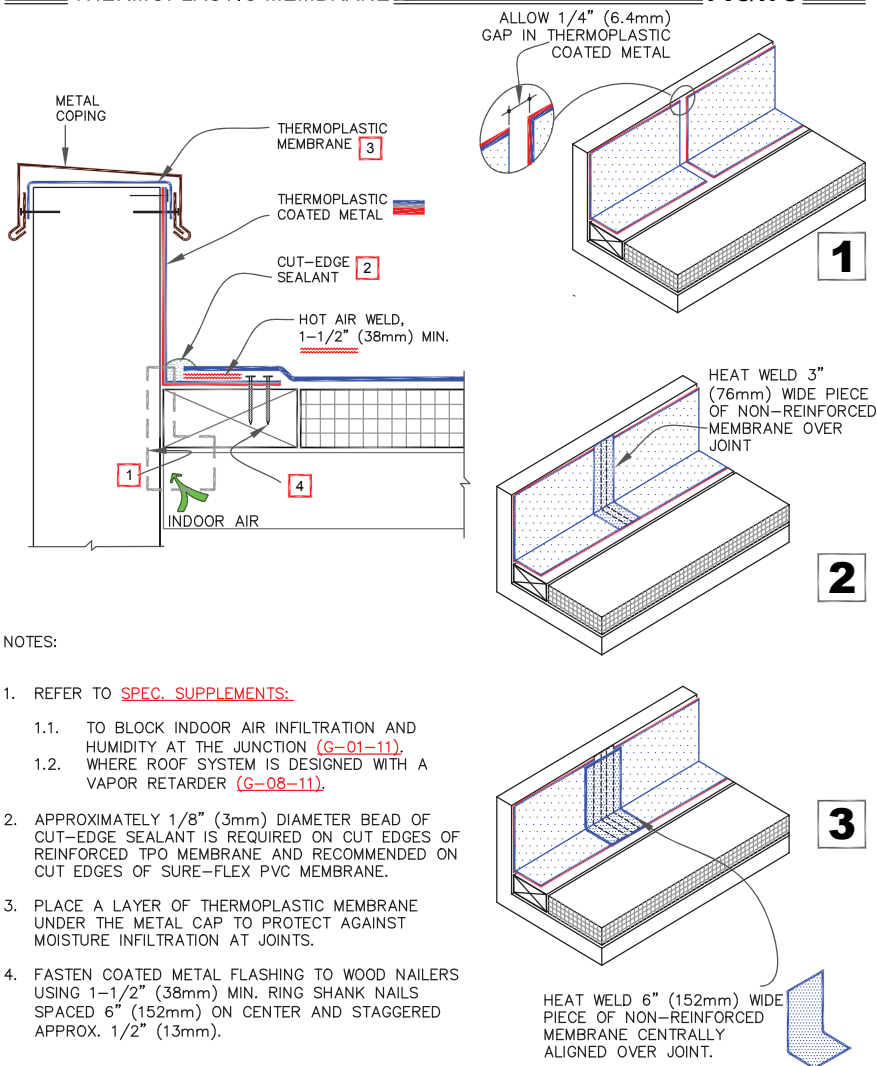
DETAIL NO.

**U-12B**

THERMOPLASTIC TPO



<p>— TPO MEMBRANE</p> <p>— APPROVED SUBSTRATE</p> <p>0 — SEE NOTE(S)</p>	<p><b>PARAPET FLASHING WITH PRESSURE-SENSITIVE RUSS- PAGE 2 OF 2</b></p> <p>For additional information, refer to Specifications</p>	<p>DETAIL NO. <b>U-12B.1</b></p> <p>THERMOPLASTIC TPO</p>
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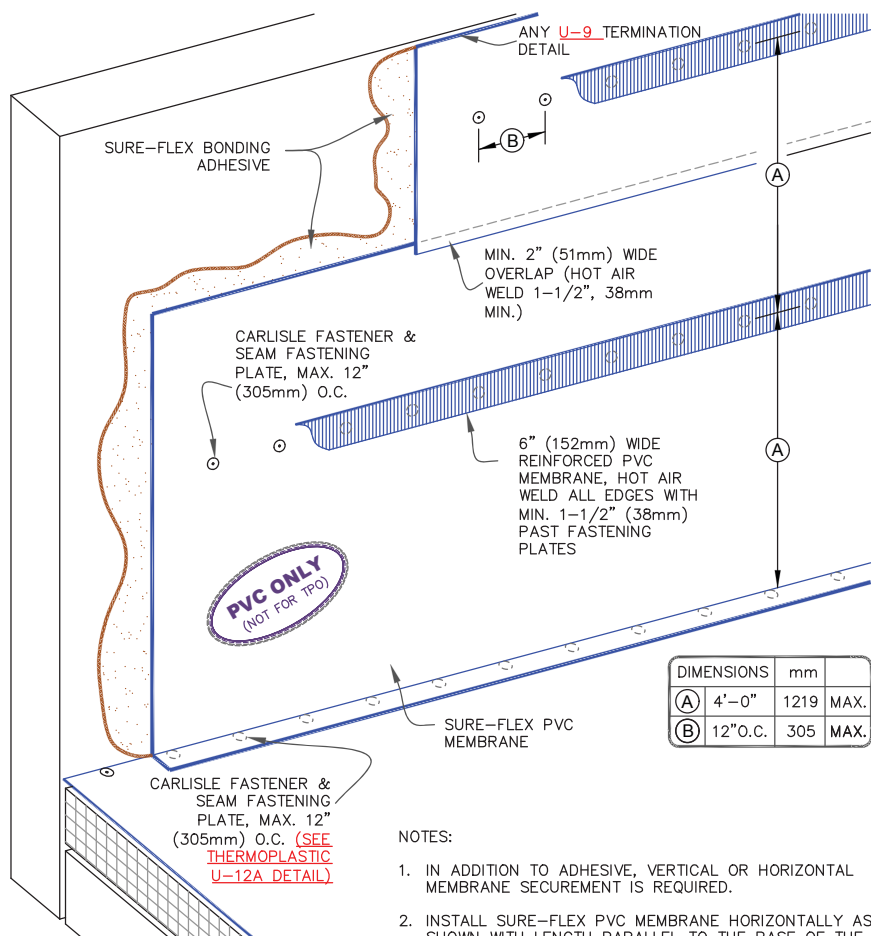


## NOTES:

1. REFER TO SPEC. SUPPLEMENTS:
  - 1.1. TO BLOCK INDOOR AIR INFILTRATION AND HUMIDITY AT THE JUNCTION (G-01-11).
  - 1.2. WHERE ROOF SYSTEM IS DESIGNED WITH A VAPOR RETARDER (G-08-11).
2. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
3. PLACE A LAYER OF THERMOPLASTIC MEMBRANE UNDER THE METAL CAP TO PROTECT AGAINST MOISTURE INFILTRATION AT JOINTS.
4. FASTEN COATED METAL FLASHING TO WOOD NAILERS USING 1-1/2" (38mm) MIN. RING SHANK NAILS SPACED 6" (152mm) ON CENTER AND STAGGERED APPROX. 1/2" (13mm).

<p>—●— THERMOPLASTIC REINFORCED MEMBRANE</p> <p>—■— APPROVED INSULATION</p> <p><b>0</b> — SEE NOTE(S)</p>	<p><b>COATED METAL WALL FLASHING</b></p> <p>For additional information, refer to Specifications</p>		<p>DETAIL NO.</p> <p><b>U-12C</b></p> <p>THERMOPLASTIC UNIVERSAL</p>
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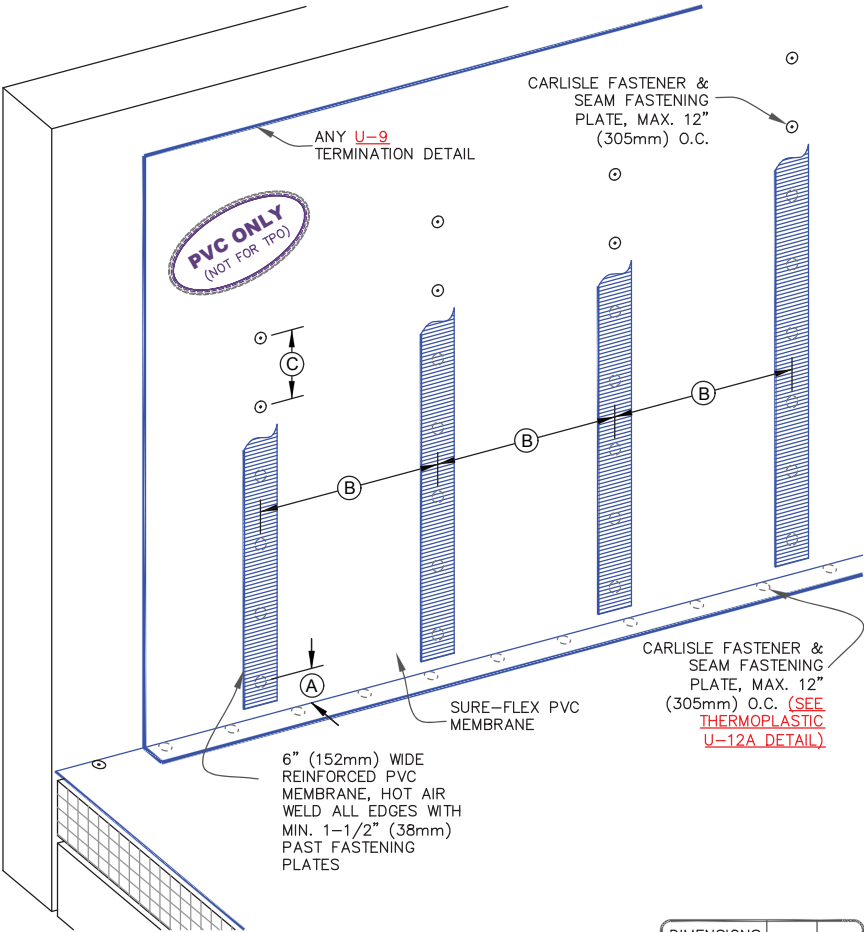




## NOTES:

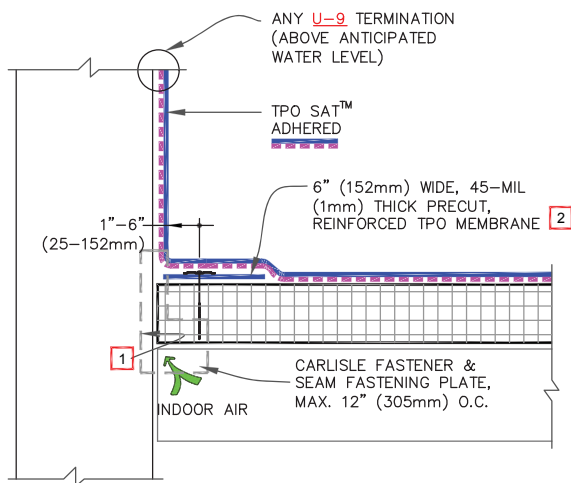
1. IN ADDITION TO ADHESIVE, VERTICAL OR HORIZONTAL MEMBRANE SECUREMENT IS REQUIRED.
2. INSTALL SURE-FLEX PVC MEMBRANE HORIZONTALLY AS SHOWN WITH LENGTH PARALLEL TO THE BASE OF THE WALL.
3. ADDITIONAL SECUREMENT IS NOT REQUIRED WHEN FLASHING TERMINATION IS 48" (1219mm) OR LESS.

 PVC MEMBRANE  APPROVED SUBSTRATE  SEE NOTE(S)	<b>PARAPET FLASHING &gt; 48" (1200mm)</b> <b>- HORIZONTAL SECUREMENT</b> For additional information, refer to Specifications		DETAIL NO. <b>U-12E</b> THERMOPLASTIC PVC
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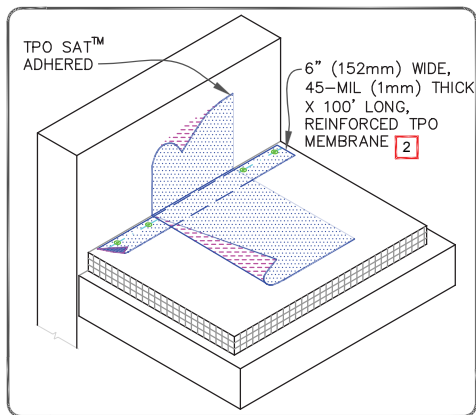
DIMENSIONS		mm	
(A)	6"	152	
(B)	32"	813	MAX.
(C)	12"	305	MAX.

<div><div></div>→ PVC MEMBRANE</div> <div><div></div>→ APPROVED SUBSTRATE</div> <div><div>0</div>→ SEE NOTE(S)</div>	<b>PARAPET FLASHING / NO ADHESION - ANY HEIGHT OPTION</b>	<div><div>TP</div></div> <div>DETAIL NO. <b>U-12F</b></div> <div>THERMOPLASTIC PVC</div>
	For additional information, refer to Specifications	

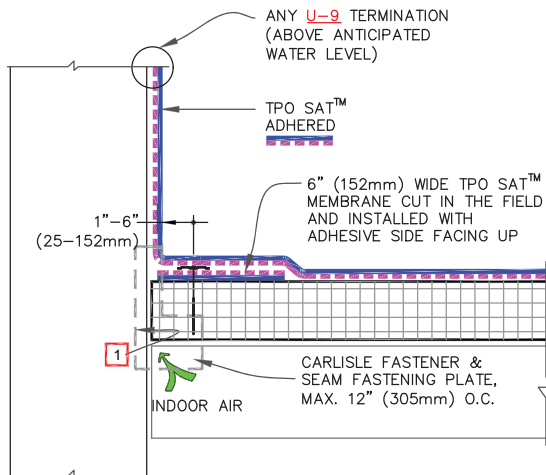


## NOTES:

1. REFER TO SPECIAL CONDITION SPEC. SUPPLEMENTS G-01-11 OR G-08-11: UTILIZE FOAM OR OTHER METHOD TO PREVENT INFILTRATION OF INDOOR AIR INTO ROOF SYSTEM.
2. THESE STRIPS ARE PRE-CUT IN THE FACTORY.

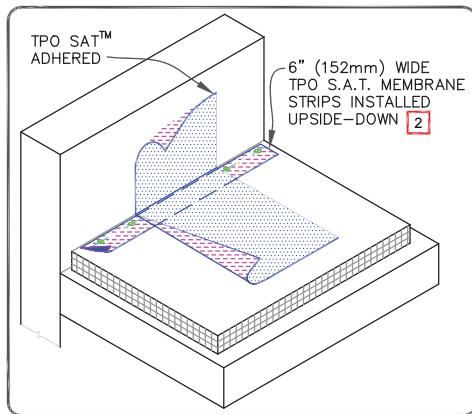


	<b>TPO SAT PARAPET FLASHING WITH TPO RUSS</b> SAT (SELF ADHERING TECHNOLOGY) For additional information, refer to Specifications	<div data-bbox="744 1274 819 1370"> </div> <div data-bbox="819 1274 936 1370"> DETAIL NO.  <b>U-12G</b>  THERMOPLASTIC TPO </div>
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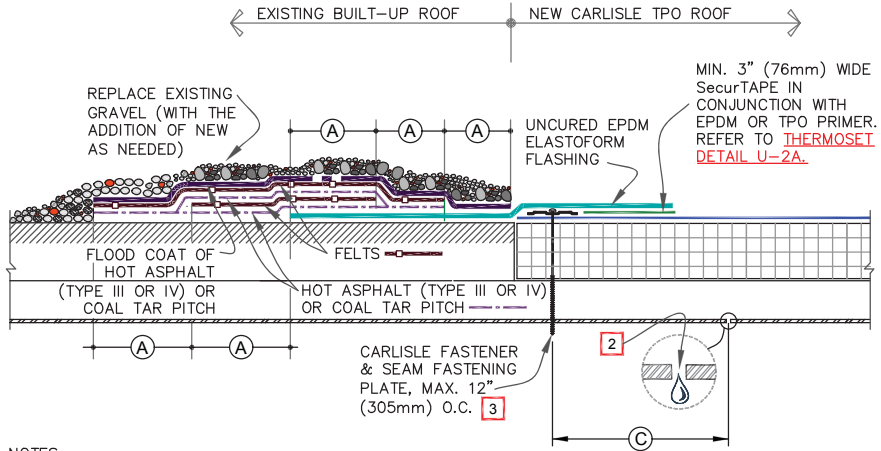
NOTES:

1. REFER TO SPECIAL CONDITION SPEC. SUPPLEMENTS G-01-11 OR G-08-11: UTILIZE FOAM OR OTHER METHOD TO PREVENT INFILTRATION OF INDOOR AIR INTO ROOF SYSTEM.
2. CONTRACTOR TO CUT SAT STRIPS IN THE FIELD.



