

Roof-Lok ERECTION MANUAL



FOR FIELD USE

PLEASE DISTRIBUTE TO THE ERECTION CREW



KIRBY
BUILDING
SYSTEMS

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1.0 GENERAL

1.1 PURPOSE OF THIS MANUAL

This installation manual is provided to Kirby Builders and their erectors as the recommended procedure for the correct installation of the Kirby Building Systems (KBS) Roof-Lok Roof System.

This manual is intended to be used in conjunction with the project's erection drawings to help plan and organize the installation of the KBS Roof-Lok Roof System. The erection drawings identify the applicable roof conditions and govern specific part arrangements. The instructions will help you identify parts, establish the installation sequence, demonstrate correct assembly, and point out any areas or procedures requiring special emphasis or attention.

This installation manual applies to the standard conditions. Custom roof conditions, including custom details and instructions, will be covered by the erection drawings. **In the case of conflict between this installation manual and the erection drawings, the erection drawings will take precedence.**

The KBS Roof-Lok Roof System can be erected on many different types of construction. However, for this manual we have assumed this roof system will be erected on a new pre-engineered metal building.

1.2 BUYER'S RESPONSIBILITY

The buyer is responsible for proper installation of the roof in accordance with the erection drawings and this manual, and in accordance with good engineering and construction practices.

The buyer must take the responsibility for selecting a competent erector, insist that the work be performed by qualified and experienced standing seam metal roof installers, and insist that the erector take time to study and understand this manual, then assure that the erector correctly follows the manual's instructions.

KBS does not guarantee and is not liable for the quality of erection. KBS is not responsible for building defects that may be attributed to improper erection or the negligence of other parties.

Clarification concerning the KBS Roof-Lok roof installation should be directed to the **QUALITY SERVICE REPRESENTATIVE** at the KBS plant.

Kirby Building Systems
124 Kirby Drive
Portland, TN. 327148
Phone: 615-745-6047
Email: qualityservices@kirbybuildingsystems.com

1.3 MBMA

This roof system is designed, manufactured, and delivered in accordance with the most recent addition of the M.B.M.A. METAL BUILDING SYSTEMS MANUAL. CONSULT THE INFORMATION IN THE "COMMON INDUSTRY PRACTICES" SECTION.

1.4 DISCLAIMER

THE PRODUCTS AND PROCEDURES IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE.

1.5 UNLOADING AND STORING

Check the quantities and condition of all Roof-Lok bundles and trim crates on arrival. Note on the delivery tickets of any shortages, damage, or discrepancies. KBS shall **not** be liable for damage or shortages that are not noted on the delivery tickets. The customer assumes full responsibility for the condition of this material after deliver by the trucking company.

Extreme care should be exercised when unloading and handling the panel bundles and accessory crates to prevent damage. The weight of the panel bundle is printed on the bundle tag on the end of each bundle. If the tag is not on the bundle, you may calculate the weight of the bundle with the formula: (Qty. of panels x Bundle length x 2.5 lbs. per foot).

Bundles up to 25 feet long can be lifted with a forklift. Bundles over 25 feet long shall be lifted with a crane utilizing a spreader bar with 4-inch minimum width nylon straps. Straps should be 15 to 20 feet apart. To avoid damage to the panels, steel cables, chains, or chokers shall not be used.

The Roof-Lok panels and accessories shall be stored on high ground, sloped to drain and tarped to protect from moisture formation. The tarp should be open at each end to allow consistent airflow through the bundles. The recommended procedures are outlined in this manual. KBS will not be held responsible for damage or discoloration of panels caused by improper storage.

1.6 ERECTION SEQUENCE

The Roof-Lok Roof System is typically designed to be erected on gable buildings **without** panel endlaps to be sheeted simultaneously from either direction. However, when panel end laps are required the sheeting direction must be right-to-left (looking up the roof slope). **Reference the Final Erection Drawing set to determine the sheeting direction.**

The panel erection sequence must always be started from the low eave corner working toward the high eave or ridge. The full panel run from eave to high eave or ridge must be installed before the next panel run can be started.

Because the roof can be started from either end, the panel ribs may not be in alignment across the ridge. This is normal practice for the Roof-Lok Roof System and does not affect the performance of the roof system.

1.7 COORDINATION WITH OTHER TRADES

Supports for the Roof-Lok Roof System shall be provided and are required as shown in the sections and as noted in these specifications. All necessary clearance dimensions for proper elevations relative to the roof panels have been shown. The contractor shall be responsible for coordinating these dimensional requirements with other trades associated with the building roof system.

1.8 ERECTION CARE

The Erector must be skilled in the erection of Metal Building Systems, including roof panels, and is responsible for complying with all applicable local, federal and state construction and safety regulations including OSHA regulations as well as any applicable requirements of local, national, or international union rules or practices.

The Erector remains solely responsible for the safety and appropriateness of all techniques and methods utilized by its crew in the erection of the Metal Building System and/or the Roof-Lok roof system.

The Erector and/or Contractor is also responsible for supplying safety devices, such as scaffolds, runways, nets, etc. which may be required to safely erect the Metal Building System and/or Roof-Lok roof system.

The Erector of the Kirby Roof-Lok Roof System shall exercise great care and attention to the details as shown on the erection drawings and in this manual to insure a secure and proper fit of all components. KBS shall not be responsible for supervising and/or coordinating the erection of the Roof-Lok Roof System with other trades.

1.9 FIELD CUTTING OF PANELS

When Roof-Lok roof panels need to be field cut or mitered, non-abrasive cutting tools such as nibblers or tin-snips shall be used. Abrasive cutting tools such as mechanical grinders or power saws, can damage the panel finish and create excess metal shavings that can corrode the panels. The use of non-approved cutting devices may void the factory warranty.

1.10 TRIM AND FLASHING

Due consideration must be given to the effects of thermal expansion and contraction when installing trim/flashing while insuring a safe, secure, weather-tight condition. KBS is not responsible for trim/flashing not supplied by Kirby.

1.11 ENGINEERING AND REINFORCING MATERIALS

NOTE: KBS does not supply engineering investigations or materials to reinforce existing non-Kirby buildings. These type investigations must be submitted to the project engineer of record

2.0 DESIGN & PERFORMANCE CRITERIA

2.1 ROOF SYSTEM

The Roof-Lok Roof System consists of 24 gage panels with a nominal coverage of 1'-4" and a panel seam that is 2" tall. The flat of the panel will be elevated above the top of the roof secondary member by either ½" (if short clips are used) or 1½" (if tall clips are used). There are two different seaming options for Roof-Lok roofs, refer to Section 2.6.

2.2 PANEL CLIP SPACING

The Roof-Lok Roof System uses a clip to attach the panels to the roof secondary members. Panel clip spacing is as follows:

For Roof-Lok Roofs on a Kirby Building:

Clips are required at every purlin and/or joist, location unless noted otherwise.

For Roof-Lok Roofs on a non-Kirby Building:

Maximum clip spacing is to be 5'-0" for purlin roofs, and 5'-6" maximum for joist roof. The actual clip spacing is the responsibility of the Engineer of Record.

2.3 PANEL CLIP FASTENER REQUIREMENTS

KBS standard clip fasteners are designed to fasten to a steel structural member of .060" minimum thickness (16 Ga.). Two fasteners are required to engage the structural member at every panel clip location. Required fastener pullout values are dependent upon project location, size, building code, and loading. Consult Kirby Engineering for project-dependent fastener specifications.

2.4 ROOF TOP UNITS AND CURB SUPPORTS

The Roof-Lok Roof System is elevated above the top of the roof secondary structural members. Roof curb sub-framing must be elevated above the secondary members to the elevation of the roof panel to avoid potential leak problems. Refer to the details for proper dimensions. Short roof clips require ½" of elevation, while tall roof clips require 1½" of elevation.

The Roof-Lok Roof System is designed as a floating system. Curb framing and flashing must be designed accordingly to allow the curb system to float with the Roof-Lok roof during thermal expansion and contraction.

Roof curbs shall not span the ridge of a building.

2.5 INSULATION REQUIREMENTS

KBS recommends that insulation be used in all Roof-Lok Roof applications to avoid problems with condensation forming on the underside of the sheeting. This also provides a buffer between the purlins and the roof panel to eliminate noise and possible damage due to metal-to-metal contact. KBS can supply a noise reducing thermal block for use in limited applications (canopies, etc.) when included as part of the roof order.

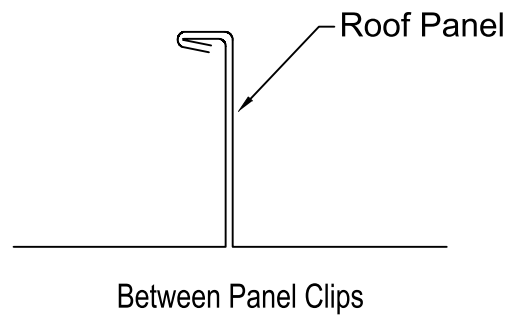
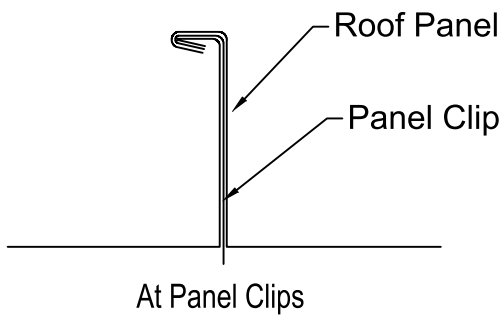
2.6 SEAMING OPTIONS

The Roof-Lok 90 seam requires hand crimping the roof panel with the manual seaming tool at the starting eave or ridge end of the panels, and at the end laps. Once the hand crimping has been completed, then seam the full length of the roof panels with the Motorized Seaming Machine.

