12BG

MODELS SSR 5" & ABOVE INSTALLATION INSTRUCTIONS

100% and 200% MODELS SIMILAR

2 $\frac{1}{2}$" and 4" DEEP SYSTEMS SIMILAR

IMPORTANT INFORMATION

Prior to the commencement of Installation, all materials MUST be inspected for Damage. Any damage must be reported to CONSTRUCTION SPECIALTIES, INC., 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.

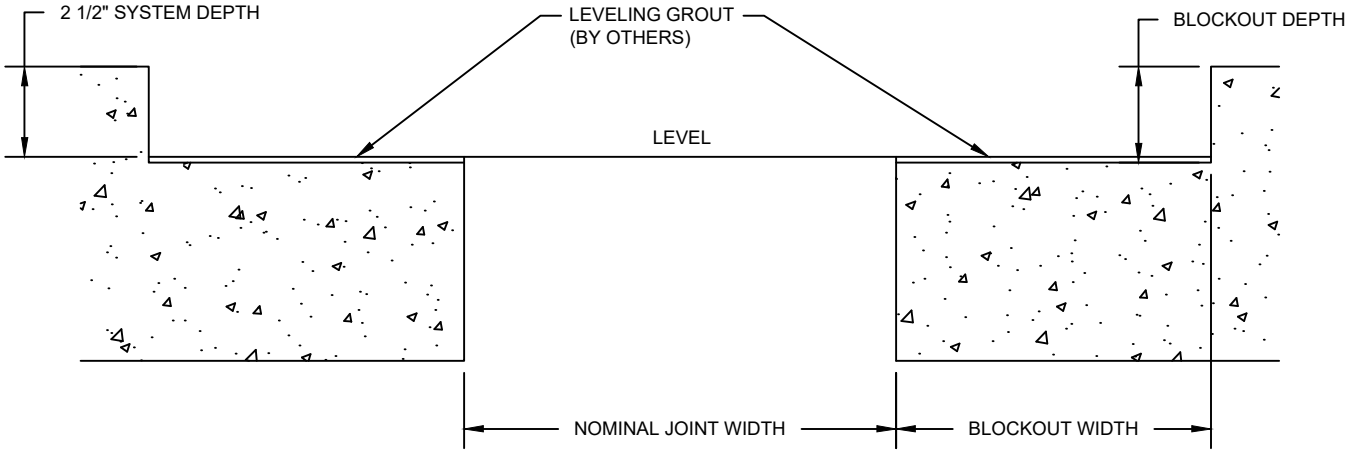
IMPORTANT:

READ THROUGH ALL INSTRUCTIONS PRIOR TO STARTING INSTALLATION

4/25/2025

Construction Specialties®
www.C-Sgroup.com
6696 Route 405 Highway, Muncy, PA 17756
Phone: (800) 233-8493 / Fax: (570) 546-8022

GENERAL NOTES



1.) Before beginning installation of these joint covers, review the layouts for the various runs of joint cover as detailed on the approved CS shop drawings.

2.) The "SSR" series joint covers must be securely mounted to structurally sound substrates. Repair all cracks or spawled areas of the concrete in the blockouts and in the deck adjacent to the blockout.

3.) The blockouts in which the covers are to be mounted must be **flat, level and parallel**. The blockout depth should be made deeper than the actual system depth and self-leveling grout should be used to set the final depth, and to provide a smooth, flat finish. **The base of the blockout must be flat (along the length of the joint) to within +/-1/16" and level (across the joint) to within +/-1/16".**

4.) The blockout width shown on the CS shop drawings is a minimum width dimension. The blockout may be made wider to allow for greater installation tolerance.

5.) The surface of the blockouts must be clean and free from any loose dust, dirt, debris and oils that would affect the installation of the covers.

6) It is possible that the expansion/seismic joint may have experienced some amount of movement at the time of installation. For proper installation of the "SSR" covers, the joint width **must be within +/-1/4" of nominal**. If the joint width at the time of installation is not within this tolerance, please contact the factory as some adjustments to the key installation dimensions may be required. These instructions assume that the nominal joint is within tolerance.

7) Coordinate installation of cover with installation of fire barrier systems and vapor barrier membrane when required.

8) ALL INFILL MATERIAL SHALL BE COORDINATED WITH APPROPRIATE TRADE. PLEASE NOTE: CS does not approve specific products, mix, designs or substitutions as we have provided the minimum requirements for the concrete and reinforcement. It is the responsibility of the concrete provider to meet these requirements.

IMPORTANT: Concrete will curl the center-plate of this system unless you take proper measures to prevent it.

Selection of the proper concrete mix is essential. Talk to your local Concrete supply Engineer and discuss this special application and get their recommendation(s) for the mix that will prevent excessive curling of the center-plate/pan. (They know concrete, your local practices and weather conditions.)

Their recommendations may include a low water-to-cement ratio; changing the aggregate, adjusting the cement-to-fly ash ratio; longer cure time; controlling shrinkage with an admixture; moist curing, ect.

All such recommendations should be coordinated with the Architect to ensure the integrity of the specification is maintained.

EXTERIOR INSTALLATION of this expansion joint cover system requires yet more care and in addition to any/all of the above possible recommendations from your Concrete Engineer, moist curing has been found to be essential to a successful installation.

STEP 1

BEGIN BASE FRAME INSTALLATION

Note: Proper installation of the "SSR" covers is dependent upon the proper location of the Base Frames. For the pan assembly to fit and function properly between the Frames, the Frames must be anchored parallel to the joint and to one another. They must be located at the proper distance from the edge of the joint and the exposed surface dimension must be maintained within a tolerance of +/-1/8". The exposed surface must also be centered over the joint to within +/-1/8".

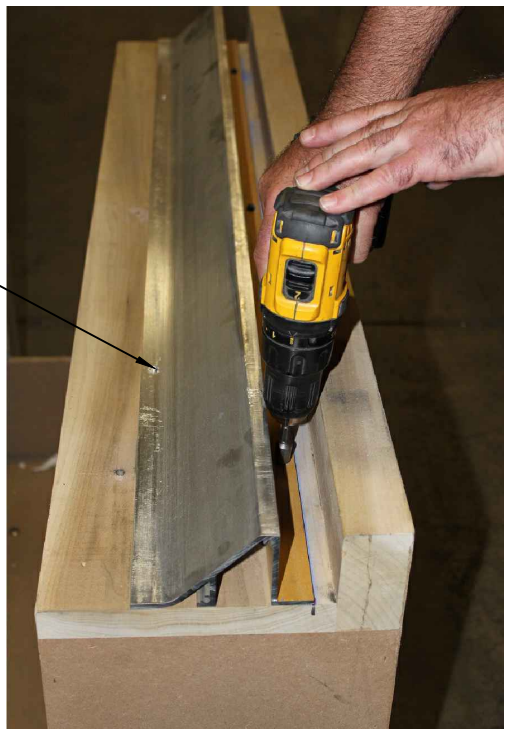
The Frame Location, Exposed Surface and Joint Width dimensions are shown on the CS shop drawings.

(Fig. 1A)

(Fig. 1B)

1.1) In the blockout on one side of the joint, measure and mark the bottom of the block out at the Frame location dimension. Strike a chalk line at this location, along the full length of the run. (See Fig 1A & 1B)

1.2) Beginning near the center of the run and working towards each end, position the first length of Frame along the Frame location line.



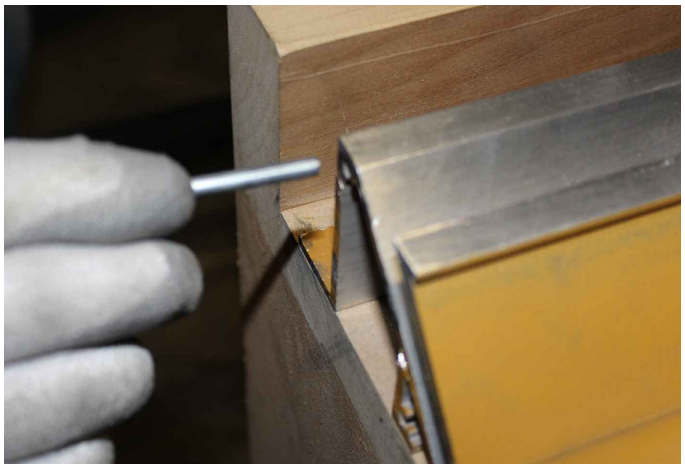
1.3) Using the Frame as a template, drill the holes for the CS supplied anchors, on both the inside and outside of the frame. Note: The anchors on the outside are of a different type and size than the inside anchors. Refer to the shop drawings for the appropriate anchors. (Follow the drilling instructions provided by the anchor bolt manufacturer.) (See Fig. 1C)

1.4) Remove the Frame and clean the holes and the blockout surface. Reposition the Frame and install the appropriate anchors to anchor the Frame into the blockout. (Follow the anchor manufacturer's installation instructions.)