<p>— SAT™ TPO MEMBRANE</p> <p>— APPROVED SUBSTRATE</p> <p>0 — SEE NOTE(S)</p>	<p><b>TPO SAT PARAPET FLASHING WITH TPO SAT RUSS</b></p> <p>SAT™ (SELF ADHERING TECHNOLOGY)</p> <p>For additional information, refer to Specifications</p>	<p>DETAIL NO.</p> <p><b>U-12H</b></p> <p>THERMOPLASTIC TPO</p>
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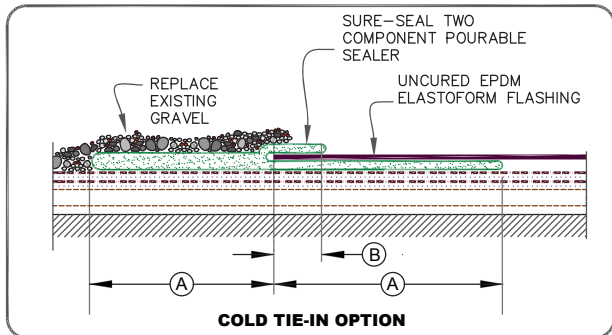




## NOTES:

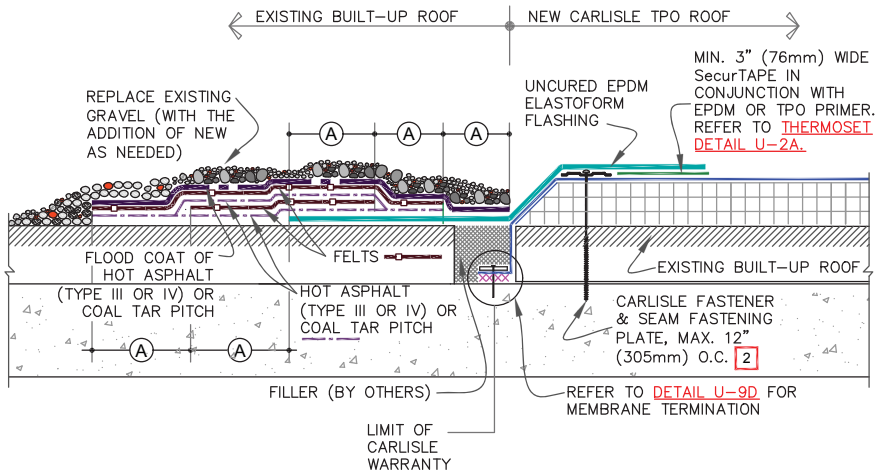
1. REMOVE ALL GRAVEL AT TIE-IN.
2. DRILL A 3/8" (10mm) DIAMETER WEEP HOLE INTO THE BOTTOM FLUTES OF THE STEEL DECK ALONG THE PERIMETER OF THE TIE-IN 6" (152mm) MINIMUM TO 12" (305mm) MAXIMUM FROM THE SEAM FASTENING PLATE.
3. ON MECHANICALLY FASTENED SYSTEMS, HP-X FASTENERS AND PIRANHA PLATES OR HP-XTRA FASTENERS AND PIRANHA XTRA PLATES ARE REQUIRED OVER STEEL DECKS.
4. IF WATER PONDS OR FLOWS OVER TIE-IN FROM BUR SURFACE, CARLISLE ROOFING SYSTEM MUST BE TOTALLY ISOLATED; SEE [DETAIL U-13B](#).

DIMENSIONS	mm	
(A)	6"	152 MIN.
(B)	2"	± 1/2" (13mm)
(C)	6"	152 TO
(D)	12"	305



TPO MEMBRANE APPROVED SUBSTRATE SEE NOTE(S)	<b>TPO TIE-IN TO BUILT-UP ROOFING OVER STEEL ROOF DECK</b> For additional information, refer to Specifications		DETAIL NO. <b>U-13A</b> THERMOPLASTIC TPO
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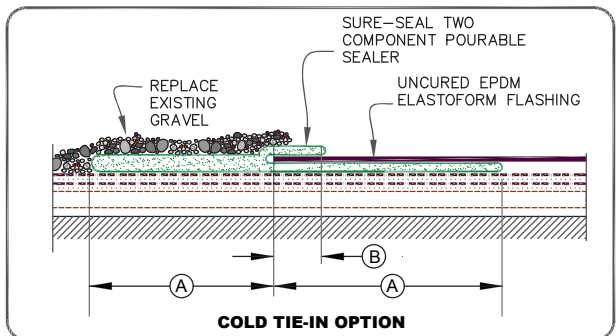
# **THERMOPLASTIC MEMBRANE** **TPO**



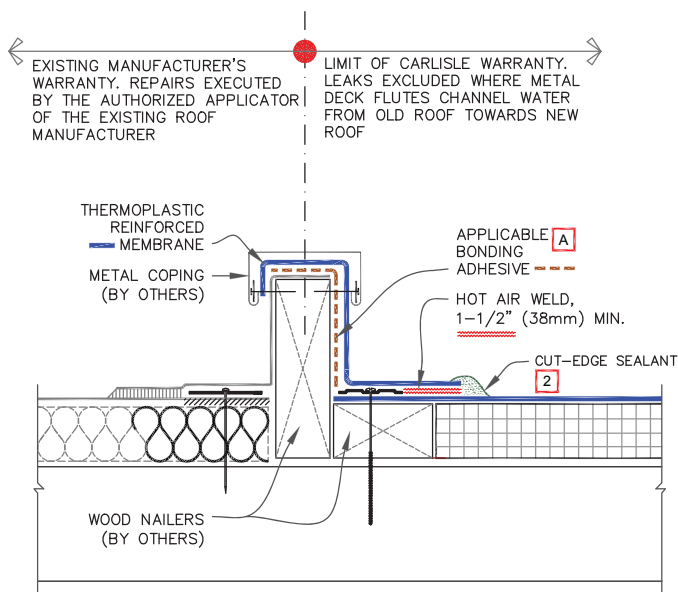
**NOTES:**

1. REMOVE ALL GRAVEL AT TIE-IN.
2. ON MECHANICALLY FASTENED SYSTEMS, CD-10 OR HD 14-10 FASTENERS AND PIRANHA PLATES ARE REQUIRED OVER CONCRETE DECKS.
3. WATER CUT-OFF MUST BE HELD UNDER CONSTANT COMPRESSION.
4. CARLISLE IS NOT RESPONSIBLE FOR DAMAGE TO THE BUILT-UP ROOF OR STRUCTURAL DECK RESULTING FROM PONDED WATER; THIS DETAIL APPLIES TO RE-ROOFING WHEN A TEAR-OFF IS NOT SPECIFIED AND WAS DESIGNED TO PREVENT MIGRATION OF WATER WITHIN THE ROOFING SYSTEM.

DIMENSIONS	mm	
(A)	6"	152 MIN.
(B)	2"	51 ± 1/2" (13mm)



<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 2px; background-color: blue; margin-right: 5px;"></div> <div>→ TPO MEMBRANE</div> </div> <div style="display: flex; align-items: center;"> <div style="width: 20px; height: 10px; border: 1px solid black; margin-right: 5px;"></div> <div>→ APPROVED SUBSTRATE</div> </div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid red; padding: 2px; margin-right: 5px;">0</div> <div>→ SEE NOTE(S)</div> </div>	<p><b>TPO TIE-IN TO BUILT-UP ROOFING OVER CONCRETE ROOF DECK</b></p> <p>For additional information, refer to Specifications</p>	<div style="display: flex; align-items: center;"> <div style="border: 1px solid red; padding: 5px; margin-right: 5px;"> <div style="font-size: 2em; font-weight: bold; text-align: center;">TP</div> </div> <div> <p>DETAIL NO.</p> <p style="font-size: 1.5em; font-weight: bold;">U-13B</p> <p>THERMOPLASTIC TPO</p> </div> </div>
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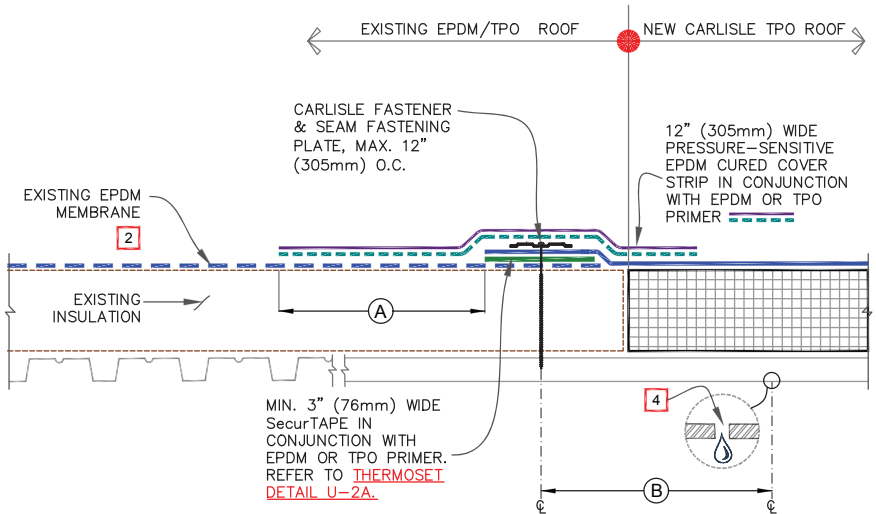
## NOTES:

1. POSITION MEMBRANE FASTENING PLATES 1/2" (13mm) TO 1" (25mm) FROM EDGE OF DECK MEMBRANE.
2. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
3. ENSURE THE LOCATION OF CURB WILL NOT IMPEDE THE FLOW OF WATER AT EXISTING ADJACENT ROOF.

**TPO MEMBRANE ONLY**  
**A** USE OF CAV-GRIP ADHESIVE MAY ALSO BE USED FOR UP TO 20 YEAR WARRANTY

	<b>TPO/PVC TIE-IN TO EXISTING SINGLE-PLY</b> For additional information, refer to Specifications		DETAIL NO. <b>U-13C</b> THERMOPLASTIC UNIVERSAL
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# THERMOPLASTIC MEMBRANE TPO



## NOTES:

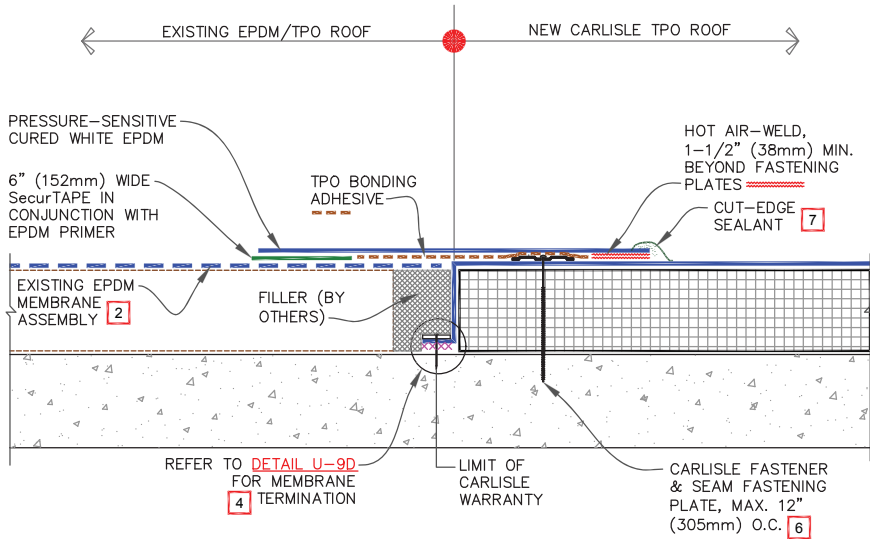
1. PRIOR TO SPlicing, CLEAN EXISTING EPDM MEMBRANE BY SCRUBBING THE SPLICE AREA WITH WEATHERED MEMBRANE CLEANER AND ALLOW TO DRY.
2. CONTACT MANUFACTURER OF EXISTING WARRANTED EPDM MEMBRANE ROOFING SYSTEM TO VERIFY ACCEPTANCE OF TIE-IN.
3. FOR EXISTING BALLASTED SYSTEMS BY OTHERS, CONSULT RESPECTIVE MANUFACTURER FOR ACCEPTABLE GRAVEL CONTAINMENT TO PREVENT GRAVEL MIGRATION.
4. DRILL A 3/8" (10mm) DIAMETER WEEP HOLE INTO THE BOTTOM FLUTES OF THE STEEL DECK ALONG THE PERIMETER OF THE TIE-IN 6" (152mm) MINIMUM TO 12" (305mm) MAXIMUM FROM THE SEAM FASTENING PLATE.
5. ON MECHANICALLY FASTENED SYSTEMS, HP-X FASTENERS AND PIRANHA PLATES OR HP-XTRA FASTENERS AND PIRANHA XTRA PLATES ARE REQUIRED OVER STEEL DECKS.

DIMENSIONS	mm	
(A)	6"	152
(B)	6"	152 MIN.
	12"	305 MAX.



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## NOTES:

1. PRIOR TO SPLICING, CLEAN EXISTING EPDM MEMBRANE BY SCRUBBING THE SPLICE AREA WITH WEATHERED MEMBRANE CLEANER AND ALLOW TO DRY.
2. CONTACT MANUFACTURER OF EXISTING WARRANTED EPDM MEMBRANE ROOFING SYSTEM TO VERIFY ACCEPTANCE OF TIE-IN.
3. ON EXISTING BALLASTED SYSTEMS, CONSULT RESPECTIVE MANUFACTURER FOR ACCEPTABLE GRAVEL CONTAINMENT TO PREVENT GRAVEL MIGRATION.
4. WATER CUT-OFF MASTIC MUST BE HELD UNDER CONSTANT COMPRESSION.
5. WHEN RE-ROOFING OVER PRE-CAST CONCRETE, APPLY LIBERAL BEAD OF WATER CUT-OFF MASTIC IN THE JOINTS TO PREVENT MOISTURE MIGRATION.
6. ON MECHANICALLY FASTENED SYSTEMS, CD-10 OR HD 14-10 FASTENERS AND PIRANHA PLATES ARE REQUIRED OVER CONCRETE DECKS.
7. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE.