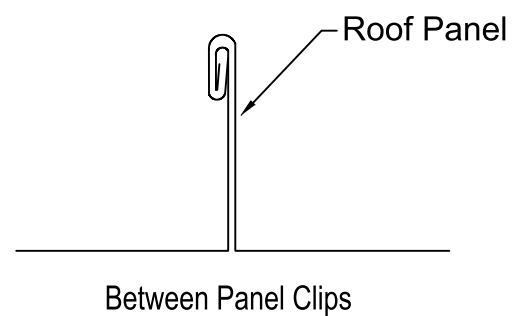
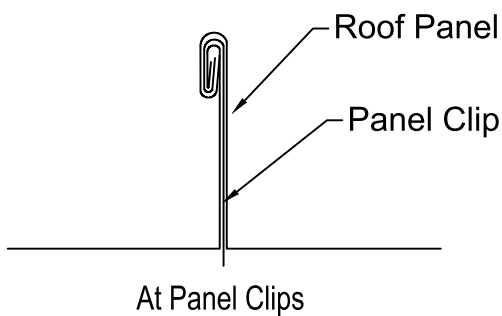
The Roof-Lok 360 seam is achieved by running the single directional seamer over the entire roof. The erector must first hand crimp the clip location on entire roof panel into the Roof-Lok 90 seam with the manual seaming tool. Prior to locking the seamer on, the low end of the panel must be hand crimped into a Roof-Lok 360 seam, utilizing the hand crimper that is supplied in the seamer kit. This will enable you to lock the seamer onto the panel seam. Then seam the full length of the roof panel.

Refer to the erection drawing roof sheeting plan for seam type.

Roof-Lok 90 SEAM



Roof-Lok 360 SEAM



4.0 ROOF-LOK ROOF COMPONENTS WITH ENGINEERING

4.1 COMPONENTS WITH ENGINEERING DEFINITION

In a case where KBS is providing the Roof-Lok Roof System to be used in conjunction with a non-Kirby structure, KBS refers to that as a “Components with Engineering”. This simply means that KBS shall calculate the quantities and lengths for the material required. KBS is performing no engineering study of the structure. The engineer of record on the project shall be responsible for coordinating the Roof-Lok Roof System with the other trades of the project to insure a safe, quality, and proper application of the roof system. KBS does not supply clip fasteners to attach to non-KBS framing materials.

4.2 DIAPHRAGM

The Roof-Lok Roof is designed to accommodate thermal expansion and contraction and will NOT act as a diaphragm for resisting lateral load forces or providing lateral stability to the roof structural members. Due consideration for this must be addressed by the project engineer of record. In addition, the Roof-Lok Roof, because it is designed to float, will not support structural members laterally. When replacing an existing screw down roof, additional bracing may be required to laterally support the members. Engineering and material for these uses shall not be provided by KBS.

4.3 CLIP FASTENING REQUIREMENTS

Refer to **section 2.3** “Design and Performance Criteria” for Roof-Lok panel clip fastening requirements.

5.0 RECEIVING & HANDLING ROOF MATERIALS

5.1 FIELD STORAGE OF MATERIALS

Upon acceptance of the shipment, the buyer or his representative is responsible for proper handling, storage, and security of the roof materials. KBS is **not liable** for damage, injury, or loss as a result of improper storage and/or handling.

The roof panel bundles should be stored on the job site in accordance with the following recommendations.

- a. Store panels in a protected area, out of standing water and drifting snow, etc. Panel bundles and trim crates should be blocked 12" above grade.
- b. Elevate panels with blocking to allow air circulation under the bundle.
- c. Slope panels for drainage of moisture from the panels.
- d. As necessary, cover panels with waterproof tarp, allowing for air circulation (do not wrap tarp under panel bundle or restrict air movement).
- e. Inspect panels daily for moisture accumulation.
- f. If panel bundles contain moisture, the panels should be dried and re-stacked. Use care in re-stacking to avoid damage to panels.
- g. Opened or re-stacked panel bundles should be secured to prevent wind damage.
- h. Bundles should be located over primary structural frame lines, not in the middle of the bay. Blocking should be used between the purlins/joists at the panel bundle locations. This blocking is not supplied by KBS.

When moving panel bundles, extreme caution should be taken to prevent damage to the panel edges. Uncrated panels should be supported at each end and at 10' (maximum) spaces.

All bundles or loose panels on the roof should be secured to the roof secondary members at the end of each workday. On steep sloped roofs, provisions should be taken to prevent panels, panel bundles, and/or trim crates from sliding off the roof. **Be sure to set panel bundles on the roof in the proper direction for the installation sequence.**

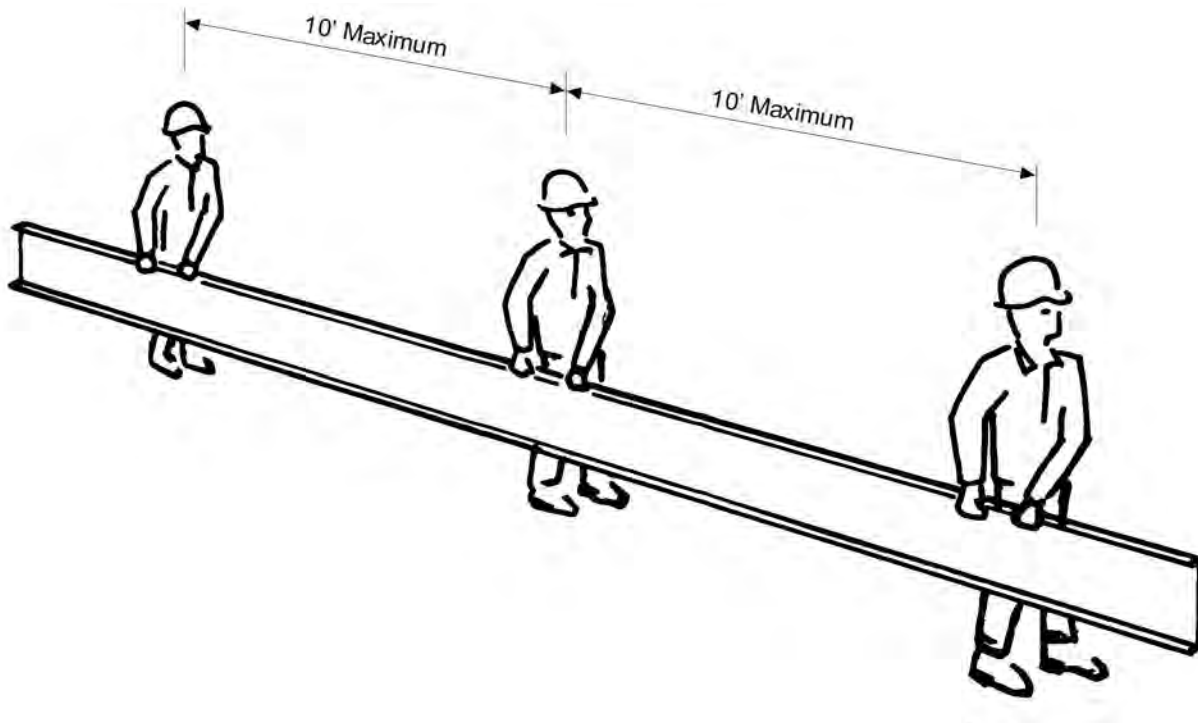
Trim and accessories should be stored in a secure area and protected from damage, weather, and theft. Fasteners, mastics, closures, etc. should be stored out of the weather and protected from contamination.

IMPORTANT NOTE: The finish on these panels may not perform as intended if not erected within **90 days** from receipt at the job site. The finish is also subject to severe damage if moisture, debris, or dust is allowed to get between the panels; therefore, panels **MUST BE STORED UNDER COVER** with one end elevated to allow for drainage and protection against moisture, dust, or debris until erected. The manufacturer will not accept claims for non-performing panels if not properly stored at the jobsite. The customer assumes full responsibility for the condition of this material after delivery by the trucking company.

5.2 HANDLING INDIVIDUAL ROOF PANELS

To lift individual panels, lift one side of the panel by the seam letting it hang naturally to prevent buckling. Pick-up points should not be more than 10' apart. Do not pick-up panels by the ends only, or in a flat position. Do not use any type of steel or cable slings.

If the individual panels are to be lifted to the roof by hand line, the common method is to use the vice grip "C" clamps. Position the clamps on the flat of the panel, as close as possible to one edge so the panel is lifted in a vertical position. The jaws of the vice grips must be padded to prevent damage to the panel surface. The clamps should be uniformly spaced, no more than 10' apart and the hand lines must be pulled in unison so that uneven lifting does not buckle the panel. Be sure the clamps are tight on the panel and the line is secure to prevent dropping the panel, which can result in personal injury and property damage.



5.3 HANDLING ROOF MATERIALS IN STRONG WINDS

Do not attempt to move panels in strong winds. Wind pressure can easily cause a person to lose balance and fall. Strong wind uplift on a panel can lift the weight of the person carrying the panel.

Loose, wind borne panels are very dangerous and can cause severe injury and damage.

Secure stacks of panels with banding or tie-downs, so wind will not blow the panels off the roof. Clamp individual unsecured panels to the roof secondary members. Clamp or block panel bundles and trim crates to prevent them from sliding down the roof slope.

5.4 MATERIAL INVENTORY

Your material is carefully inspected and packaged before leaving the plant and accepted by the transportation company as being complete and in satisfactory condition. It is the carrier's responsibility to deliver the shipment intact. Note any damage or discrepancies on the delivery tickets before signing as receiver.

Conducting a material inventory at the time of delivery is essential. By conducting the materials inventory, the erector is able to identify any material shortage or damage and avoid stopping installation later because of such shortage or damage. All claims must be filed with KBS Quality Service Representatives prior to any field modifications or purchases that may result in a charge to KBS.

It is imperative that any shortages or damages of the delivered materials be noted at once and clearly marked on the bill of lading before signature of acceptance. Notify KBS immediately of any conflicts. KBS will not be responsible for shortages or damages unless they are noted on the bill of lading. KBS is not responsible for items accepted in questionable condition.

In the case of packaged components (such as clips, fasteners, and mastics, etc.), the quantities are marked on their container and should be checked against the bill of materials.

5.5 EQUIPMENT FOR UNLOADING AND LIFTING

Hoisting equipment is necessary to unload and position the panels and accessory crates for site storage and installation. The equipment must have sufficient capacity and reach to place the material where it is required for efficient installation.

Nylon slings will be required to minimize panel damage. Kirby Building Systems recommends a minimum 4" wide nylon sling be used. KBS panels are banded. No exterior covering is used, so care must be taken to prevent damage.

A spreader bar will be required for the longer panel bundles to assure correct sling spacing and uniform lifting. The spreader bar must be large enough to handle the maximum panel bundle weight and length.

Trim crates are to be handled in the same way as panel bundles.

Panel bundle weight can be found on the I.D. tag at the low end of each bundle. Steel chokers, cables or chains shall not be used.

5.6 LIFTING ROOF PANEL BUNDLES

Bundles over 25 feet long should be handled with a crane using a spreader bar and nylon slings. Lifting should occur at center of gravity. Locate slings at 1/4 points of the length of the panel from each end of the bundle.

