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GENERAL NOTES

The details shown on the following pages are suggestions or guidelines for installing the 238T roof panel system. The installation details shown here are proven methods of construction, but they are not intended to cover all building requirements, designs or codes. The details may require changes or revisions due to individual project conditions. In addition, other details may be perfectly acceptable for use. Please contact McElroy Metal for assistance in determining if a detail is acceptable.

Installation procedures shall be in accordance with the manufacturer's printed instructions, details or approved shop drawings. Installers should thoroughly familiarize themselves with all instructions prior to beginning the installation process.

The designer/installer is responsible to ensure the following:

That the details here meet the particular building requirements.

Awareness of and allowance for expansion/contraction of the roof panels.

That adequate water tightness is maintained.

That a proper uniform substructure is used to avoid panel distortion and that the substructure meets necessary code requirements.

That all supporting members have been examined and are straight, level and plumb.

McElroy Metal can provide all flashings and accessories shown in the installation drawings unless noted otherwise. Panels, flashing and trim shall be installed true and in proper alignment with any exposed fasteners equally spaced for the best appearance. Sealant shall be field applied on a clean, dry surface.

Some field cutting and fitting of panels and flashings is to be expected and to be considered a part of normal installation work. Workmanship shall be of the best industry standards and with installation performed by experienced metal craftsmen.

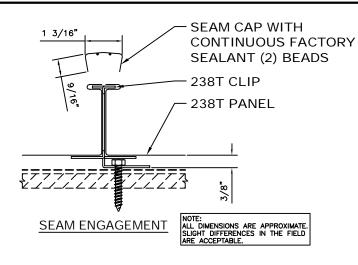
Oil canning of metal panels is inherent in the product and is not a cause for rejection. Plank or Striated panels are recommended as to reduce the appearance of oil canning.

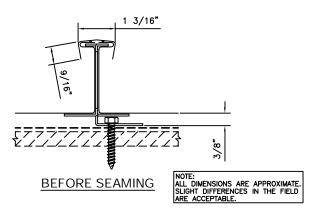
Contents of this manual are subject to change without notice. To confirm this book is the most current copy, please visit McElroy Metal's website at www.mcelroymetal.com.

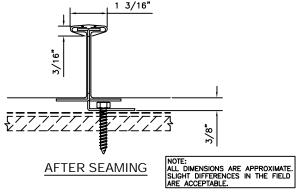
Optional details can also be found on our website.



GENERAL INFORMATION







NOTE:

Mechanical seamers and hand seamers are available for rental through McElroy's approved seamer supplier at the following website. Go to: http://www.mcelroyseamers.com

!!!ATTENTION!!!

If a panel or seam becomes damaged, the installer can rent a "de-seamer" through the same website listed above.

ATTENTION

READ THE SEAMER INFORMATION THOROUGHLY BEFORE STARTING THE SEAMING OPERATION. FAILURE TO ADHERE TO THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY AND DAMAGE TO THE SEAMER AND/OR PANELS. THE ERECTOR WILL BE HELD LIABLE FOR ANY COSTS INCURRED FOR REPLACEMENT OR REPAIR.

PRE-SEAMING INFORMATION

- Locate seamer box. Check to make sure you received an electric seamer, parts box, return shipping label and an information booklet. If not, please call our Technical Services Department. (Hand Seamers must be rented.)
- Locate power source and check against power requirements in the information booklet.
- 3. Check seams for proper engagement.
- 4. Clean dirt, debris and excess sealant from seams and panel surfaces to avoid interfering with the seaming operation.

HAND SEAMING OPERATION

!!!ATTENTION!!!

It is critical that the panel seams are crimped and folded before using the electric seamer. Failure to follow these guidelines will result in damaged seams.

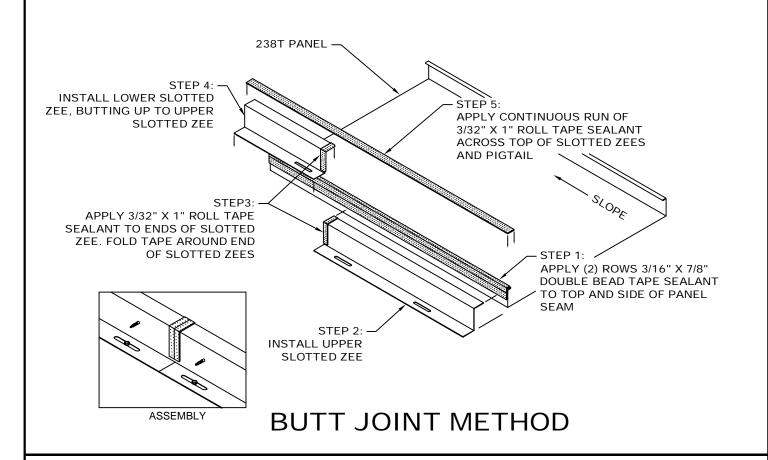
To begin seaming, set the hand seamer on the seam. Align the edge of the hand seamer about one to two inches pass the edge of the panel. Crimp the panel 3 to 4 times along the seam for a total of 12" at the eave and 5 or 6 times along the seam for a total of 18" at the ridge and then at every clip.

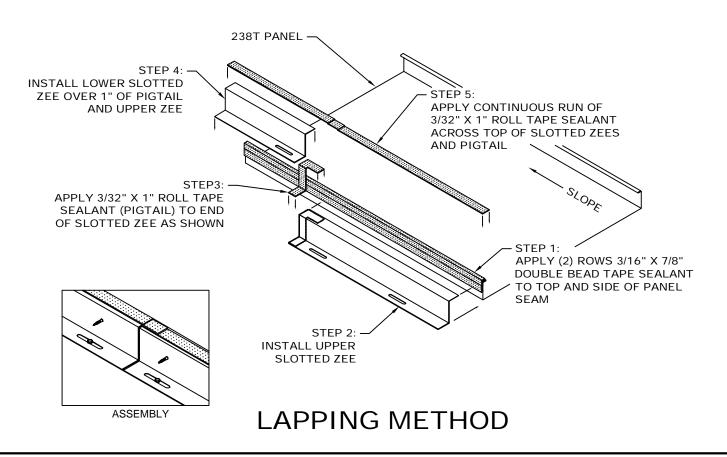


CAUTION: The use of any seaming machine or tools other than that recommended by the manufacturer, may damage the panels, void all warranties and will void all engineering data.



