

THERMAL VAPOR BARRIER (TVB)^{12EV}

1" - 40" HORIZONTAL

INSTALLATION INSTRUCTIONS



IMPORTANT INFORMATION

Prior to the commencement of Installation all materials **MUST** be inspected for Damage. Any damage must be reported to Construction Specialties as soon as possible, so that replacement materials may be furnished without delay.

All work must be completed as per Architect's Approved "Shop Drawings", and in accordance with these Installation Instructions. When installation is complete, all materials must be protected from damage until the Architect's FINAL INSPECTION.

All materials should be arranged in the order that they are to be installed. All hardware required for each portion of the work should be placed with the appropriate materials.

Please review all Approved Shop Drawings and this Document to familiarize yourself with all the details and components of this assembly.

IMPORTANT:

READ THROUGH ALL INSTRUCTIONS PRIOR TO STARTING INSTALLATION

8/15/2023



Construction Specialties™

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GENERAL NOTES

- Thermal Vapor Barrier (TVB) is to be installed in accordance with architectural drawings, CS shop drawings, or details provided for the specific projects requirements and these installation instructions.
- Although the installation process is similar for horizontal and vertical TVB applications, these instructions apply to TVB horizontal applications.
- The TVB is to be installed in conjunction with a CS joint cover when indicated.
- For applications where no CS joint cover is installed with the TVB, galvanized washer strips or continuous alum. frames, and anchors, are provided to secure the TVB in place. These conditions are referenced in these instructions.
- In horizontal applications, a Vapor Barrier is to be installed in conjunction with the TVB to provide water protection.

Material Preparation:

- All sections should be removed from the shipping containers and laid out to allow material to relax and flatten prior to installation.
- All TVB is supplied with wide anchor flanges.
- TVB barriers are intended to be installed with a minimum $1\frac{1}{2}$ " recess into the joint but can be increased to accommodate the installation of additional vapor barrier and/or joint cover components. (Fig. 1 & 2)
- The wide flanges are intended to allow the TVB to be mated to building waterproofing membranes. If not needed, the excess flange material can be cut off beyond the attachment.

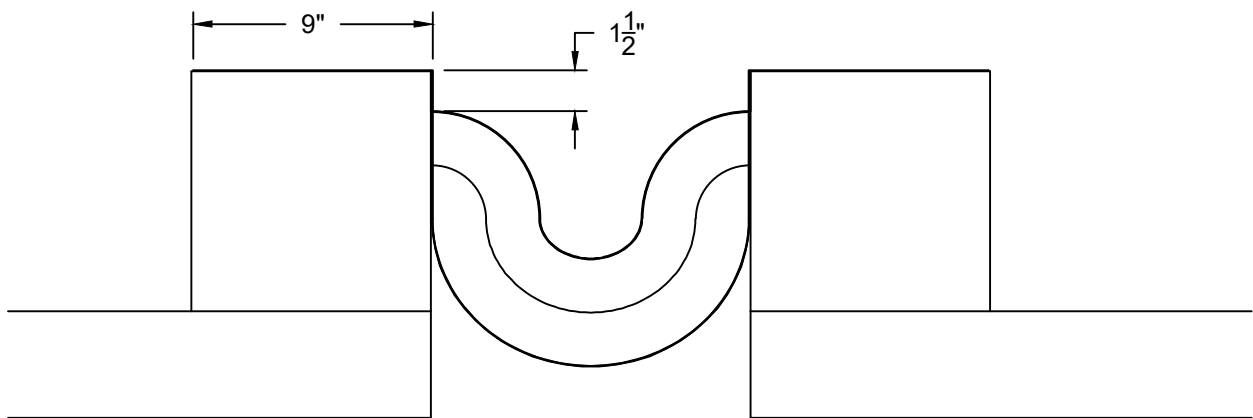


FIG. 1 - TVB - MINIMUM RECESS

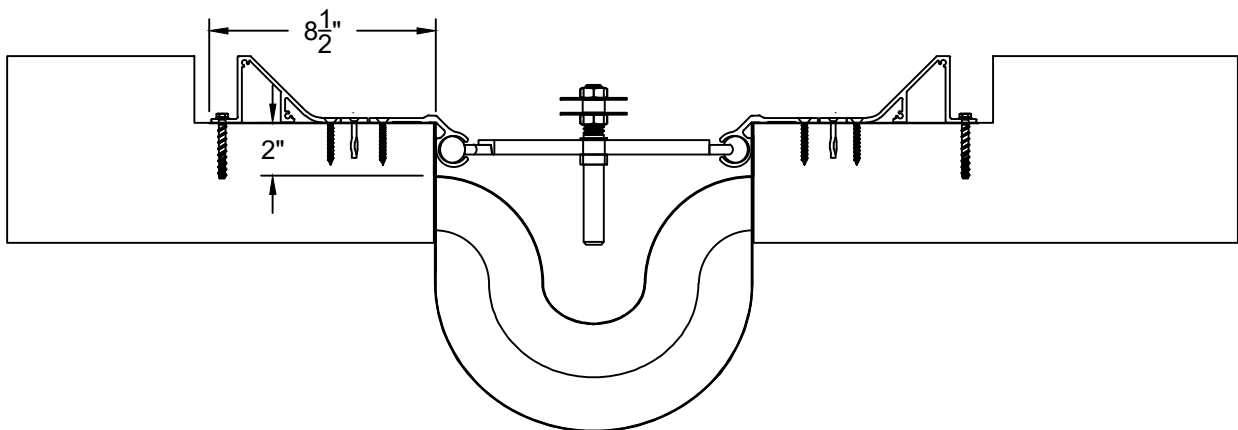
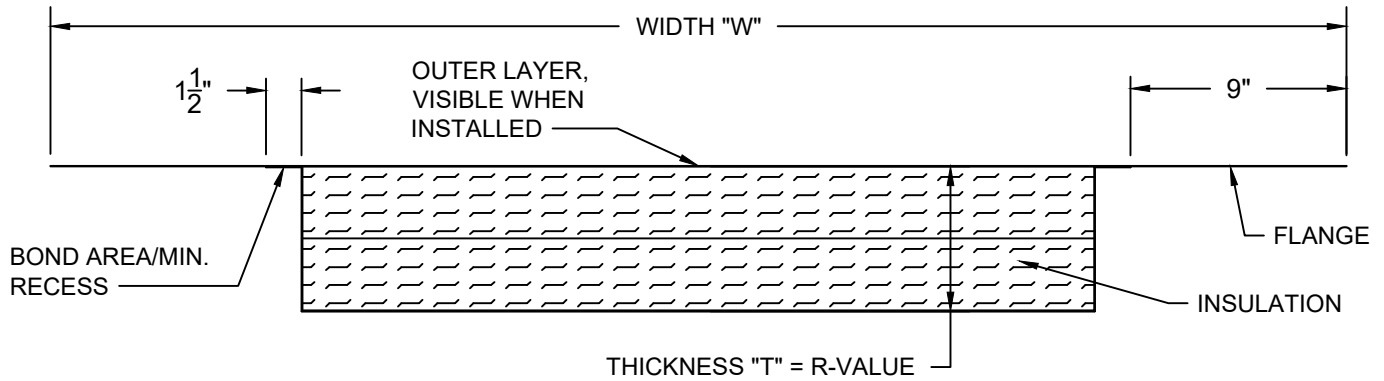


FIG. 2 - TVB - RECESS ADJUSTED FOR JOINT COVER FRAMES

IDENTIFYING TVB BARRIERS

Note: When multiple sizes/models of TVB have been supplied, the info. below can be used to aid in identifying the appropriate barrier for a given joint location. Note: The size, construction, and components of the TVB are the same for both horizontal and vertical applications.