Loads should always be checked for secure hook-up, proper balance, and lift clearance. Tag lines should be used if to control the load during lifting, especially if operating in the wind.

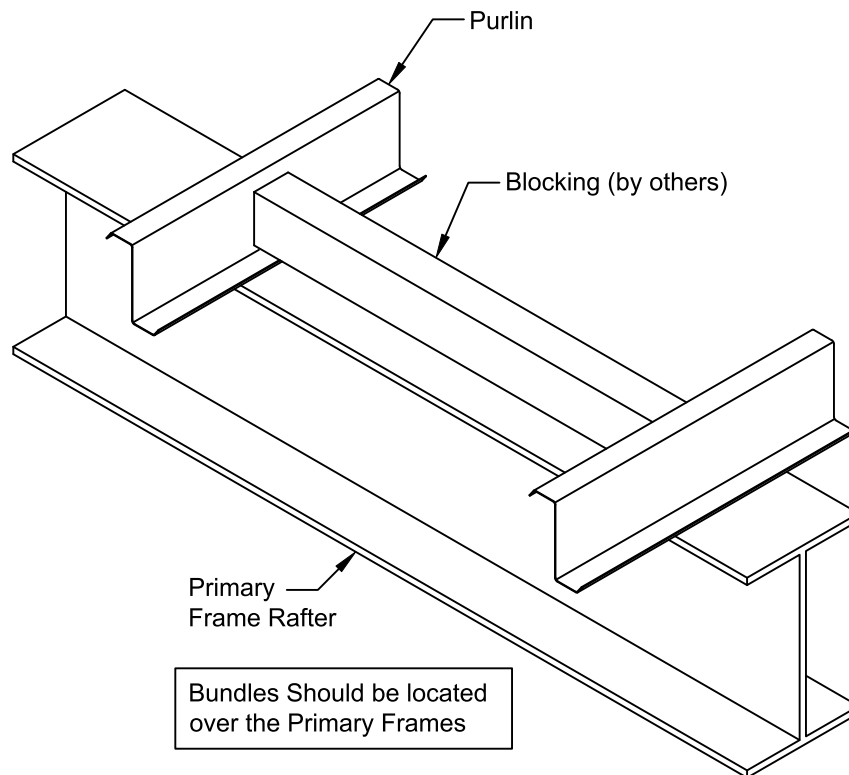
Panel crates less than 25' long may be lifted with a forklift only if the forks are spread at least 5' apart and blocking is used to prevent panel damage by the forks.

5.7 PLACING PANEL BUNDLES ON THE ROOF

Locate the bundles on the roof according to the erection sequence.

The bundles should be located over the primary structural frame lines, not in the middle of a bay.

Blocking should be used between purlins at the bundle locations as shown in the detail below. This blocking is not provided by KBS.



6.0 SAFE ROOF INSTALLATION

6.1 REGULATIONS

Regulations set forth by the Occupational Safety and Health Act, local, state, and/or federal agencies should be adhered to at all times. KBS is not responsible for injury, damage, or failure, which may be the result from failing to meet any of these regulations.

In compliance with the Hazard Communication Rule 1910.1200, Material Safety Data Sheets (MSDS) have been provided for your use and safety. These data sheets should be made available to all personnel that come in contact with these products. These data sheets will give you the necessary information to properly handle such materials and what to do in case of an emergency. (The MSDS sheets are located in one of the warehouse boxes for the KBS Builders).

6.2 ERECTOR'S RESPONSIBILITY

The erector of the roof system is responsible for the safe execution of this manual. These instructions are intended to describe the sequence and proper placement of parts. They are not intended to prescribe comprehensive safety procedures. The procedures in this manual are believed to be reliable. However, KBS shall not be responsible for injury, damage, or failure due to the misapplication of these procedures, improper erection techniques, or negligence

6.3 WALKING AND WORKING ON ROOF PANELS

DO NOT place bundles of panels on the roof structure without first verifying the structure will safely support the concentrated weight of the panels and the weight of the installation crew. Some roof structures may not be designed to support the weight of a full panel bundle without additional structure support.

DO NOT use a roof panel as a working platform. An unsecured panel could collapse under the weight of a person standing between purlins or at the panel end.

DO NOT walk on the last installed panel run, as the unsecured edge could collapse under a person's weight. When installing clips or making end lap connections, etc., stand where the roof structural will support your weight. An approved and safe walking platform should be used in high traffic areas to prevent the roof panel from being deformed, scratched, or scuffed.

6.4 SAFETY EQUIPMENT

The use of safety equipment for the roof panel installation is recommended at all times during the installation process. However, when using lanyards, be sure that the clasp, belt hooks and wire cables are covered in such a manner that they will not scratch the panel surface if accidentally dragged along the panel.

6.5 CREW SIZE

The length of the individual roof panels should be considered when determining crew size. It is recommended that under normal conditions, there be one person for every ten feet of panel length, plus one.

6.6 PANEL OVERHANG

DO NOT stand on the end of unsupported (cantilevered) panels at the eave or ridge. Standing on the cantilever portion may result in panel collapse.

6.7 POINT LOADS

When properly supported by the structural steel, panels are designed to support uniform loads, which are evenly distributed over the panel surfaces. Point loads that occur in small or concentrated areas, such as heavy equipment, ladder, or platform feet, etc., may cause panel deformation or even panel collapse.

6.8 SLICK SURFACES

Panel surfaces and structural steel surfaces are hard, smooth, and nonabsorbent, which causes these surfaces to be very slick when wet or covered with snow or ice. Even blowing sand or heavy dust can make these surfaces difficult to walk on without slipping.

Unpainted panel surfaces are often coated with oil to accommodate the panel-fabrication process. Although designed to wash away or evaporate during normal weather, the oil on new panels can be extremely slick, especially during periods of light rain and dew.

Caution must be exercised to prevent slipping and falling onto the roof surface or even sliding off the roof. Non-slip footwear is a necessity and non-slip working platforms are recommended.

6.9 ELECTRICAL CONDUCTANCE

Metal panels are excellent electrical conductors. A common cause of injury is the contact of metal panels with power lines during handling and installation. The location of all power lines must be noted and, if possible, flagged. The installation process must be routed to avoid accidental contact with all power lines and high voltage services and equipment. All tools and power cords must be properly insulated and grounded and the use of approved ground fault circuit breakers is recommended.

6.10 FALSE SECURITY OF INSULATION

Blanket and rigid board insulation block the installer's view of the ground below the roof. Serious injury can occur when the installer gets a false sense of security because he cannot see the ground and steps through the insulation.

6.11 SHARP EDGES

Some edges or panels and flashing are razor sharp and can cause severe cuts if proper protective hand gear is not worn. Be careful not to injure others while moving panels and flashing.

6.12 SAFE ROOF INSTALLATION SUMMARY

EXTREME CAUTION SHOULD BE EXERCISED WHEN WALKING ON ROOF PANELS.

OILS USED DURING THE ROLL FORMING PROCESS AND/OR NATURAL MOISTURE MAY CAUSE THE PANELS TO BECOME SLIPPERY.

DO NOT STEP ON PANELS WITH CREASED EDGES.

DO NOT STEP ON OR NEAR THE EDGE OF A PANEL.

DO NOT STEP WITHIN 5 FEET OF THE END OF A PANEL.

DO NOT USE LOOSE PANELS AS WORK PLATFORMS.

DO NOT WALK ON UNSECURED PANELS.

DO NOT WALK ON TRANSLUCENT PANELS

SECURE ALL LOOSE PANELS AT THE END OF THE WORK DAY.

USE EXTRA CARE WHEN WORKING ON STEEP SLOPES.

WHEN INSTALLING CLIPS, WALK ONLY OVER THE PURLIN/JOIST LINES.

**AS ROOF WORK PROGRESS'S, ALL FULL PANELS RUNS SHOULD BE MOTOR SEAMED.
SEE PAGE'S 25 & 59 FOR TEMPORARILY HAND CRIMPING INFORMATION.**

**IN COMPLIANCE WITH THE HAZARD COMMUNICATION RULE 1910:1200,
MATERIAL SAFETY DATA SHEETS HAVE BEEN PROVIDED FOR YOUR USE AND
SAFETY. THESE DATA SHEETS SHOULD BE MADE AVAILABLE TO ALL
PERSONNEL THAT COME IN CONTACT WITH THESE PRODUCTS. THESE DATA
SHEETS WILL GIVE YOU THE NECESSARY INFORMATION TO PROPERLY HANDLE
SUCH MATERIALS AND WHAT TO DO IN CASE OF AN EMERGENCY.**

7.0 CHECKING THE STRUCTURE

7.1 COMPLETED AND BRACED

Before placing materials and workers on the roof structure to start roof installation, it must be confirmed that the structure is designed to accommodate the material and erection loads as well as the appropriate live loads and wind uplift loads.

It also must be determined that the structure is complete and structurally sound with all structural connections and bracing in place and secure.

7.2 LATERAL STABILITY

The sliding clip method of attaching roof panels to the roof secondary members provides only limited lateral stability and diaphragm bracing to the roof secondary members.

Before placing materials on the roof and starting the roof installation, confirm that the necessary roof bracing and sag angles or bridging is in place and secured.

7.3 ALIGNMENT

Prior to installation, roof secondary members should be checked for overall dimensions and evenness of plane. The roof secondary members should also be checked to verify the roof system can be installed without interference. Also, roof secondary members nearest the panel end laps, ridge, or high eave should be checked for correct location to properly accommodate the roof components.

CHECKING THE STRUCTURE

TOLERANCES, MEASURING, APPEARANCE AND CORRECTIONS

7.4 TOLERANCES

To assure the roof system's correct fit-up and designed weather tightness, the structure must be aligned within the following tolerances; also refer to the MBMA manual for common industry standards.

OUT OF SQUARE – The roof system can only accommodate 1/8" of "sawtooth" of the roof panel ends and the eave, ridge, and panel splices. This means the allowable out of square of the rake line relative to the eave line and ridge line is 1/8" for each 40' of rake run.

STRUCTURE WIDTH AND EAVE STRAIGHTNESS – The roof system is designed to accommodate +/- 1" of overall structure width error, or +/- 3/4" of eave straightness error at each eave.