(Fig. 1C)

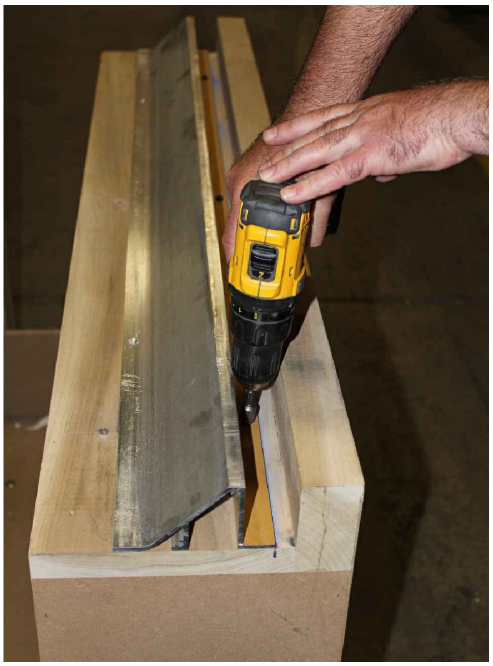
STEP 2

CONTINUE BASE FRAME INSTALLATION



(Fig. 2A)

(Fig. 2B)



(Fig. 2C)

Note: To assist in maintaining the alignment of the exposed top edge of Base Frames, Alignment Pins are to be placed in adjacent Frame sections prior to installation. (See Fig. 2A & 2B)

2.1) Place a length of Base Frame into the blockout adjacent to, and butted against, the installed Base Frame. Align the frame to the chalk line and using the Frame as a template, drill the holes for the CS supplied anchors, on both the inside and outside of the frame.

2.2) Remove the Frame and clean the holes and the blockout surface.

2.3) Insert grooved end of the Alignment Pins, approximately 1/2 of its length, into each of the extrusion bosses of the next length of Base Frame.

2.4) Position the adjacent length of Frame into the blockout and insert the alignment pins into the extrusion bosses of the previous Frame.

2.5) Following the instruction from Step 1, position, drill and anchor each additional length of Base Frame for this side of the joint. (See Fig. 2C)

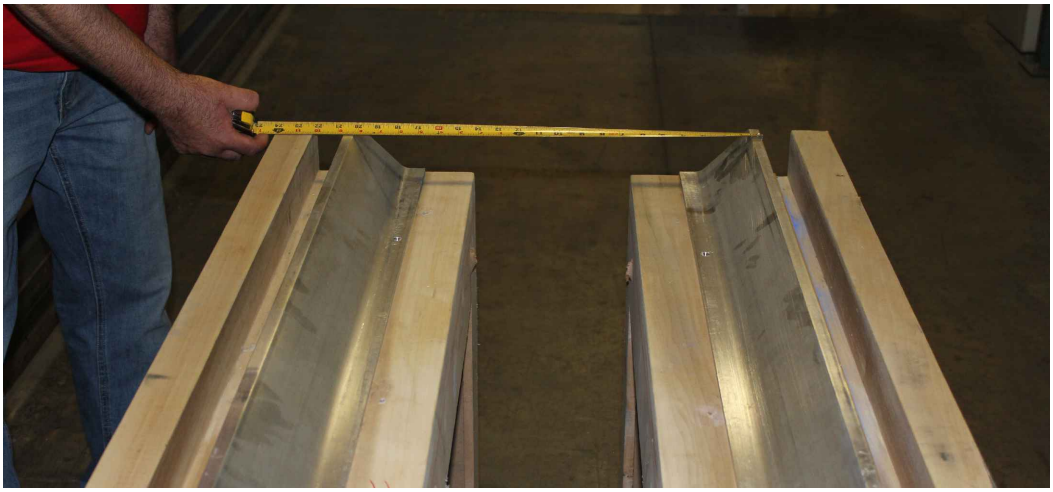
2.6) Continue to installe the remaining Base Frames for this side of the joint.

Note: As you approach each end of the run, the last lengths of Frame may have to be cut to the appropriate length.

STEP 3

INSTALL OPPOSITE BASE FRAME

(Fig. 3A)



(Fig. 3B)

3.1) Beginning again near the center of the run and working towards each end, position the first length of Base Frame in the opposite blockout.

3.2) Measuring off the top edge of the initial anchored length of Base Frame, position this length of Frame so that the exposed surface dimension (per the CS shop drawings for this model) is maintained. Make sure that the Frame is equal distance or parallel to the initial Frame, over the full length. (See Fig. 3A)

3.3) Follow instruction in Step 1.3 and 1.4 to prepare and install this first length of frame. (See Fig. 3B) (Follow the drilling instructions provided by the anchor manufacturer.)

3.4) Follow Step 2.1 - 2.5 to install adjacent lengths of Base Frame for this side of the joint. (See Fig. 2A & 2B on page 4)

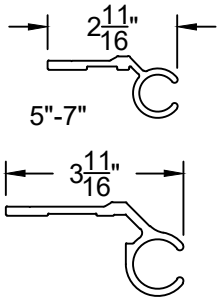
3.5) Repeat and install the remaining Frames for the entire length of the run.

STEP 4

BEGIN INSTALLATION OF TURNBAR FRAMES

Note: The Turnbar Frames are to be located so that they nest over the corner of the slab. Due to irregularities in the edge of the slab or due to the proximity of the Base Frame, the Turn Bar Frame may cantilever out from the face of the slab by up to 1/4".

4.1) Beginning again near the center of the run and working towards each end, position the first length of Turnbar Frame on the corner of the slab. (See Fig. 4A)



8" AND LARGER

(Fig. 4A)

(Fig. 4B)

4.2) Using the Frame as a template, drill the holes for the CS supplied anchors. (Follow the drilling instructions provided by the anchor manufacturer.)

4.3) Remove the Frame and clean the holes. Reposition the Frame and anchor the Frame into the blockout with the CS supplied anchors. (Follow the anchor manufacturer's installation instructions.) (See Fig. 4B)

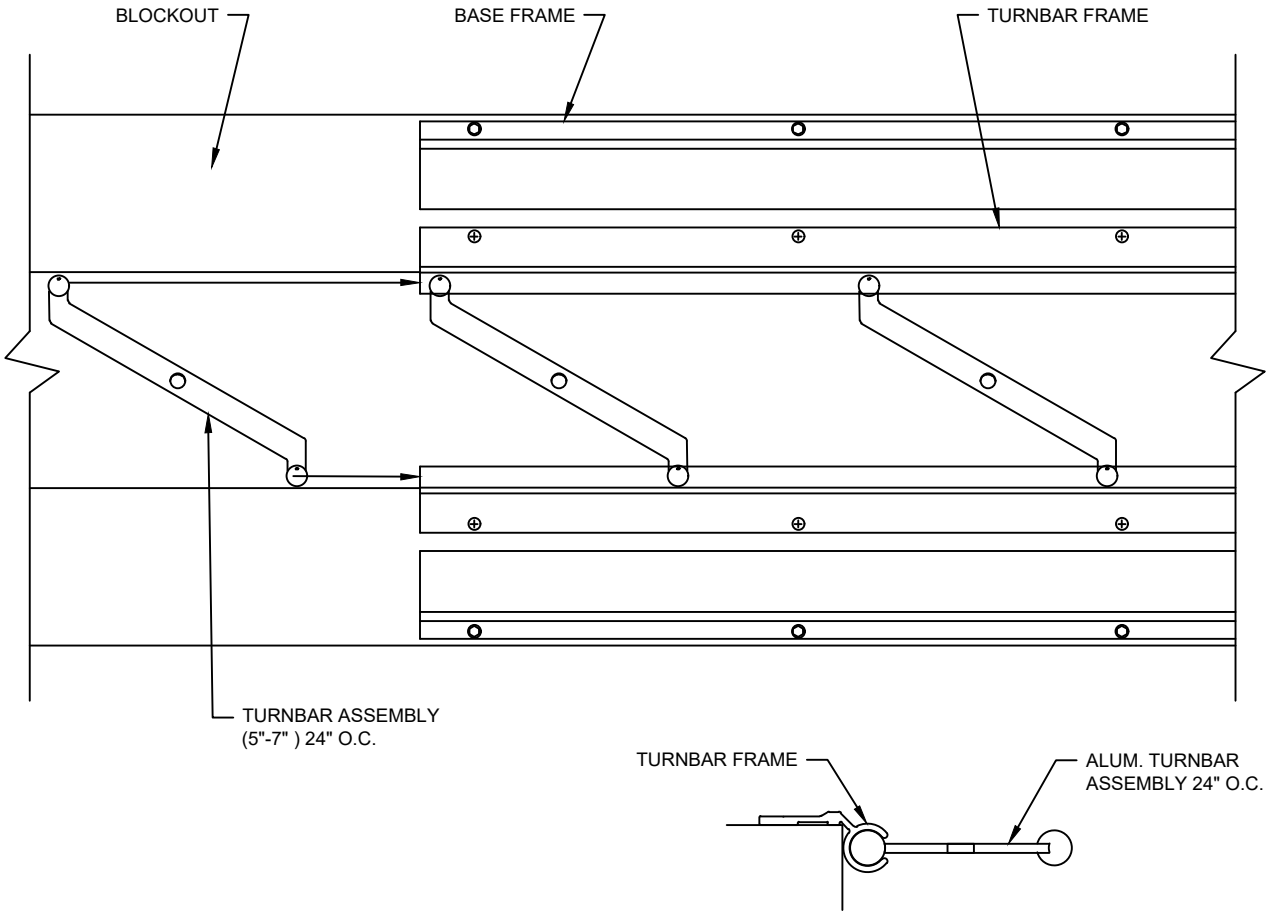
4.4) Position, drill and install the Turnbar Frame at the opposite side of the joint. (Note: It is recommended that the Turnbar Frames be installed in pairs, one at each side of the joint, to facilitate installation of the Turnbar Assemblies as indicated in Step 5.) (See Fig. 4C)