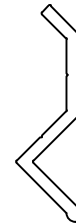


TVB SECTION DETAIL

BARRIER IDENTIFICATION		
MODEL	WIDTH "W"	OVERALL LENGTH
TVB1	22.5"	21'-0"
TVB2	24"	21'-0"
TVB3	25.5"	21'-0"
TVB4	27"	21'-0"
TVB6	30"	11'-0"
TVB8	33"	11'-0"
TVB10	36"	11'-0"
TVB12	39"	11'-0"
TVB14	42"	11'-0"
TVB16	45"	11'-0"
TVB18	48"	11'-0"
TVB20	51"	11'-0"
TVB22	54"	11'-0"
TVB24	57"	11'-0"
TVB26	60"	11'-0"
TVB28	63"	11'-0"
TVB30	66"	11'-0"
TVB32	69"	11'-0"
TVB34	72"	11'-0"
TVB36	75"	11'-0"
TVB38	78"	11'-0"
TVB40	81"	11'-0"

BARRIER IDENTIFICATION		
MODEL	WIDTH "W"	OVERALL LENGTH
TVB12	23"	21'-0"
TVB24	25"	21'-0"
TVB36	27"	21'-0"
TVB48	29"	21'-0"
TVB612	33"	11'-0"
TVB816	37"	11'-0"
TVB1020	41"	11'-0"
TVB1224	45"	11'-0"
TVB1428	49"	11'-0"
TVB1632	53"	11'-0"
TVB1836	57"	11'-0"
TVB2040	61"	11'-0"
TVB2244	65"	11'-0"
TVB2448	69"	11'-0"
TVB2652	73"	11'-0"
TVB2856	77"	11'-0"
TVB3060	81"	11'-0"
TVB3264	85"	11'-0"
TVB3468	89"	11'-0"
TVB3672	93"	11'-0"
TVB3876	97"	11'-0"
TVB4080	101"	11'-0"

R-VALUE IDENTIFICATION		
THICKNESS "T"	R-VALUE	LAYERS OF INSULATION
4"	R13	2
6"	R19	2
9"	R30	3

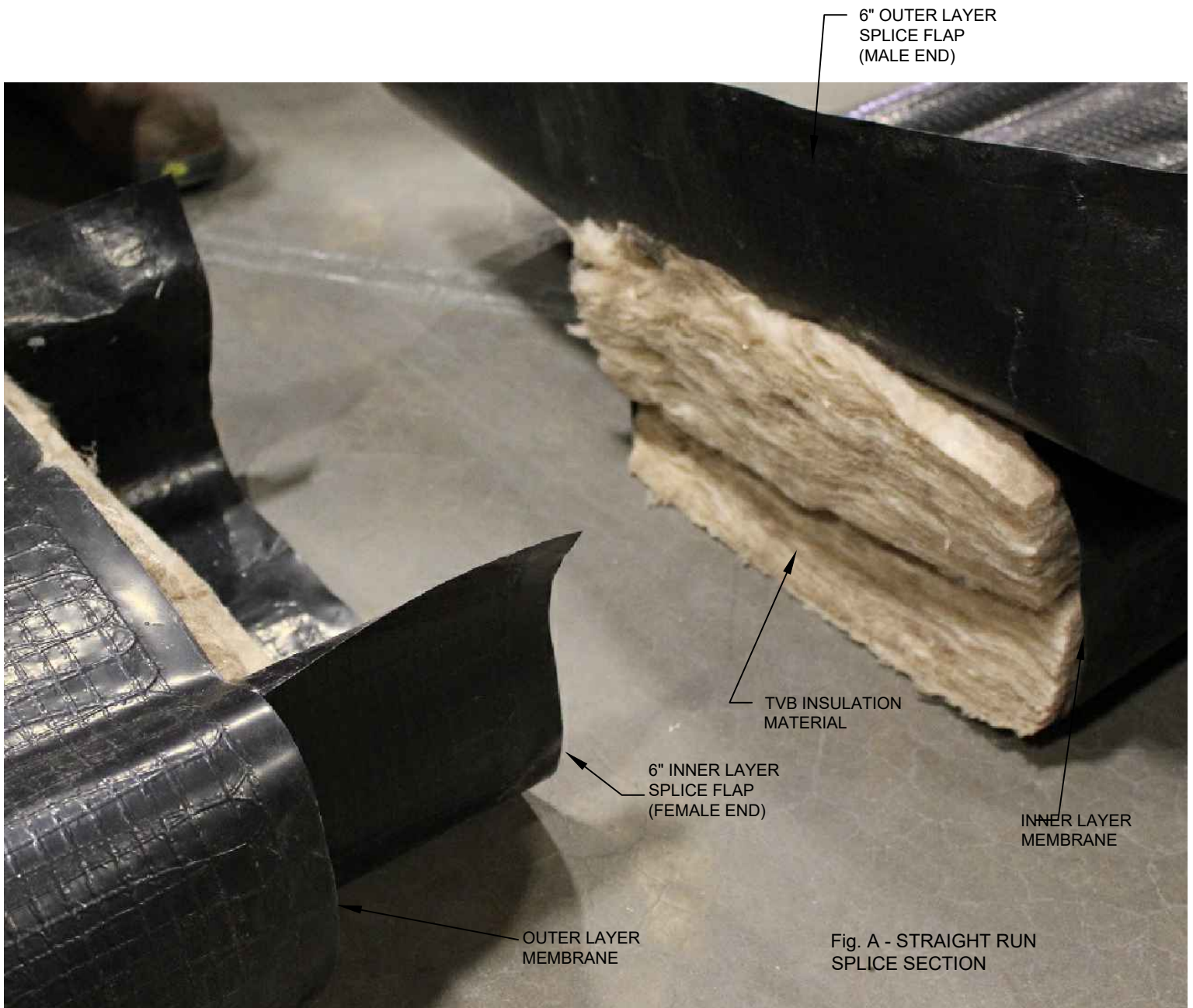


ALUM. FRAME (12A810008)
 - MODEL A1 - TBV INSTALLED WITH ALUM. FRAME ONE SIDE.
 - MODEL A2 - INSTALLED WITH ALUM. FRAME BOTH SIDES.