To assure that the accumulation of the structure width error and eave straightness error does not exceed the roof system's tolerance, the structure width should be measured from eave line to eave line at each rake, at the first frame line from each rake and at each point where there is a significant error or change in eave straightness (this usually occurs at a frame line or at a endwall column).

STRUCTURE LENGTH AND RAKE STRAIGHTNESS – The roof system is designed to accommodate +/- 2" of overall structure length error, or +/- 1" of rake straightness error at each rake line.

To assure that the accumulation of the structure length error and rake straightness error does not exceed the roof system's tolerance, the structure length should be measured from rake line to rake line at each eave, at the ridge and at each point where there is a significant error or change in rake straightness (this usually occurs at a rafter end splice).

7.5 MEASURING

Structure length and width may be measured with a steel measuring tape from the face of the eave or rake member to the face of the opposite eave or rake member. The measuring tape must be parallel to the relative eave or rake line and must be stretched taut. Eave and rake straightness may be determined by measuring deviations from a string line, which is stretched taut along the eave or rake line.

7.6 AESTHETIC ACCEPTANCE

Although these structure alignment tolerances will allow for reasonable roof component fit-up and ease of installation, the extremes of these tolerances may be aesthetically objectionable and should be confirmed with the customer before starting the roof installation.

7.7 CORRECTIONS

Any structure alignment error, which exceeds the above stated tolerances, must be corrected before roof installation can begin. If it is decided that the structure alignment errors cannot be corrected, alternate roof details may have to be developed. The alternate details may require additional materials, modified parts (with additional cost, fabrication and delivery time) and additional installation time. KBS cannot assure the performance of such alternate details.

8.0 INSTALLATION BASICS

8.1 PROPER TOOLS

Before starting the roof installation, be sure that the proper equipment and tools are on hand. The tools must be in good operating condition and operators should adhere to safety precautions at all times.

The following tools and equipment should be considered for efficient installation of the Roof-Lok Roof System. Actual tools and equipment required may vary due to variations in building type and construction:

Motorized Seaming Machine

KBS Roof Lok Manual Crimping Tool

- Seaming Machine and Crimping tools are available for rental from D.I. Roof Seamers. Rental information can be accessed through the 'Resources' tab at kirbybuildingsystems.com

Sheet Metal Shears-left and right cut

Sheet Metal Cutter or power shears or nibblers

Screw Guns-designed for use with self-drilling screws

Socket Extensions- 4" or 6" for screw guns

Hex Socket Heads-5/16" and 3/8", magnetic

Electric Drill Motor-1/4" capacity

Drill Bits-assortment

Hack Saw-with metal cutting blade

Steel Measuring Tapes-12', 50', 100, and 120'

Nylon String Lines

Pop Rivet Tool-1/8" capacity

Blue Chalk Line (Not Red)

Brooms

Marking Pens (do not use pencils)

Caulk Guns-for 1/10-gallon mastic tubes

Power Source and Extension Cords-capable of handling the total equipment requirement, including 20-amp seaming machine, without power drop due to extension cord length.

8.2 MASTIC

TEMPERATURE EFFECTS

Temperature extremes must be considered during installation of the roof due to the sensitivity of mastics. The recommended installation temperature range is 20-120 degrees Fahrenheit. At colder temperatures, the mastic stiffens resulting in loss of adhesion and compressibility. At hotter temperatures, the mastic becomes too soft for practical handling. On cold but sunny days, the panel surface may become warm enough to accept the application of heated mastic even though the air temperature is **below** 20 degrees Fahrenheit.

When overnight temperatures fall below freezing, the mastic should be stored in a heated room so it will be warm enough to use the following day. On hot days, the mastic cartons should be stored off the roof in a cool and shaded area. While on the roof, mastic rolls should be kept shaded until actual use.

In very cold weather, it is recommended that the fasteners be tightened slowly and only tight enough that the mastic is in full contact with the panel or flashing. Then on the next sunny day, complete the tightening process after the sun warms the panel and flashing surfaces.

COMPRESSION

To assure proper compression and seal, the tape mastic must be compressed between the panel and flashing surfaces with firm and uniform pressure. In most cases, the required pressure is applied by the clamping action of screws pulling the adjoining surfaces together. However, the tape sealant's resistance to pressure becomes greater in cold weather.

During cold weather, the fasteners must be tightened slowly to allow the mastic time to compress. If the fasteners are tightened too fast, the fasteners may strip out before the mastic compresses adequately, or the panel or flashing may deform in the immediate area of the fastener, leaving the rest of the mastic insufficiently compressed.

8.2 MASTIC (Continued)

INSIDE CORNERS

An inside radius, such as where the panel flat meets a rib, is usually the most critical area to seal. A common mistake for the installer is to bridge the mastic across the inside radius.

When the lapping panel or flashing is pushed into place, the bridged mastic is stretched and thinned. The mastic may then be too thin to adequately seal this critical area. When tape mastic is applied at an inside radius, it is recommended that the mastic be folded back, then push the mastic fold into the radius.

PROPER MASTIC INSTALLATION PROCEDURES

Roof-Lok panels are shipped with thin plastic film along each shoulder of the panel. **Prior to installing any tape mastic this film must be removed.**

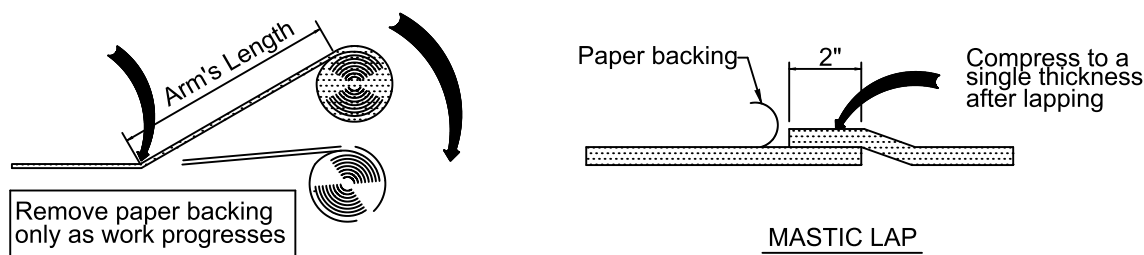
Apply mastic only to clean, dry surfaces.

Roll mastic out to arm length. Press the mastic firmly in place making sure it is tightly formed to all bends.

Remove paper backing only when ready to install top component.

Splice mastic with a 2" lap. Press lapped pieces of mastic firmly together to form a single thickness.

DO NOT STRETCH MASTIC ACROSS CORNERS. THIS WILL DECREASE THE THICKNESS WHERE IT IS NEEDED THE MOST, AND MAY NOT PERFORM AS DESIGNED.



8.3 FASTENERS

SCREW GUNS

Use torque control screw guns for driving self-drilling screws. 2000-2500 RPM screw guns with torque adjustable clutch are necessary to attain efficient drilling speeds. **Do not use impacting tools.** Also note that cordless screw guns are not recommended.

To assure proper voltage to the tool, extension cords should be checked for proper wire size and cord length:

- 16 ga. wire, max cord length = 100'
- 14 ga. wire, max cord length = 200'
- 12 ga. wire, max cord length = 300'

SOCKETS

Use good quality magnetic sockets. Good fitting sockets reduce wobble and stripping of the screw heads. They also minimize objectionable paint chipping and scuffing on colored screws and minimize damage to the protective coating on unpainted screws.

Magnetic sockets collect drill shavings, which will build up and eventually prevent the socket from seating properly on the screw heads. One method of removing the drill shavings is to roll up a ball of tape mastic and push the socket into the mastic. When the socket is removed from the mastic, most of the drill shavings will be embedded in the mastic thereby cleaning the socket. This process should be repeated as often as needed to keep the socket clear of drill shavings.

SOCKET EXTENSIONS

A 4" or 6" socket extension is recommended for installing the panel clip screws. With the extension, the screw can be driven straight down without tilting the screw gun to clear the panel or clip.

8.3 FASTENERS (Continued)

FASTENER INSTALLATION

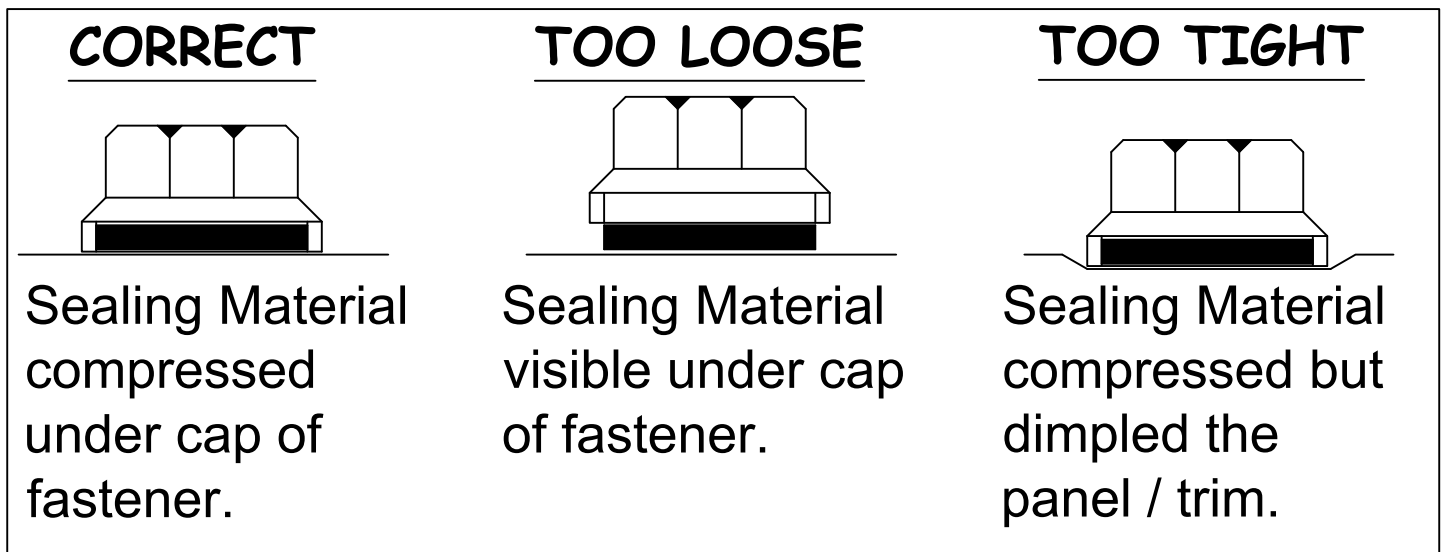
Before starting the screw, the materials to be joined must be pressed together with foot or hand pressure. The pressure must be maintained until the screw has drilled through all the materials and the threads have engaged.