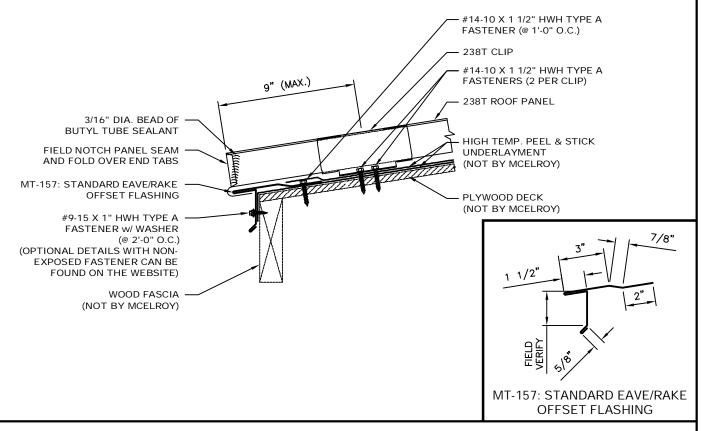
16GA SLOTTED RAKE ZEE INSTALLATION



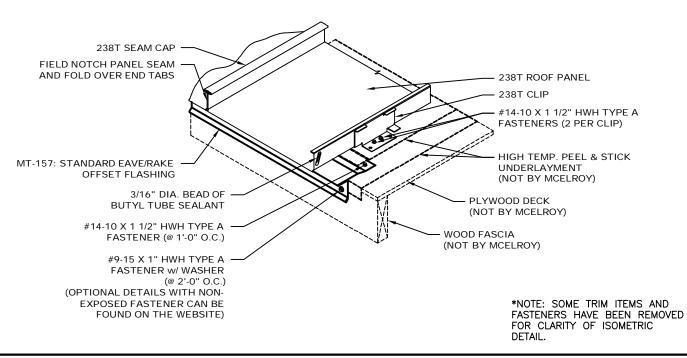




EAVE DRIP DETAIL

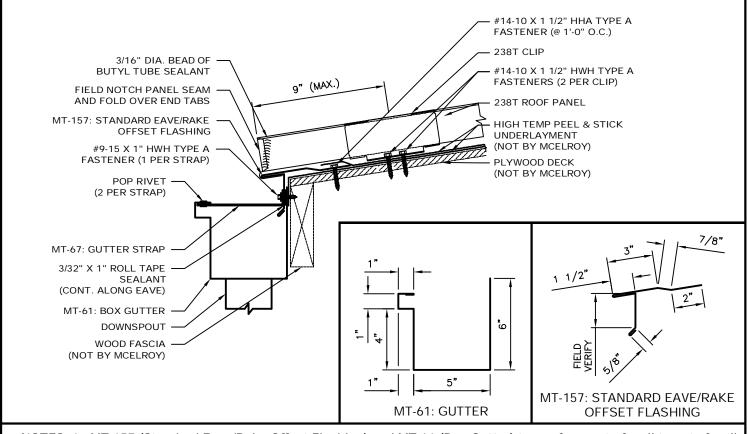


- NOTES: 1. MT-157 (Standard Eave/Rake Offset Flashing) to run from out of wall to out of wall.
 - 2. Attach MT-157 (Standard Eave/Rake Offset Flashing) to decking with #14-10 x 1 1/2" HWH Type A Fastener @ 1'-0" O.C.
 - 3. Attach MT-157 (Standard Eave/Rake Offset Flashing) to the Wood Fascia with #9-15 x 1" HWH Type A Fastener with Washer @ 2'-0" O.C.
 - 4. Trim pieces lap 2". Apply 3/32" x 3/8" Butyl Tape or Butyl Tube Sealant in trim laps.
 - 5. Place a 3/16" Dia. Bead of Butyl Tube Sealant to leading edge of 238T panel.
 - 6. Field Notch panel seam and fold over end tabs of panels.

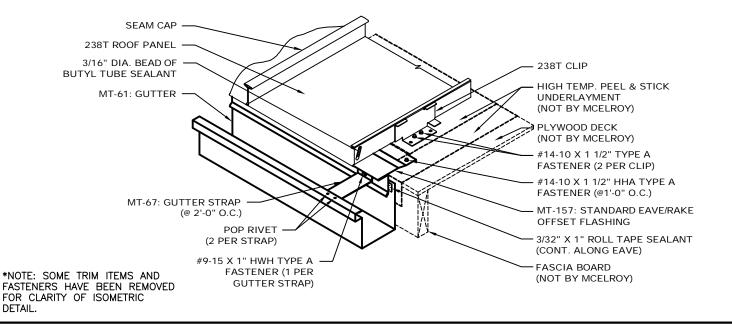




EAVE DRIP w/ GUTTER DETAIL

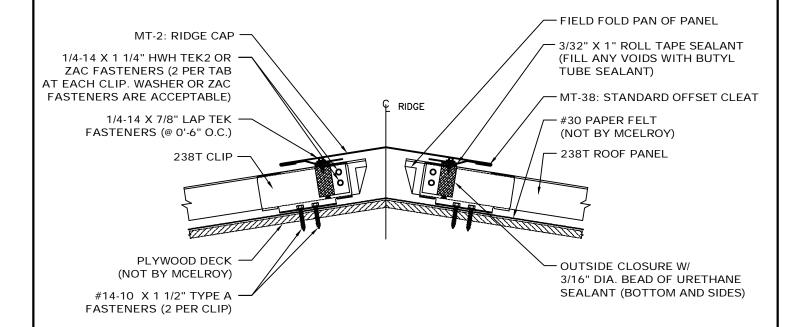


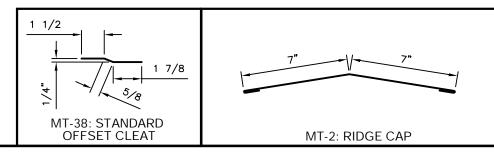
- NOTES: 1. MT-157 (Standard Eave/Rake Offset Flashing) and MT-61 (Box Gutter) to run from out of wall to out of wall
 - 2. Apply a continuous bead of 3/32" x 1" Roll Tape Sealant to the inside vertical leg of the MT-61 (Gutter). Attach MT-67 (Gutter Straps) to Gutter with (2) Pop Rivets as shown in detail.
 - 3. Attach MT-157 (Standard Eave/Rake Offset Flashing) to decking with #14-10 x 1 1/2" HWH Type A Fastener @ 1'-0" O.C. Slide vertical leg of Gutter behind MT-157 (Standard Offset Eave Flashing) and fasten through MT-67 (Gutter Strap), MT-157 (Standard Eave/Rake Offset Flashing), Tape Sealant and Gutter with #9-15 x 1" HWH Type A Fastener into Fascia Board required Gutter Strap Spacing.
 - 4. Trim pieces lap 2". Apply 3/32" x 3/8" Butyl Tape or Butyl Tube Sealant in trim laps.
 - 5. Place a 3/16" Dia. Bead of Butyl Tube Sealant to leading edge of 238T panel.
 - 6. Field Notch panel seam and fold over end tabs of panels.





FIXED RIDGE DETAIL

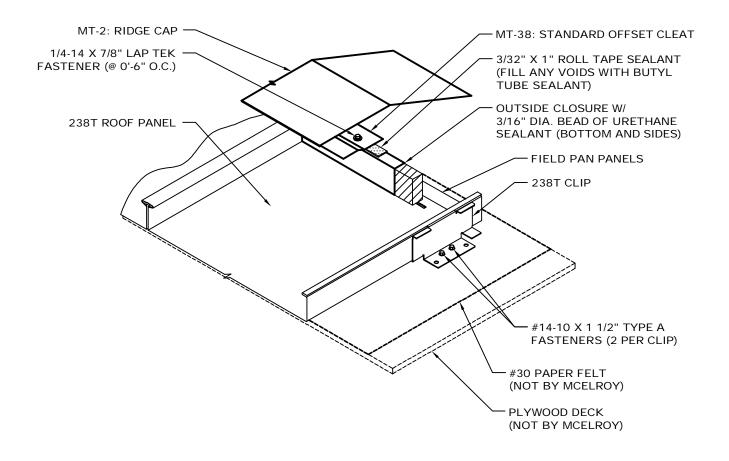


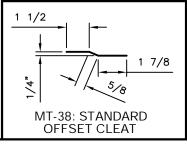


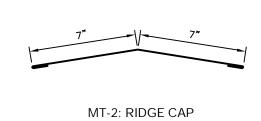
- NOTES: 1. MT-2 (Ridge Cap) and MT-38 (Standard Offset Cleat) to run from out of wall to out of wall.
 - 2. Using a panning tool, fold up the pan of the panel at the ridge.
 - 3. Install 238T panels and apply a 3/16" Dia. bead of Urethane Tube Sealant in the pan of the panel and up the the vertical legs where the foam closure will be placed.
 - 4. Install Metal Closure Cover over the Foam Closure and secure to panel with (2) 1/4-14 x 1 1/14" HWH Tek2 or ZAC Fasteners, making sure to fasten through the clip to provide fixed point.
 - 5. MT-2 (Ridge Cap) laps 2". Apply 3/32" x 1" Butyl Tape and Pop Rivet trims to MT-38 (Standard Offset Cleat with Pop Rivets at Laps.