TPO MEMBRANE APPROVED SUBSTRATE SEE NOTE(S)	<b>EPDM TIE-IN ON CONCRETE DECK</b> For additional information, refer to Specifications		DETAIL NO. <b>U-13E</b> THERMOPLASTIC TPO
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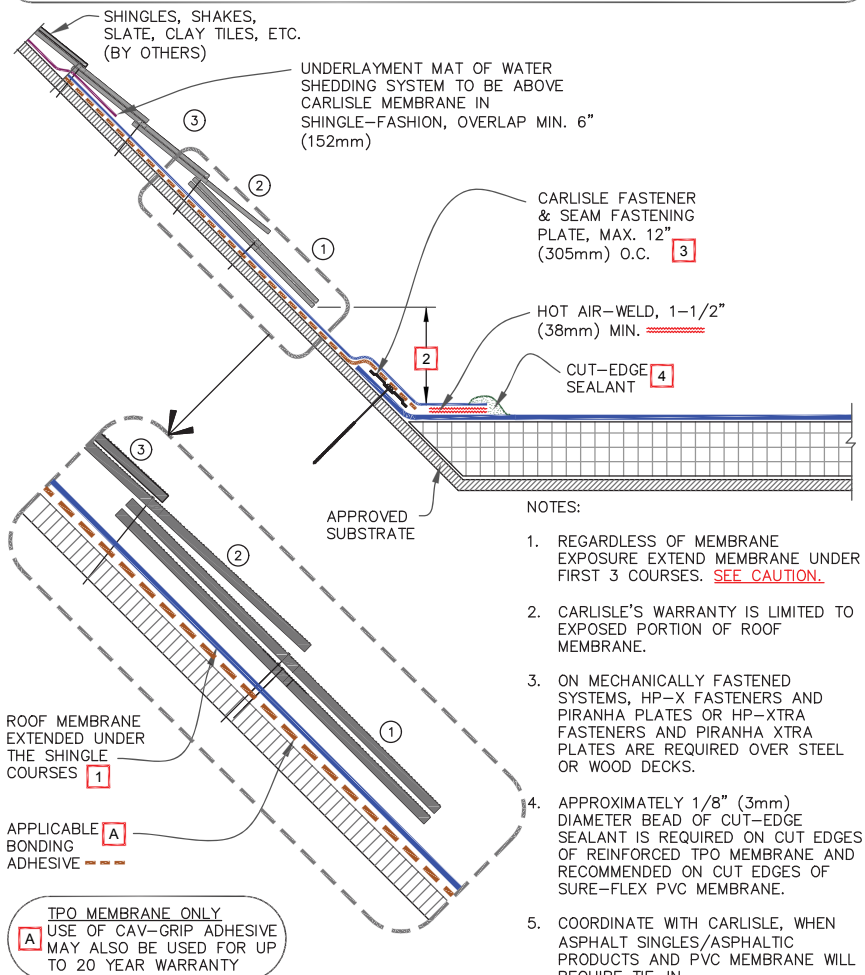
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# THERMOPLASTIC MEMBRANE

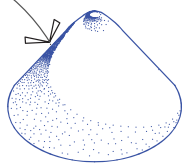
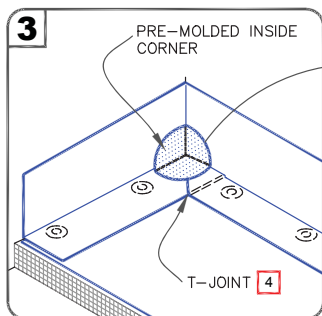
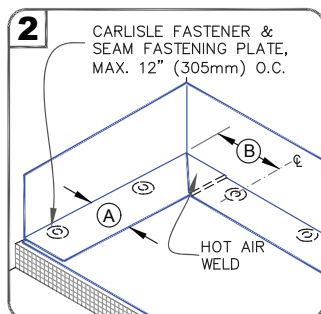
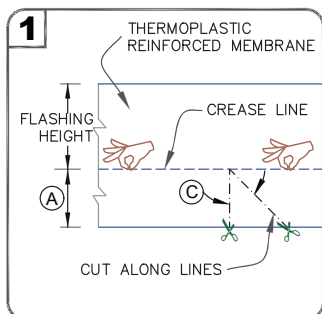
# PVC/TPO

CAUTION

IF STEEP SLOPED ROOF WILL HAVE ASPHALT OR COAL TAR PITCH PRODUCTS, IMMEDIATELY COORDINATE WITH CARLISLE WHEN PVC MEMBRANE IS EXTENDED UNDER STEEP ROOF ASSEMBLY.



<p>— THERMOPLASTIC REINFORCED MEMBRANE</p> <p>— APPROVED INSULATION</p> <p>— SEE NOTE(S)</p> <p>[0]</p>	<p><b>TPO/PVC TIE-IN TO SHINGLED ROOF</b></p> <p>For additional information, refer to Specifications</p>	<p>DETAIL NO.</p> <p><b>U-13F</b></p> <p>THERMOPLASTIC UNIVERSAL</p>
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PRE-MOLDED INSIDE CORNER BEFORE INSTALLATION

NOTES:

1. POSITION FASTENING PLATES 6" TO 9" (152 TO 229mm) FROM THE CORNER AND 1/2" TO 1" (13 TO 25mm) FROM EDGE OF MEMBRANE.
2. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
3. REFER TO CARLISLE SPECIFICATIONS FOR ACCEPTABLE CARLISLE FASTENERS AND PLATES.
4. WHEN USING 60 OR 80-MIL MEMBRANE, APPLY A 4-1/2" (114mm) DIAMETER "T-JOINT" COVER AT ALL FIELD SPLICE INTERSECTIONS.

DIMENSIONS	mm	
(A) 6"	152	APPROX.
(B) 6"-9"	152-229	
(C) 45-DEGREES APPROX.		

	— THERMOPLASTIC REINFORCED MEMBRANE
	— APPROVED INSULATION
	— SEE NOTE(S)

**PRE-MOLDED INSIDE CORNER FLASHING**

For additional information, refer to Specifications



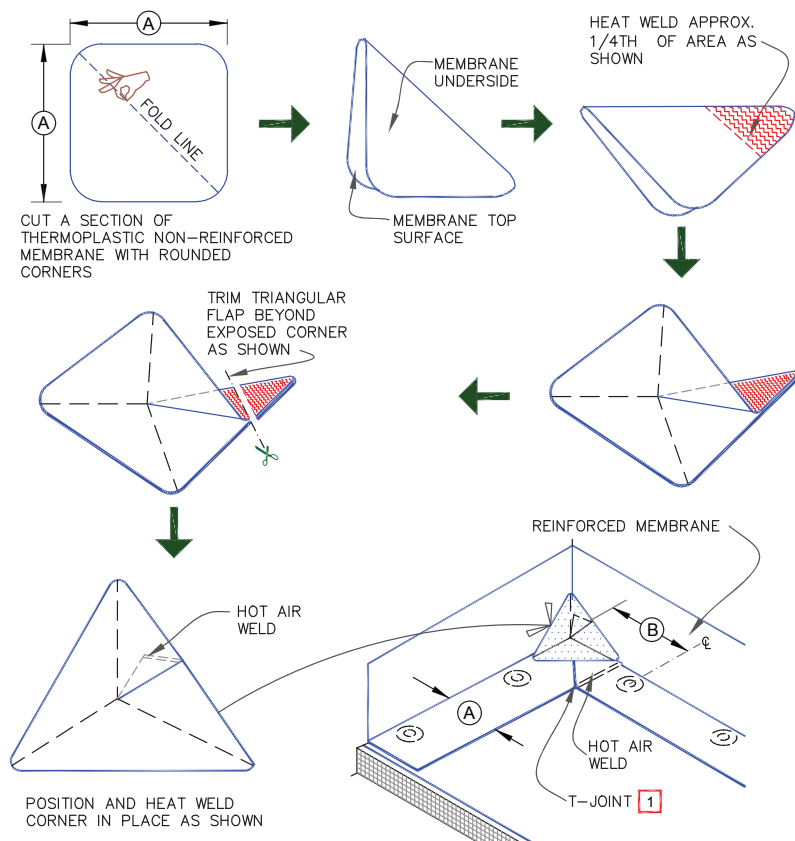
DETAIL NO.

**U-15A**

THERMOPLASTIC UNIVERSAL

CAUTION

DETAIL NOT FOR USE ON 25 OR 30-YEAR WARRANTY PROJECTS, PRE-FABRICATED/PRE-MOLDED ACCESSORIES MUST BE UTILIZED. ACCEPTABLE FLASHING SHALL CONFORM WITH THERMOPLASTIC UNIVERSAL DETAIL U-15A.



DIMENSIONS	mm	
(A) 6"	152	APPROX.
(B) 6"-9"	152-229	

NOTE:

WHEN USING 60 OR 80-MIL MEMBRANE, APPLY A 4 1/2" (114mm) DIAMETER "T-JOINT" COVER AT ALL FIELD SPLICE INTERSECTIONS.

	→ THERMOPLASTIC REINFORCED MEMBRANE
	→ APPROVED INSULATION
	→ SEE NOTE(S)

### FIELD FABRICATED INSIDE CORNER FLASHING

For additional information, refer to Specifications

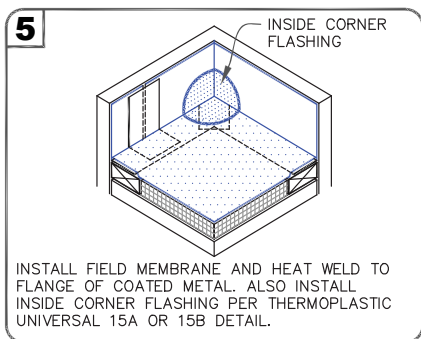
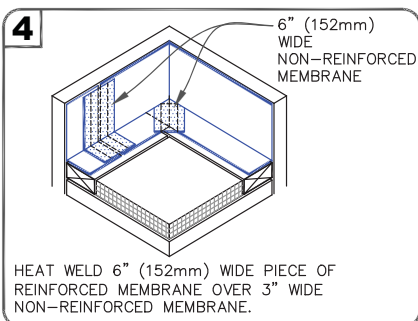
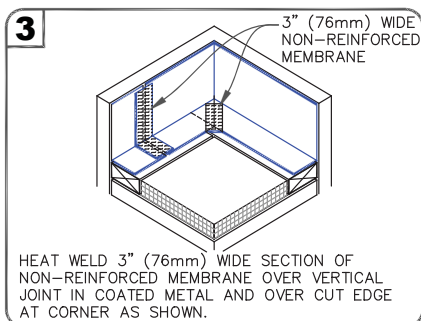
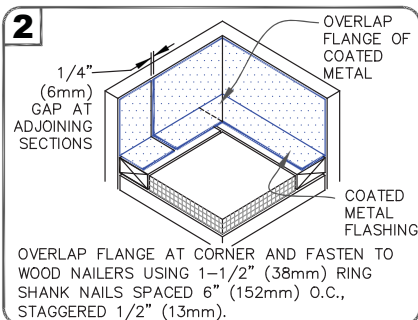
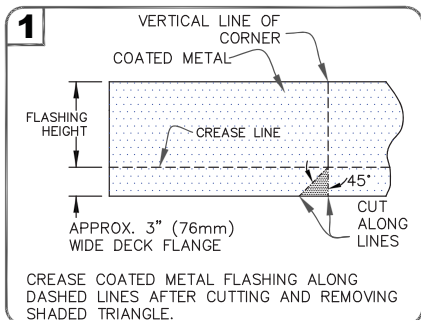


DETAIL NO.

U-15B

THERMOPLASTIC UNIVERSAL





## NOTES:

1. FASTEN COATED METAL FLASHING TO WOOD NAILERS USING 1-1/2" (38mm) MIN. RING SHANK NAILS SPACED 6" (152mm) ON CENTER AND STAGGERED APPROX. 1/2" (13mm).
2. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.

	→ THERMOPLASTIC REINFORCED MEMBRANE
	→ APPROVED INSULATION
	→ SEE NOTE(S)

**INSIDE CORNER WITH COATED METAL WALL FLASHING**

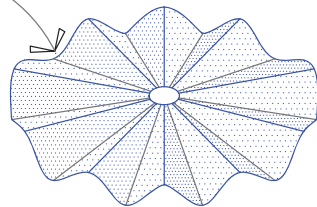
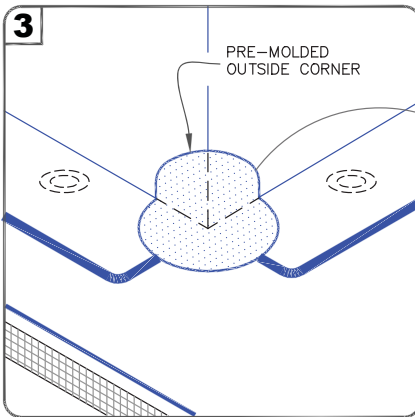
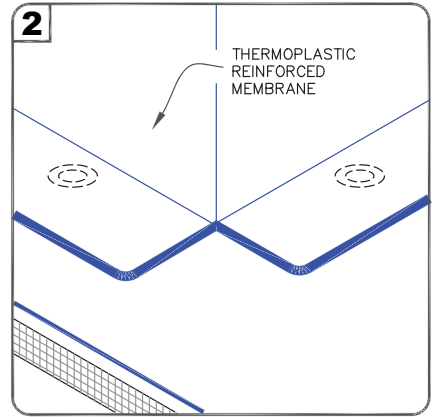
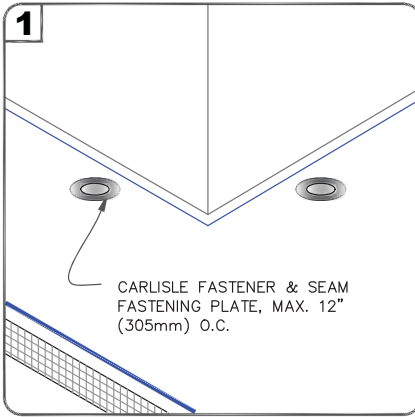
For additional information, refer to Specifications



DETAIL NO.

**U-15C**

THERMOPLASTIC UNIVERSAL



PRE-MOLDED OUTSIDE  
CORNER BEFORE  
INSTALLATION

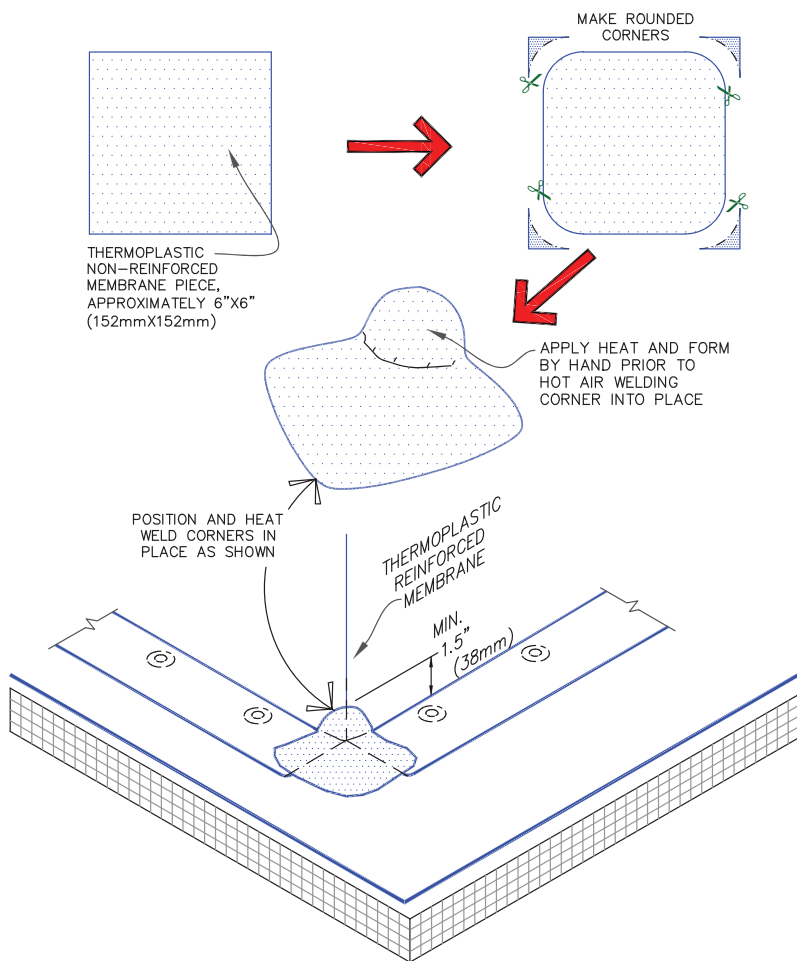
#### NOTES:

1. POSITION FASTENING PLATES 6"(152mm) FROM THE CORNER AND 1/2" TO 1" (13 TO 25mm) FROM EDGE OF MEMBRANE.
2. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.
3. REFER TO CARLISLE SPECIFICATIONS FOR ACCEPTABLE CARLISLE FASTENERS AND PLATES.

	<p><b>PRE-MOLDED OUTSIDE CORNER FLASHING</b></p> <p>For additional information, refer to Specifications</p>	<p>DETAIL NO.</p> <p><b>U-15D</b></p> <p>THERMOPLASTIC UNIVERSAL</p>
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CAUTION

DETAIL NOT FOR USE ON 25 OR 30-YEAR WARRANTY PROJECTS, PRE-FABRICATED/PRE-MOLDED ACCESSORIES MUST BE UTILIZED. ACCEPTABLE FLASHING SHALL CONFORM WITH THERMOPLASTIC UNIVERSAL DETAIL U-15D.