Most self-drilling screws require 20 pounds of pressure to maintain the drilling action and to start the thread cutting action. Also, applying such pressure before starting the screw gun will usually prevent tip walking or wandering. If too little pressure is applied, the drill point may not cut into the metal and the point will heat up and become dull. If the pressure is too heavy, the bottom material may be deflected away, causing a standoff condition, or the drill tip may be broken or split. Screws must be held perpendicular to the panel or flashing surface during starting and driving.

For proper seating of the fastener-sealing washer, the panel or flashing surface must be clean and drill shavings must be removed from under washers before seating. The fastener must be driven perpendicular to the panel surface so that the washer can seat level without warping or cupping.

Do not over-drive screws. Over-driving can strip the threads and/or damage the sealing washer and material being connected. Use screw gun with torque control set to function properly for the combination of fastener size, hole size, and material thickness.

The fastener should be driven tight enough to uniformly compress the washer but not so tight that the washer splits or rolls out from under its metal dome. The recommended procedure is to tighten the fastener until the sealing washer just starts to visually bulge from under the metal dome. Refer to the chart below for a proper fastener-seating diagram.



Upon stripping or breaking a screw, the screw must be immediately removed and replaced with the goof screw (Part No. H1000). These fasteners can be purchased through SteelStore or by contacting Kirby's Component Department at 615-745-6197.

8.4 FIELD CUTTING OF PANELS AND FLASHING

ABRASIVE SAW PROBLEMS

Abrasive saws (circular saws with friction disks) are not recommended for cutting roof panels or flashing. Abrasive saws create high heat that may burn away the protective cladding from the panel edge, causing the edge to rust.

Also, abrasive saw dust contains fine, hot steel particles, which accumulate on panel and flashing surfaces where they rust and can cause staining and rusting of those surfaces.

Rust caused by abrasive saw damage or abrasive dust particles are excluded from warranty claims.

SHEARING METHODS

It is recommended that panels and flashing be cut with shears or nibblers to provide a clean, undamaged cut. On shear cut edges, the protective cladding extends to the edge of the cut and is often wiped over the edge to further protect the base metal. Whenever possible, fit the material so that the factory cut edge is exposed and the field cut edge is covered.

When field cutting complex shapes, it is usually easier to cut out a 1" wide strip using both left and right hand shears. The 1" cutout provides clearance to smoothly cut the flats and the clearance to work the shears around tight corners.

When making repetitive cuts (such as cutting panels at a hip condition) it is recommended that a template is made from a piece of drop-off panel or flash to provide fast and accurate marking of the field cut. When using panel material for the template, cut off the top portion of the panel ribs so that the template can easily lay onto the panel being marked.

MARKING PANELS

Avoid marking the panels for cutting, etc., in a manner that will leave visible markings, stains, etc., on the finished roof surface. Use chalk or felt tip ink markers. **DO NOT USE GRAPHITE (LEAD) PENCILS ON UNPAINTED PANEL SURFACES; THE GRAPHITE WILL CAUSE RUSTING OF THE SURFACE.**

8.5 SHEETING DIRECTION AND MODULARITY

The Roof-Lok Roof System is designed to be installed in a right to left direction. However, when endlaps are not required the panel can be install in either direction. If panel end laps are needed, the panels must be installed from right to left (looking up the roof slope). There may be roof conditions that require a specific sheeting direction. Check the erection drawings to determine if a specific sheeting direction is required.

The required installation sequence is to complete each panel run from eave to ridge before starting the next panel run. This sequence will help ensure straight runs and allow the insulation to be installed immediately ahead of each panel run.

During installation of the roof, considerations must be made for maintaining panel modularity. By maintaining panel modularity, proper roof coverage can be obtained and the standard perimeter parts will fit properly without necessity of field modifications or reordering of parts, etc.

For proper fit-up between the panel, mastic and closures or end lap parts, the panels must be held to the 16" coverage dimension (within a 1/8" tolerance per panel). The accumulated coverage (start panel to finish panel) tolerance is determined by the ability to keep the panels parallel and to correctly fit and assemble the finish rake condition.

If the roof panel has conditions such as fixed location penetrations, parapets, firewalls, etc., the accumulated panel coverage may require tighter tolerances for proper fit-up and weather-tightness of the roof system.

Maintaining panel modularity is **EXTREMELY IMPORTANT**, as the panels may shrink or grow during installation. Refer to section 13.5 and 13.6 for further instructions and details about holding panel modularity.

8.6 LAYOUT AND CHECKING COVERAGE

Recommended for all roofs, but a must for large or complex roofs, is to make a layout of the actual structure (field measured as described in sections 7.4-7.5) so that the roof panel start and stop dimensions can be laid out to accommodate any structural misalignments.

Panel coverage is always checked at the eave, ridge, and end laps so that non-parallel seam (or dogleg) conditions can be detected and corrected before they become objectionable. The coverage check should be one with a measuring tape held taut and measured to the same side of the seam and always parallel to the eave to prevent any measuring error.

Every four to six panel runs should be checked for panel modularity. This will assure that the panels are maintaining a straight line and proper coverage is being maintained. If the panels are off module, they should be corrected by equal adjustments of the next four to six panel runs.

8.7 APPEARANCE CONSIDERATIONS

Although the above stated coverage tolerance will provide for reasonable ease of installation and water tightness, such visible conditions as non-parallel panel seams, dogleg of the panel seam at the end laps, non-parallel finish panel width, and mismatch of panel seams across the ridge, may be objectionable and should be confirmed with the customer before continuing roof installation.

8.8 INSPECTION OF THE ROOF ASSEMBLY DURING INSTALLATION

IMPORTANCE OF INSPECTION

During the roof installation, all areas of the roof system assembly must be frequently inspected to ensure the correct assembly in accordance with the erection drawings and this manual.

Failure to assemble the roof system correctly will result in roof performance problems that may require costly corrective work, roof replacement and performance and damage claims, etc. Also, incorrect installation may void the material and weather-tightness warranties.

8.9 INSPECTION LIST

ERECTION DRAWINGS

Check that the erection drawings are available at the job site and have been reviewed for differences with the actual job conditions and differences with the erection manual. Also confirm that the drawings are the latest issue with the latest revisions and additions.

ROOF LAYOUTS

Check that the roof start and finish dimensions have been correctly determined based on the erection drawings and the actual structural conditions.

STRUCTURAL ALIGNMENT

Check that the structural misalignments were corrected in accordance with section 7.3 of this manual.

PANEL LENGTH

Check that the installed roof panels have the correct overhang at the eave and end laps and have the correct hold back dimension at the ridge or high eave, in accordance with the erection drawings.

EAVE SEAL

Check that the eave mastic is in the correct position on top of the eave plate. Check that the eave fasteners penetrate the center of the eave mastic and into the eave plate. Check that the fasteners are not loose or stripped.

Check that the eave mastic is in complete contact with the roof panel and eave plate without any voids or gaps. Confirm that the roof panel and eave plate are clean and dry during installation and that the mastic is not wet or otherwise contaminated.

8.9 INSPECTION LIST (Continued)

END LAP SEAL

Check that the roof panel end laps are correctly assembled and that the lapping panels are tightly nested without visible gaps.

Check that the mastic is in the correct position and is in complete contact with the lapped panels without any voids or gaps, especially at the radius between the panel flat and the vertical legs of the panel. Confirm that the panels are clean and dry during installation and that the mastic is not wet or otherwise contaminated.

Check that the end lap fasteners penetrate through the center of the mastic and into the lap stiffener. Check that the fasteners are not loose or stripped.

Check that the end lap assembly is not bowed down causing water ponding and debris accumulations.

RIDGE / HIGH SIDE SEAL

Check that the zee closure is installed correctly.

Check that the mastic is in the correct position and is in complete contact with the zee closure and the roof panel without any voids or gaps. Confirm that the zee closure and roof panels are clean and dry during installation and the mastic is not wet or contaminated.

Check that the zee closure fasteners penetrate through the roof panel, through the center of the mastic and into the zee closure. Check that the fasteners are not loose or stripped.

Check that the tube caulk is installed along the back of the zee closure as necessary to seal any voids around the panel seam area.

RAKE SEAL

Check that the mastic between the rake trim and the roof panel is properly installed.

Check that the end caps are installed properly.

Check that the flashing splices are correctly lapped, sealed, and fastened.

Check that all fasteners are seated properly.

PANEL CLIP ATTACHMENT

Check that the panel clips are correctly fitted to the panel without any distortion or damage of the clip tab. On sliding clips, check that the clip tab is centered on the clip base between the centering tabs.

Check that the clips are located along each panel side lap at each roof secondary member or at the locations specified on the erection drawings.

Check that the panel clip fasteners are of the type, size, length, finish and quantity per clip as specified on the erection drawings.

8.9 INSPECTION LIST (Continued)

SIDE LAP

Check that the factory installed side lap mastic is in the correct position without voids or interruptions and is not damaged, wet or otherwise contaminated.

Check that the full length of each side lap seam is correctly seamed.

Check that the panel coverage tolerance does not exceed 1/8" per panel and that the accumulated coverage will allow proper fit and assembly of the ridge closure zee and finish rake condition and any other critical fit conditions such as penetrations, parapets, etc.

FLASHING AND PENETRATIONS

Check that all flashing (including penetrations) are correctly assembled and tightly fitted. Check that the required mastics are correctly positioned and in complete contact with the adjoining surfaces without voids or interruptions. Confirm that the mastics and adjoining surfaces are clean and dry during installation

Check that the flashing splices are correctly lapped, sealed and fastened.

Check that the flashing is sufficiently pitched to shed water and eliminate ponding areas, especially at the critical splices, end laps and corners.

Check that the fasteners are of the specified type, size, length, finish and spacing. Check that the fasteners are not loose or stripped. Check that the sealing washers are in full contact with the flashing surface and not distorted, split or otherwise damaged.

Along the rakes, high eave transitions, fixed penetration, etc., check that the flashing is not constrained and will allow for the roof's expansion/contraction movement.

8.9 INSPECTION LIST (Continued)

SURFACE CONDITIONS

Damaged roof system surfaces are subject to corrosion and performance problems and may void the material and performance warranties.

Check that the panel and flashing surfaces are not being subjected to abusive conditions such as: careless handling of panels and flashing, excessive roof traffic, abrasive or contaminated footwear, rough handling of materials, tools and equipment, or contact with abrasive materials or residue, etc.