FIXED RIDGE DETAIL



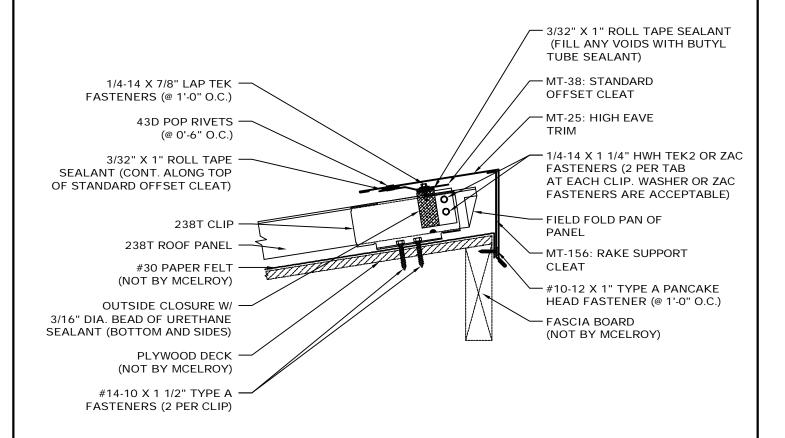


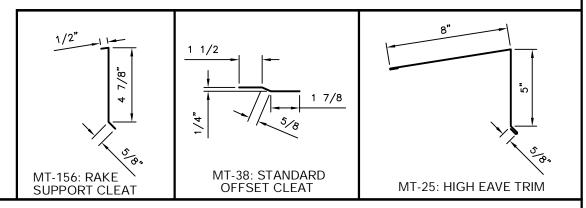


- NOTES: 1. MT-2 (Ridge Cap) and MT-38 (Standard Offset Cleat) to run from out of wall to out of wall.
 - 2. Using a panning tool, fold up the pan of the panel at the ridge.
 - 3. Install 238T panels and apply a 3/16" Dia. bead of Urethane Tube Sealant in the pan of the panel and up the the vertical legs where the foam closure will be placed.
 - 4. Install Metal Closure Cover over the Foam Closure and secure to panel with (2) 1/4-14 x 1 1/14" HWH Tek2 or ZAC Fasteners, making sure to fasten through the clip to provide fixed point.
 - 5. MT-2 (Ridge Cap) laps 2". Apply 3/32" x 1" Butyl Tape and Pop Rivet trims to MT-38 (Standard Offset Cleat with Pop Rivets at Laps.



FIXED HIGH EAVE DETAIL

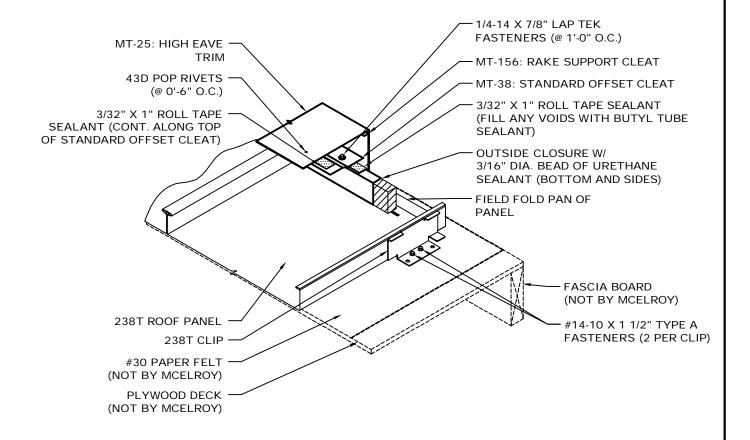


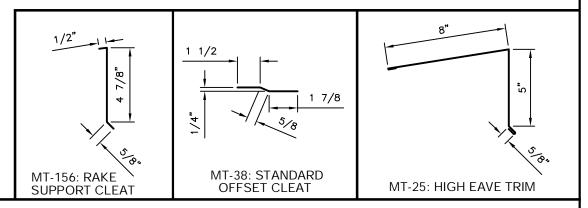


- NOTES: 1. MT-25 (High Eave Trim), MT-156 (Rake Support Cleat) and MT-38 (Standard Offset Cleat) to run from out to out of building.
 - 2. Attach MT-156 (Rake Support Cleat) to fascia board with #10-12 x 1" Type A Pancake Head Fasteners at 1'-0" O.C.
 - 3. Apply a 3/16" Dia. bead of Urethane Sealant to the pan and up the vertical legs of the panel where the Foam Outside Closure will be placed. Install Metal Closure Cover over Foam Outside Closure and attach to panels and clip with (2) 1/4-14 x 1 1/4" HWH Tek2 or ZAC Fasteners to provide a fixed point. Attach 1/4" Offset Cleat to Outside Closures with 1/4-14 x 7/8" Lap Tek fasteners at 1'-0" O.C.
 - Apply a continuous line of 3/32" x 1" Roll Tape Sealant to the top flange of the MT-38 (Standard Offset Cleat).
 - 5. High Eave Trim to lap 2". Apply 3/32" x 3/8" Butyl Tape or Butyl Tube Sealant in trim laps and Pop Rivet flashing. Offset Cleat will butt joint.



FIXED HIGH EAVE DETAIL

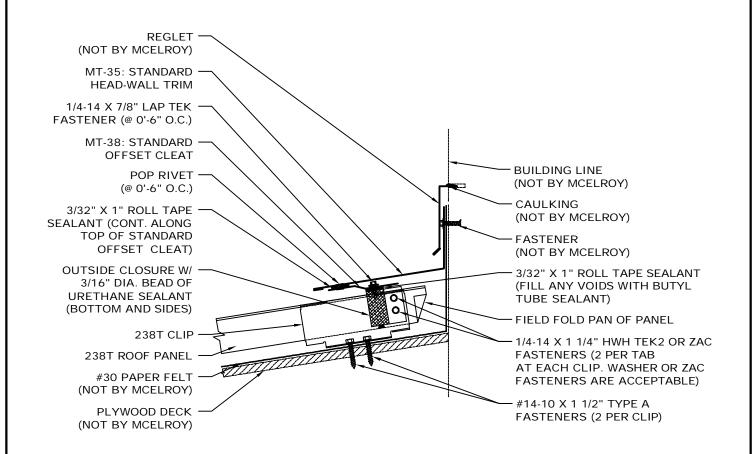


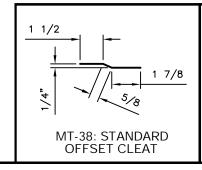


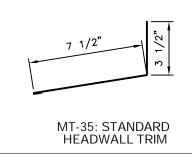
- NOTES: 1. MT-25 (High Eave Trim), MT-156 (Rake Support Cleat) and MT-38 (Standard Offset Cleat) to run from out to out of building.
 - 2. Attach MT-156 (Rake Support Cleat) to fascia board with #10-12 x 1" Type A Pancake Head Fasteners at 1'-0" O.C.
 - 3. Apply a 3/16" Dia. bead of Urethane Sealant to the pan and up the vertical legs of the panel where the Foam Outside Closure will be placed. Install Metal Closure Cover over Foam Outside Closure and attach to panels and clip with (2) 1/4-14 x 1 1/4" HWH Tek2 or ZAC Fasteners to provide a fixed point. Attach 1/4" Offset Cleat to Outside Closures with 1/4-14 x 7/8" Lap Tek fasteners at 1'-0" O.C.
 - 4. Apply a continuous line of 3/32" x 1" Roll Tape Sealant to the top flange of the MT-38 (Standard Offset Cleat).
 - 5. High Eave Flashing to Iap 2". Apply 3/32" x 3/8" Butyl Tape or Butyl Tube Sealant in trim Iaps and Pop Rivet flashing. Offset Cleat will butt joint.