(Fig. 4C)

STEP 5

BEGIN TO INSTALL TURNBARS

*Note: MODELS 5" - 7" See Instructions below
MODELS 8" & Above See Instructions on page 8



END VIEW

MODELS 5" - 7"

Note: The Turnbar Assemblies 5" - 7" 100% & 200% models are spaced at approx. 24" o.c., (5) assemblies per 10'-0" length of Frames.

5.1) With the first pair of Turnbar Frames installed, insert the first Turnbar assembly into the Frames. Note the orientation of the Turnbars as shown in the detail above. The bent angle of the turn bar extrusion and ball pins are to face outward, towards the Frames, so that the Turnbar aluminum tube does not contact the Frames.

5.2) Place the ball, at one end of the assembly, into the appropriate Turnbar Frame and slide inward until the ball at the opposite end can be inserted into the opposite Turnbar Frame.

5.3) Repeat the inserting procedure for the remaining number of bars as required for the length of Frame.

5.4) Continue with installation of the adjacent lengths of Turnbar Frame, inserting the Turnbar Assemblies with each pair as they are installed.

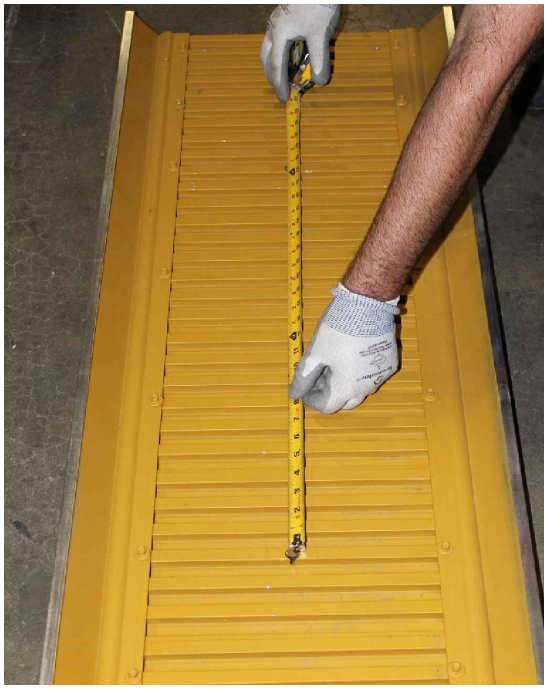
Note: At an end condition, the Turnbars may have to be inserted before the final length of Frame is anchored.

STEP 5 Con't.

BEGIN TO INSTALL TURNBARS

MODELS 8" & Above See Instructions below

(Fig. 5A)



(Fig. 5B)

MODELS 8" & Above

Note: Turn Bar Assemblies are located and spaced for 10'-0" length of Pan and Frames. Turnbar length and spacing will vary with joint width.

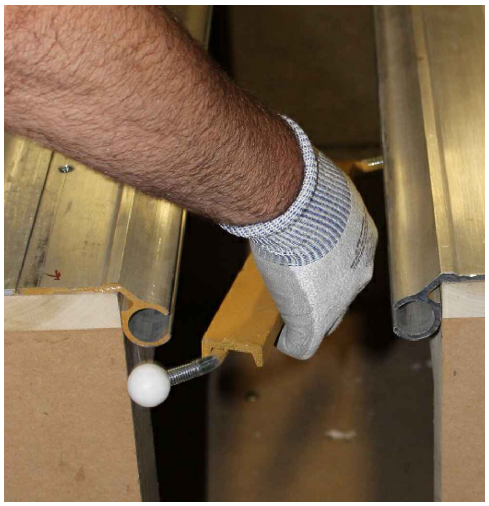
5.1) Measure the Center Pan, Centerpost hole locations on a typical 10' Pan Assembly (Fig. 5A & 5B). Measure and mark the centerline locations on the Turn Bar Frames. (See Fig. 5C & 5D) See the shop drawing details for the on center spacing for each model.

(Fig. 5C)

(Fig. 5D)

5.2) Insert the first Turnbar Assembly into the Frames. Note the orientation of the Turnbars as shown in the picture. The bent angle of the ball pins are to face outward, towards the Frames, so that the channel does not contact the Frames. The wide, flat portion of the channel should be up with the short legs facing down. (See Fig. 5E)

5.3) Place the ball, at one end of the assembly, into the appropriate Turnbar Frame and slide inward until the ball at the opposite end can be inserted into the opposite Turnbar Frame.



(Fig. 5E)

STEP 5 Con't

BEGIN TO INSTALL TURNBARS

(Fig. 5F)

5.4) Repeat the inserting procedure for the remaining number of bars as required for this 10' length of Frame. Align the center hole of each Turnbar with the marked on center locations on the Turnbar Frames. (See Fig. 5F)

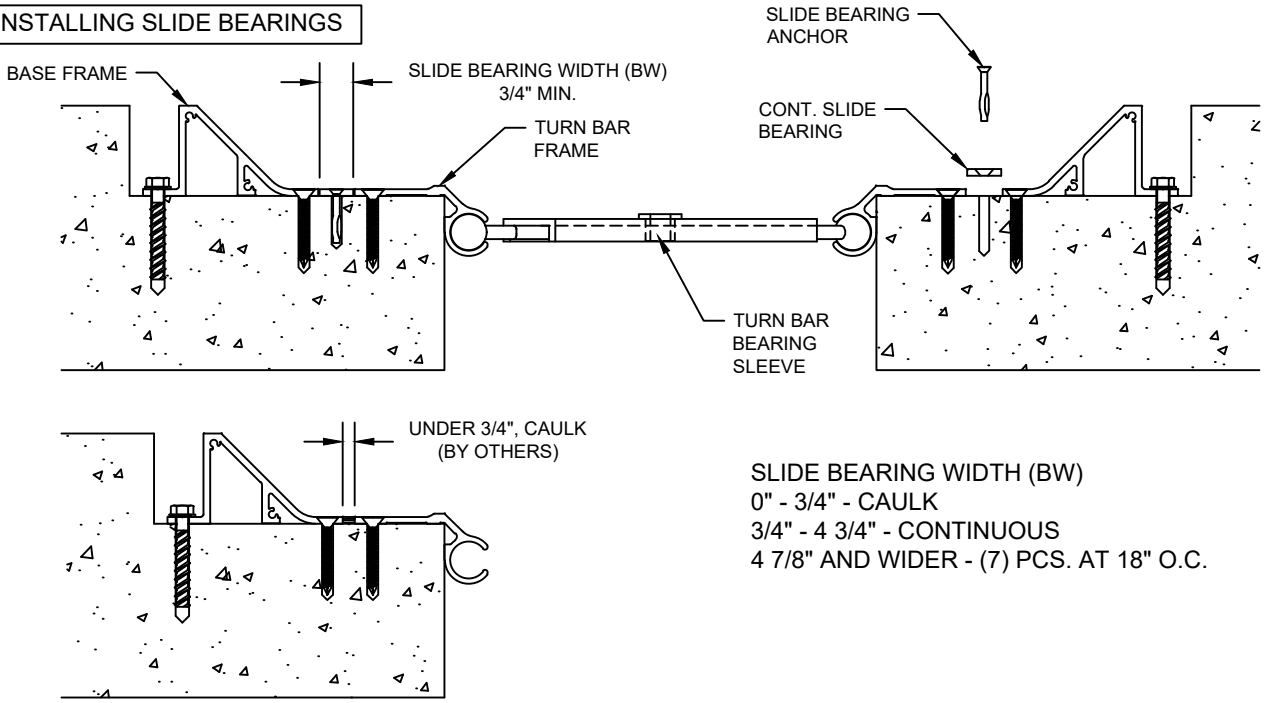
5.5) Continue with installation of the adjacent pairs of Turnbar Frames.