Check that the panel and flashing surfaces are not being subjected to exposed metal objects and material left on the roof such as: tools, material drop-off, fasteners, wire, staples, drill and nibbler chips, saw and file particles, etc. In the process of rusting, these materials will absorb the panel's protective coating, thus leaving the panels exposed to rusting.

Check that the panels and flashing are not being subjected to long term **wet conditions** such as: standing water, consistent sources of steam, mist, spray, dripping or runoff, wet debris, wet insulation or other moisture holding material.

Check that the panels and flashing are not subjected to direct contact or runoff from corrosive materials such as: copper pipes and flashing, uncured cement, treated lumber, anti-icing chemicals, galvanized materials, strong solvents or other corrosive materials.

Check that graphite (lead) pencils were not used to mark on unpainted surfaces. The graphite marks will cause rusting.

Check that the roof materials are not subjected to damaging heat such as: cutting torches, abrasive saws, etc.

UNSPECIFIED MATERIALS

Use of the wrong materials may cause installation and performance problems and may void the performance and material warranties.

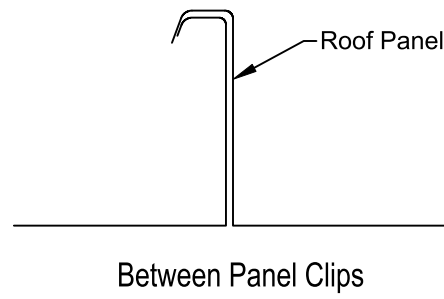
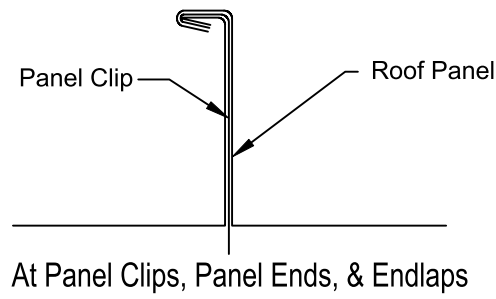
Check that all installed roof system materials, especially mastics and fasteners, are only those which are provided or specified by KBS for your specific project and are used only as specified on the erection drawings and this installation guide.

KBS cannot be responsible for the performance of roof materials that are not provided, specified or approved by KBS.

8.10 MOTORIZED PANEL SEAMING & HAND CRIMPING

Hand crimping at ALL roof clips, low eave, high eave and end laps is required during panel installation to ***temporarily*** secure the panels. The installed roof panels **must** be mechanically seamed prior to leaving the roof un-attended. If high winds, rain, or snow are imminent, the roof panels **must** be seamed before conditions occur.

TEMPORARY HAND CRIMPING



CAUTION: Un-seamed roof panels cannot provide their designed wind load and weather resistance.

Erector Notes:

The roof seam profile is complete only after the entire roof has been mechanically seamed.

8.11 ROOF LEAK TROUBLESHOOTING

The building insulation is not properly tied off to form a vapor barrier, allowing the roof to condensate.

Condensation occurs when warm moist air comes in contact with colder surfaces such as panels, framing members, etc. The insulation system must be designed to act as a vapor barrier in addition to providing thermal values. It is the erector's responsibility to install the insulation properly, according to normal and customary industry practices.

The Back-Up Plate at the end lap is not properly installed or aligned.

If the tabs on the back-up plate are not properly attached over the end of the roof panels, the lap stiffener will push away and not allow the end lap fastener to engage properly.

The pre-cut mastic at the end lap is not properly located over the dimples at the end of the upper panel.

The end lap mastic is provided wide enough to cover the dimples in the end of the upper panel. It is important that the mastic is centered over the dimples, so the fastener penetrates the mastic.

Stripped fasteners at end laps, joints, rake, eave, ridge, etc.

It is important that if a fastener is stripped, it is replaced with one of a larger size to ensure the proper tightening and clamping force is achieved. These fasteners (Part No. H1000) can be purchased through Steel Store or by contacting Kirby's Component Department at 615-745-6197.

The zee closure is not properly installed.

If the proper installation procedure is not followed the panel will not be sealed and moisture build up from ice and snow or a driving rain may infiltrate the building. Refer to section 13.8 for instructions. The zee closures need to be aligned, fastened together and sealed with butyl tube caulk.

Butyl Tube Caulk is not applied properly at the Low Eave.

Butyl tube caulk is to be placed between the panels at the low eave of the building. Refer to section 11.3 & 12.4.

Butyl Tube Caulk is not applied properly at the High Eave/Ridge.

Butyl tube caulk is to be placed between the panels at the low eave of the building. Refer to section 13.3.

Incorrect caulking type used at roof locations.

KBS provides two types of tube caulking. A non-skinning butyl caulk is supplied for all roof applications, and a skinning polyurethane caulk is supplied for trim applications. The polyurethane caulk is not to be used in roof applications.

Holes in the roof panels

Most of the time, holes in roof panels are from objects being dropped or thrown onto the panels. These include screw guns, roof accessories, clips, etc. Small holes can be patched with a piece of matching (galvalume or painted) material sealed with tape mastic and screwed in place. Larger holes should be repaired by replacing the roof panel.

9.0 STANDARD PARTS AND HARDWARE

9.1 GENERAL

The following details provide a basic description and graphic illustrations of the standard roof assembly parts. The purpose of these details is to assist the erector in the correct selection and identification of parts.

Because of the many variations in conditions, it is important that you review the job conditions to identify the specific parts required for your job.

Review the erection drawings for any special parts or parts which are different from the standard parts shown in these details. If differences exist, the erection drawings will take precedence.

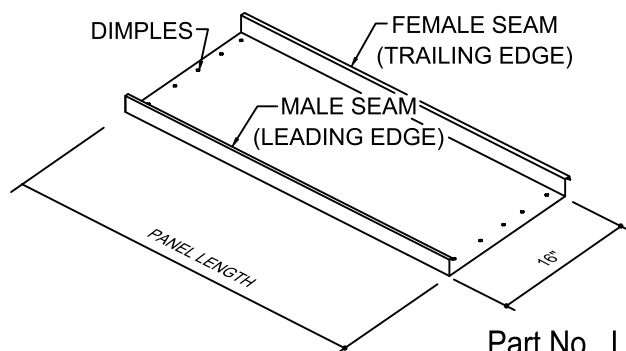
For proper fit-up, sealing and fastening and to help ensure the roof assembly's weather-tightness, structural capability, durability and appearance, the correct parts must be used. Do not use parts other than those specified on the erection drawings.

STANDARD PARTS AND HARDWARE

PANEL AND RAKE SUPPORTS

ROOF-LOK PANEL

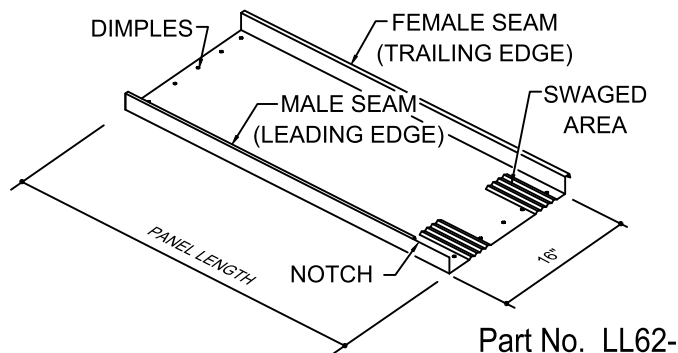
Used in single panel runs and at the low eave in multiple panel runs.



Part No. LC62-

ROOF-LOK PANEL w/ SWAGED END

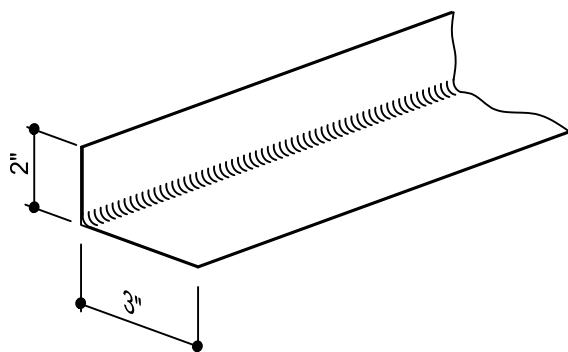
Used when multiple panels are required for panel run. This type panel is used in all locations other than the panel starting at the low eave.



Part No. LL62-

UTILITY RAKE SUPPORT

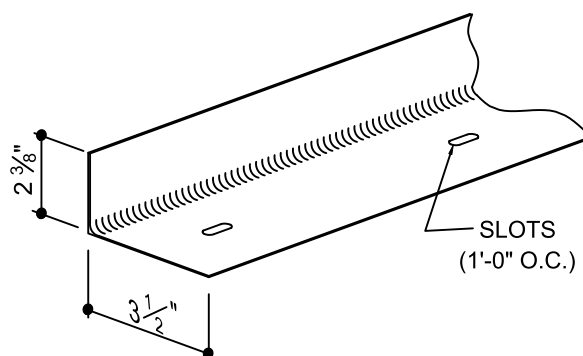
Used at rake with utility clips (no panel offset)



Part No. URS10

LOW RAKE SUPPORT

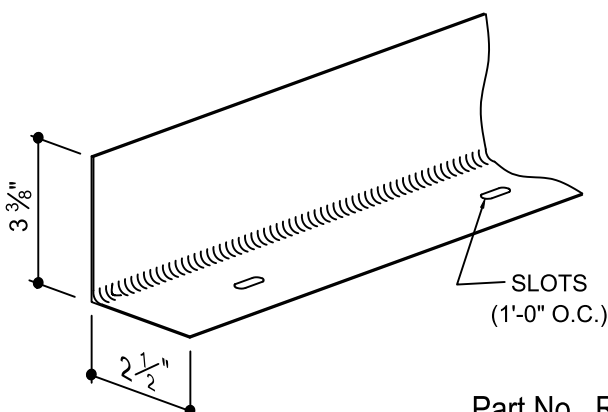
Used at rake with low clips (1/2" panel offset)



Part No. LRS20

HIGH RAKE SUPPORT

Used at rake with high clips (1 1/2" panel offset)