	—•— THERMOPLASTIC REINFORCED MEMBRANE
	—•— APPROVED INSULATION
	—•— SEE NOTE(S)

### FIELD FABRICATED OUTSIDE CORNER FLASHING

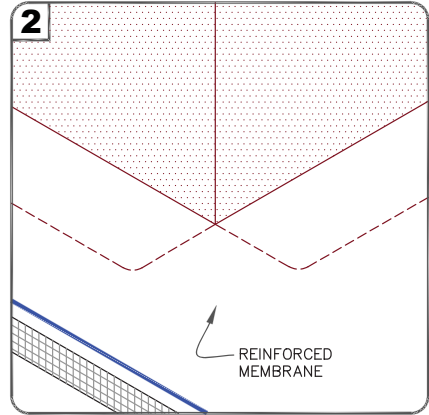
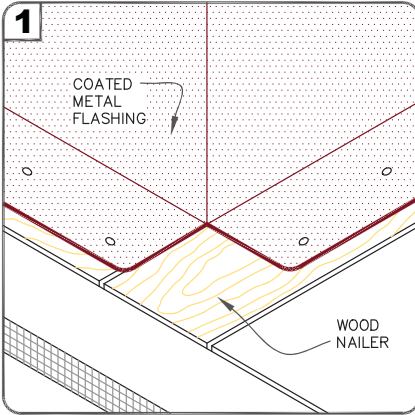
For additional information, refer to Specifications



DETAIL NO.

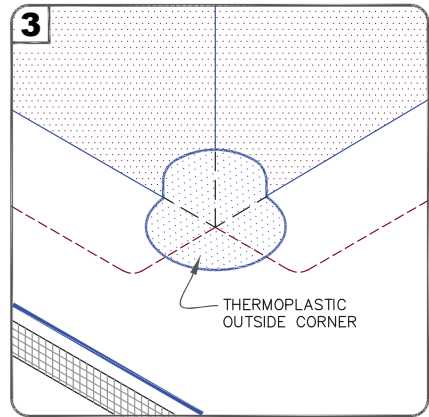
**U-15E**





THERMOPLASTIC UNIVERSAL



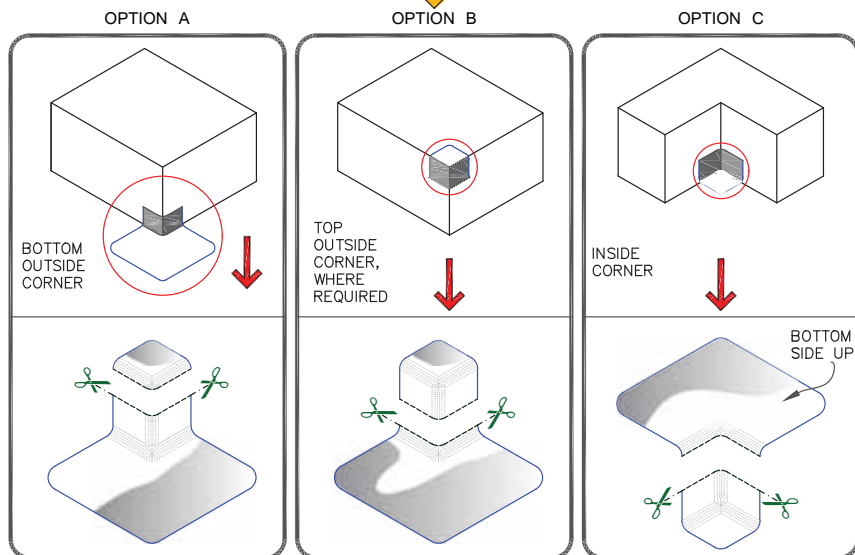
**NOTES:**

1. FASTEN COATED METAL FLASHING TO WOOD NAILERS USING 1-1/2" (38mm) MIN. RING SHANK NAILS SPACED 6" (152mm) ON CENTER AND STAGGERED APPROX. 1/2" (13mm).
2. REFER TO THERMOPLASTIC U-15C DETAIL FOR FLASHING VERTICAL JOINTS IN COATED METAL.



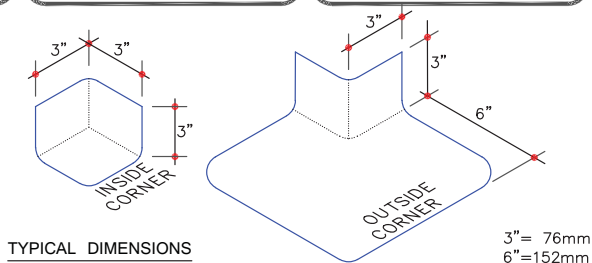
<p>  THERMOPLASTIC REINFORCED MEMBRANE   APPROVED INSULATION   SEE NOTE(S)                 </p>	<p><b>OUTSIDE CORNER WITH COATED METAL WALL FLASHING</b></p> <p>For additional information, refer to Specifications</p>	<p>                      DETAIL NO.  <b>U-15F</b>                      THERMOPLASTIC UNIVERSAL                 </p>
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60-MIL (1.27mm) THICK  
PVC/TPO, UNIVERSAL  
CORNERS CAN BE USED  
FOR 3 DIFFERENT CORNER  
CONDITIONS AS SHOWN  
BELOW



## NOTES:

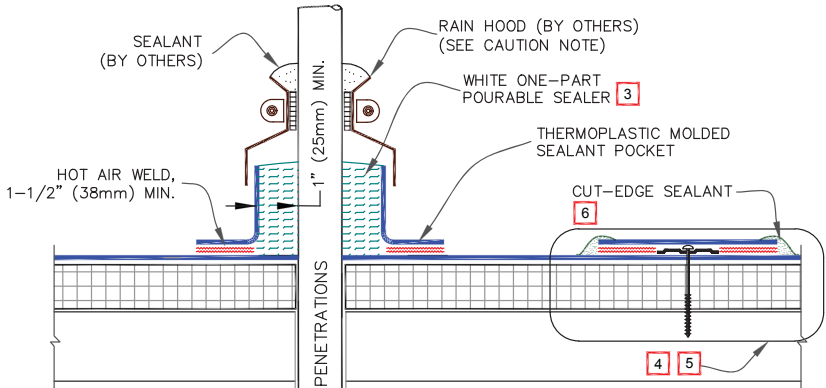
1. ROOF SYSTEMS MUST NOT HAVE FIELD FABRICATED OR BUILT-IN CANT STRIP.
2. REFER TO TECHNICAL DATA BULLETINS FOR COLOR AVAILABILITY.



	<b>PVC OR TPO: UNIVERSAL CORNERS - COMBINATION INSIDE &amp; OUTSIDE CORNERS</b> For additional information, refer to Specifications	<div data-bbox="744 1279 813 1352" data-label="Image"> </div> <div data-bbox="824 1279 935 1352" data-label="Text">           DETAIL NO. <b>U-15G</b> THERMOPLASTIC UNIVERSAL         </div>
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CAUTION

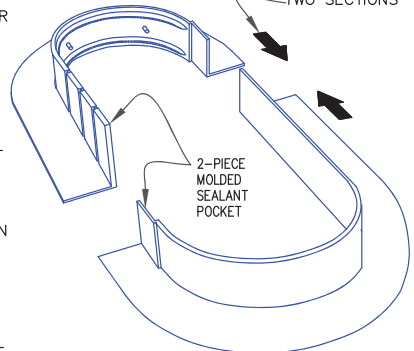
MOLDED SEALANT POCKETS MUST BE USED IN CONJUNCTION WITH RAIN HOODS FOR PROJECTS WITH 25 AND 30-YEAR WARRANTIES.



## NOTES:

1. TEMPERATURE OF PIPE MUST NOT EXCEED 160° F (71° C).
2. WHEN USING TPO MOLDED SEALANT POCKET, TPO PRIMER MUST BE APPLIED TO ALL INSIDE SURFACES AND PENETRATIONS PRIOR TO FILLING WITH SEALANT. WHEN USING PVC MOLDED SEALANT POCKET, CLEAN THE POCKET WITH PVC CLEANER, APPLY TPO PRIMER TO PENETRATION(S) ONLY.
3. FILL POCKET COMPLETELY WITH WHITE ONE-PART POURABLE SEALER UNTIL RIM IS COVERED WITH SEALANT; ENSURE ALL VOIDS ARE FILLED.
4. ON MECHANICALLY-FASTENED SYSTEMS, INSTALL A MINIMUM OF 4 FASTENING PLATES AROUND SEALANT POCKETS WITH A DIAMETER UP TO 6" (152mm). ADDITIONAL FASTENING PLATES WILL BE REQUIRED FOR SEALANT POCKETS GREATER THAN 6" IN DIAMETER AND SHALL BE SPACED 12" (305 mm) ON CENTER MAXIMUM.
5. REFER TO CARLISLE SPECIFICATIONS FOR PROPER FASTENERS AND PLATES.
6. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF SURE-FLEX PVC MEMBRANE.

PLACE MOLDED THERMOPLASTIC SEALANT POCKET AROUND PENETRATION AND OVERLAP THE TWO SECTIONS



REFER TO PRODUCT DATA SHEET FOR STEP-BY-STEP INSTALLATION PROCEDURES

REV. 8/21/2014

	→ THERMOPLASTIC REINFORCED MEMBRANE
	→ APPROVED INSULATION
	→ SEE NOTE(S)

**MOLDED SEALANT POCKET**

For additional information, refer to Specifications



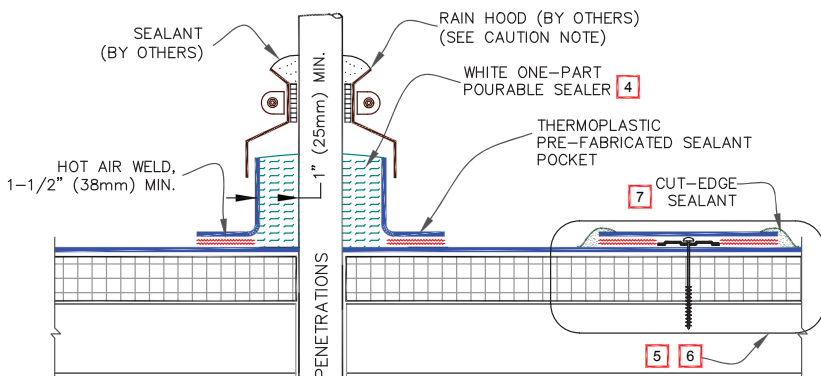
DETAIL NO.  
**U-16A**

THERMOPLASTIC UNIVERSAL

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CAUTION

PRE-FABRICATED SEALANT POCKETS MUST BE USED IN CONJUNCTION WITH RAIN HOODS FOR PROJECTS WITH 25 AND 30-YEAR WARRANTIES.

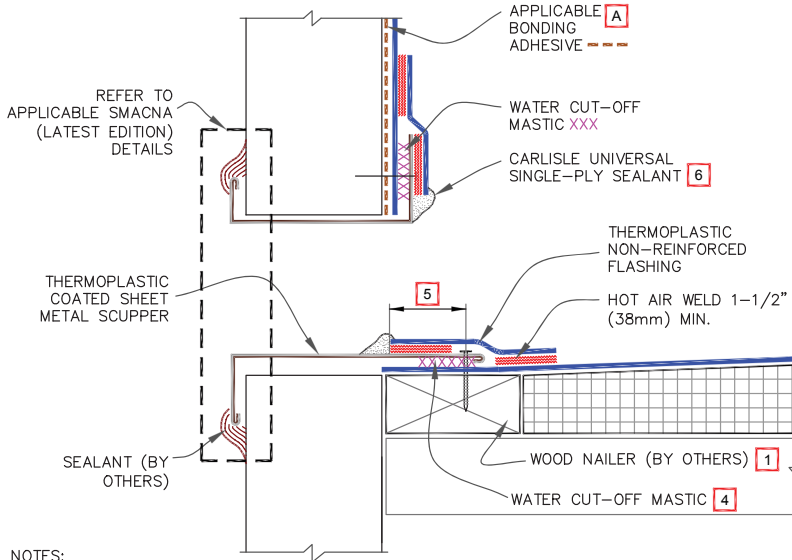


## NOTES:

1. TEMPERATURE OF PIPE MUST NOT EXCEED 160° F (71° C).
2. WHEN USING TPO MOLDED SEALANT POCKET, TPO PRIMER MUST BE APPLIED TO ALL INSIDE SURFACES AND PENETRATIONS PRIOR TO FILLING WITH SEALANT. WHEN USING PVC SEALANT POCKET, CLEAN THE POCKET WITH PVC CLEANER, APPLY TPO PRIMER TO PENETRATION(S) ONLY.
3. WHEN USING TPO SEALANT POCKET, APPLY TPO PRIMER TO THE TPO MEMBRANE AND PENETRATION(S) SURFACES ONLY. DO NOT APPLY TPO PRIMER TO THE GALVANIZED METAL SURFACE ON THE INSIDE OF THE SEALANT POCKET.
4. FILL POCKET COMPLETELY WITH WHITE ONE-PART POURABLE SEALER UNTIL RIM IS COVERED WITH SEALANT; ENSURE ALL VOIDS ARE FILLED.
5. ON MECHANICALLY-ATTACHED SYSTEMS, INSTALL A MINIMUM OF 4 FASTENING PLATES AROUND SEALANT POCKETS WITH A DIAMETER UP TO 6" (152mm). ADDITIONAL FASTENING PLATES WILL BE REQUIRED FOR SEALANT POCKETS GREATER THAN 6" IN DIAMETER AND SHALL BE SPACED 12" (305mm) ON CENTER MAXIMUM. FASTENERS/PLATES ARE NOT REQUIRED ON ADHERED SYSTEMS UNLESS SEALANT POCKET DIAMETER EXCEEDS 12" (305mm).
6. REFER TO CARLISLE SPECIFICATIONS FOR PROPER TYPES OF FASTENERS AND PLATES.
7. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE AND RECOMMENDED ON CUT EDGES OF VERSIFLEX PVC MEMBRANE.

	<b>PRE-FABRICATED SEALANT POCKET</b>  For additional information, refer to Specifications	DETAIL NO. <b>U-16B</b>  THERMOPLASTIC UNIVERSAL

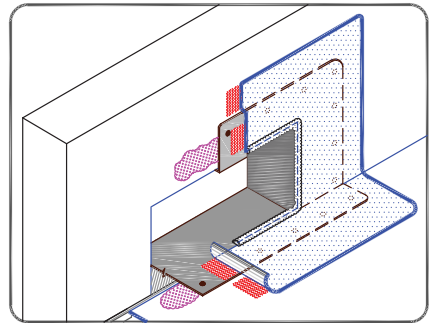
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## NOTES:

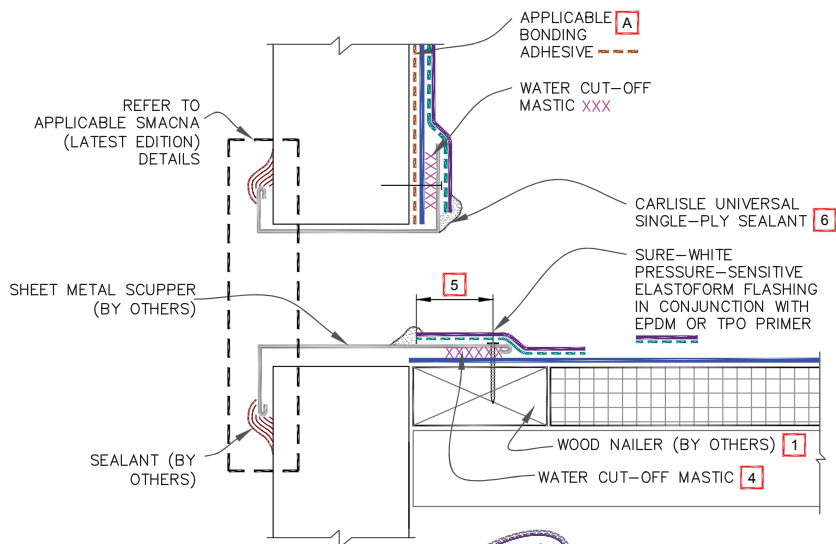
1. WOOD NAILERS ARE INSTALLED ONLY AT SCUPPERS TO SECURE METAL SLEEVE AND MUST EXTEND PAST THE WIDTH OF METAL SLEEVE FLANGE.
2. INSTALL WALL FLASHING PRIOR TO SCUPPER INSTALLATION.
3. METAL SCUPPER BOX MUST HAVE CONTINUOUS FLANGES WITH ROUNDED CORNERS.
4. WATER CUT-OFF MASTIC UNDER SCUPPER FLANGE MUST BE UNDER CONSTANT COMPRESSION.
5. SCUPPER FLANGES MUST BE TOTALLY COVERED BY NON-REINFORCED FLASHING WITH MINIMUM 2" (51mm) COVERAGE PAST NAIL HEAD.
6. UNIVERSAL SINGLE-PLY SEALANT IS REQUIRED AT FLASHING EDGES ON SCUPPER EDGE. WHEN USING TPO MEMBRANE, TPO PRIMER MUST BE USED TO PREPARE SURFACES PRIOR TO THE APPLICATION OF SEALANT.