5.6) Locate, mark and install the required number of Turnbars

Note: At an end condition, the Turnbars may have to be inserted before the final length of Frame is anchored.

STEP 6

INSTALLING SLIDE BEARINGS



SLIDE BEARING WIDTH (BW)
0" - 3/4" - CAULK
3/4" - 4 3/4" - CONTINUOUS
4 7/8" AND WIDER - (7) PCS. AT 18" O.C.

Note: The Slide Bearings are used to prevent the pan bearings from dropping into the space between Frames during seismic movement and causing damage. When the space between Frames is less than 3/4" wide, the space is to be filled level with caulking (by others). **Refer to shop drawing details for slide bearing use.

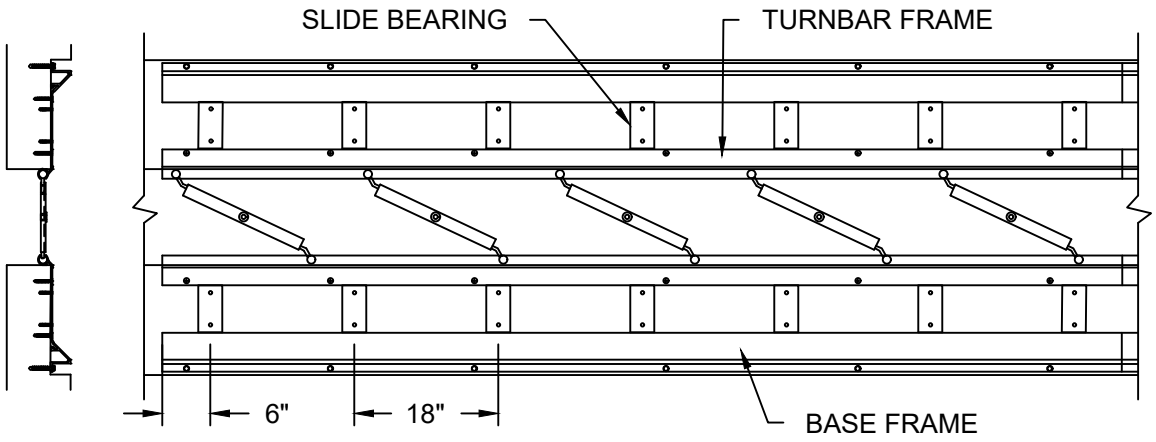
6.1) Models with continuous Slide Bearings, position the first length of continuous slide bearing into the space between the Base Frame and Turn Bar Frame. Models with seven (7) Slide Bearing pieces in a 10' run, starting at one end of the Base Frame position the first piece so that it butts against the lower leg of the base frame. Place the first piece 6" in from the end and space the remaining Slide Bearing pieces (6 of them) at 18" o.c. (See Fig. 6B)

6.2) Using the Slide Bearing as a template, mark the hole locations for the bearing anchors, then remove the Slide Bearing.

6.3) Drill the holes for the appropriate CS supplied anchors (see shop drawings). (Drill the holes per the anchor manufacture's instructions.) Clean the holes and blockout surface.

6.4) Place the Slide Bearing back into position and anchor to the slab.

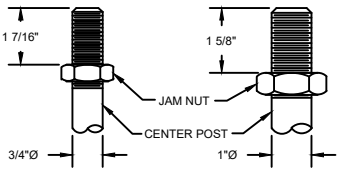
6.5) Repeat for the remaining Slide Bearing lengths that are required for each side of the joint.



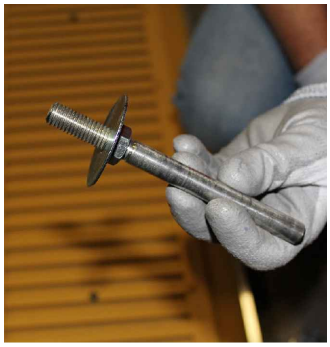
(Fig. 6B)

STEP 7

CENTER PAN ASSEMBLY AND INSTALLATION



(Fig. 7B)



(Fig. 7A)

Note: Center Pan Assemblies are supplied in typical 10'-0" lengths. Each Pan is to receive 3/4"Ø or 1"Ø Center Post Assemblies. The quantity and diameter of the Center Posts is dependent upon the joint width. The size and quantity will be indicated on the C/S shop drawings. The holes for the center posts will be located and drilled in the factory.

7.1) Place a jam nut onto each Center Post and thread on until the nut is the appropriate distance from the end. See details above.

7.2) Place a large diameter flat washer over the jam nut and insert the threaded end of the Center Post up through the hole from the underside of the Pan.

7.3) From the top side of the Pan, place a large diameter flat washer and jam nut onto the Center Post.

7.4) Tighten the jam nut against the Pan and flat washer.

(Fig. 7C)

7.5) Beginning near the center of the run, position the first Pan along side the joint.

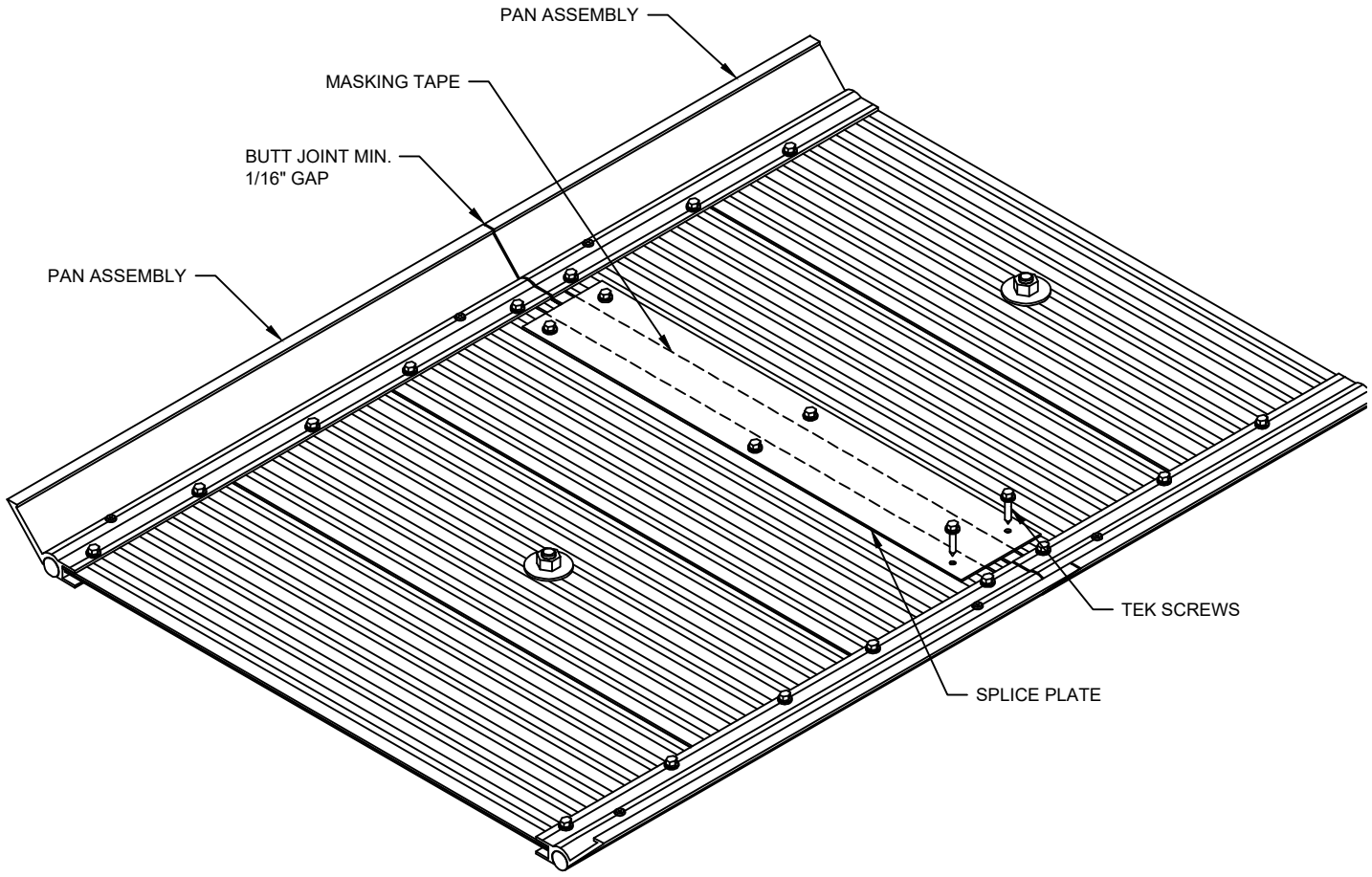
7.6) Align the center of the Turnbars so that they match the locations of the Center Posts.