GALV. WASHER STRIP (12M218003)
 - MODEL G1 - TBV INSTALLED WITH GALV. WASHER STRIP ONE SIDE.
 - MODEL A2 - INSTALLED WITH GALV. WASHER STRIP BOTH SIDES.

INSTALLATION NOTES



Installation Notes:

- Installation of horizontal TVB begins at the end of a horizontal joint or run.
- If a run of TVB requires a transition (e.g. horizontal to vertical, 90° horizontal corner, ect.), it is recommended to install the transition area first and work outward from the the transition. (See page 14-18 for transition instructions.)

Reference: The Outer Layer Membrane is the plastic sheet material that will be visible once installed. The Inner Layer Membrane is the plastic sheet portion that is first inserted into the joint towards the inside of the building.

Barrier Lengths:

- 1"-4", R13, R19 and R30 barriers are shipped in 21'-0" lengths, and 6"-40" R13, R19 and R30 barriers are shipped in 11'-0" lengths.
- All barriers are supplied with a 6" splice flap extension of the Outer Layer (Male End) at one end and Inner Layer (Female End) at the other end to facilitate splicing.
- Field splicing will be required when the length of a run is greater than the supplied length of TVB barrier.

INSTALLATION: HORIZONTAL JOINT

Step 1 - Installation Prep

- 1.1 Review the architectural drawings, CS shop drawings, and details of where the first run of TVB is to be installed. Take note of the required recess for this location (a minimum 1 1/2" recess is required).
- 1.2 Calculate the surface flange width using the formula $1\ 1/2" - \text{recess depth} = \text{surface flange width}$. (TVB barriers are supplied with a 10 1/2" wide flange along each edge. At the minimum 1 1/2" recess depth, the surface width of the flange is 9". As the barrier is recessed further into the joint, the surface flange width decreases.)
- 1.3 On each side of the joint, measure back from the joint edge and place a mark on the floor, blockout or roof representing the outer edge of the surface flange. (Note: These marks will assist in locating the barrier and setting the recess depth for the barrier. (Fig. 1A). To further assist, you can measure, mark, fold and crease the flange at this dimension.)
- 1.4 If either end of this run requires a transition, refer to pages 14-18. If no transition is required, proceed to Step 2. If a transition was already installed, refer to Step 6.



Fig. 1A

Step 2 - First Barrier Prep - No Transition

- 2.1 Measure the overall length of the run.
- 2.2 Place a length of TVB barrier on the floor, roof or ground with the Male End oriented to the beginning end of the run. (Fig 2A)
- 2.3 Using scissors, cut off the 6" splice flap creating a square end on the barrier. (Fig. 2B)



Fig. 2A



Fig. 2B

INSTALLATION: HORIZONTAL JOINT

Step 2 - First Barrier Prep - No Transition - Continued

2.4 Measure the overall length of the run. If the first barrier length exceeds the run length, from the square cut end (Male End) of the first barrier, measure and mark the required length on the surface of the Outer Layer. (Note: If the run length exceeds the barrier length, see Step 4 for splicing instructions.)

2.5 Using a square, place a perpendicular line across the width of the Outer Layer. Using a straight edge and utility knife, compress the barrier and cut through the entire barrier creating a square cut end. (Fig 2C)

Note: Larger TVB barriers contain pins to retain the insulation within the barrier. When cutting the barrier to a required length, if the pin or pins are cut off, new pins are to be installed. If the cut length of the barrier is less than 3' long, adding pins is not necessary.

For barriers with a single pin at each end, centered in the width:

2.6 Place the barrier face down (Inner Layer facing up) measure in 6" from the cut end and at the center of the width of the insulation and place a location mark on the barrier.

2.7 Flip the barrier over (Outer Layer facing up) and place a mark at the same dimensional location on the surface of the Outer Layer.

2.8 Select the appropriate pin length for the R-value of your barrier (R13 = 4 1/2", R19 = 6 1/2" and R30 = 9 1/2" pins). Hold the point of the Pin on the mark and perpendicular to the surface of the barrier. Push the Pin through the Outer Layer and the insulation.

2.9 Lift the end of the barrier so you can see the mark on the bottom (Inner Layer). Move the Pin until you can feel the point is aligned with the mark and push the pin through the Inner Layer.

2.10 Flip the barrier over. Place a Locking Washer over the point of the Pin. Push the Washer approx. 3/4" - 1" onto the Pin.

2.11 Approx. 3/4" above the washer, cut off the end of the pin with cutting pliers (Fig. 2D). Using two pliers, place one pliers just under the Washer and grip the pin firmly. With the second pliers, grip the Pin just above the Washer and bend the pin over 90°. (Fig. 2E & 2F)

For barriers with two pins at each end:

2.12 Follow the steps above, however, at the pins remaining in the barrier, measure the distance from the outer edge of the insulation to the pins. Please the mark at this dimension and 6" in from the cut end.



Fig. 2C



Fig. 2D

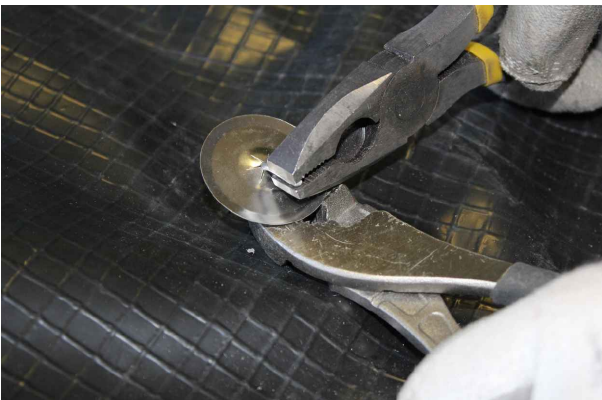


Fig. 2E

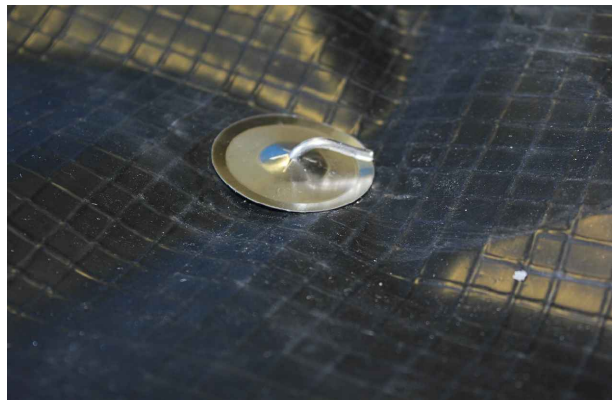


Fig. 2F

INSTALLATION: HORIZONTAL JOINT

Step 3 - First barrier installation

Note: The insulation thickness varies with R-Value (R13 = 4" thick, R19 = 6" thick and R30 = 9" thick) and the insulation width varies based on nominal joint width and movement requirement. In some barriers the insulation is thicker than it is wide. The installation method for these barriers follows:

- 3.1 Place the barrier centered over the joint, align the first end of the barrier with the end of the joint run. The opposite end should align with the other end of the joint. (Fig. 3A)
- 3.2 At the "start" end of the barrier, reach under the flanges and place your hands on the outside surface of the barrier on each side.
- 3.3 Push your hands together compressing the width of the barrier. (Fig. 3B)
- 3.4 Insert the bottom end of the inner layer into the joint. (Fig. 3C)
- 3.5 Continue to compress and insert the barrier into the joint, along the length, walking the barrier into the joint.
- 3.6 Push the barrier into the joint until the flanges reach the surface. Lay the flanges across the surface.
- 3.7 Push the barrier further into the joint to set the recess. Align the outer edge of the flanges with the location marks and/or until the flange crease seats on the corner of the substrate.
- 3.8 Measure from the substrate surface down to the TVB insulation area to confirm the recess depth. Adjust as needed.
- 3.9 Place strips of duct tape along the outer edges of the flanges, over the length of the installed barrier, to hold the barrier in position as installation continues. (Fig. 3D)

Note: See page 8 for instructions for barriers with insulation that is wider than it is thick.



Fig. 3A



Fig. 3B

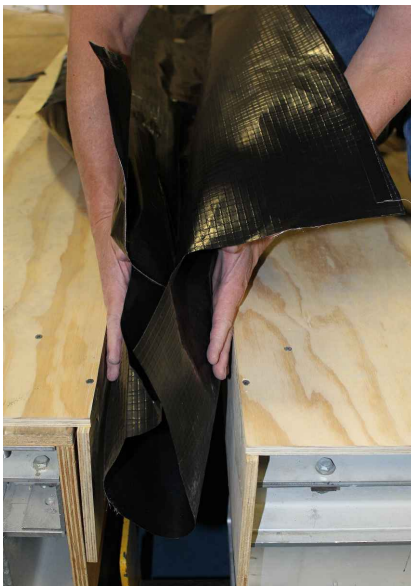


Fig. 3C



Fig. 13D

INSTALLATION: HORIZONTAL JOINT

Step 3 - First barrier installation

Note: The installation method for barrier with insulation that is wider than it is thick:

- 3.1 Place the barrier on the floor/roof alongside the joint, align the first end of the barrier with the end of the joint run. The opposite end should align with the other end of the joint.
- 3.2 Lift up on the edge flange on one side of the barrier and fold it over to the opposite flange, folding the barrier in half to form the barrier into a "U" shape. (Note: To assist with the fold, place a long thin item, such as a piece of pipe, a rod, a 2x4 or similar, along the centerline of the barrier and compress the insulation while folding). (Fig. 3A).
- 3.3 Lift the barrier by the flanges while maintaining the folded U-shape and position the barrier over the joint. Align the ends of the barrier with the ends of the joint.
- 3.4 Begin to push the bottom of the barrier into the joint. If needed, place your hands on the outside surface, on each side of the barrier, and compress the sides to fit the barrier into the joint. (Fig. 3B)
- 3.5 Work along the length of the barrier and continue to push the barrier into the joint until the flanges reach the surface. Lay the flanges across the surface.
- 3.6 Push the barrier further into the joint to set the recess. Align the outer edge of the flanges with the location marks and/or until the flange crease seats on the corner of the substrate. (Fig. 3C)
- 3.7 Measure from the substrate surface down to the TVB insulation area to confirm the recess depth. Adjust as needed. (Fig. 3D)
- 3.8 Place strips of duct tape along the outer edges of the flanges, over the length of the installed barrier, to hold the barrier in position as installation continues. (Fig. 3E)



Fig. 3A



Fig. 3B

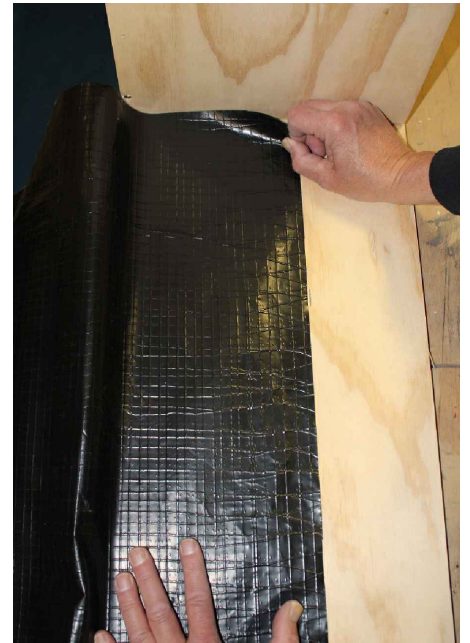


Fig. 3C

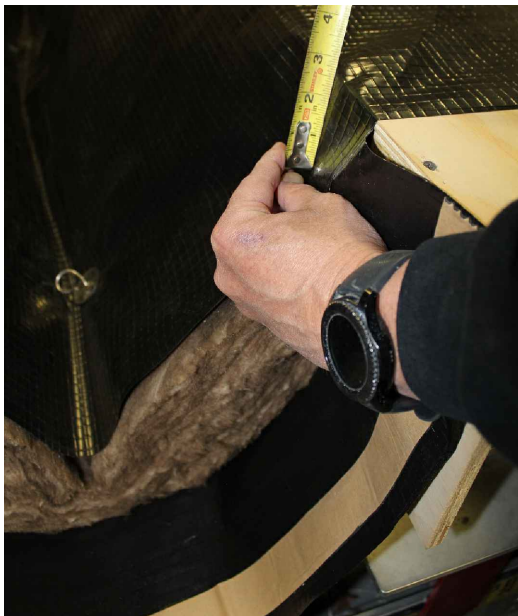


Fig. 13D



Fig. 3E

INSTALLATION: HORIZONTAL JOINT

Step 4 - Out-of-Joint Splicing

4.1 When the run length exceeds the supplied barrier length, barriers are to be spliced together.

4.2 Place additional lengths of barrier, equaling or exceeding the run length, extending from the uncut end of the first barrier.