TPO MEMBRANE ONLY  
 [A] USE OF CAV-GRIP ADHESIVE  
 MAY ALSO BE USED FOR UP  
 TO 20 YEAR WARRANTY



	<b>SCUPPER WITH COATED METAL</b> For additional information, refer to Specifications		DETAIL NO. <b>U-18A</b> THERMOPLASTIC UNIVERSAL
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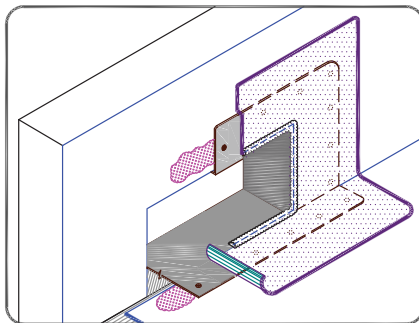






## NOTES:

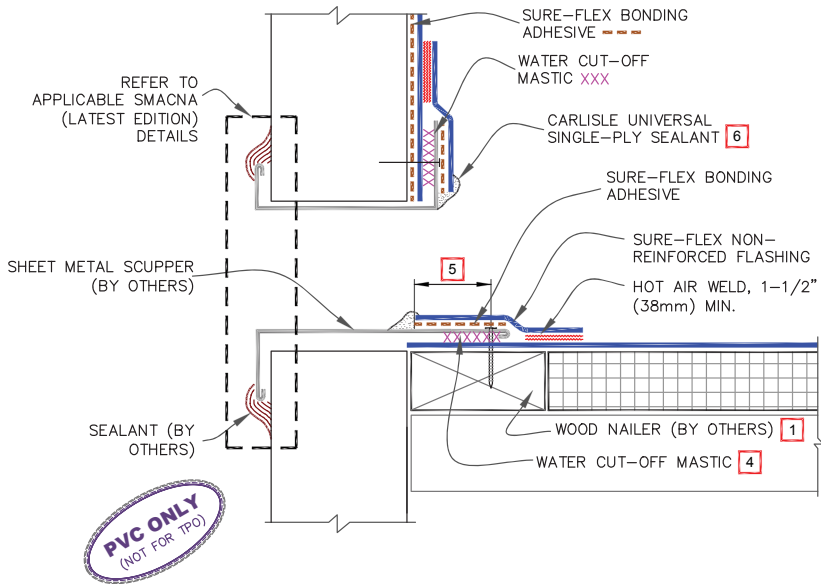
- WOOD NAILERS ARE INSTALLED ONLY AT SCUPPERS TO SECURE METAL SLEEVE AND MUST EXTEND PAST THE WIDTH OF METAL SLEEVE FLANGE.
- INSTALL WALL FLASHING PRIOR TO SCUPPER INSTALLATION.
- METAL SCUPPER BOX MUST HAVE CONTINUOUS FLANGES WITH ROUNDED CORNERS, SOLDER ALL SCUPPER SEAMS WATER-TIGHT.
- WATER CUT-OFF MASTIC UNDER SCUPPER FLANGE MUST BE UNDER CONSTANT COMPRESSION.
- SCUPPER FLANGES MUST BE TOTALLY COVERED BY PRESSURE-SENSITIVE ELASTOFORM FLASHING WITH MINIMUM 2" (51mm) COVERAGE PAST NAIL HEAD.
- UNIVERSAL SINGLE-PLY SEALANT IS REQUIRED AT FLASHING EDGES ON SCUPPER EDGE. TPO PRIMER MUST BE USED TO PREPARE SURFACES PRIOR TO THE APPLICATION OF SEALANT.

**TPO ONLY**  
(NOT FOR PVC)

**TPO MEMBRANE ONLY**  
USE OF CAV-GRIP ADHESIVE  
MAY ALSO BE USED FOR UP  
TO 20 YEAR WARRANTY

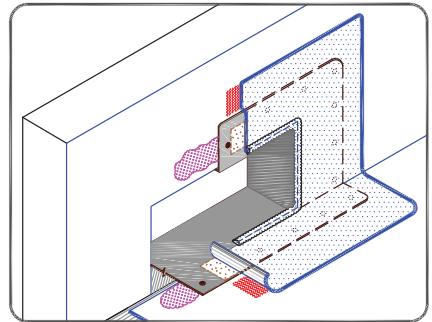


 TPO MEMBRANE  APPROVED SUBSTRATE  SEE NOTE(S)	<b>SCUPPER AT DECK- TPO</b> For additional information, refer to Specifications		DETAIL NO. <b>U-18B</b> THERMOPLASTIC TPO
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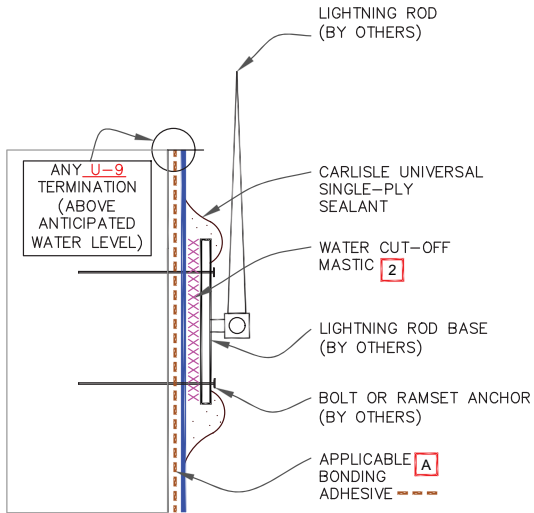
## NOTES:

1. WOOD NAILERS ARE INSTALLED ONLY AT SCUPPERS TO SECURE METAL SLEEVE AND MUST EXTEND PAST THE WIDTH OF METAL SLEEVE FLANGE.
2. INSTALL WALL FLASHING PRIOR TO SCUPPER INSTALLATION.
3. METAL SCUPPER BOX MUST HAVE CONTINUOUS FLANGES WITH ROUNDED CORNERS, SOLDER ALL SCUPPER SEAMS WATER-TIGHT.
4. WATER CUT-OFF MASTIC UNDER SCUPPER FLANGE MUST BE UNDER CONSTANT COMPRESSION.
5. SCUPPER FLANGES MUST BE TOTALLY COVERED BY NON-REINFORCED PVC FLASHING WITH MINIMUM 2" (51mm) COVERAGE PAST NAIL HEAD.
6. UNIVERSAL SINGLE-PLY SEALANT IS REQUIRED AT FLASHING EDGES ON SCUPPER EDGE.



— PVC MEMBRANE — APPROVED SUBSTRATE — SEE NOTE(S)	<b>SCUPPER AT DECK- PVC</b> For additional information, refer to Specifications		DETAIL NO. <b>U-18C</b> THERMOPLASTIC PVC
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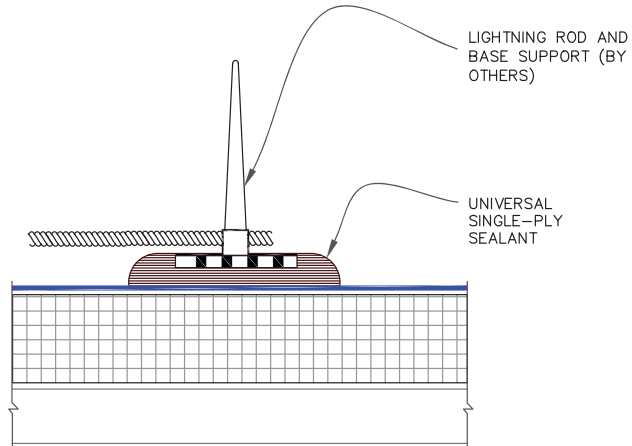


## NOTES:

1. DETAIL MAY BE USED FOR ANY FASTENER PENETRATION (E.G., ACCESS LADDER, ANCHOR SUPPORT TO PARAPET).
2. WATER CUT-OFF MASTIC MUST BE UNDER CONSTANT COMPRESSION.
3. DETAIL UNACCEPTABLE FOR HORIZONTAL APPLICATION ON ROOF DECK.

**A** TPO MEMBRANE ONLY  
USE OF CAV-GRIP ADHESIVE  
MAY ALSO BE USED FOR UP  
TO 20 YEAR WARRANTY

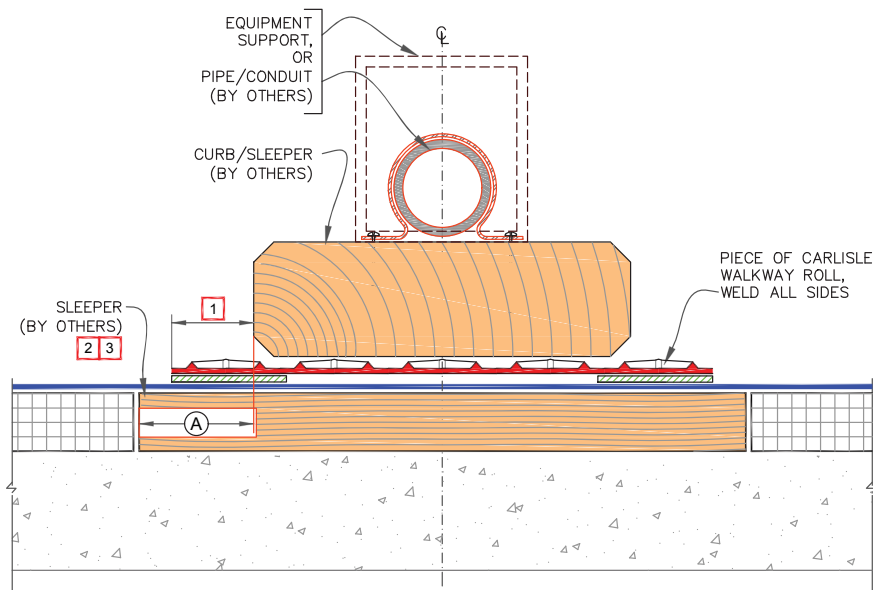
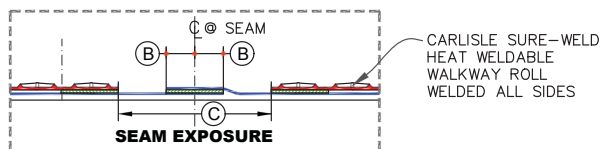
<p>— THERMOPLASTIC REINFORCED MEMBRANE</p> <p>— APPROVED INSULATION</p> <p><b>0</b> — SEE NOTE(S)</p>	<p><b>LIGHTNING ROD AT PARAPET (VERTICAL ATTACHMENT)</b></p> <p>For additional information, refer to Specifications</p>	<p>DETAIL NO. <b>U-20A</b></p> <p>THERMOPLASTIC UNIVERSAL</p>
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NOTES:

1. CLEAN EXPOSED MEMBRANE SURFACE WITH WEATHERED MEMBRANE CLEANER (WHEN USING TPO) AND PVC MEMBRANE CLEANER (WHEN USING PVC) AND ALLOW TO DRY.
2. WHEN USING TPO MEMBRANE, APPLY TPO PRIMER TO THE MEMBRANE SURFACE PRIOR TO THE APPLICATION OF UNIVERSAL SINGLE-PLY SEALANT.

<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 20px; height: 5px; background-color: blue; border: 1px solid black; margin-right: 5px;"></div> <div>—• THERMOPLASTIC REINFORCED MEMBRANE</div> </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 20px; height: 10px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); border: 1px solid black; margin-right: 5px;"></div> <div>—• APPROVED INSULATION</div> </div> <div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; border: 2px solid red; display: flex; align-items: center; justify-content: center; margin-right: 5px;">0</div> <div>—• SEE NOTE(S)</div> </div> </div> </div>	<div style="border: 1px solid black; padding: 5px;"> <b>LIGHTNING ROD AT DECK LEVEL</b> </div> <div style="border: 1px solid black; padding: 2px; font-size: 0.8em;">                         For additional information, refer to Specifications                     </div>	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 40%;"> <div style="border: 1px solid red; padding: 5px; font-size: 2em; font-weight: bold; color: red; margin: 0 auto;">TP</div> <div style="border: 1px solid black; padding: 2px; font-size: 0.8em;">THERMOPLASTIC UNIVERSAL</div> </div> <div style="width: 60%;"> <div style="border: 1px solid black; padding: 2px; font-size: 0.8em;">DETAIL NO.</div> <div style="border: 1px solid black; padding: 5px; font-size: 1.5em; font-weight: bold; margin: 0 auto;">U-20B</div> </div> </div>
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## NOTES:

1. SLEEPER MUST BE LARGE ENOUGH TO SUPPORT WEIGHT OF EQUIPMENT WITHOUT INDENTING INSULATION. EXTEND SLEEPER OUT AS REQUIRED BY STRUCTURAL ENGINEER TO DISTRIBUTE SUBJECT LOAD OR AT LEAST EXTEND OUT MIN. 3" (76mm).
2. ENSURE SCREW/ANCHOR HEADS IN TOP SURFACE OF WOOD BLOCKING ARE RECESSED TO PROTECT MEMBRANE.
3. SLEEPER NOT REQUIRED UNDER CONDUIT OR PIPE SUPPORTS.
4. CONSULT STRUCTURAL ENGINEER AND/OR SPECIFIER TO AVOID WATER PONDING DUE TO DECK DEFLECTION.
5. IN SNOW COUNTRY, WHERE DIRECT IMPACT OF SLIDING SNOW IS EXPECTED, [SLOPES >:12 (83mm/1M), (5°)], THERE RAISE CONDUITS AND PIPES ABOVE THE REGIONAL SNOW LINE.

DIMENSIONS		mm	
(A)	3"	76	MIN. ALL SIDES
(B)	3/4"	19	
(C)	4"	102	

WELD

	— THERMOPLASTIC REINFORCED MEMBRANE
	— APPROVED INSULATION
	— SEE NOTE(S)

**SLEEPER DETAIL**

For additional information, refer to Specifications

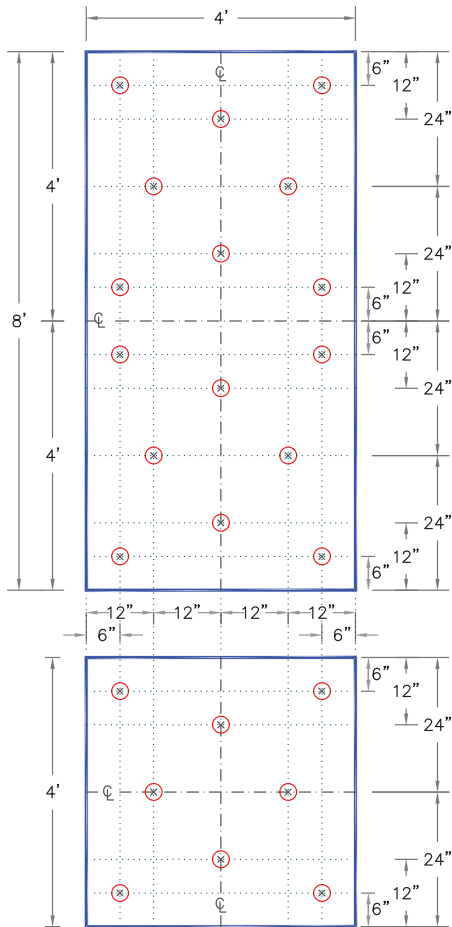


DETAIL NO.