7.7) Apply a heavy bead of grease to the inside of the sleeve bearing of each Turnbar.

7.8) Hold the Pan over the joint. Align the Center Posts with the Turnbars. Seat the Pan onto the Frames with the Center Posts positioned through the sleeve bearings of the Turnbars. (See Fig. 7C)

STEP 8

PAN SPLICING



Note: Center Pan Assemblies are supplied in typical 10'-0" lengths. Each pan is to be field spliced to the adjacent Pans to maintain alignment. A minimum 1/16" gap must be maintained between Pan Assemblies to allow for thermal expansion.

8.1) Place the next Pan Assembly onto the Frames as instructed in Step 7.

8.2) Slide the Pan along the Frames until the ends of the Pans butt together. Separate slightly to maintain a minimum 1/16" gap.

8.3) Adjust the Pans across the joint so that the top corners of the Pan are in alignment.

8.4) Place a strip of masking tape or duct tape on top of the Pans, over the butt joint, for the full width of the Pan.

8.5) Center one of the CS supplied splice plates over the butt joint and attach to the Pan using the supplied self-drilling tek screws. Note: Maintain the minimum 1/16" gap at the butt joint.

END OF A RUN REQUIREMENTS

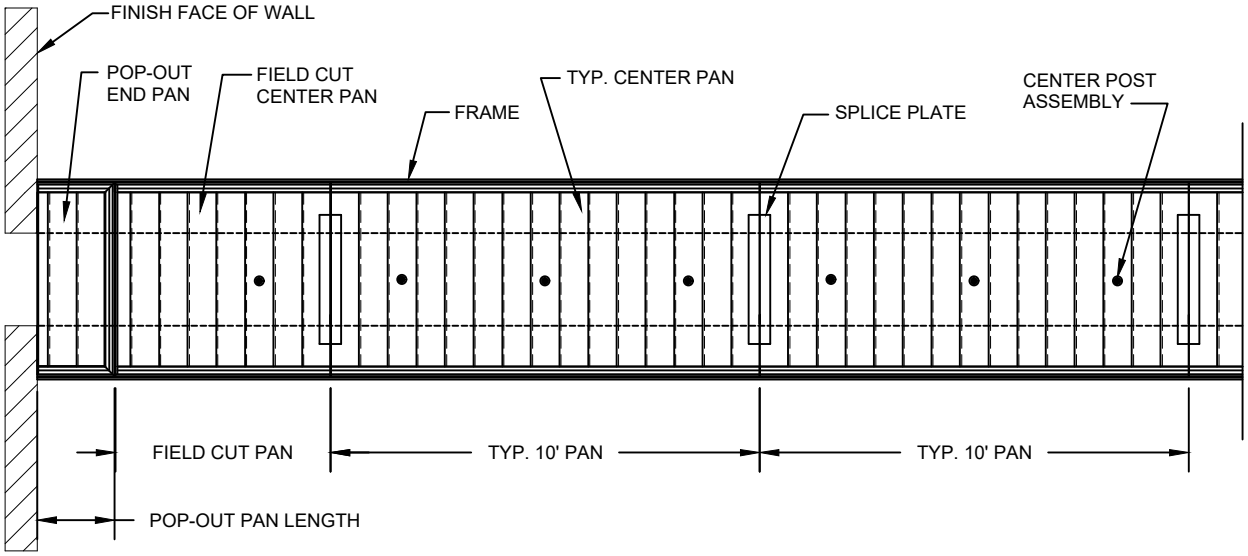
Note:
When approaching the ends of a run of cover, several field issues must be considered to complete the installation and maintain proper function of the covers.

1) Lateral Shear Movement - If lateral shear movement of the buildings is expected, custom "Pop-Out" End Pans will be required and will be indicated on the approved C/S shop drawings.

2) Field Cutting Center Pans - It is likely that a standard 10'-0" length of Center Pan will have to be field cut to fit the exact length between the wall or Pop-Out Pan and the last standard length of Pan.

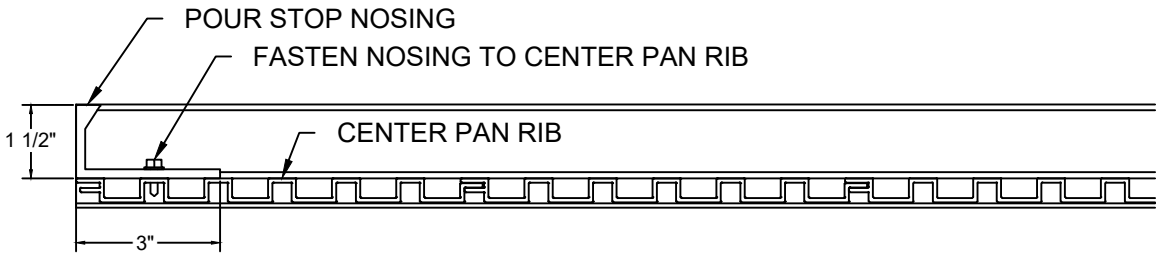
3) Location of Center Post Assemblies - Depending upon the center-to-center spacing of the Center Post assemblies, the length of the Turnbar Assemblies, and the joint movement requirements, some Center Post assemblies may or may not be needed.

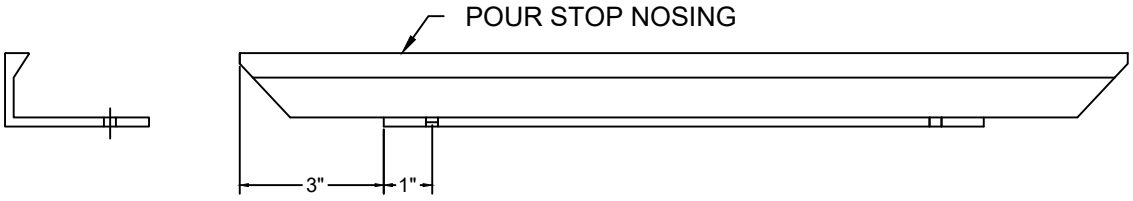
Review the layout below to familiarize yourself with the cover requirements at the end of a run. Then review the next few installation steps before proceeding with installation.

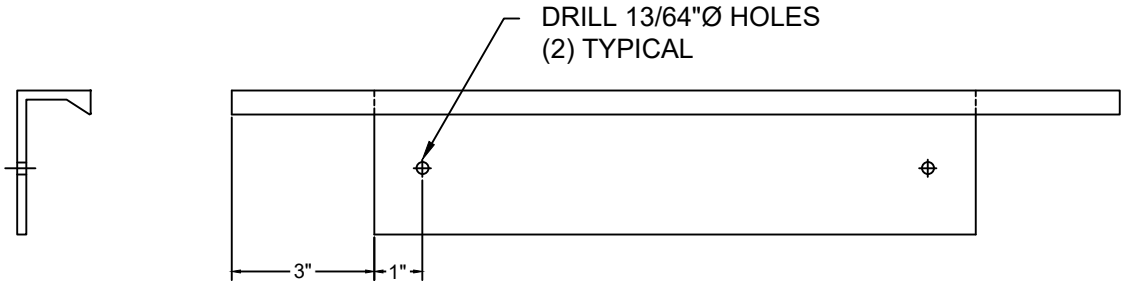


STEP 9

POUR STOP INSTALLATION







Note: When no Pop-Out Pan are required in a run, Pour Stop Angles are used to end the run at a wall or in place of Splice Plates at butt joints.