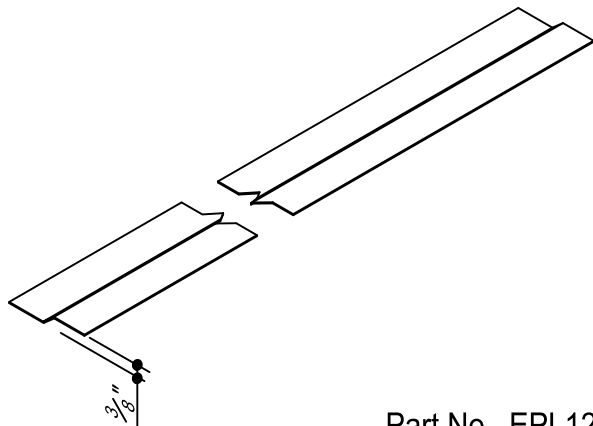
Part No. RSL20

STANDARD PARTS AND HARDWARE

EAVE PLATES AND PANEL HARDWARE

LOW EAVE PLATE

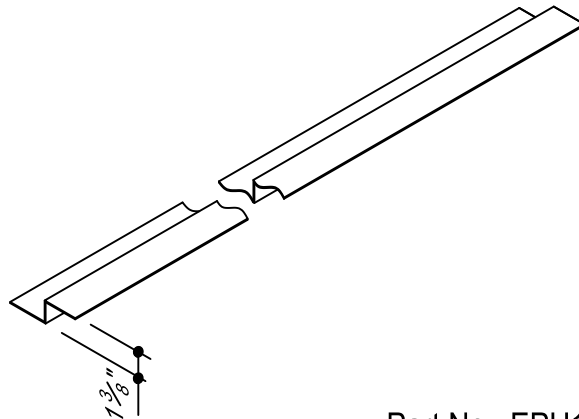
Used at eave with low clips ($\frac{1}{2}$ " panel offset)



Part No. EPL120

HIGH EAVE PLATE

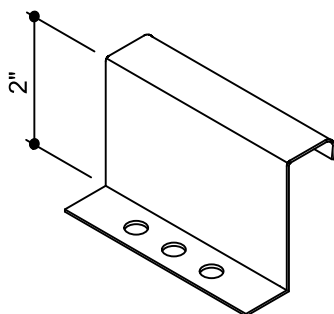
Used at eave with high clips ($1\frac{1}{2}$ " panel offset)



Part No. EPH120

UTILITY PANEL CLIP

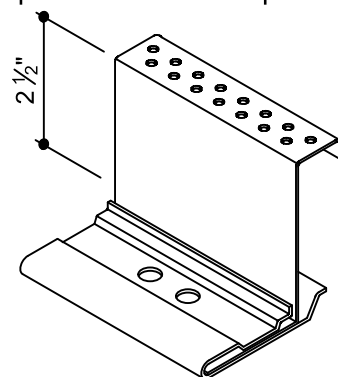
Used with roofs with no insulation between the purlin and the roof panel (no panel offset)



Part No. H4550

LOW PANEL CLIP

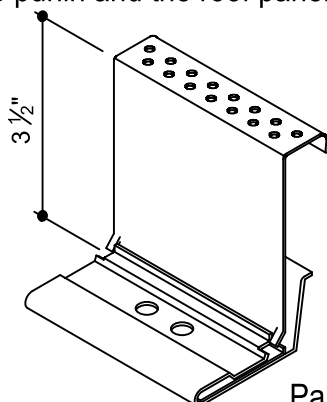
Used with roofs with insulation thickness $\leq 4\frac{1}{4}$ " between the purlin and the roof panel ($\frac{1}{2}$ " panel offset)



Part No. LSEC-1

HIGH PANEL CLIP

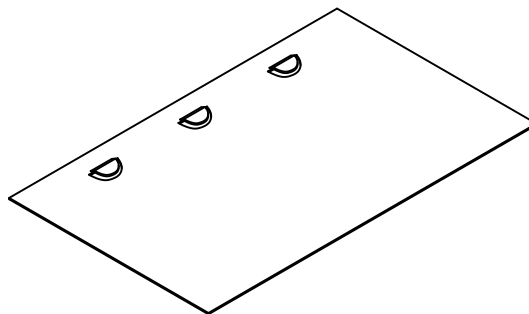
Used with roofs with insulation thickness $\geq 4\frac{1}{4}$ " between the purlin and the roof panel ($1\frac{1}{2}$ " panel offset)



Part No. LSEC-2T

BACK-UP PLATE

Used on the end of the lower panel at an endlap.
($12\frac{1}{2}$ " x $15\frac{1}{2}$ " x 16 Ga. Alum. Coated Plate)



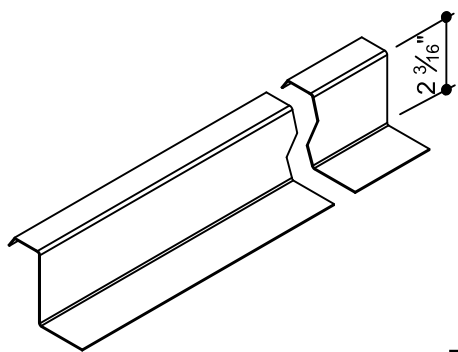
Part No. LSLS-1

STANDARD PARTS AND HARDWARE

ZEE CLOSURE AND THERMAL BLOCKS

ROOF-LOK ZEE CLOSURE

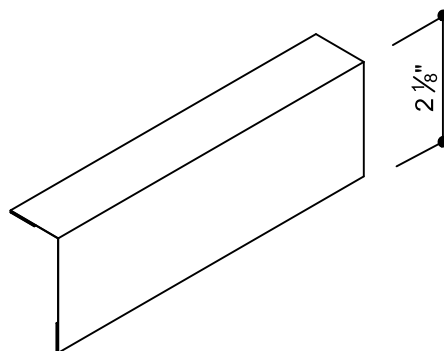
Used on the end of the panel at the ridge.
(18 Ga. Galvalume Zee)



Part No. TRCZ

ZEE CLOSURE COVER FLASH

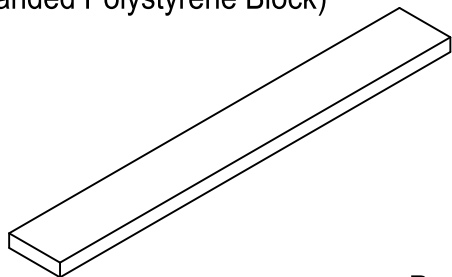
Used to cover Zee Closures on colored roofs.



Part No. TL1

THERMAL BLOCK

Used between insulation and roof panel above
secondary framing with high panel clips.
Thermal Block thickness varies based on insulation
thickness over the secondary.
(Expanded Polystyrene Block)



Part No. Varies

STANDARD PARTS AND HARDWARE

MASTIC AND SEALANT

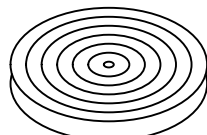
$\frac{3}{16}$ " x $\frac{3}{4}$ " TAPE MASTIC

Used at:

Top of Zee Closure

Trim laps

Between rake trim and roof panel



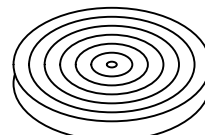
50' ROLL

Part No. H3000

$\frac{1}{8}$ " x $1\frac{1}{2}$ " TAPE MASTIC

Used at:

Eave between closure trim and roof panel



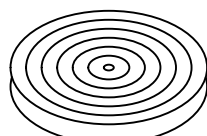
30' ROLL

Part No. H3001

$\frac{3}{16}$ " x $2\frac{1}{4}$ " TAPE MASTIC

Used at:

Between zee closure and underside of panel



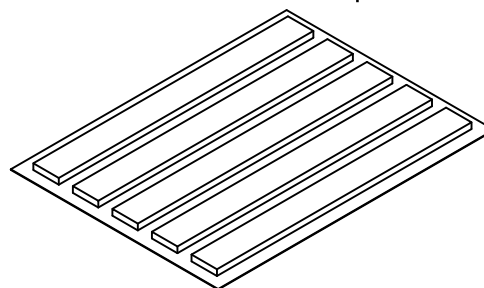
30' ROLL

Part No. H3020

$\frac{3}{16}$ " x $\frac{7}{8}$ " x 3" PRE-CUT TAPE MASTIC

Used at:

Panel ends on the side and top of the male rib



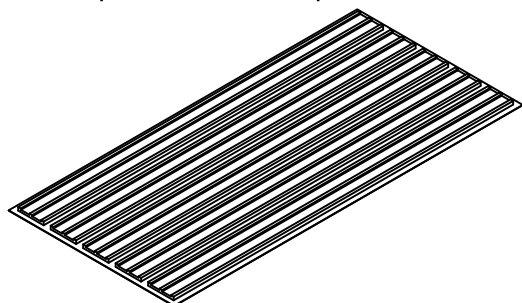
5 STRIPS PER SHEET

Part No. 3TP

$\frac{1}{8}$ " x $1\frac{1}{2}$ " x $15\frac{7}{8}$ " PRE-CUT TAPE MASTIC

Used at:

Panel endlaps between roof panels



5 STRIPS PER SHEET

Part No. 1-1/2 TP-L

STANDARD PARTS AND HARDWARE

MASTIC AND SEALANT

NON-SKINNING BUTYL TUBE CAULK

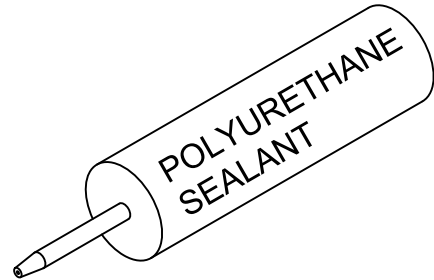
Used at:
Roof applications



Part No. H3151

POLYURETHANE TUBE CAULK

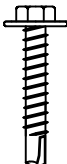



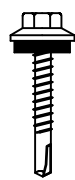

Used at:
Trim laps



Part No. H3152

STANDARD PARTS AND HARDWARE

FASTENERS

<u>1/4 - 14x1 1/4" TCP 3 w/o Washer SDS</u>  Used at: Eave plate to eave strut Misc. secondary attachments Part No. H1020	<u>1/4 - 14 x 1 1/4" SHOULDER TEK 2 w/o WASHER</u>  Used at: Attachment of rake support to rake angle Part No. H1076
<u>12 - 14x1 1/4" TCP 2 w/o Washer SDS</u>  Used at: Attachment of panel clips to purlins Part No. H1040	<u>12 - 24 x 1 1/2" TCP 5 w/o Washer SDS</u>  Used at: Attachment of panel clips to joist Part No. H1070
<u>1/4 - 14 x 1" TCP 1 w/ Washer Long Life SDS</u>  Used at: Panel to eave plate Panel to panel at endlaps Panel to zee closure at peak Rake trim to rake support Ridge trim to zee closures Specified trim laps Part No. H1029	
	<u>1/8" x 3/16" POP RIVET</u>  Used at: Specified trim laps Part No. H1100

10.0 PREPARATION FOR ROOF PANEL INSTALLATION

10.1 GENERAL

The following details provide graphic illustration of the roof assembly steps. The purpose is to instruct the erector in correct and efficient assembly of the roof system.