**U-24**

THERMOPLASTIC UNIVERSAL

# ATTACHMENT DETAILS INSULATION/ COVER BOARD




## NOTES:

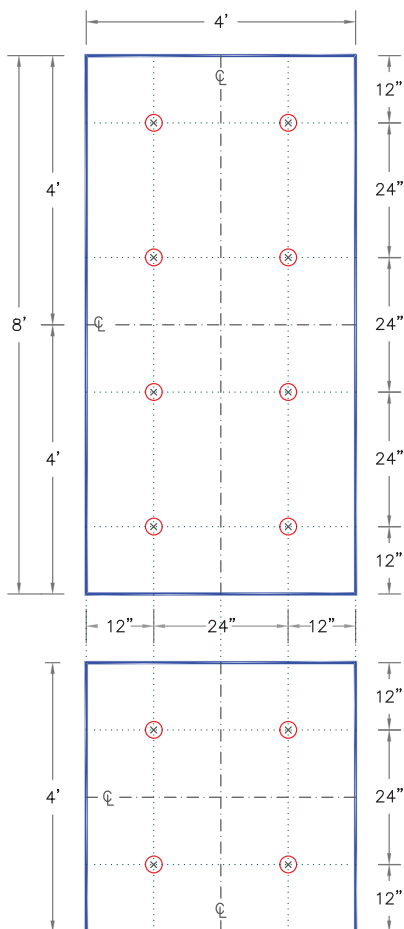
1. WHEN ENHANCED INSULATION FASTENING IS REQUIRED AS PRESCRIBED IN FACTORY MUTUAL LOSS PREVENTION DATA SHEET 1-29, ANSI/SPRI WD-1, OR MIAMI-DADE COUNTY, REFER TO [CARLISLE'S DESIGN REFERENCE DR-05-11](#).
2. FOR CRITERIA ON INSULATION FASTENERS AND PLATES, REFER TO CARLISLE SPECIFICATIONS.
3. IF A WIND SPEED WARRANTY GREATER THAN 55 MILES PER HOUR (25 METERS PER SECOND) OR A WARRANTY TERM GREATER THAN 20-YEARS IS SPECIFIED, ADDITIONAL FASTENING MAY BE REQUIRED, REFER TO CARLISLE SPECIFICATIONS.

FEET TO MILLIMETERS		INCHES TO MILLIMETERS																		
4'	8'	inch	1/8"	1/4"	15/32"	1/2"	5/8"	3/4"	1"	1.5"	2"	2.5"	3"	4"	6"	8"	9"	11"	12"	18"
1219	2438	mm	3	6	12	13	16	19	25	38	51	63	76	102	152	203	229	279	305	457

<div>⊗</div> → FASTENER & PLATE <div>⊕</div> → CENTER LINE <div>⋯</div> → GUIDE LINE	<b>CARLISLE INSULATION/ COVER BOARD ATTACHMENT</b> For additional information, refer to Specifications		DETAIL NO. <b>A-27A</b> ADHERED SYSTEM
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## INSULATION/ COVER BOARD

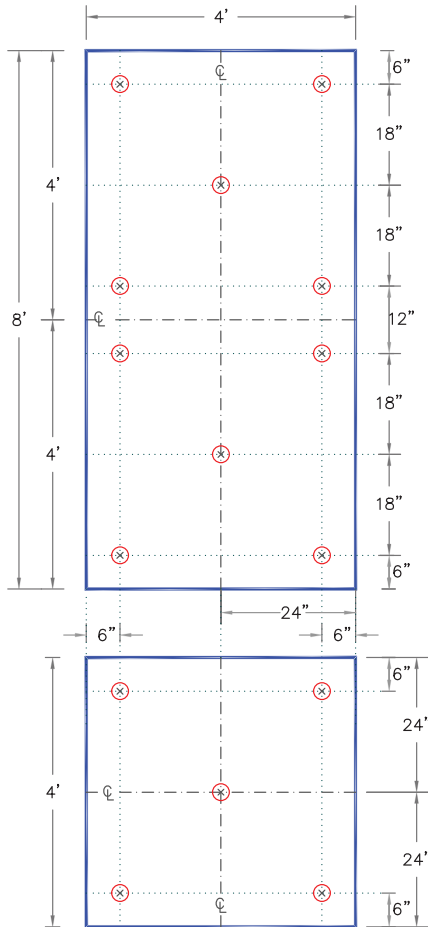


NOTES:

1. THIS DETAIL APPLIES TO MIN. 2" (51mm) THICK (SINGLE OR TOP LAYER) CARLISLE POLYISOCYANURATE INSULATION WHEN FASTENED INTO 22-GAUGE (0.8mm) STEEL, STRUCTURAL CONCRETE, MINIMUM 15/32" (12mm) PLYWOOD OR 1-1/2" (38mm) THICK WOOD PLANK ROOF DECKS.
2. WHEN ENHANCED INSULATION FASTENING IS REQUIRED AS PRESCRIBED IN FACTORY MUTUAL LOSS PREVENTION DATA SHEET 1-29, ANSI/SPRI WD-1 OR MIAMI-DADE COUNTY, REFER TO [CARLISLE'S DESIGN REFERENCE DR-05-11.](#)
3. FOR CRITERIA ON INSULATION FASTENERS AND PLATES, REFER TO CARLISLE SPECIFICATIONS.
4. IF A WIND SPEED WARRANTY GREATER THAN 55 MILES PER HOUR (25 METERS PER SECOND) OR A WARRANTY TERM GREATER THAN 20-YEARS IS SPECIFIED, ADDITIONAL FASTENING MAY BE REQUIRED, REFER TO CARLISLE SPECIFICATIONS.
5. DETAIL NOT FOR USE OVER ORIENTED STRAND BOARD, GYPSUM, CEMENTITIOUS WOOD FIBER (TECTUM), LIGHTWEIGHT INSULATING CONCRETE OR STEEL ROOF DECK THINNER THAN 22-GAUGE (0.8mm). [REFER TO DETAIL A-27A](#) FOR ACCEPTABLE FASTENING.

FEET TO MILLIMETERS			INCHES TO MILLIMETERS																										
4"	8"		inch	1/8"	1/4"	5/32"	1/2"	5/8"	3/4"	1"	1.5"	2"	2.5"	3"	4"	6"	8"	9"	11"	12"	18"	24"	36"						
1219	2438		mm	3	6	12	13	16	19	25	38	51	63	76	102	152	203	229	279	305	457	610	914						

# ATTACHMENT DETAILS INSULATION/ COVER BOARD



- NOTES:
1. THIS DETAIL APPLIES TO MIN. 1-1/2" (38mm) THICK (SINGLE OR TOP LAYER) CARLISLE POLYISOCYANURATE INSULATION WHEN FASTENED INTO 22-GAUGE (0.8mm) STEEL, STRUCTURAL CONCRETE, MINIMUM 15/32" (12mm) PLYWOOD OR 1-1/2" (38mm) THICK WOOD PLANK ROOF DECKS.
  2. WHEN ENHANCED INSULATION FASTENING IS REQUIRED AS PRESCRIBED IN FACTORY MUTUAL LOSS PREVENTION DATA SHEET 1-29, ANSI/SPRI WD-1 OR [CARLISLE'S DESIGN REFERENCE DR-05-11](#).
  3. FOR CRITERIA ON INSULATION FASTENERS AND PLATES, REFER TO CARLISLE SPECIFICATIONS.
  4. IF A WIND SPEED WARRANTY GREATER THAN 55 MILES PER HOUR (25 METERS PER SECOND) OR A WARRANTY TERM GREATER THAN 20-YEARS IS SPECIFIED, ADDITIONAL FASTENING MAY BE REQUIRED, REFER TO CARLISLE SPECIFICATIONS.
  5. THIS DETAIL NOT FOR USE OVER ORIENTED STRAND BOARD, GYPSUM, FIBROUS CEMENT (TECTUM), LIGHTWEIGHT INSULATING CONCRETE OR STEEL ROOF DECK THINNER THAN 22-GAUGE (0.8mm), [REFER TO DETAIL A-27.1](#) FOR ACCEPTABLE FASTENING.

FEET TO MILLIMETERS	
4'	8'
1219	2438

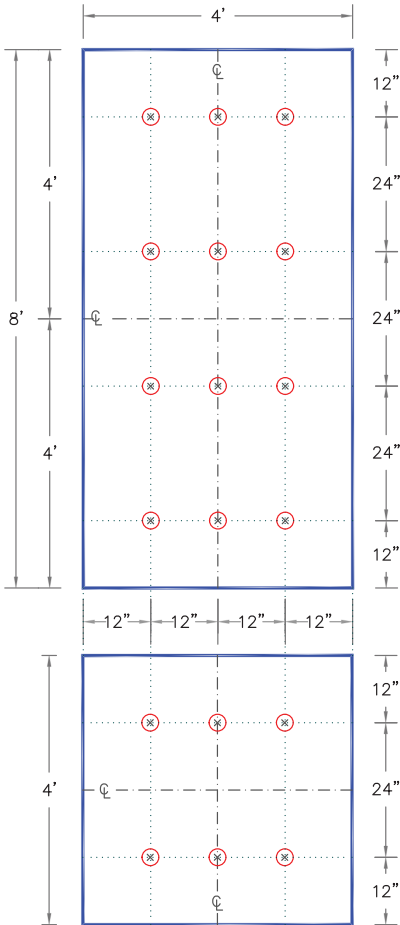
		INCHES TO MILLIMETERS																			
inch		1/8"	1/4"	15/32"	1/2"	5/8"	3/4"	1"	1.5"	2"	2.5"	3"	4"	6"	8"	9"	11"	12"	18"	24"	36"
mm		3	6	12	13	16	19	25	38	51	63	76	102	152	203	229	279	305	457	610	914

  	<div style="display: flex; justify-content: space-between;"> <div>           FASTENER &amp; PLATE            CENTER LINE            GUIDE LINE         </div> <div style="width: 80%;"> <b>MINIMUM 1-1/2" THICK CARLISLE HP-H / INSULBASE / SECURSHIELD POLYISOCYANURATE INSULATION</b>            For additional information, refer to Specifications         </div> <div style="width: 15%; text-align: center;"> </div> </div>	DETAIL NO. <div style="font-size: 24pt; font-weight: bold;">A-27C</div> ADHERED SYSTEM
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# ATTACHMENT DETAILS





# INSULATION/ COVER BOARD



## NOTES:

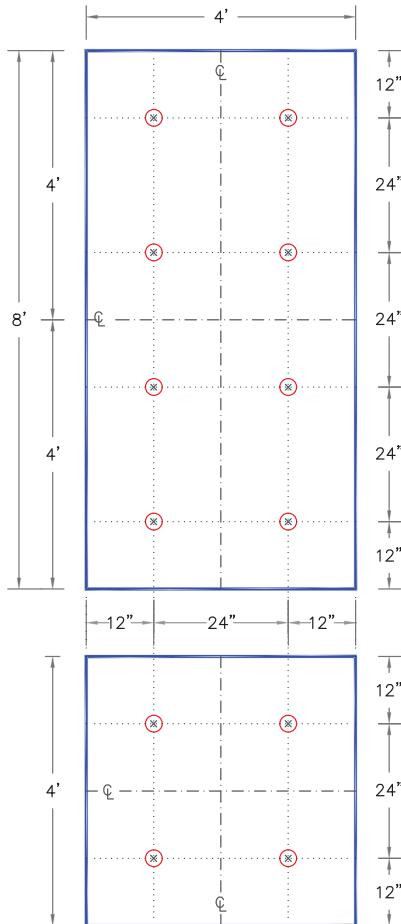
1. THIS DETAIL APPLIES TO 1/4" (6mm) AND 1/2" (13mm) THICK SECUROCK OR DENS DECK PRIME (OVER AN APPROVED INSULATION) WHEN FASTENED INTO 22-GAUGE (0.8mm) STEEL, STRUCTURAL CONCRETE, MINIMUM 15/32" (12mm) PLYWOOD OR 1-1/2" (38mm) THICK WOOD PLANK ROOF DECKS.
2. WHEN ENHANCED FASTENING IS REQUIRED AS PRESCRIBED IN FACTORY MUTUAL LOSS PREVENTION DATA SHEET 1-29, ANSI/SPRI WD-1 OR MIAMI-DADE COUNTY, REFER TO [CARLISLE'S DESIGN REFERENCE DR-05-11](#).
3. FOR CRITERIA ON INSULATION FASTENERS AND PLATES, REFER TO CARLISLE SPECIFICATIONS.
4. IF A WIND SPEED WARRANTY GREATER THAN 55 MILES PER HOUR (25 METERS PER SECOND) OR A WARRANTY TERM GREATER THAN 20-YEARS IS SPECIFIED, ADDITIONAL FASTENING MAY BE REQUIRED, REFER TO CARLISLE SPECIFICATIONS.
5. DETAIL NOT FOR USE OVER ORIENTED STRAND BOARD, GYPSUM, FIBROUS CEMENT (TECTUM), LIGHTWEIGHT INSULATING CONCRETE OR STEEL ROOF DECK LESS THAN 22-GAUGE (0.8mm), [REFER TO DETAIL A-27.1](#) FOR ACCEPTABLE FASTENING.
6. WHEN INSTALLED OVER COMBUSTIBLE WOOD DECKS OR INSULATIONS, ALL JOINTS SHALL BE STAGGERED.
7. LONG UNINTERRUPTED RUNS GREATER THAN 200' (>61 METERS) OF SECUROCK MAY REQUIRE SLIGHT GAPPING DUE TO THERMAL EXPANSION.

FEET TO MILLIMETERS		INCHES TO MILLIMETERS																		
4'	8'	inch	1/8"	1/4"	15/32"	1/2"	5/8"	3/4"	1"	1.5"	2"	2.5"	3"	4"	6"	8"	9"	11"	12"	18"
1219	2438	mm	3	6	12	13	16	19	25	38	51	63	76	102	152	203	229	279	305	457
																				610
																				914

	FASTENER & PLATE	<b>1/4" OR 1/2" THICK SECUROCK OR DENS DECK PRIME</b>		DETAIL NO.
	CENTER LINE			A-27D
	GUIDE LINE			ADHERED SYSTEM
For additional information, refer to Specifications				

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# ATTACHMENT DETAILS INSULATION/ COVER BOARD



## NOTES:

- THIS DETAIL APPLIES TO 5/8" (16mm) THICK SECUROCK OR DENS DECK PRIME (OVER AN APPROVED INSULATION) WHEN FASTENED INTO 22-GAUGE STEEL, STRUCTURAL CONCRETE, MINIMUM 15/32" (12mm) PLYWOOD OR 1-1/2" (38mm) THICK WOOD PLANK ROOF DECKS.
- WHEN ENHANCED FASTENING IS REQUIRED AS PRESCRIBED IN FACTORY MUTUAL LOSS PREVENTION DATA SHEET 1-29, ANSI/SPRI WD-1 OR MIAMI-DADE COUNTY, REFER TO [CARLISLE'S DESIGN REFERENCE DR-05-11](#).
- FOR CRITERIA ON INSULATION FASTENERS AND PLATES, REFER TO CARLISLE SPECIFICATIONS.
- IF A WIND SPEED WARRANTY GREATER THAN 55 MILES PER HOUR (25 METERS PER SECONDS) OR A WARRANTY TERM GREATER THAN 20-YEARS IS SPECIFIED, ADDITIONAL FASTENING MAY BE REQUIRED, REFER TO CARLISLE SPECIFICATIONS.
- DETAIL NOT FOR USE OVER ORIENTED STRAND BOARD, GYPSUM, FIBROUS CEMENT (TECTUM), LIGHTWEIGHT INSULATING CONCRETE OR STEEL ROOF DECK LESS THAN 22-GAUGE (0.8mm), [REFER TO DETAIL A-27.1](#) FOR ACCEPTABLE FASTENING.
- WHEN INSTALLED OVER COMBUSTIBLE WOOD DECKS OR INSULATIONS, ALL JOINTS SHALL BE STAGGERED.
- LONG UNINTERRUPTED RUNS GREATER THAN 200' (> 61M) OF SECUROCK MAY REQUIRE SLIGHT GAPPING DUE TO THERMAL EXPANSION.

FEET TO MILLIMETERS		INCHES TO MILLIMETERS																			
4'	8'	inch	1/8"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1 1/8"	1 1/4"	1 3/8"	1 1/2"	1 5/8"	1 3/4"	1 7/8"	2"	2 1/8"	2 1/4"	2 3/8"
1219	2438	mm	3	6	12	13	16	19	25	38	51	63	76	102	152	203	229	279	305	457	610

X
→ FASTENER & PLATE

⊕
→ CENTER LINE

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→ GUIDE LINE

**5/8" THICK SECUROCK OR DENS DECK PRIME**

For additional information, refer to Specifications

DETAIL NO.