FIXED HEADWALL DETAIL



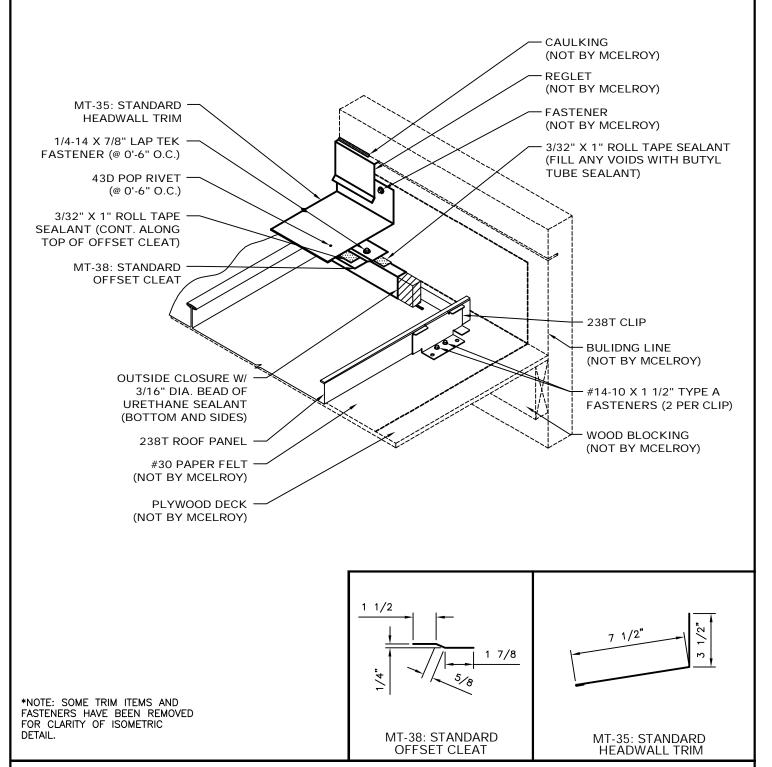




- NOTES: 1. MT-35 (Standard Headwall Trim) and MT-38 (Standard Offset Cleat) to run from out to out of building.
 - 2. Apply a 3/16" Dia. bead of Urethane Sealant to the pan and up the vertical legs of the panel where the Foam Outside Closure will be placed. Install Metal Closure Cover over Foam Outside Closure and attach to panels and clip with (2) 1/4-14 x 1 1/4" HWH Tek2 or ZAC Fasteners to provide a fixed point.
 - 3. Apply a continuous line of 3/32" x 1" Roll Tape Sealant to the top flange of the Metal Outside Closure. Attach 1/4" Offset Cleat to Outside Closure with 1/4-14 x 7/8" Lap Tek Fasteners at 0'-6" O.C.
 - 4. Apply a continuous line of 3/32" x 1" Roll Tape Sealant to the top flange of the Offset Cleat.
 - 5. MT-35 (Standard Headwall Trim) to lap 2". Apply 3/32" x 3/8" Butyl Tape or Butyl Tube Sealant in trim laps and Pop Rivet flashing. MT-38 (Standard Offset Cleat) will butt joint.



FIXED HEADWALL DETAIL

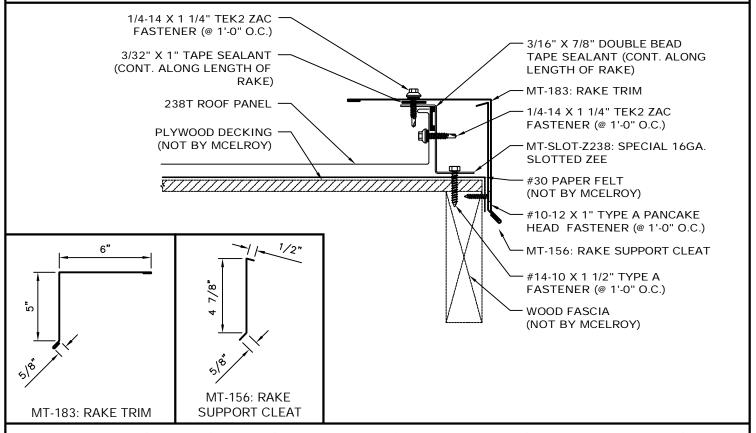


- NOTES: 1. MT-35 (Standard Headwall Trim) and MT-38 (Standard Offset Cleat) to run from out to out of building.
 - 2. Apply a 3/16" Dia. bead of Urethane Sealant to the pan and up the vertical legs of the panel where the Foam Outside Closure will be placed. Install Metal Closure Cover over Foam Outside Closure and attach to panels and clip with (2) 1/4-14 x 1 1/4" HWH Tek2 or ZAC Fasteners to provide a fixed point.
 - 3. Apply a continuous line of 3/32" x 1" Roll Tape Sealant to the top flange of the Metal Outside Closure. Attach 1/4" Offset Cleat to Outside Closure with 1/4-14 x 7/8" Lap Tek Fasteners at 0'-6" O.C.
 - 4. Apply a continuous line of 3/32" x 1" Roll Tape Sealant to the top flange of the Offset Cleat.
 - 5. MT-35 (Standard Headwall Trim) to lap 2". Apply 3/32" x 3/8" Butyl Tape or Butyl Tube Sealant in trim laps and Pop Rivet flashing. MT-38 (Standard Offset Cleat) will butt joint.

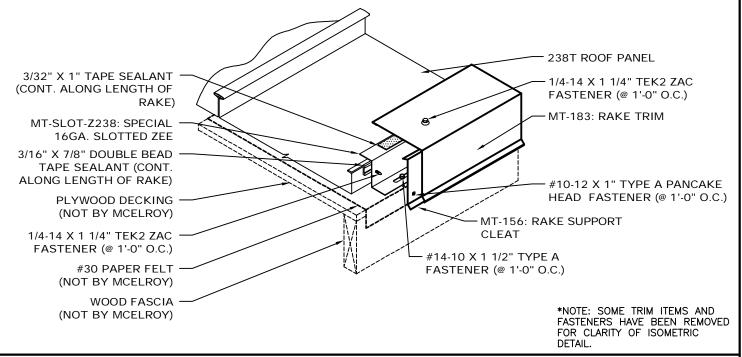


238T

FLOATING RAKE DETAIL



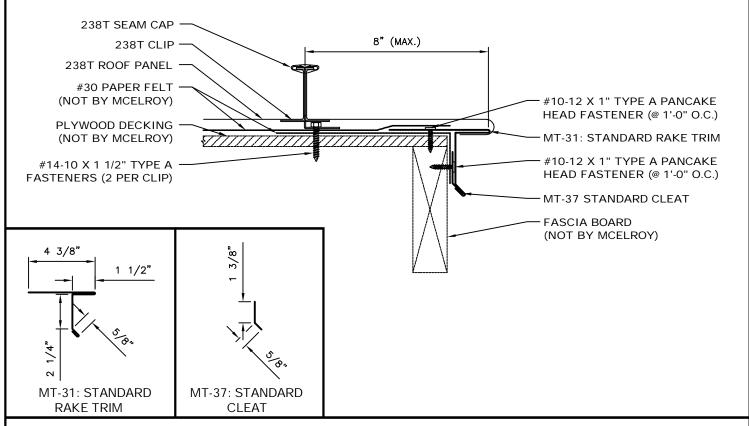
- NOTES: 1. MT-183 (Rake Trim), MT-156 (Rake Support Cleat) and MT-SLOT-Z238 (Special 16ga. Slotted Zee) to run from eave to ridge.
 - 2. Attach MT-SLOT-Z238 (Special 16ga. Slotted Zee) to decking with #14-10 x 1 1/2" HWH Type A Fasteners at 1'-0" O.C.
 - 3. Apply a continuous bead of 3/16" x 7/8" Double Bead Tape Sealant to the vertical leg of the 238T panel. Install 238T panel and hold in place on the Slotted Zee with clamps. Fasten panel to Slotted Zee with 1/4-14 x 1 1/4" Tek2 ZAC Fasteners at 1'-0" O.C.
 - 4. Apply a continuous bead of 3/32" x 1" Roll Tape Sealant to the top of the Slotted Zee and attach MT-183 (Rake Trim) with 1/4-14 x 1 1/4" Tek2 ZAC Fasteners at 1'-0" O.C.
 - 5. Trim pieces lap 2". Apply 3/32" x 3/8" Butyl Tape or Butyl Tube Sealant in trim laps and Fasten to trims.