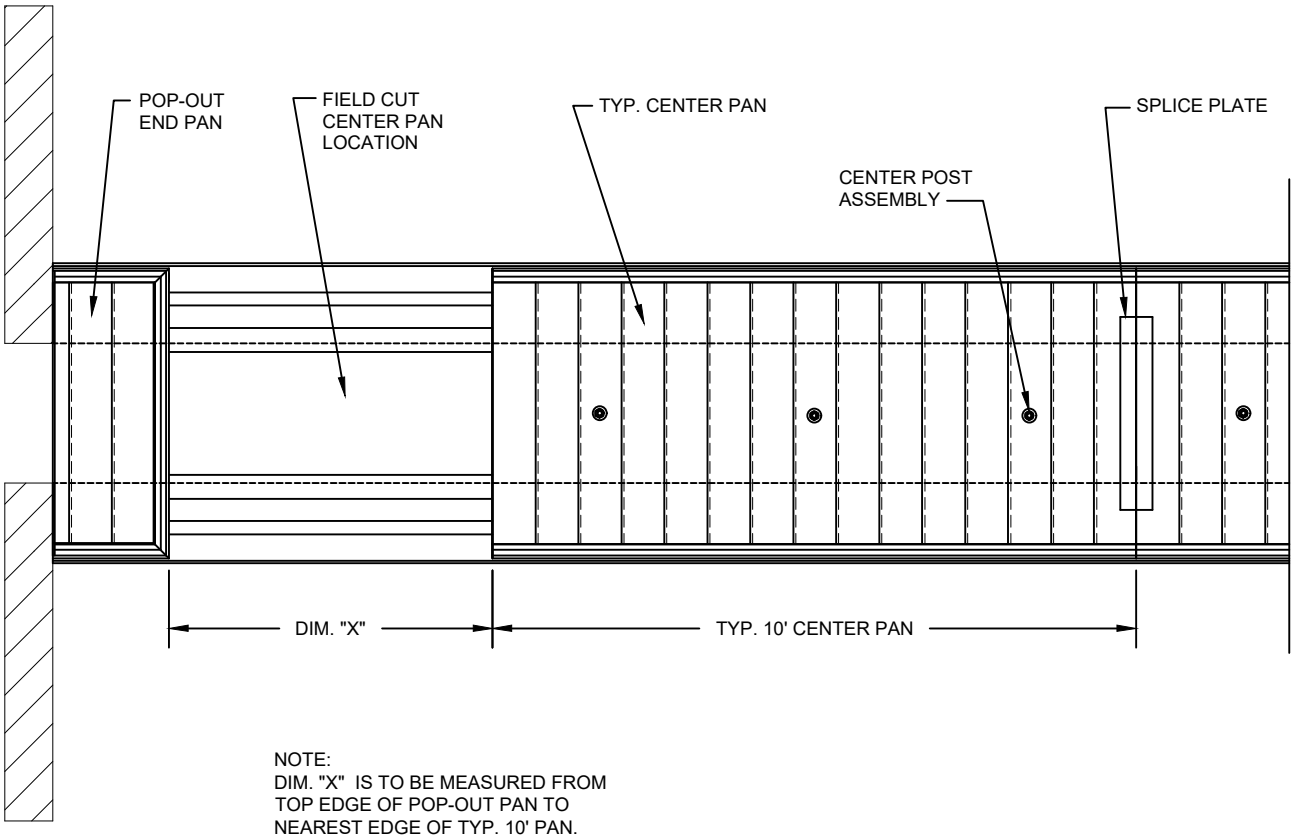
9.1) Fasteners need to anchor through rib of center pan. On the bottom flange of the Pour Stop measure back to center of the rib, 1" in from each end and drill two (2) 13/64" diameter holes for CS supplied fasteners. (Drill the holes per the anchor manufacture's instructions.) (See details above for reference.)

9.2) Place the Pour Stop into position and anchor to the center pan.

9.3) Repeat this step for any remaining Pour Stop installations that are required at butt joints or end pans.

STEP 10

FIELD CUT CENTER PAN



NOTE:
DIM. "X" IS TO BE MEASURED FROM
TOP EDGE OF POP-OUT PAN TO
NEAREST EDGE OF TYP. 10' PAN.

THE ACTUAL FIELD CUTTING LENGTH
IS EQUAL TO DIM. "X" (-) 1".

NOTE: 1" SPACE REQUIRED FOR
CAULK JOINT.

Note: To assist in determining the cut length for the Center Pan, temporarily place one of the custom Pop-Out End Pans in position at the end of the joint. The flat end of the pop-out Pan should butt to the face of the wall, and the end with the sloped nosing is to face the adjacent Center Pan.

10.1) Measure the distance between the top edge of the sloped nosing of the Pop-Out Pan, and the nearest edge of the last typical 10' Center Pan (DIM. "X").

10.2) Subtract 1" from Dim. "X" to establish the field cut pan length.

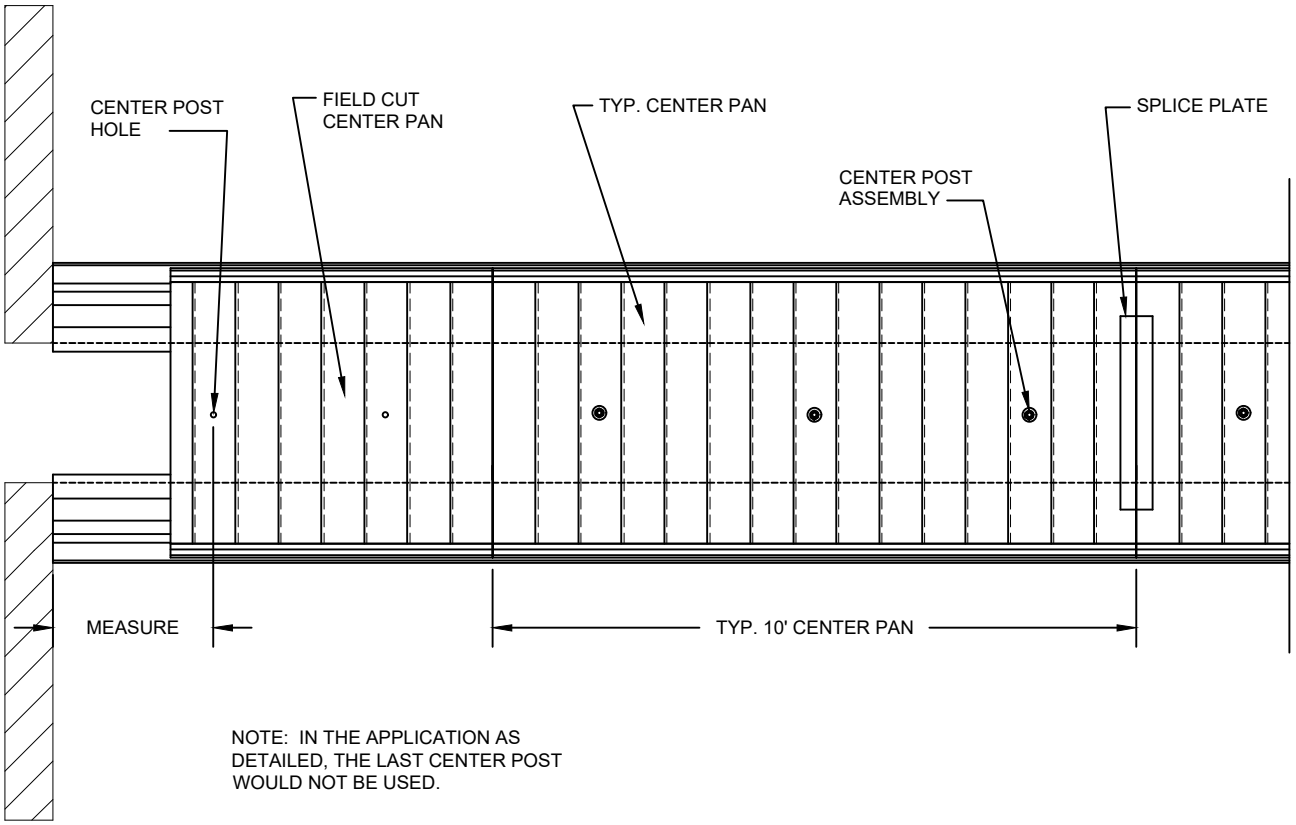
10.3) Measure and mark a length of Center Pan with the required field cut length. Note: Any of the assembly screws (used to attach the components of the Pan together) that may fall on the cut line, should be removed before cutting.