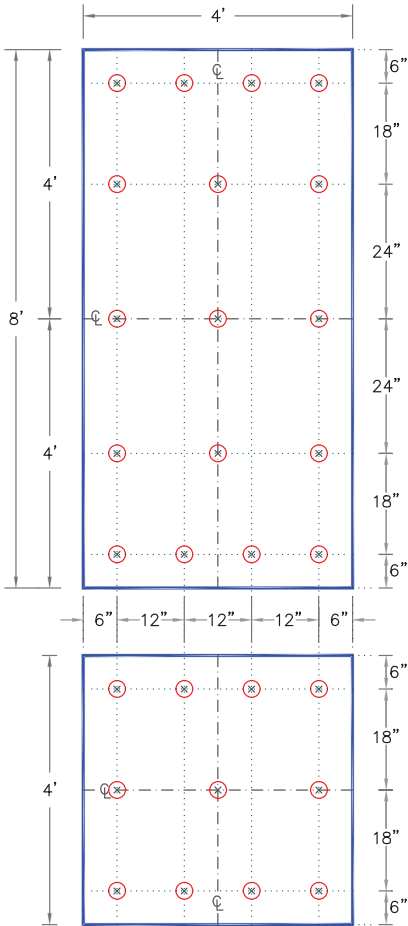
**A-27E**

ADHERED SYSTEM

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## ATTACHMENT DETAILS

## INSULATION/ COVER BOARD



### NOTES:

1. WHEN ENHANCED FASTENING IS REQUIRED AS PRESCRIBED IN FACTORY MUTUAL LOSS PREVENTION DATA SHEET 1-29, ANSI/SPRI WD-1 OR MIAMI-DADE COUNTY, REFER TO [CARLISLE'S DESIGN REFERENCE DR-05-11](#).
2. FOR CRITERIA ON INSULATION FASTENERS AND PLATES, REFER TO CARLISLE SPECIFICATIONS.
3. IF A WIND SPEED WARRANTY GREATER THAN 55 MILES PER HOUR (25 METERS PER SECOND) OR A WARRANTY TERM GREATER THAN 20-YEARS IS SPECIFIED, ADDITIONAL FASTENING MAY BE REQUIRED, REFER TO CARLISLE SPECIFICATIONS.
4. OSB (ORIENTED STRAND BOARD) MUST BE POSITIONED WITH AN 1/8" (3mm) GAP BETWEEN BOARDS.
5. WHEN SPECIFIED, JOINTS IN OSB (ORIENTED STRAND BOARD) MUST BE STAGGERED WITH JOINTS IN INSULATION BELOW.

FEET TO MILLIMETERS		INCHES TO MILLIMETERS																					
4'	8'	inch	1/8"	1/4"	5/32"	1/2"	5/8"	3/4"	1"	1.5"	2"	2.5"	3"	4"	6"	8"	9"	11"	12"	18"	24"	36"	
1219	2438	mm	3	6	12	13	16	19	25	38	51	63	76	102	152	203	229	279	305	457	610	914	

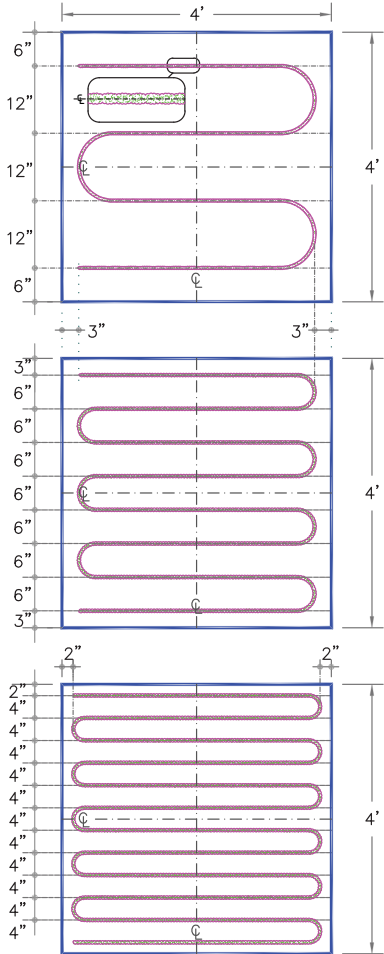
	→ FASTENER & PLATE	<b>OSB (ORIENTED STRAND BOARD) ATTACHMENT</b>		DETAIL NO.
	→ CENTER LINE			A-27F
	→ GUIDE LINE			ADHERED SYSTEM
For additional information, refer to Specifications				

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# ATTACHMENT DETAILS INSULATION/ COVER BOARD

NOTES:

- REFER TO CARLISLE SPECIFICATIONS FOR PRODUCT DATA SHEETS FOR APPROPRIATE BEAD SPACING BASED UPON THE BUILDING HEIGHT, WARRANTY TERM AND ACCEPTABLE SUBSTRATE.
- THE SURFACE TO WHICH ADHESIVE IS TO BE APPLIED SHALL BE DRY, FREE OF FINS, PROTRUSIONS, SHARP EDGES, LOOSE AND FOREIGN MATERIALS, OIL AND GREASE. AREA SHOULD BE CLEANED WITH AN AIR BLOWER.
- PREVIOUSLY UNEXPOSED ASPHALT OR RESIDUE MUST BE PRIMED WITH CARLISLE CAVGRIP, 702 OR 702LV PRIMER.
- SEAL ALL GAPS IN THE CONCRETE DECK WITH CARLISLE 725TR OR OTHER SUITABLE MATERIAL TO AVOID CONDENSATION ISSUES OR FILL WITH CARLISLE INSULATION ADHESIVE.
- AT THE BEGINNING OF THE INSULATION ATTACHMENT PROCESS AND PERIODICALLY THROUGHOUT THE DAY, CHECK THE ADHESION OF BOARDS TO ENSURE A TIGHT BOND IS CREATED AND MAXIMUM CONTACT IS ACHIEVED.
- ALL BOARDS SHOULD BE IMMEDIATELY WEIGHED DOWN AT CORNERS & CENTER. SLIT THE BOARD TO CONFORM TO THE CONTOURS OF THE SUBSTRATE AS NEEDED.



FEET TO MILLIMETERS		INCHES TO MILLIMETERS																				
4'	8'	inch	1/8"	1/4"	5/32"	1/2"	5/8"	3/4"	1"	1.5"	2"	2.5"	3"	4"	6"	8"	9"	11"	12"	18"	24"	36"
1219	2438	mm	3	6	12	13	16	19	25	38	51	63	76	102	152	203	229	279	305	457	610	914

⊗
→ FASTENER & PLATE

⊕
→ CENTER LINE

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→ GUIDE LINE

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→ FOAM ADHESIVE

**INSULATION/ COVER BOARD  
ATTACHMENT USING BEAD ADHESIVE**

For additional information, refer to Specifications

DETAIL NO.
A-27G

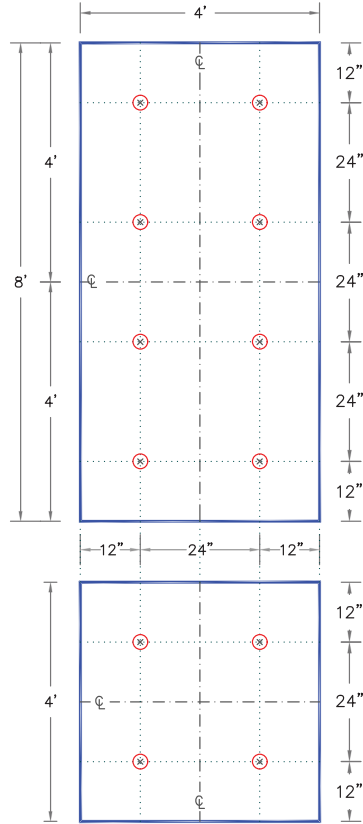
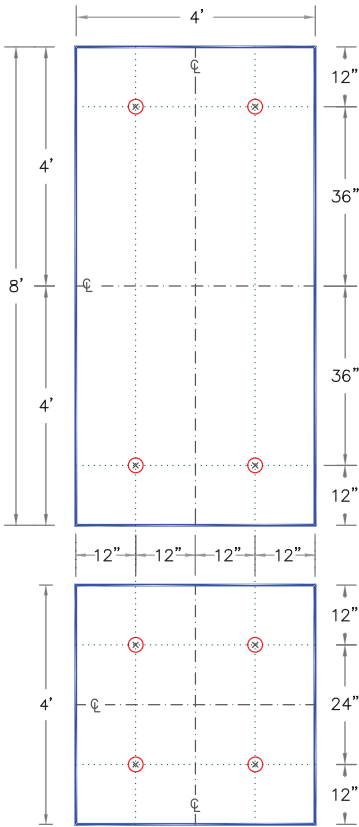
ADHERED SYSTEM

## ATTACHMENT DETAILS

## INSULATION/ COVER BOARD

NEW CONSTRUCTION OR RE-ROOF/TEAR OFF PROJECTS WITH SecurShield HD, SECUROCK, DENS-DECK, HP RECOVERY BOARD OR ANY CARLISLE APPROVED INSULATION


RE-ROOF/NO TEAR OFF PROJECTS WITH POLYISOCYANURATE LESS THAN 1-1/2" (38mm) THICK




NOTE:

FOR CRITERIA ON INSULATION FASTENERS AND PLATES, REFER TO CARLISLE SPECIFICATIONS.


FEET TO MILLIMETERS		INCHES TO MILLIMETERS																					
4'	8'	inch	1/8"	1/4"	15/32"	1/2"	5/8"	3/4"	1"	1.5"	2"	2.5"	3"	4"	6"	8"	9"	11"	12"	18"	24"	36"	
1219	2438	mm	3	6	12	13	16	19	25	38	51	63	76	102	152	203	229	279	305	457	610	914	




FASTENER & PLATE



CENTER LINE




GUIDE LINE



FOAM ADHESIVE

**INSULATION/ COVER BOARD ATTACHMENT UP TO 15-YEAR WARRANTIES**

For additional information, refer to Specifications



DETAIL NO. MF-27A

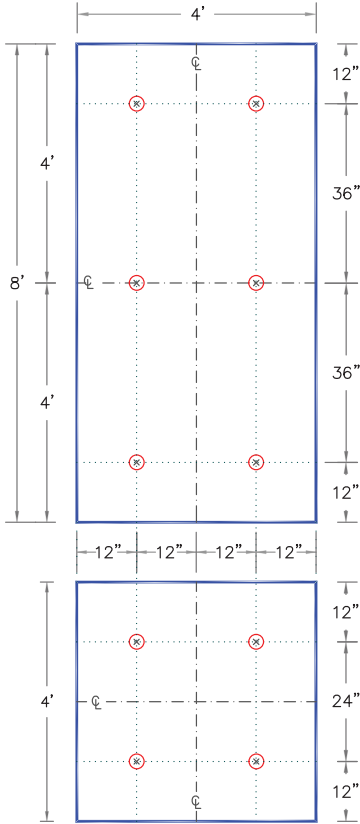
MECHANICALLY FASTENED

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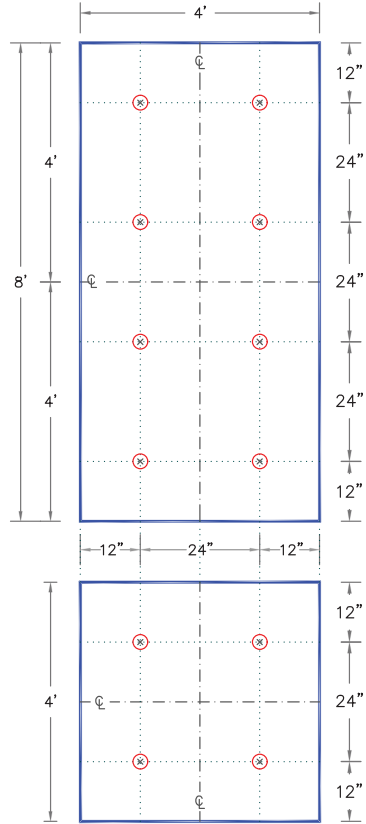
## ATTACHMENT DETAILS

## INSULATION/ COVER BOARD

NEW CONSTRUCTION OR RE-ROOF/TEAR OFF PROJECTS WITH SecurShield HD, SECUROCK, DENS-DECK, HP RECOVERY BOARD OR ANY CARLISLE APPROVED INSULATION



RE-ROOF/NO TEAR OFF PROJECTS WITH POLYISOCYANURATE LESS THAN 1-1/2" (38mm) THICK



### NOTES:

- FOR CRITERIA ON INSULATION FASTENERS AND PLATES, REFER TO CARLISLE SPECIFICATIONS.
- 25 AND 30-YEAR WARRANTY PROJECTS REQUIRE COMPLETE TEAR OFF.

FEET TO MILLIMETERS	
4'	8'
1219	2438

	INCHES TO MILLIMETERS																			
inch	1/8"	1/4"	15/32"	1/2"	5/8"	3/4"	1"	1.5"	2"	2.5"	3"	4"	6"	8"	9"	11"	12"	18"	24"	36"
mm	3	6	12	13	16	19	25	38	51	63	76	102	152	203	229	279	305	457	610	914

	FASTENER & PLATE
	CENTER LINE
	GUIDE LINE
	FOAM ADHESIVE

### INSULATION/ COVER BOARD ATTACHMENT FOR PROJECTS EXCEEDING 15-YEAR WARRANTIES

For additional information, refer to Specifications

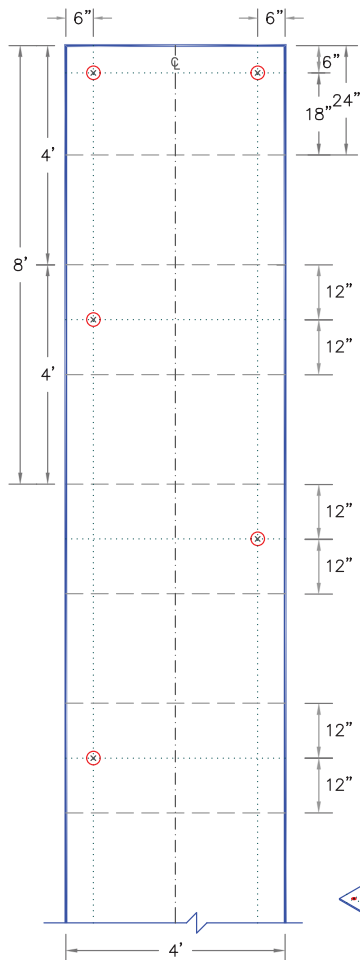


DETAIL NO.  
**MF-27B**

MECHANICALLY FASTENED

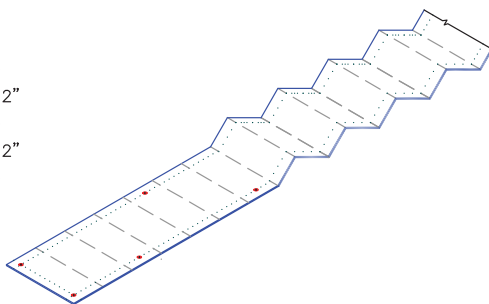
## ATTACHMENT DETAILS

## INSULATION/ COVER BOARD



### NOTES:

1. INSTALL R-TECH RECOVER BOARD WITH CONTINUOUS SIDE JOINTS AND END JOINTS STAGGERED SO THEY ARE OFFSET BY A MINIMUM OF 12" (305mm) FROM THE END JOINTS IN ADJACENT ROWS.
2. INSULATION SHOULD ABUT TIGHTLY AGAINST ADJACENT BOARDS.
3. IF R-TECH FANFOLD RECOVER BOARD IS BEING INSTALLED OVER AN EXISTING LAYER OF INSULATION, ALL JOINTS MUST BE OFFSET A MINIMUM OF 6" (152mm) BETWEEN LAYERS.
4. FASTENERS SHOULD NEVER BE CLOSER THAN 6" (152mm) FROM THE EDGES OF THE BOARD.
5. CARE MUST BE TAKEN TO AVOID OVERDRIVING OR UNDER-DRIVING THE FASTENER AND PLATE ASSEMBLY.
6. METALLIC FACER PERMITS THE USE OF R-TECH RECOVER BOARD UNDER EPDM MECHANICALLY FASTENED ASSEMBLIES IN NORTHERN CLIMATES (CONTACT CARLISLE FOR ACCEPTANCE).