4.3 Place each barrier so that the Male End and Female End are oriented to facilitate splicing. (Fig. 4A)

4.4 At the ends of the first and second barrier, prepare to create an out-of-joint splice.

4.5 At the end of the first barrier, apply the CS supplied Fab Tape to the inside surface of the inner splice flap, approximately 1/2" in from edge of the flap (Fig. 4B). (Do not remove the paper backing from the Fab Tape at this time.) Use a roller to apply pressure to seat the tape to the vapor barrier (Fig. 4C). (Note: To increase the bond strength, use a non-flaming or sparking heat gun and heat the Fab Tape area. Apply heat when installing at temperatures below 40° F.)

4.6 At the second barrier, turn the barrier face down. Apply Fab Tape to the Outer Splice Flap, approximately 1/2" in from edge of the flap. (Do not remove the paper backing from the Fab Tape at this time.) Use a roller to apply pressure to seat the tape to the vapor barrier. (Fig. 4D) Note: When additional barrier will be required, apply the Fab Tape at each end of all additional barriers.

Continued on Page 10.



Fig. 4A



Fig. 4B



Fig. 4C



Fig. 4D

INSTALLATION: HORIZONTAL JOINT

Step 4 - Out-of-Joint Splicing (Continued)

4.7 Flip the second barrier back upright so that insulation material from each barrier will mate together.

4.8 Peel off the paper backing from the Fab Tape on the Inner Splice Flap (Female End) inside the first barrier. (Fig. 4E)

4.9 Carefully lift and place the second barrier (Male End) inside the Inner Splice Flap (Female End) of the first barrier bringing ends of the insulation together. (Fig. 4F) While keeping the insulation butted tightly together, seat the second barrier down onto the Fab Tape and along the vertical sides. Note: The bond of the tape can be unforgiving so use caution to try to center the barrier within the first barrier.

4.10 Apply pressure on the outer surface of the Inner Layer to get the tape to adhere. (Note: To increase the bond strength, use a non-flaming or sparking heat gun and heat the Fab Tape area.)

4.11 Lift the Outer Splice Flap of the second barrier and peel the paper backing from the Fab Tape. (Fig. 4G) Working from the middle of the barrier width towards to outside edges, seat the flap and tape against the top surface of the Outer Layer of the the first barrier.

4.12 Apply pressure to the area of the Fab Tape to adhere the tape. Use a roller to ensure a secure bond at the taped area. (Note: To increase the bond strength, use a non-flaming or sparking heat gun and heat the Fab Tape area. Apply heat when installing at temperatures below 40° F.)

Note:

Because the TBV product width and weight varies greatly over the size range, it is necessary to evaluate the the assembly of multiple barriers to determine what overall length can be effectively handled for installation. After splicing barriers together, lift the barriers from the ends to evaluate if a longer length is manageable.

- If additional length or lengths are manageable, proceed to add additional lengths to the assembly by following the splice procedures above accessing the manageable length after each.
 - When the splice-assembled barrier length exceeds the run length, follow instructions at Step 2.4 and 2.5 to measure, mark and cut the barrier to the required run length.
 - Proceed to install the barrier assembly per Step 3.
- If a longer length cannot be handled effectively, install the assembled length into the joint per Step 5.
 - Splice additional barriers together as needed for the overall run length.
 - Install additional assemblies while forming In-Joint splices per Step 3.
 - Cut the assembled barrier to the required length to finish the run per the instruction in Step 2.4 and 2.5.



Fig. 4E

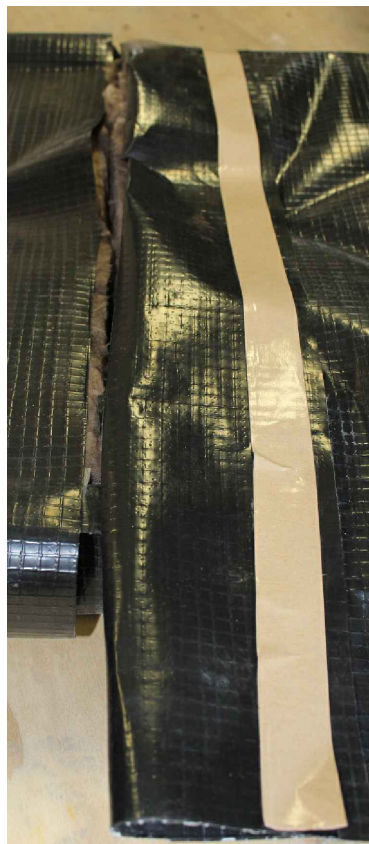


Fig. 4F

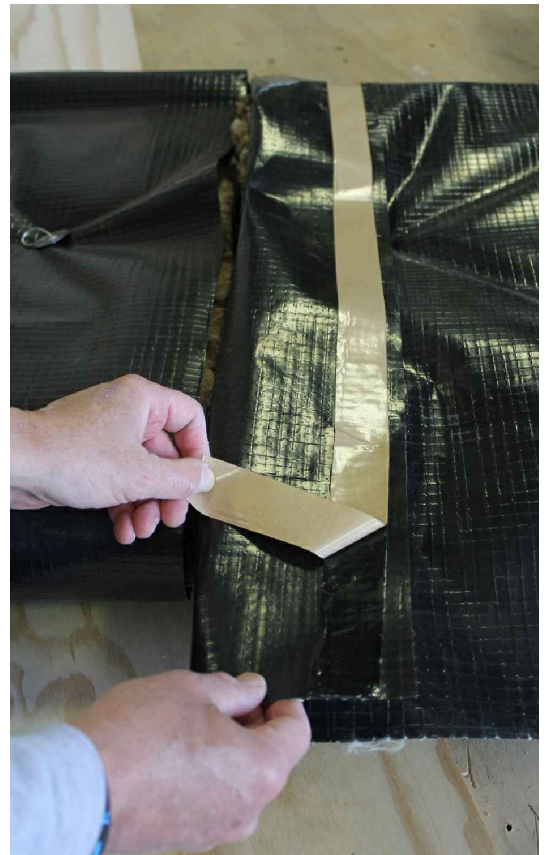


Fig. 4G

INSTALLATION: HORIZONTAL JOINT

Step 5 - In-Joint Splicing

5.1 When the run length requires additional barriers or multiple barrier assemblies, the barrier may be spliced within the joint. Note: In-Joint splicing is more difficult to create so it is recommended that Out-of-Joint splicing is used when possible.

5.2 If not previously applied, follow Step 4.5 - 4.6 to apply the Fab Tape to the Male and Female end of each barrier/barrier assembly to be spliced.