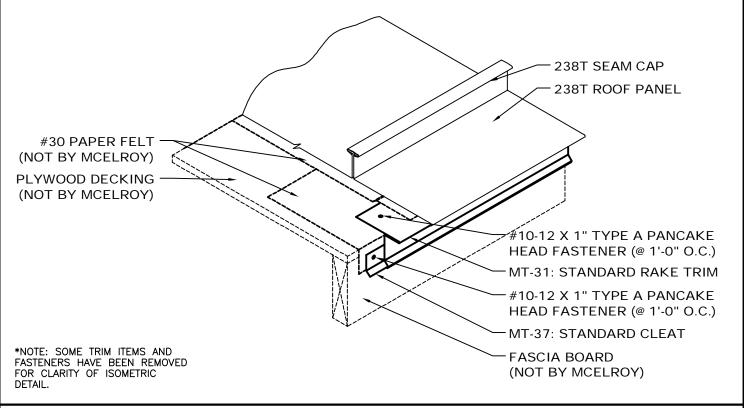


238T

FLOATING RAKE DETAIL (ALT.)



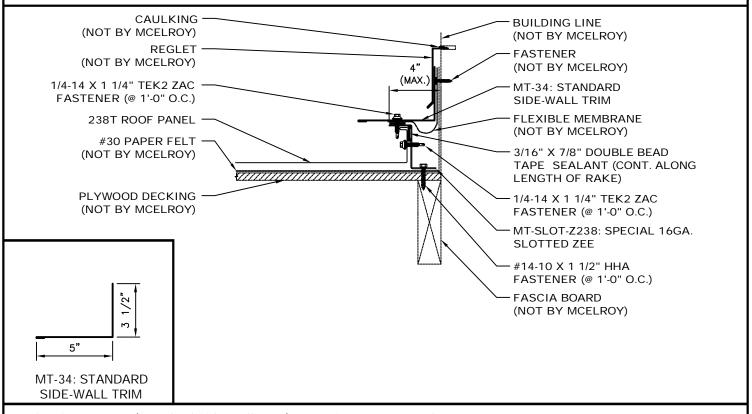
- NOTES: 1. MT-31 (Rake Trim) and MT-37 (Standard Cleat) to run from eave to ridge.
 - 2. Attach MT-37 (Standard Cleat) to Fascia Board with #10-12 x 1" Type A Pancake Head Fasteners at 1'-0" O.C.
 - 3. Attach MT-31 (Rake Trim) to MT-37 (Standard Cleat) and fasten to Plywood Decking with $\#10-12 \times 1"$ Type A Pancake Head Fasteners at 1'-0" O.C.
 - 4. Field cut leading edge of panel and fold panel down 180°.



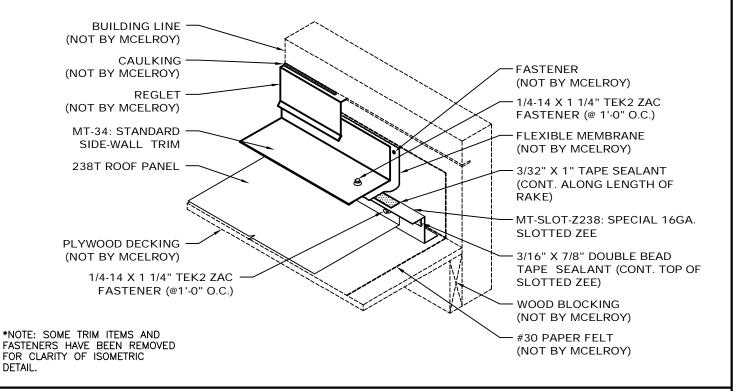


238T

FLOATING SIDE-WALL TIE-IN DETAIL

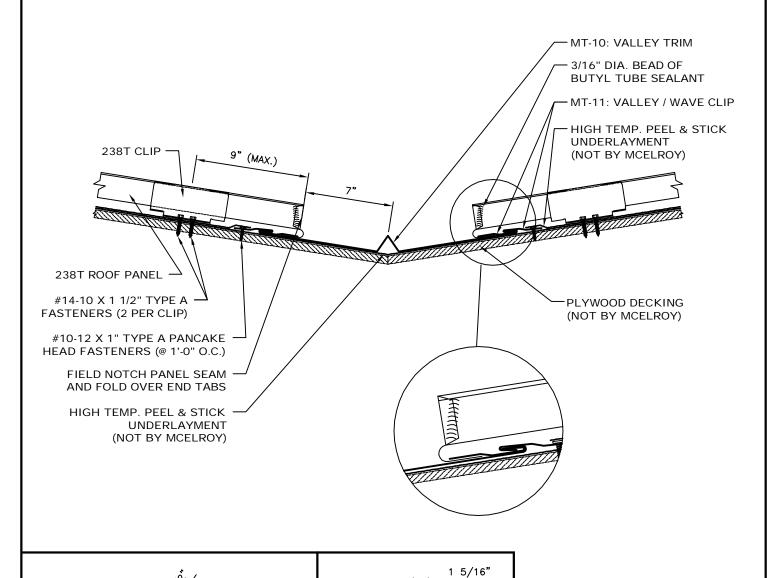


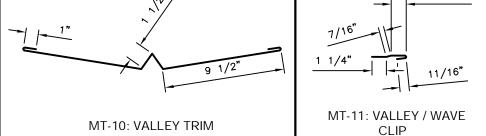
- NOTES: 1. MT-34 (Standard Side-Wall Trim) to run from Eave to Ridge.
 - 2. Attach MT-SLOT-Z238 (Special 16ga. Slotted Zee) to decking with #14-10 x 1 1/2" HWH Type A Fasteners at 1'-0" O.C.
 - 3. Apply a continuous run of 3/16" x 7/8" Double Bead Tape Sealant to the vertical leg of the 238T panel. Install 238T panel and hold in place on the Slotted Zee with clamps. Fasten panel to Slotted Zee with 1/4-14 x 1 1/4" Tek2 Zac Fasteners at 1'-0" O.C.
 - 4. Apply a continuous run of 3/32" x 1" Roll Tape Sealant to the top of the Slotted Zee and attch MT-34 (Standard Side-Wall Trim) with 1/4-14 x 1 1/4" Tek2 ZAC Fasteners at 1'-0" O.C.
 - 5. Trim pieces lap 2". Apply 3/32" x 3/8" Butyl Tape or Butyl Tube Sealant in trim laps and Fasten to trims.





VALLEY DETAIL

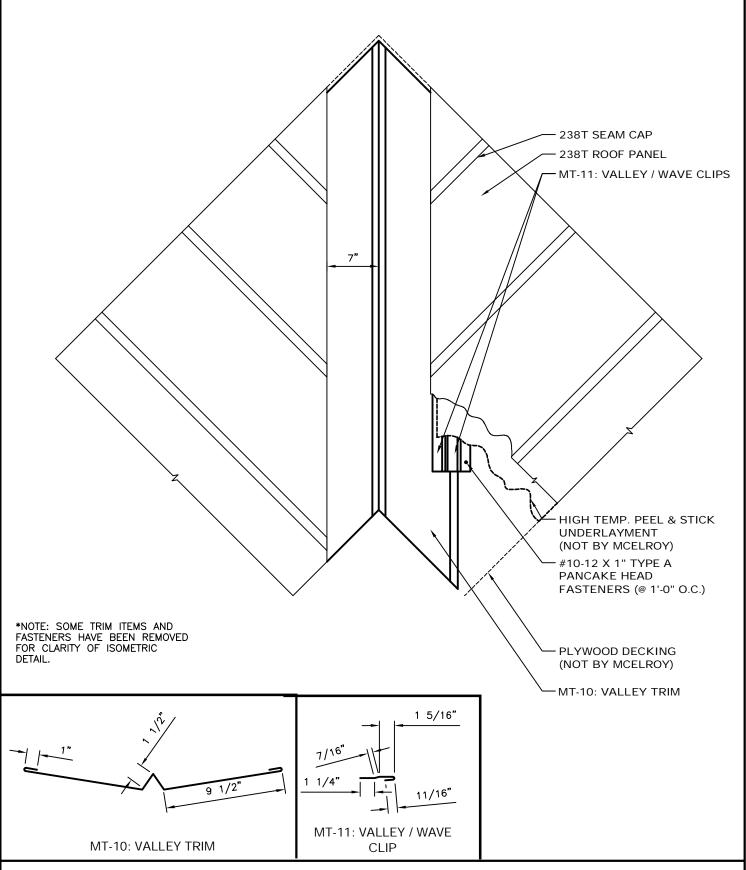




- NOTES: 1. Install MT-10 (Valley Trim) from eave to ridge. MT-10 (Valley Trim) pieces lap 6". Place 3/32" x 1" Butyl Tape or a 3/16" Dia. bead of Butyl Tube Sealant in laps.
 - 2. Cut panels at required bevel for valley condition.
 - 3. Attach MT-11 (Valley / Wave Clip) with #10-12 x 1" Type A Pancake Head fasteners at 1'-0" O.C.