FEET TO MILLIMETERS		INCHES TO MILLIMETERS																		
4'	8'	inch	1/8"	1/4"	15/32"	1/2"	5/8"	3/4"	1"	1.5"	2"	2.5"	3"	4"	6"	8"	9"	11"	12"	18"
1219	2438	mm	3	6	12	13	16	19	25	38	51	63	76	102	152	203	229	279	305	457
																				610
																				914

	FASTENER & PLATE		DETAIL NO.
	CENTER LINE		
	GUIDE LINE		
	FOAM ADHESIVE		
For additional information, refer to Specifications			

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# **Heat Welding Equipment Use & Procedures**

## **Thermoplastic Membranes**

### **Automatic Heat Welder**

An electrically powered, self-propelled device that utilizes an electrical resistance heating element or heater and fan-forced super heated air to weld membrane seams.

#### **1. Temperature Settings**

- a. When making a Sure-Weld / Sure-Flex splice, no one temperature setting or speed can be used to describe the temperature setting or speed to set the robot. The splice must be tested to determine the quality of the splice.
- b. Consult the respective heat welding machine manufacturer for recommendations concerning proper temperature setting and speed control of their equipment.
- c. Typically, the colder the ambient temperature (and likewise the membrane temperature) the slower the Automatic Heat Welder speed control must be adjusted to produce proper seams.
- d. As a general guide, Sure-Weld membranes will weld at a lower temperature 1000° F (538° C) and faster speed (10 feet to 15 feet per minute) than most other heat welded membrane materials. Sure-Flex membrane will typically weld at a temperature of 1150° F (621° C) and a speed of 8 feet to 12 feet per minute.
- e. With the Leister Varimat Automatic Heat Welder, the suggested heat setting is 1004° F (540° C) at 12.5 feet per minute for Sure-Weld OR 1148° F (620° C) at 10.2' per minute for Sure-Flex. With any other brand of robot welder, the temperature should be set at the manufacturer's recommended temperature to begin testing for correct splice results.
- f. The following is a list of items to be checked to determine the temperature setting and the speed at which a splice should be completed:
  1. When the membrane is in direct sunlight, the temperature or robot speed may have to be adjusted when moving into a shaded area, check the splice results. Remember the membrane surface in a shaded area will be cooler than a membrane surface that is in sunlight. Darker colored membrane (such as gray) will be warmer than white and may affect the welder speed.



2. Dampness on the membrane from dew, a passing rain shower or misting condition will reduce heat from the splice due to evaporating moisture from the membrane surface. The heat welding temperature (increased) or the robot speed (slower) will have to be adjusted to produce a good splice. Water must be wiped from the welding surface prior to welding the splice.
3. Wind has a cooling affect as it blows over the surface. It will also affect the airflow in the splice reducing the effectiveness of the hot air gun. This will require the operator to increase heat from the hot air gun or reduce the welder speed.
4. Substrates make a substantial difference in the amount of heat required to produce a proper heat welded splice. The robot will have to be adjusted accordingly:
  - a. Plywood and Concrete act as heat sinks and will take a higher temperature or slower speed setting than insulation.
  - b. Cool damp substrates will take a higher temperature or slower speed setting than dry substrates.
5. Membrane “bleed-out” from sheets should occur with Sure-Flex membrane if properly welded. If bleed-out is not occurring (the underside of the membrane begins to melt and flow), the welder speed should be decreased to increase welding temperature.

## **2. Equipment Set-up**

- a. Equipment set up is the responsibility of the Authorized Applicator. When poor welding is occurring check the following:
  1. If the membrane is overheated on one side or the other, check the nozzle to be sure it is distributing the heat evenly between the two sheets.
  2. If the heat is bypassing the edge of the sheet producing a cold weld along the edge of the splice, be sure the nozzle is completely under the sheet and the air dam is in place and functional.
  3. If the probed splice is tight at the edge but a cold weld is present in center of the splice (the heat is melting the edges but does not melt the center of the splice), check to be sure the robot is not running too fast
  4. Ensure the silicone pressure wheel is intact with no voids in the silicone. If voids are present, incomplete welding will result.
  5. On certain heat welder models, be sure all wheels on the air dam are not binding. Binding wheels will cause sheet movement and distortion during the welding process.

6. The automatic heat welder nozzle should be adjusted as close to the pressure wheel as possible. If the nozzle is too far away from the pressure wheel, distortion of the membrane may occur due to heat expansion.

**NOTE:** Adjust welder nozzle so the curved portion (heel) extending outside the seam area does not contact or drag on the exposed surface of the membrane. This portion of the nozzle should be  $\frac{1}{16}$ " to  $\frac{1}{8}$ " above membrane surface.

7. Overheating the membrane will cause poor welds. It is recommended the automatic welder be run not less than 8' a minute on average temperature days.
8. Only on very cold days the welder should be run below this speed. The temperature and welder speeds must be determined based on test welds prior to actual sheet welding.
9. Clean screen of dirt and debris on air inlet of heat gun every day. Accumulation of contaminants on screen will reduce air flow and heat output of welder.

### 3. Membrane Welding

- a. Prepare the Automatic Heat Welder and allow it to warm for approximately 5 to 10 minutes to reach operating temperature.
- b. Position the Automatic Heat Welder properly prior to seaming with the guide handle pointing in the same direction the machine will move along the seam.
- c. Lift the overlapping membrane sheet and insert the blower nozzle of the Automatic Heat Welder between the overlap for the heat welder to begin operating. The welder will begin moving automatically.
- d. Weight plates provided on Automatic Welders must be utilized.
- e. Proceed along the seam ensuring that the small guide wheel in front of the machine aligns with the edge of the top membrane sheet. Guide the machine from the front only.

**CAUTION:** Ensure the power cord has plenty of slack to prevent dragging the machine off course (which could result from a tightly stretched cord).

- f. At all splice intersections, roll the seam with a silicone roller to ensure a continuous heat welded seam (the membrane should be creased into any membrane step-off with the edge of the silicone roller). A false weld may result due to surface irregularities created by multiple thicknesses of Sure-Weld/Sure-Flex membrane sheets.

When using 60-mil or 80-mil Sure-Weld/Sure-Flex Membrane, a TPO/PVC "T" Joint Cover must be applied over all "T" joint splice intersections. For PVC the use of Sure-Flex Non-Reinforced Flashing is not acceptable to overlay "T" Joint splice intersections.

- g. To stop the automatic welder, disengage and pull the nozzle from the seam area and the welder will automatically stop moving.
- h. Mark the end of the heat welded seam with a water-soluble marker for easy identification. A Hand Held Welder will be necessary to complete the weld in the area between where the Automatic Heat Welder is stopped and restarted.
- i. Perform a test weld, at least, at the start of work each morning and afternoon. Test welds should be made if any changes in substrate or weather conditions occur.

#### **4. Preventing Membrane Creeping During Welding**

- a. The operator of the robot must apply foot pressure to the membrane, kicking and sliding the membrane under the robot to keep the membrane tight. Always have the operator stand on the unfastened sheet of membrane to prevent sheet movement.
- b. Do not release foot pressure from the membrane until the pressure wheel rolls over the membrane in front of the foot that is holding the membrane in place.

#### **5. Use of Welding Tracks**

- a. Set welding tracks lengthwise along the splice, close to the Automatic Heat Welder air dam to reduce membrane movement caused by the welding process. The operator must continue to apply foot pressure to the welding tracks to help hold the membrane splice in place. Welding tracks are moved as welder progresses along seam.
- b. Welding tracks can be:
  - 1. Sheet metal, 22 gauge – 12" wide by 10' long (with rounded corners).
  - 2. Aluminum or steel plates – ¼" x 3", 4' to 6' long (with rounded corners).
  - 3. Wood planks – 2" x 12" X 4' to 6' long.
  - 4. Heavy plywood – ¾" x 24" x 8' long.

## 6. Test Cuts

- a. Perform a test weld at least at the start of work each morning and afternoon.
- b. The test sample should be approximately 1 inch wide and longer than the width of the seam (cut across the heat welded seam).
- c. Peel the test sample apart after it has thoroughly cooled (approximately 10 minutes) and examine for a consistent 1-1/2 inch wide minimum weld. De-lamination of the membrane from the scrim-reinforcement is an indication of a properly welded seam.
- d. Identify the following seam problems to assure seam quality:
  1. Discolored or scorched membrane – Increase speed or decrease temperature setting if membrane discolors.
  2. Voids and wrinkles - A proper heat welded seam has no voids or wrinkles and must be at least 1-1/2 inches wide. Refer to Seam Probing procedures outlined below for proper inspection of seam deficiencies.

## 7. Seam Probing

A blunt or dull cotter pin puller is recommended to probe all heat-welded seams. Probing seams must be done once heat welds have thoroughly cooled. Heat welded seams must be probed throughout the day to check seam quality and to make proper adjustments to heat welding equipment. **The repair of deficiencies must be done routinely throughout the day but no later than the end of each workday.**

- a. Allow heat-welded seams to cool thoroughly for approximately 30 minutes. Premature probing can damage warm seams.
- b. Draw probing tool tip along the edge of the heat welded seam. Apply firm pressure to probe the seam junction, but not into the bottom membrane sheet. The tool will not penetrate into the lap area of a properly welded seam.
- c. If the seam-probing tool penetrates into the lap area, mark the seam using a water-soluble marker at the beginning and the end of voids or wrinkles in the seam edge.
- d. Repair seam deficiencies as soon as possible using the hand held welder. Carlisle recommends that repairs be made the same day they are discovered.

Probe repaired seams after they have cooled completely. If the repair is acceptable, wipe off the water soluble marker lines; if not acceptable, repair the seam using standard heat welded overlay procedures.

**Note:** All laps must be probed each day soon after it has cooled to verify the welder set-up is effective. Particular attention must be given to all membrane intersections and heat-welded seams at insulation joints. In addition, there should be periodic checks (including at the start of each day) to verify good peel strength.

- f. Apply Cut-Edge Sealant on all cut edges of the reinforced Sure-Weld membrane (where the scrim reinforcement is exposed) after seam probing is completed. When a 1/8" diameter bead of Cut-Edge Sealant is applied, approximately 225 – 275 linear feet of coverage per squeeze bottle can be achieved.
  1. Cut Edge Sealant not required on cut edges of Sure-Flex membrane. (Horizontal or Vertical) However, it is recommended.
  2. Cut-Edge Sealant is not required on vertical Sure-Weld splices.

## **Hot Air Hand Welder**

### **1. General**

- a. An electrically powered, hand-held device that utilizes an electrical resistance heating element or heater and fan-forced super heated air to heat weld Sure-Weld/Sure-Flex membrane and flashing. A hand-held silicone rubber roller is used in conjunction with the welder to apply the pressure that fuses the heated membrane surfaces to each other.
- b. The hand-held welder is typically used to repair seams, or when the use of the Automatic Heat Welder is inappropriate (such as flashing penetrations and on high sloped surfaces).

### **2. Hand Held Welder Settings**

- a. Temperature setting for hand held welders when used for flashing should be approximately "6" (on a scale from 1 to 10).
- b. Temperature settings for hand held welders when used for membrane should be approximately "8 –10" (on a scale from 1 to 10).
- c. Exact settings will vary based on heat welding membrane type, ambient temperatures, substrate and type of welder.
- d. Silicone roller should be used to apply pressure to the membrane to be welded.

## Electrical Cords

For generator requirements and maximum length of electrical cords, refer to Generator/ Electrical Requirements below.

## Seam Prober

The probing of heat welded seams is an important step in the application of a Sure-Weld/Sure-Flex Roofing Systems. Carlisle recommends the use of a Carlisle Seam Probe to probe all heat welded seams. All seams must be probed (after the seam has thoroughly cooled) with the appropriate seam probing tool and all deficiencies must be repaired accordingly with a hand held hot air welder no later than the end of each work day.

## Silicone Rubber Roller

A 2" wide rubber roller used for rolling heat welded splices.

## Generator/Electrical Requirements

Building power supplies do not typically provide the proper amount of power necessary for consistent heat welding. The use of a portable generator conforming to the following guidelines is strongly advised.

1. A minimum 6500 watt generator with a minimum output of 210 volts is required for one Automatic Heat Welder. Reduced power availability will result if additional equipment is connected to the generator and may result in faulty heat welded seams. GFI (Ground Fault Interrupter) protection is recommended. Additional generators will be required for operating other power tools and hand held heat welders.

Electrical cords (3 conductors) of the maximum length indicated must be used with the corresponding wire as listed below:

Maximum Length	Wire Size
50 foot	#12
100 foot	#10
300 foot	#8

2. A minimum 3,000 watt generator may be used to power a maximum of two hand held heat welders as long as no other equipment is connected. This generator should service a minimum of 110 volts and be GFI (Ground Fault Interrupter) protected.

Electrical cords (3 conductors) of the maximum length indicated must be used with the corresponding wire as listed below:

Maximum Length	Wire Size
50 foot	#14
100 foot	#12

For extension cords longer than 100', consult an electrician or electrical contractor to ensure proper size of generator and wire.

## Heat Welding Precautions

1. Check the welding machine set-up to ensure proper alignment of the heating nozzle, air dam, pressure wheels, or moving parts to see they move properly or are free-spinning. Test run the welding machine to ensure it moves forward following a straight line. If the alignment is off, make necessary adjustments.
2. Make sure the air intake is open. Clean out the air intake screen for the blower unit at each start up.
3. Check the machine for worn or broken parts which need to be replaced. Exercise care to protect the pressure wheel from notches or cuts to prevent incomplete sealing of the welded seam.
4. Before the machine is connected to the power source, make sure it is switched off to prevent a power surge that could damage the unit. Turn the unit on and allow the blower/heater unit to warm up for approximately 5 to 10 minutes to reach operating temperature.
5. Clean the heat nozzle with a wire brush to remove any build-up of membrane, as needed.
6. To extend the life of the heating element of the Heat Welding Equipment, always turn the temperature adjustment down so the welder can cool prior to switching the machine off.
7. Follow all care and maintenance instructions recommended by the respective manufacturer.

8. It is recommended that two Automatic Heat Welders and two generators be available at the project site in the event of mechanical failure.

## **Welding Problems/Repairs**

1. A Hand Held Hot Air Welder and a 2" wide silicone roller must be used when repairing the membrane. When the entire heat welded seam is to be overlaid, an Automatic Heat Welder may be used.
2. Prior to proceeding with any repair procedure, the area to be repaired must be cleaned and any material which has been exposed to the elements must be prepared with Carlisle Weathered Membrane Cleaner (Sure-Weld) or PVC Membrane Cleaner (Sure-Flex). The membrane can typically be repaired up to 6 months to a year with a standard cleaning method. In cases where the standard cleaning method is not sufficient, the following procedures must be used:
  - a. Scrub the area to be welded with a "Scotch Brite" Pad and appropriate Membrane Cleaner.
  - b. Clean all residue from the area to be welded with a Splice Wipe or a clean natural fiber (cotton) rag.
  - c. Weld the new membrane to the cleaned area using standard welding procedures.
3. Voids in welded seams can be repaired using a Hand Held Hot Air Welder and a silicone roller. Depending on conditions, a splice overlay may be required.
4. Position the hand held welder facing into void so hot air is forced between overlapping membranes. Roll the top membrane surface using positive pressure toward the outer edge until the heated membrane surfaces are fused.
5. Exposed scrim-reinforcement (resulting from scorching surface of membrane) and test weld areas must be repaired by overlaying the damaged area with a separate piece of membrane with rounded corners. The overlay must extend a minimum of 2 inches past the area to be repaired.
6. Probe all edges of the overlay once cooled to ensure a proper weld has been achieved.
7. Seal all cut edges of Sure-Weld Membrane with Cut-Edge Sealant. Cut-Edge sealant not required on cut edges of Sure-Flex Membrane, however, it is recommended.

**Note:** The same overlay repair procedures may be used for punctures in the heat weldable membrane.