5.3 Place the next barrier or barrier assembly centered over the joint with the male end aligned over the female end of the installed barrier. (Fig. 5.A)

5.4 Reach under the barrier and peel the paper backing off the Fab Tape within the female flap of the installed barrier. (Fig. 5B)

5.5 At the mating end of the barrier, compress the end of the barrier or form the barrier to a "U" shape so it can fit within the installed barrier.

5.6 Carefully lower the end of the barrier into the joint and installed barrier, butt the end of the insulation to the insulation of the installed barrier, and seat the underside of the barrier onto the Fab Tape. Try to center the barrier onto the tape and within the installed barrier.

5.7 Seat the remainder of the barrier onto the joint and set the recess per Step 3 instructions.

5.8 Once the full length of the barrier is seated, place your hands inside the barrier at the splice area and press outward to seat the outer barrier onto the tape.

5.9 Lift the Outer Splice Flap of the second barrier and peel the paper backing from the Fab Tape. (Fig. 5C) Working from the middle of the barrier width towards outside edges, seat the flap and tape against the top surface of the installed barrier. (Note: To increase the bond strength, use a non-flaming or sparking heat gun and heat the Fab Tape area. Apply heat when installing at temperatures below 40° F.)

5.10 Use your hands to apply pressure to the area of the Fab Tape to adhere the tape. (Fig. 5D)



Fig. 5A



Fig. 5B

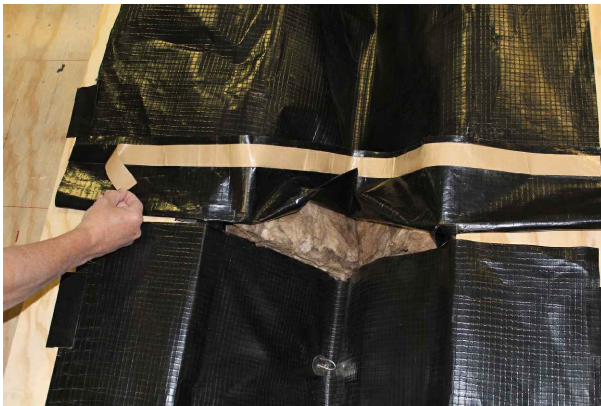


Fig. 5A

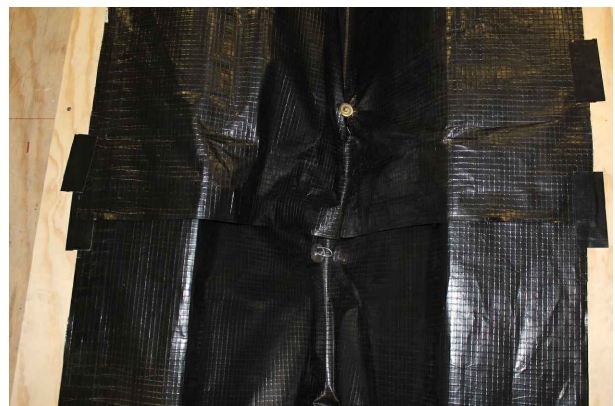


Fig. 5B

INSTALLATION: HORIZONTAL JOINT

Step 6 - First Barrier Prep from a Transition

6.1 When a transition (such as horizontal to vertical, 90° horizontal corner, ect.) occurs at the end or within a run, it is recommended that the transition barrier is installed first and the installation is continued from the transition. Prepare the transition barrier per instructions on pages 14-18. (Fig. 6.1)

6.2 Measure from the insulation at the end of the transition to the end of the run. Note the end condition (male or female) at the transition barrier.

6.3 Prepare barriers for the run per splice instructions in Step 4 and 5.

6.4 Place the barrier/barriers in the appropriate orientation to mate with the male or female end of the transition barrier. (Fig. 6A)

6.5 Place the first barrier or multibarrier assembly over the joint.

6.6 Insert the barrier into the joint (Step 3) and create the In-Joint splice per Step 5 instructions.



Fig. 6A

INSTALLATION: HORIZONTAL JOINT

Step 7 - Install Aluminum Frames or Galvanized Strips

Note: In many applications the TVB is anchored by the frames or retainers of an adjacent expansion joint cover (e.j.c.). For application where there is no e.j.c., the TVB can be anchored with Alum. Frames or Galvanized Strips, based on the substrate and recess depth. Refer to CS-provided drawings and details for TVB-A and TVB-G models for the required application.

7.1 Based on the details, position an Alum. Frame or Galv. Strip at the location indicated. (Fig. 7A & 7B)

7.2 Using the Alum. Frame or Galv. Strip as a template, mark the locations for the anchors. Refer to the drawings for the CS-supplied anchor type and spacing.

7.3 Based on the anchor type, pre-drill the substrate with the appropriate size and type of drill. Note: For some anchor types and substrates (example: thin metal, wood), it may not be necessary to pre-drill.

7.4 Reposition the frame/strip and anchor it using the appropriate anchor. (Fig. 7C & 7D)

7.5 Repeat for each piece of of frame/strip required to full anchor this run of TVB.

Notes:

- In horizontal applications, a Vapor Barrier is to be installed in conjunction with the TVB to provide water protection.
- The wide wings of the TVB are intended to be mated to the building weather membrane when required. Dow Corning 758 Silicone Weather Barrier Sealant has been tested with TVB barrier and has proven to provide an acceptable water seal between the TVB and common building membranes.
- When the wide flange is not needed, it can be removed beyond the attachment.