VALLEY DETAIL

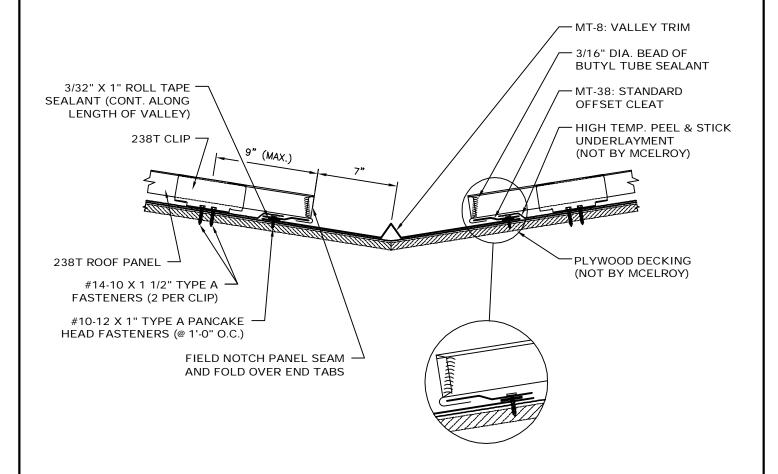


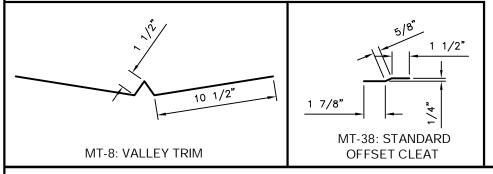
- NOTES: 1. Install MT-10 (Valley Trim) from eave to ridge. MT-10 (Valley Trim) pieces lap 6". Place 3/32" x 1" Butyl Tape or a 3/16" Dia. bead of Butyl Tube Sealant in laps.

 - Cut panels at required bevel for valley condition.
 Attach MT-11 (Valley / Wave Clip) with #10-12 x 1" Type A Pancake Head fasteners at 1'-0" O.C.



VALLEY DETAIL (ALT.)

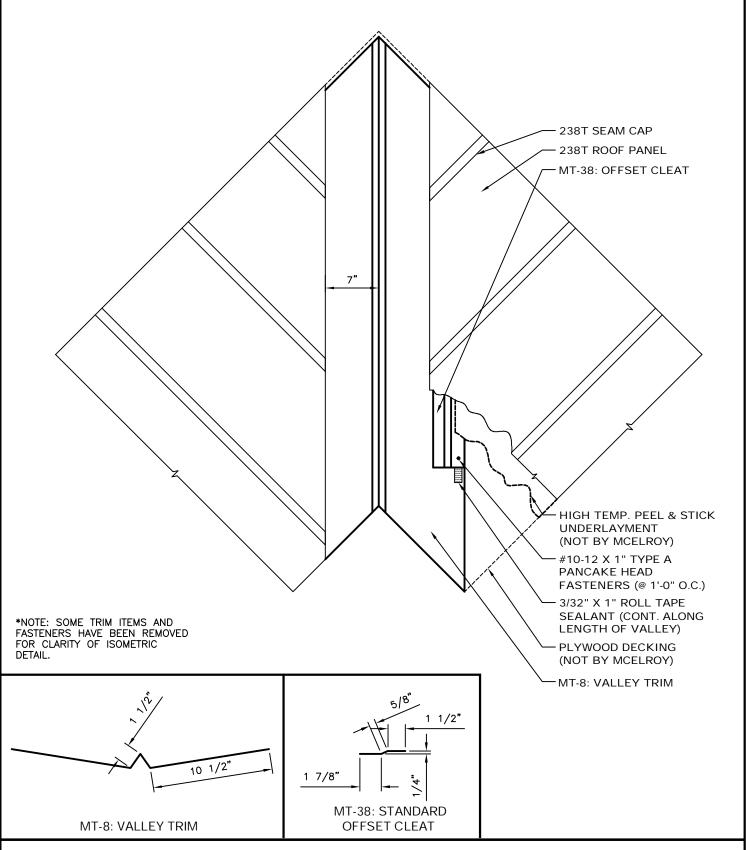




- NOTES: 1. Install MT-8 (Valley Trim) from eave to ridge. MT-8 (Valley Trim) pieces lap 6". Place 3/32" x 1" Butyl Tape or a 3/16" Dia. bead of Butyl Tube Sealant in laps.
 - 2. Cut panels at required bevel for valley condition.
 - 3. Apply a continuous line of 3/32" x 1" Roll Tape Sealant up both sides of MT-8 (Valley Trim).
 - 4. Install MT-38 (Standard Offset Cleat) with #10-12 x 1" Type A Pancake Head fasteners at 1'-0" O.C.



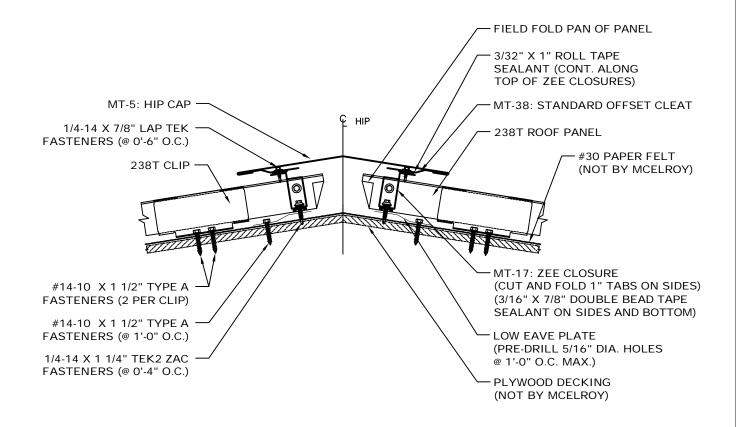
VALLEY DETAIL

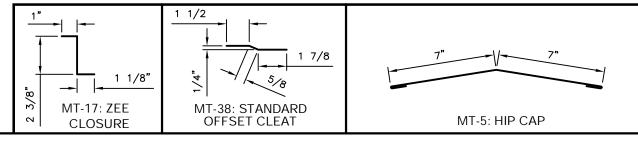


- NOTES: 1. Install MT-8 (Valley Trim) from eave to ridge. MT-8 (Valley Trim) pieces lap 6". Place 3/32" x 1" Butyl Tape or a 3/16" Dia. bead of Butyl Tube Sealant in laps.
 - 2. Cut panels at required bevel for valley condition.
 - 3. Apply a continuous line of 3/32" x 1" Roll Tape Sealant up both sides of MT-8 (Valley Trim).
 - 4. Attach MT-38 (Standard Offset Cleat) with #10-12 x 1" Type A Pancake Head fasteners at 1'-0" O.C.