10.4) Using a circular saw with the appropriate blade and a straight edge or saw guide, cut the Center Pan to the required length.

Proceed to Step 11.

STEP 11

PREPARE CUT CENTER PAN FOR INSTALLATION



Note: When preparing the Field Cut Pan for installation, there are two issues to be addressed. The placement of the last Turnbar Assembly in relation to the end of the run, and the installation of the Pop-Out Pan, Deflector Nosing. Use the following instructions to address these issues.

Turnbar Assembly

Note: When field cutting the Pan to length, it is likely that the cut was made near to a Turnbar Center Post location or that one or more post locations have been removed. The location of the Turnbar Assembly that is nearest to the end of the run is important in that the location must be far enough from the end so that the Turnbar will not slide out of the Frame during maximum movement. The dimension for this location must be greater than or equal to the overall length of a Turnbar assembly. Use the following instructions to determine the location for the last Turnbar.

11.1) Temporarily place the cut Pan on to the Base Frames. Position the cut Pan so that the uncut end butts against the last installed 10' Pan.

11.2) Measure the overall length of a Turnbar Assembly.

11.3) Measure from the ends of the run (or face of the wall) to the Center Post location hole nearest the end of the Pan. If the hole location is greater than, or equal to, the Turnbar length, the hole will be used. If the hole location is less than the Turnbar length, simply place duct tape over the hole as it will not be used.

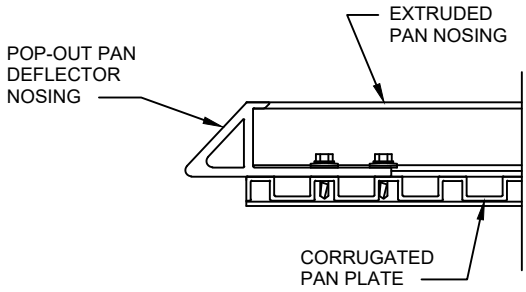
11.4) Remove the Cut Pan and install the required number of Center Posts as indicated in Step 7.

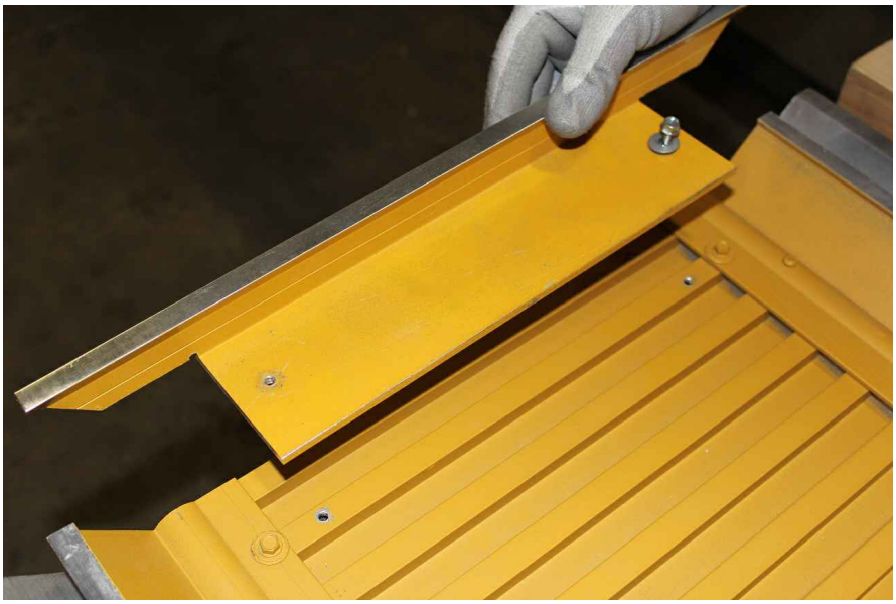
11.5) Insert the required number of Turnbar Assemblies (equal to the number of Center Posts) into the Frames as instructed in Step 5.

Note: If the Cut Pan length is too short for any Turnbar Assemblies to be used, the Pan will simply be held by the pan splice plate. See Step 9.

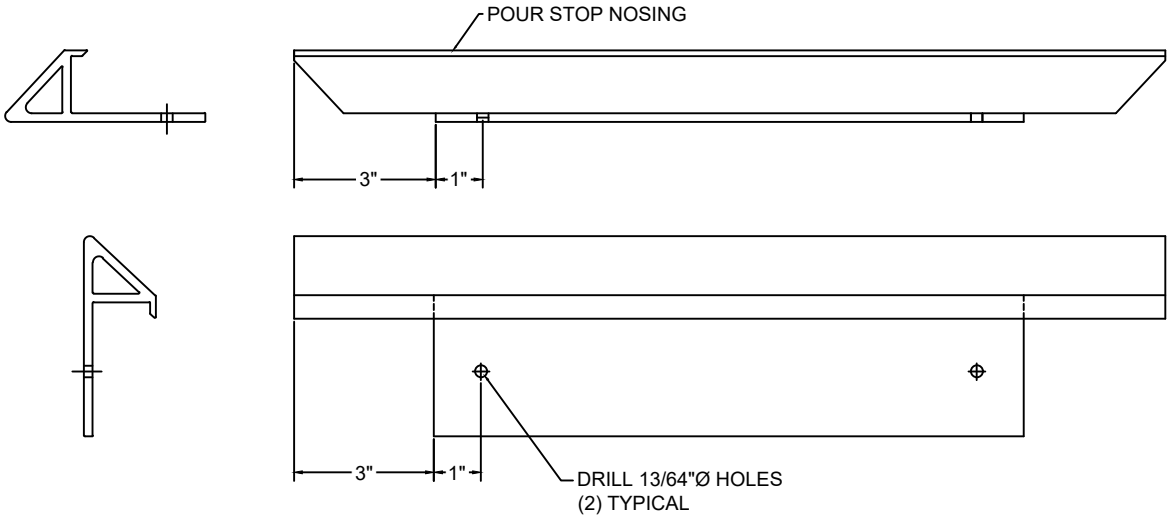
STEP 11 (CONT.)

PREPARE CUT CENTER PAN FOR INSTALLATION





(Fig. 11A)



Pop-out Pan Deflector Nosing

Note: Before placing the Cut Pan into the blockout, a Pan Deflector Nosing must be attached to the cut end of the Pan. The Pan Deflector Nosing is an extruded aluminum shape that forces the Pop-Out Pan up and out of the way during seismic, lateral movement.

11.6) Locate the Pan Deflector Nosing in the appropriate width for the given Pan. To determine appropriate width, measure between the inside edges of the Pan nosings.

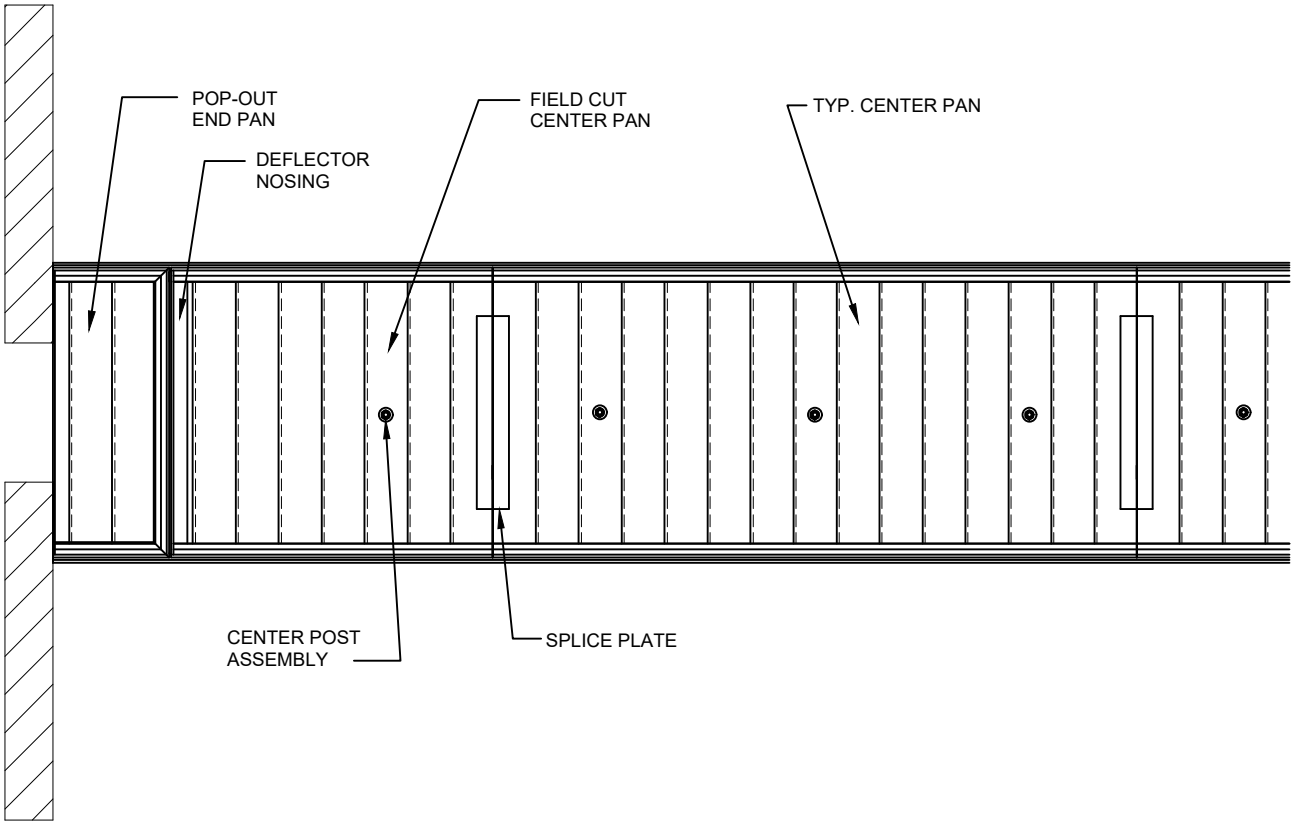
11.7) Position the Deflector Nosing between the Pan Nosings with the wide leg on top of the extruded, corrugated Pan plate.