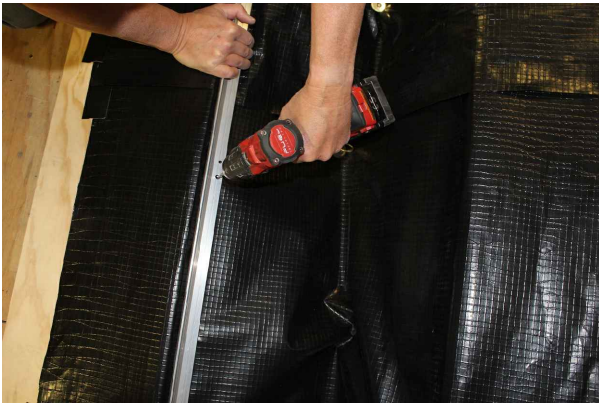


Fig. 7A

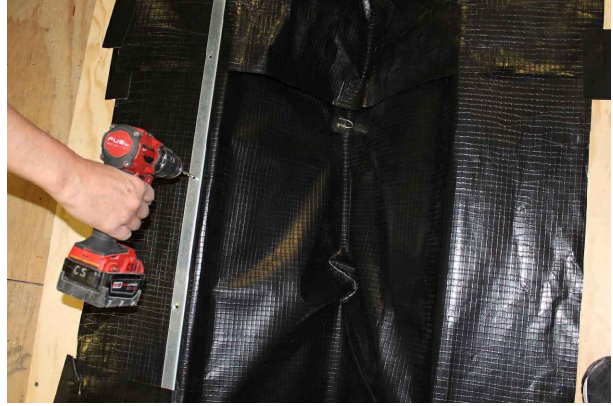


Fig. 7B

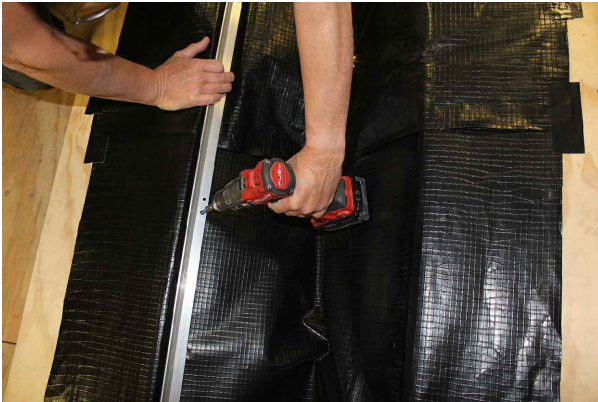


Fig. 7C



Fig. 7D

TRANSITIONS / MITERS

In transitions it is important to minimize the cutting of the top layer of vapor barrier material on the TVB system. The vapor barrier material is flexible and easily transitions with minimal penetrations.

VERTICAL TO HORIZONTAL TRANSITION

It is recommended to use one continuous section of TVB to transition from a vertical to a horizontal condition. Without cutting the material, fold TVB material into a "U" shape and install in the expansion joint area. If using a spliced piece of material, make sure the splice area is not at the 90° corner of the transition. (Fig. T1)

Orient the barrier so that the Inner Layer Splice Flap is at the upper end of the vertical portion to facilitate splicing to the next vertical barrier.

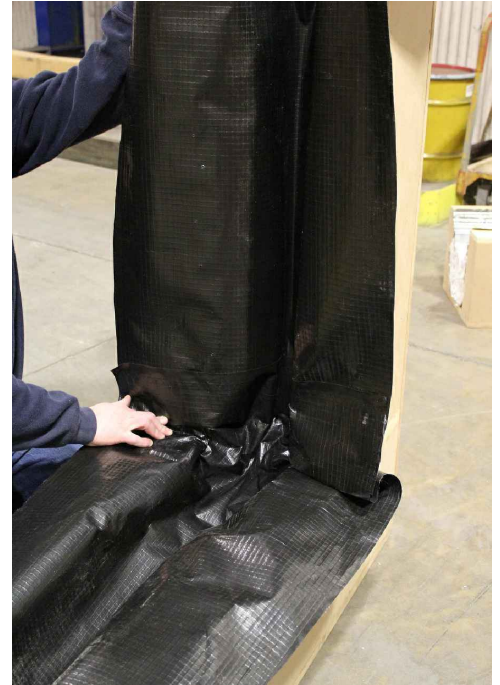


Fig. T1

90° HORIZONTAL TRANSITION

It is recommended to cut the 9" flanges back to the seamed insulation blanket and to only cut the bottom layer of vapor barrier and insulation material. These cuts will allow the product to fold into the cavity at the transition without cutting the outer vapor barrier layer. (Fig. T2 & T3)

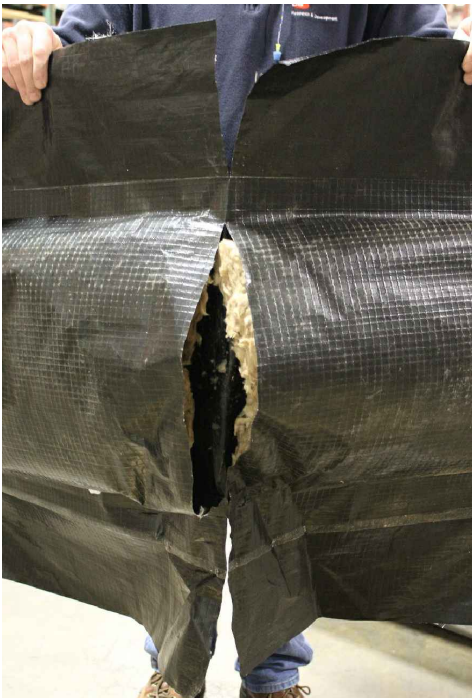


Fig. T2



Fig. T3

Fold the TVB insulation blanket into a "U" shape and install into the joint area, installing to the recessed depth of the straight run of material. Tape the 9" TVB flanges to the substrate to hold in place. At the top surface, at the outside corner, splice in a 12" x 12" vapor barrier piece, notching to allow installation in corner. Apply CS-supplied Fab Tape to splice edges, remove paper backing and apply pressure to ensure a secure bond. (See figure T4 & T5)