HIP DETAIL

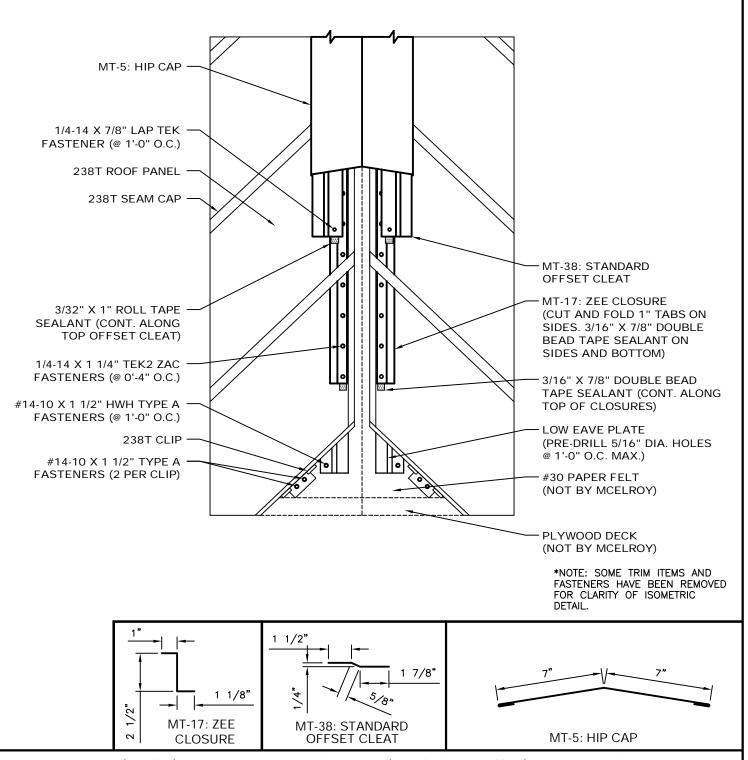




- NOTES: 1. MT-5 (Hip Cap) to run from Eave to Ridge. MT-38 (Standard Offset Cleat) to run from Ridge to Eave.
 - 2. Using a panning tool, fold up the pan of the panel at the Hip.
 - 3. Install 238T panels as directed in this manual.
 - 4. Cut individual Zee Closures with 1" Side Tabs from the MT-17 (Zee Closure). Apply a 3/16" x 7/8" Double Bead Tape Sealant to the bottom and sides of Zee Closures and install 2" down from end of panel. Fasten with 1/4-14 x 1 1/4" Tek2 ZAC fasteners at 0'-4" (Max.).
 - 5. MT-5 (Hip Cap) laps 2". Apply 3/32" x 1" Butyl Tape and Pop Rivet trims to MT-38 (Standard Offset Cleat with Pop Rivets at Laps.



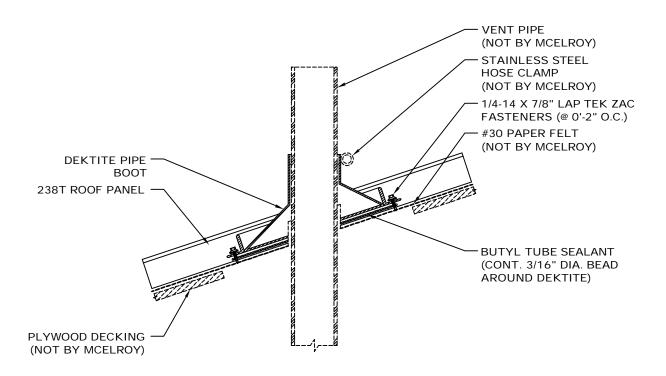
HIP DETAIL



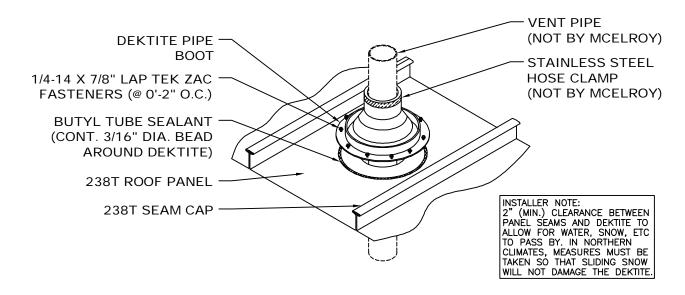
- NOTES: 1. MT-5 (Hip Cap) to run from Eave to Ridge. MT-38 (Standard Offset Cleat) to run from Ridge to Eave.
 - 2. Using a panning tool, fold up the pan of the panel at the Hip.
 - 3. Install 238T panels as directed in this manual.
 - 4. Cut individual Zee Closures with 1" Side Tabs from the MT-17 (Zee Closure). Apply a 3/16" x 7/8" Double Bead Tape Sealant to the bottom and sides of Zee Closures and install 2" down from end of panel. Fasten with 1/4-14 x 1 1/4" Tek2 ZAC fasteners at 0'-4" (Max.).
 - 5. MT-5 (Hip Cap) laps 2". Apply 3/32" x 1" Butyl Tape and Pop Rivet trims to MT-38 (Standard Offset Cleat with Pop Rivets at Laps.



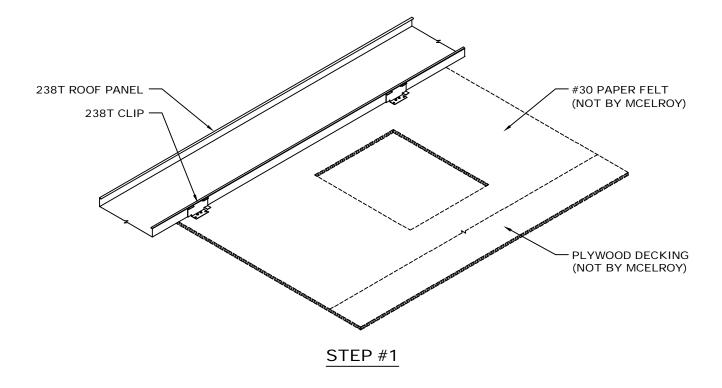
DEKTITE DETAIL



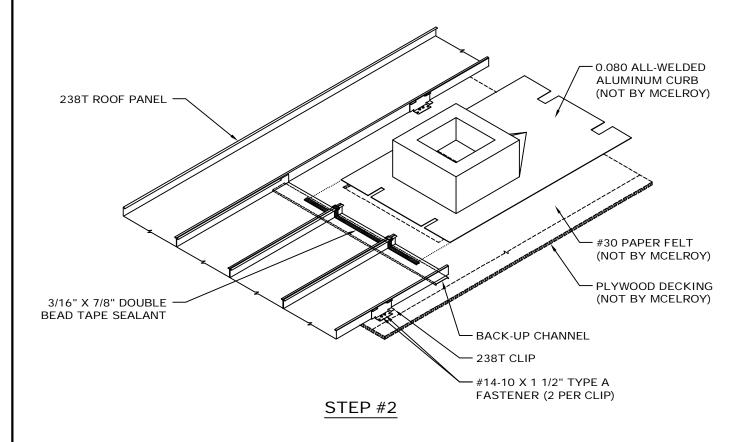
- NOTES: 1. Cut hole in panel 1" larger than pipe diameter. If installing over a solid substrate, over-cut hole in substrate so fastener do not pin system from thermal movement.
 - 2. Cut hole in top of Dektite Boot so that it fits snuggly around pipe. Apply a 3/16" Dia. bead of Tube Butyl sealant around the base flange of boot. Secure to panel with 1/4-14 x 7/8" Lap Tek ZAC fasteners 2" O.C.
 - 3. Dektite boot MUST fit in pan of panel. Do not fasten to standing seams.