11.8) Anchor the Deflector Nosing to the Pan as indicated above. Note: The screws are to hit the top flat portions of the corrugations and should be staggered at 18" o.c. maximum.

The Cut Pan is now ready to be installed.

STEP 12

INSTALL CUT PAN AND POP-OUT PAN



12.1) Position and install the Field Cut Pan as indicated in Step 7.

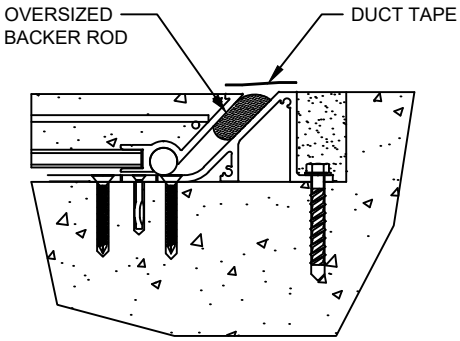
12.2) Install the splice plate between the field cut Pan and previous Pan as indicated in Step 8.

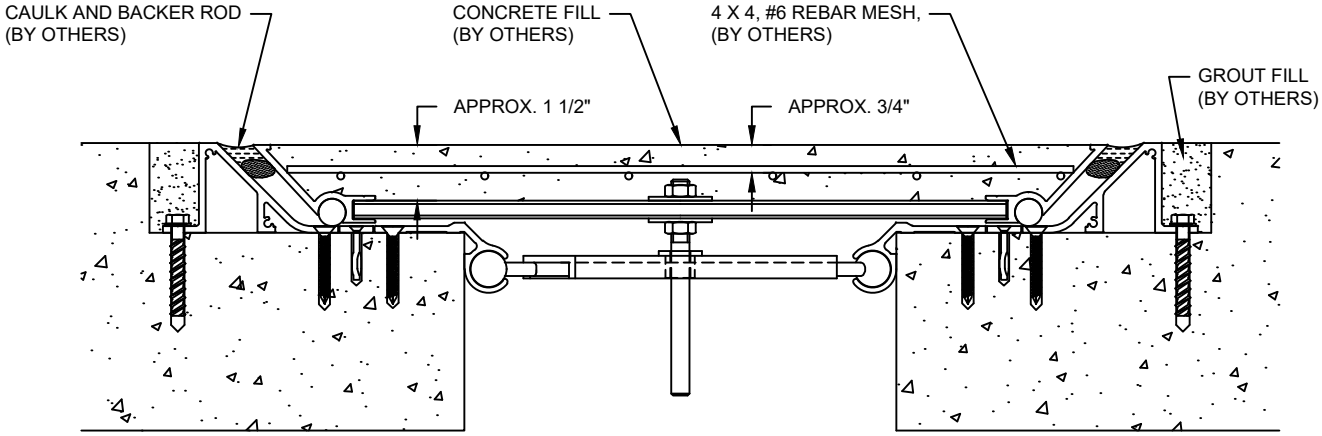
12.3) Position the Pop-Out End Pan into the blockout with the flat side towards the wall and the Deflector Nosing towards the Cut Pan. Note: There should be a caulk joint of approx. 1" between the Pop-Out Pan and the Cut Pan.

12.4) Adjust the Pop-Out Pan so that the caulk joint along each edge is equal.

STEP 13

COMPLETING THE INSTALLATION





Note: With the joint cover assemblies installed for the full length of the run, the following steps will complete the installation. The steps do not necessarily have to be completed in the order shown.

13.1) Place the CS supplied oversized Backer Rod into the slot between the Base Frame and Pan, on each side of the joint, for the full length of the run. The Backer Rod should be positioned just below the exposed edges of the Base Frame and Pan. Note: The Backer Rod is used to prevent dirt and debris from gathering in the slot between the Frame and Pan that could hinder movement or the resting position of the Pan.

13.2) Place duct tape along the top surface of both the Base Frame and Pan Frame so that it spans over the oversized backer rod. Note: The tape will protect the exposed surfaces while the grout and concrete fill are placed.

13.3) Fill the remaining blockout area, above the Base Frame anchors, with a quality non-shrink grout (by others).

13.4) In the Pan, place 4" x 4" - W2.9 X W2.9 rebar mesh (by others) along the full length of the run. The rebar mesh should span nearly the full width of the Pan, and should be positioned approximately 3/4" below the top surface of the Pan.

IMPORTANT Note: Select the proper concrete mix: Discuss with your local Concrete supplier Engineer to recommend a concrete for this special application in effort to prevent excessive shrinking, curling, and fracturing of the concrete from occurring. Recommendations include: Low water to cement ratio, #8 coarse aggregate, and/or a 60/40 cement to ash combination, greater full cure time (60 day minimum recommended), and a recommended shrinkage admixture. If concrete is being applied outside, canopies or burlap should be used to minimize excessive differential curing from occurring. Concrete should not be installed if there is the possibilities the temperatures could drop below recommended curing temperatures during the curing cycle.

13.5) Fill the Pan with the selected concrete (concrete by others). Float the concrete level with the exposed edges of the Pan. Smooth and finish as required. Apply misters for moist curing (see Important Note:).

IMPORTANT Note: Measures must be taken to prevent excess shrinking and curling from occurring. Construction Specialties recommends the installer moist cure the concrete for a minimum of 12 days. During the final 5 days reduce duration of moist curing incrementally. These efforts will aid in the reduction of differential curing from occurring causing warping of the concrete and possibly damaging the aluminum pans.

STEP 13 continued

COMPLETING THE INSTALLATION

Included below are links to articles and documentation for additional resources to aid in the reduction of shrinking and warping caused by improperly specified or curing of the concrete.

http://www.cement.org/tech/cct_floors_shrinkage.asp
http://www.irc.nrc-cnrc.gc.ca/ctu_sc_n44

IMPORTANT Note: After all misting and troweling has been completed, apply the recommended water based concrete curing compound (not a cure and seal) (by others) to the entire surface of the concrete.

13.6) When the concrete has set or after any other floor finish work is complete, remove the duct tape from along the exposed surface of the Pan and Base Frames. Before removing the oversized Backer Rod, vacuum off the top surface to remove all loose grout, concrete, dirt and debris that might fall into the slot as the Backer Rods are removed. Then remove the Backer Rods.

13.7) Place new backer rods (by others) and caulking (by others) along the full length of the slots between the Pan and Base Frames. The caulk should be smooth and level with the exposed surfaces of the Frame and Pan. Note: To provide the proper thermal expansion and compression capability, select a caulking that will provide +/-50% movement capability per nominal width. We recommend using **Sika® 2C NS** where available. The caulking should be applied per the manufactures recommendations and width to depth ratio.

THE INSTALLATION SHOULD NOW BE COMPLETE. PROTECT THE INSTALLATION UNTIL FINAL ARCHITECTURAL INSPECTION.