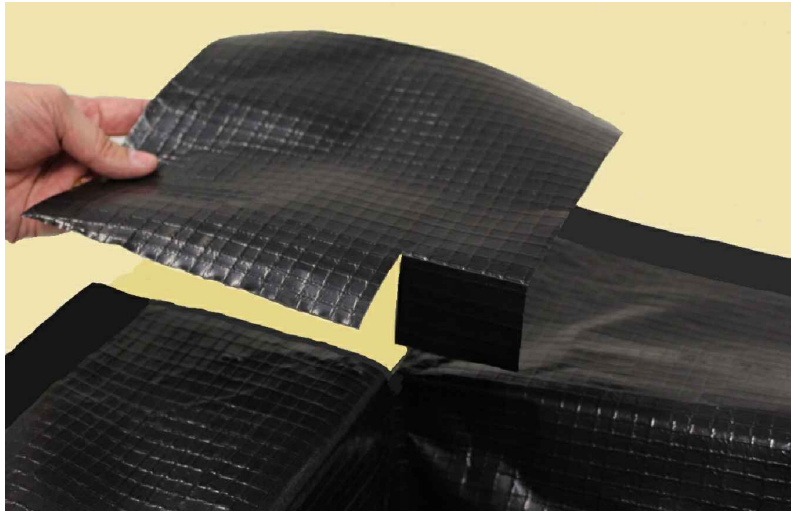


Fig. T4

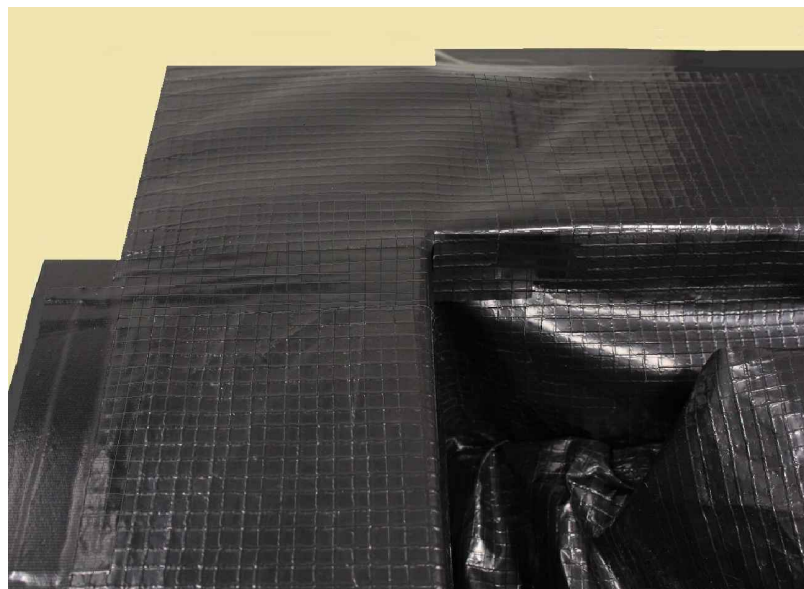


Fig. T5

"T" Transition:

It is recommended to have one section run continuous through the "T" transition butting /splicing in TVB leg creating the "T" transition.



Fig. T6

Cut the bottom layer of vapor barrier back 12" on each side of the insulation material, folding back to expose insulation material. Cut and remove 12" of insulation material leaving the vapor barrier on the top and bottom of the TVB system. (Fig. T6, T7 & T8)



Fig. T7

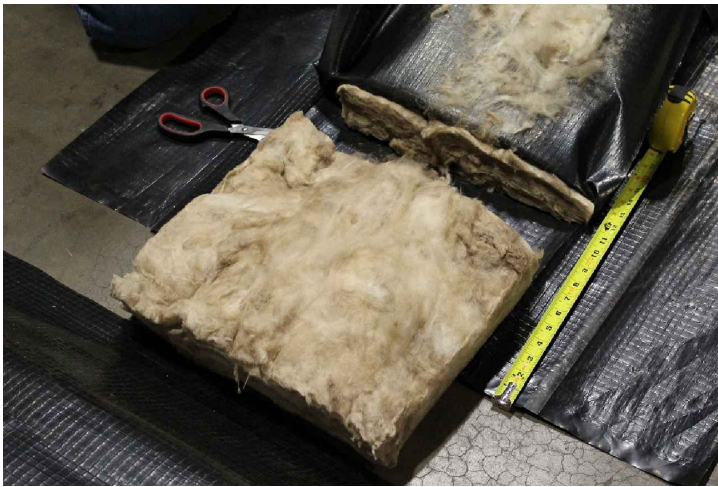


Fig. T8

Fold the bottom layer of vapor barrier material up, tucking it in over the top of the insulation material. (Fig. T9)

Fold 1" of the top layer of vapor barrier down over and crease. (Fig. T10)



Fig. T9

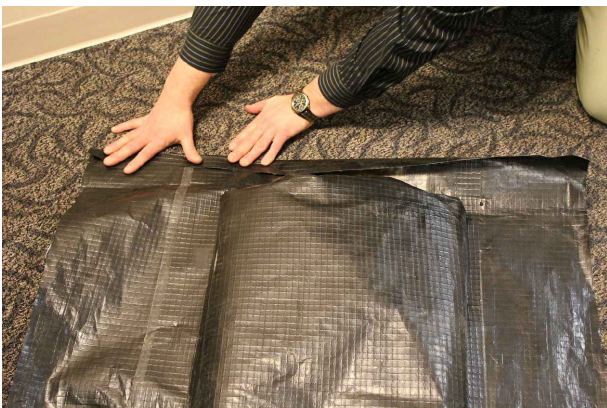


Fig. 10

"T" Transition Con't:

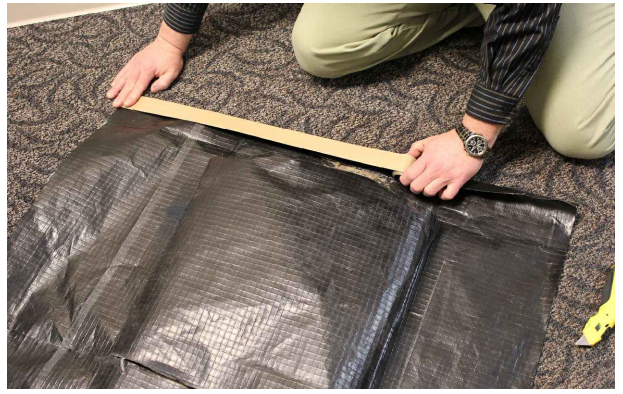


Fig. T11



Fig. T12

Apply CS-supplied fab tape to the 1" folded over/creased tab. Fold the 1" fab taped area up over the top layer of vapor barrier. Remove the paper backing from the fab tape and apply pressure to seal. Use a roller to ensure a secure bond to the taped area. (Fig. T11 & T12)



Fig. T13

Fold the insulation of the leg "T" transition into a "U" shape to install in the joint area at the required recess depth of the TVB drape. Review the shop drawings and the expansion joint cover anchor frame to determine the recess depth required. The recommended minimum recess depth is 1 1/2" for most applications. Tape the TVB section to the substrate to hold in place. (Fig. T13)

Butt the "T" leg of the transition into the continuous run of TVB material creating the "T" transition. (Fig. T14)

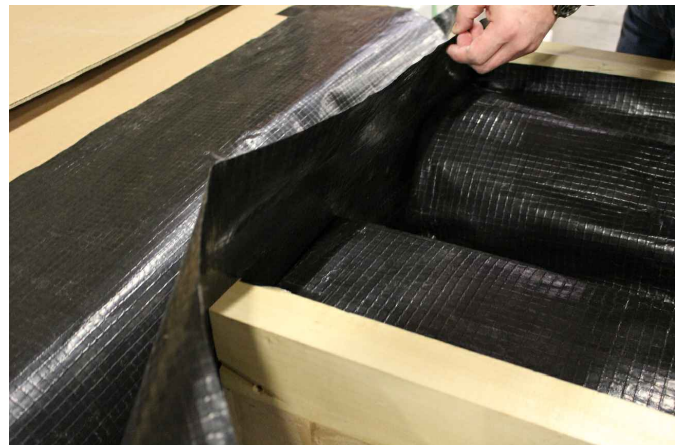


Fig. 14

"T" Transition Con't:



Fig. T15

Cut the 9" flange of the continuous run of TVB material at the center of the intersecting leg down to the seamed insulation blanket but not cut into the insulation material. Fold the cut flange to fit into the joint area of the intersecting leg. Apply CS-supplied fab tape to the backside of the cut flanges, apply pressure to seal cut flanges into place. (Fig. T15 & T16)



Fig. T16