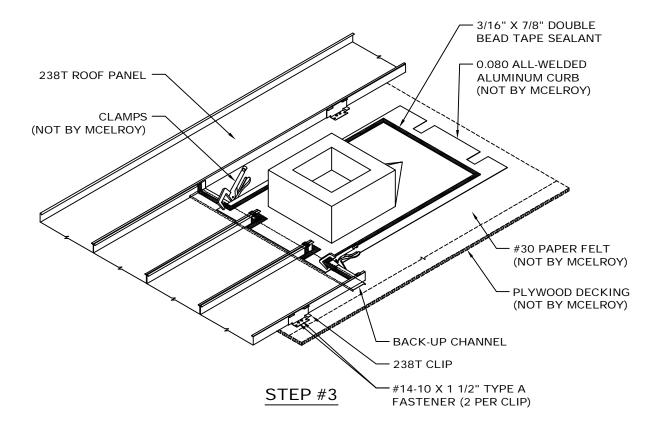




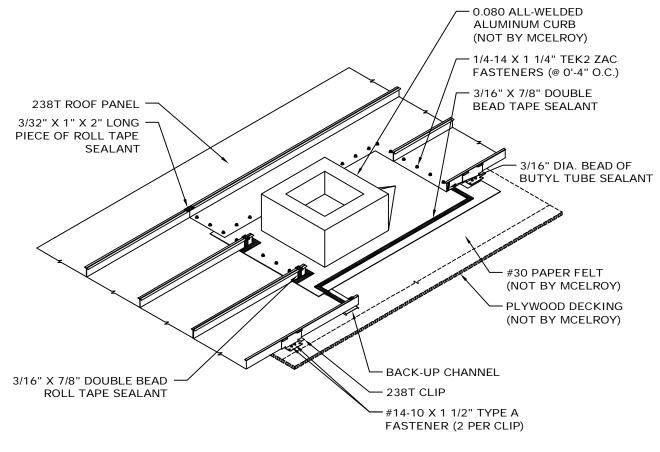






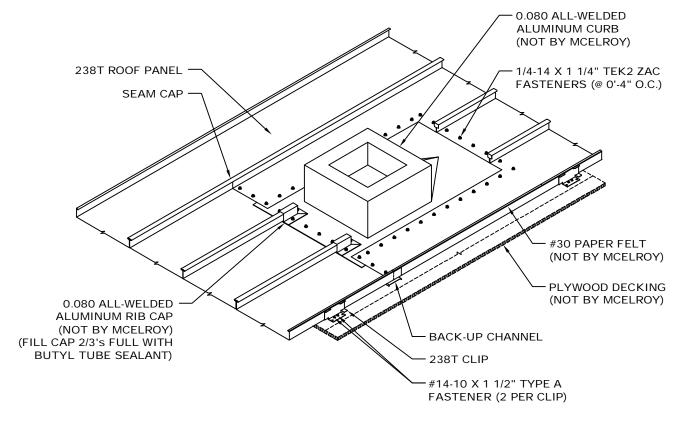






STEP #4

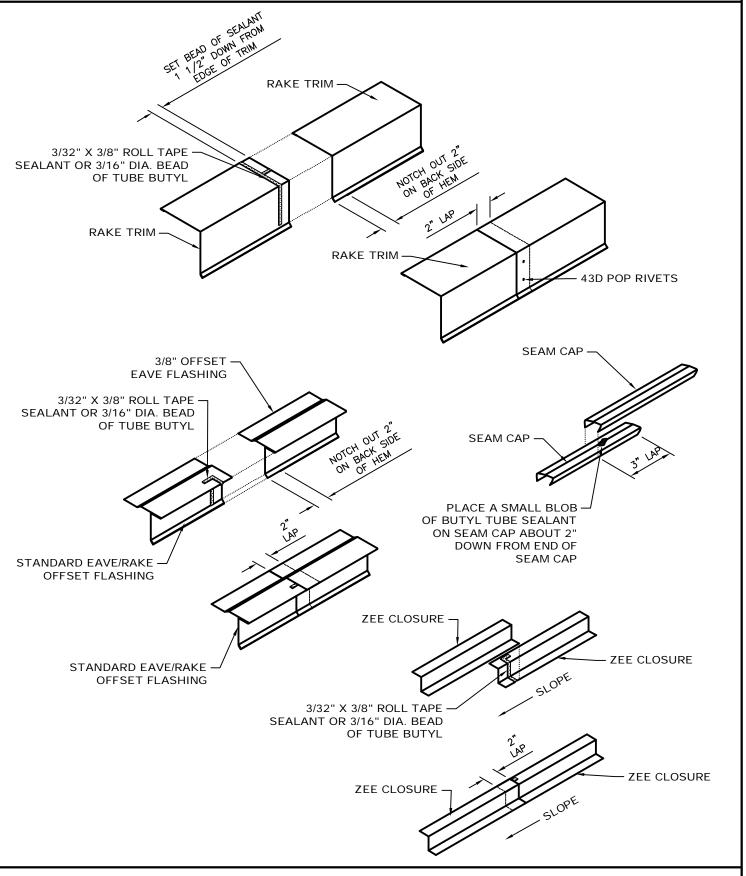




STEP #5



TYPICAL TRIM LAP DETAIL

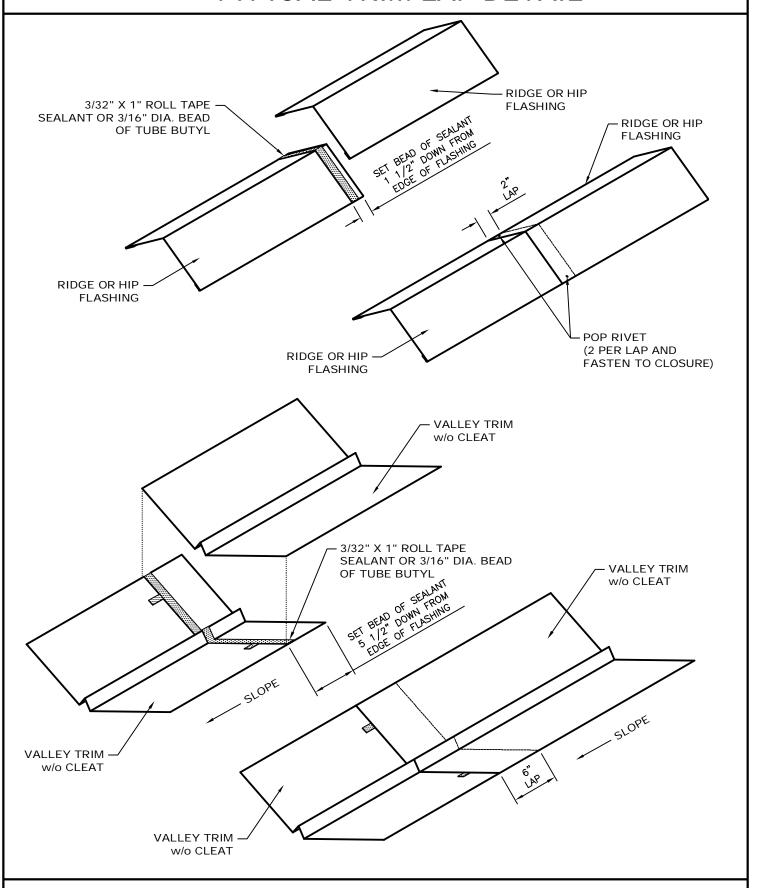


NOTE: 1. Apply 3/32" x 3/8" Roll Tape Sealant or a 3/16" Dia. bead of Tube Butyl 1 1/2" back from the edge of the trim. Also, apply a piece of tape sealant or bead of Tube Butyl as a Pigtail to completely seal joint.

- 2. Notch the hems on the upper trim piece 2" so that the trim will fit flat in the lap joint.
- 3. Secure trim laps with Pop Rivets as shown above.



TYPICAL TRIM LAP DETAIL



NOTE: 1. Apply 3/32" x 1" Roll Tape Sealant or a 3/16" Dia. bead of Tube Butyl 1 1/2" back from the edge of the trim

- 2. Notch the hems on the upper trim piece 2" so that the trim will fit flat in the lap joint.
- 3. Secure trim laps with Pop Rivets as shown above.





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MANUFACTURING LOCATIONS

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Chesapeake, VA 23323	Clinton, IL 61727	Diamond, MO 64840	Fenton, MO 63026
409 Lovejoy Road	3014 Lincoln Court	1440 Aldine Bender Road	10504 E. 59th Street
Ft. Walton Beach, FL 32548	Garland, TX 75041	Houston, TX 77032	Indianapolis, IN 46236
32 Industrial Circle	9435 US Hwy. 60 W.	1020 Veterans Street	5123 Terminal Dr.
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514 Cave Road	8304 Hwy. 70 E.	613 North Bierdeman Rd.	8511 Industrial Drive Pearland, TX 77584
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