Because of the many variations in conditions, it is important that you review the job to identify and isolate the specific installation details required for your job.

Review the erection drawings for differences with these details. If differences exist, the erection drawings will take precedence.

These details are arranged in a step-by-step sequence. Following this sequence ensures that correct assembly and ensures that the part to be worked on will be readily accessible for the next assembly step.

Do not shortcut these assembly steps without careful consideration of the possibility of incorrect or omitted assembly and the resulting corrective rework.

To minimize confusion, the details are always oriented so that the view is from eave to ridge, with the starting rake at the left and finish rake at the right. **Refer to the erection drawings to determine the required sheeting direction and rake conditions.**

To help ensure weather-tightness, the details emphasize proper fit-up, sealing and fastening. It is most important that only the specified mastics and fasteners be used for each condition and that they be installed correctly as shown on these details and the erection drawings.

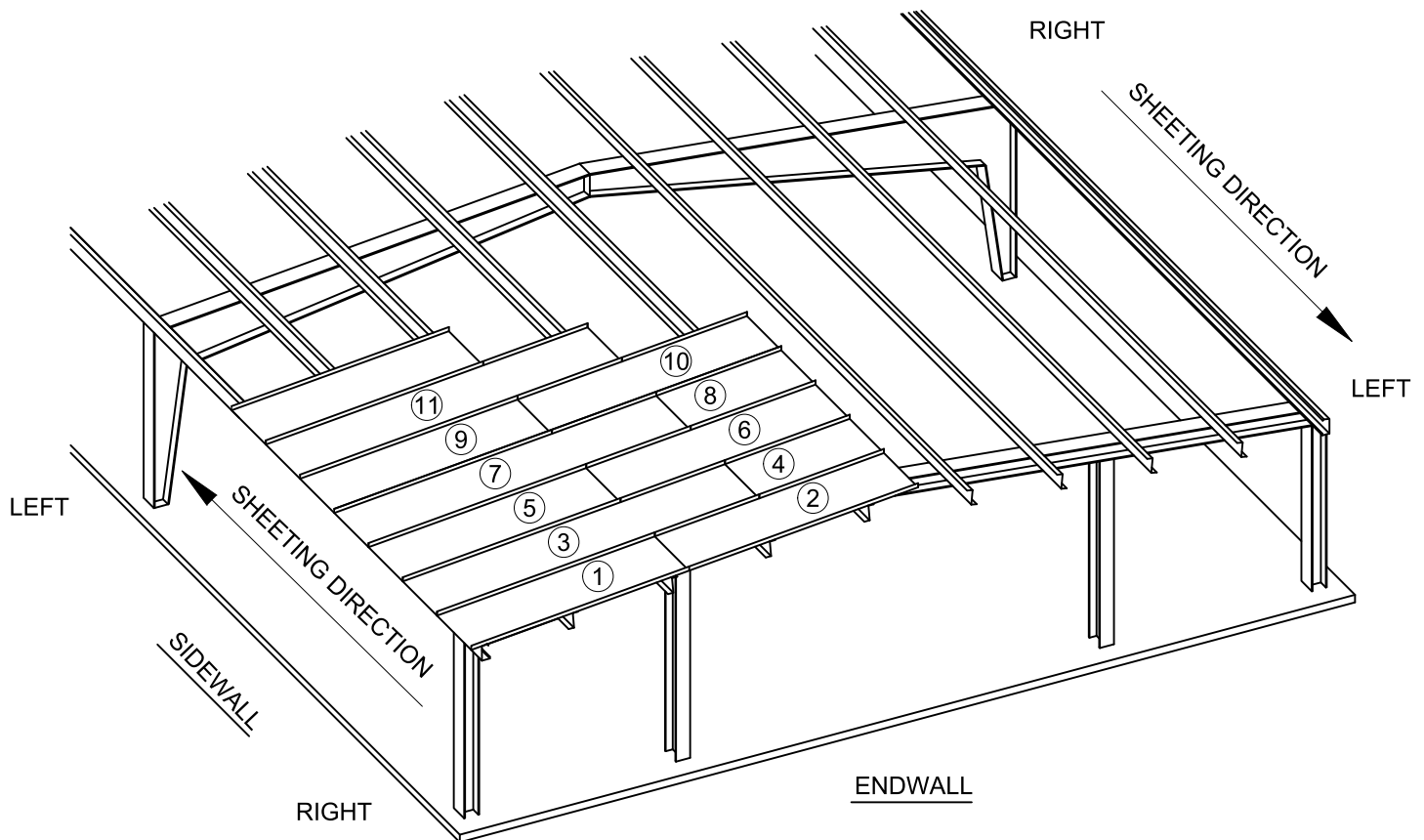
Be sure that these critical instructions are reviewed often and the roof assembly is checked at each assembly step.

10.2 ORIENTATION AND EXPLANATION

The details in this section will show the installation of the eave plate, eave mastic, rake angles, rake supports, and the first run of insulation. **These are the parts that must be installed before the roof panel installation can begin.**

Gable Buildings **without** panel endlaps can be sheeted simultaneously from either direction. However, when panel end laps are required the sheeting direction must be right-to-left (looking up the roof slope). **Reference the Final Erection Drawing set to determine the sheeting direction.**

The panel erection sequence must always be started from the low eave corner working toward the high eave or ridge. The full panel run from eave to high eave or ridge must be installed before the next panel run can be started. A representation of the panel erection sequence is shown below.



WALL PANELS OMITTED
FOR CLARITY.

10.3 EAVE PLATE INSTALLATION

Refer to the erection drawing roof line trim details for the required **eave plate part number**.

The eave plate provides a solid attachment surface for the low eave end of the roof panel.

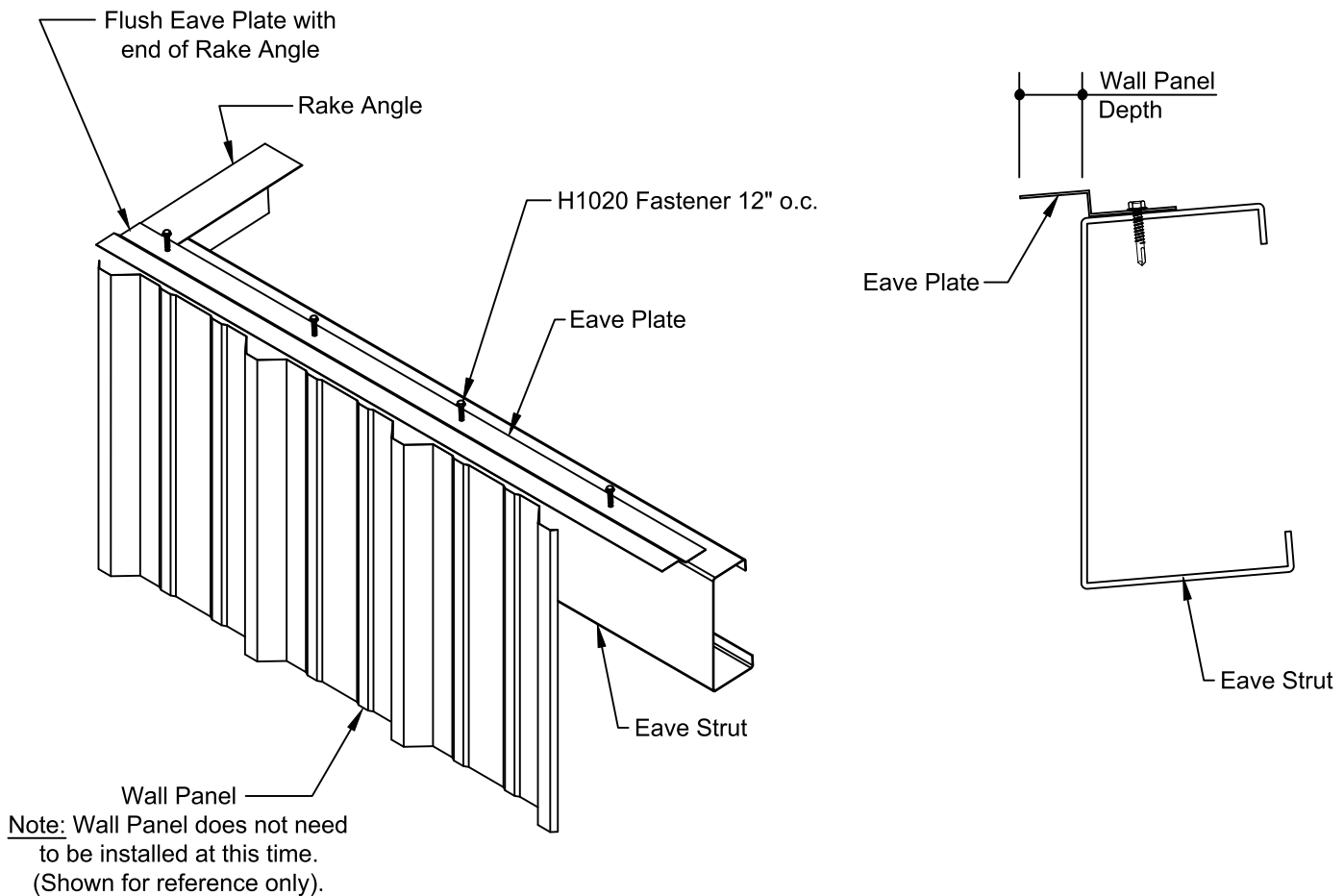
The eave plate must be installed before the roof insulation is placed over the roof secondary members.

Before installing the eave plate, check that the eave secondary members are in straight alignment from rake to rake and that the building is square.

Install the starting and finishing ends of the eave plates flush with the outer face of the rake angles.

Place the eave plate so the top leg of the eave plate is flush with the outside face of the wall panel as shown in the illustration below.

Fasten the eave plate with H1020 screws at 12" o/c.

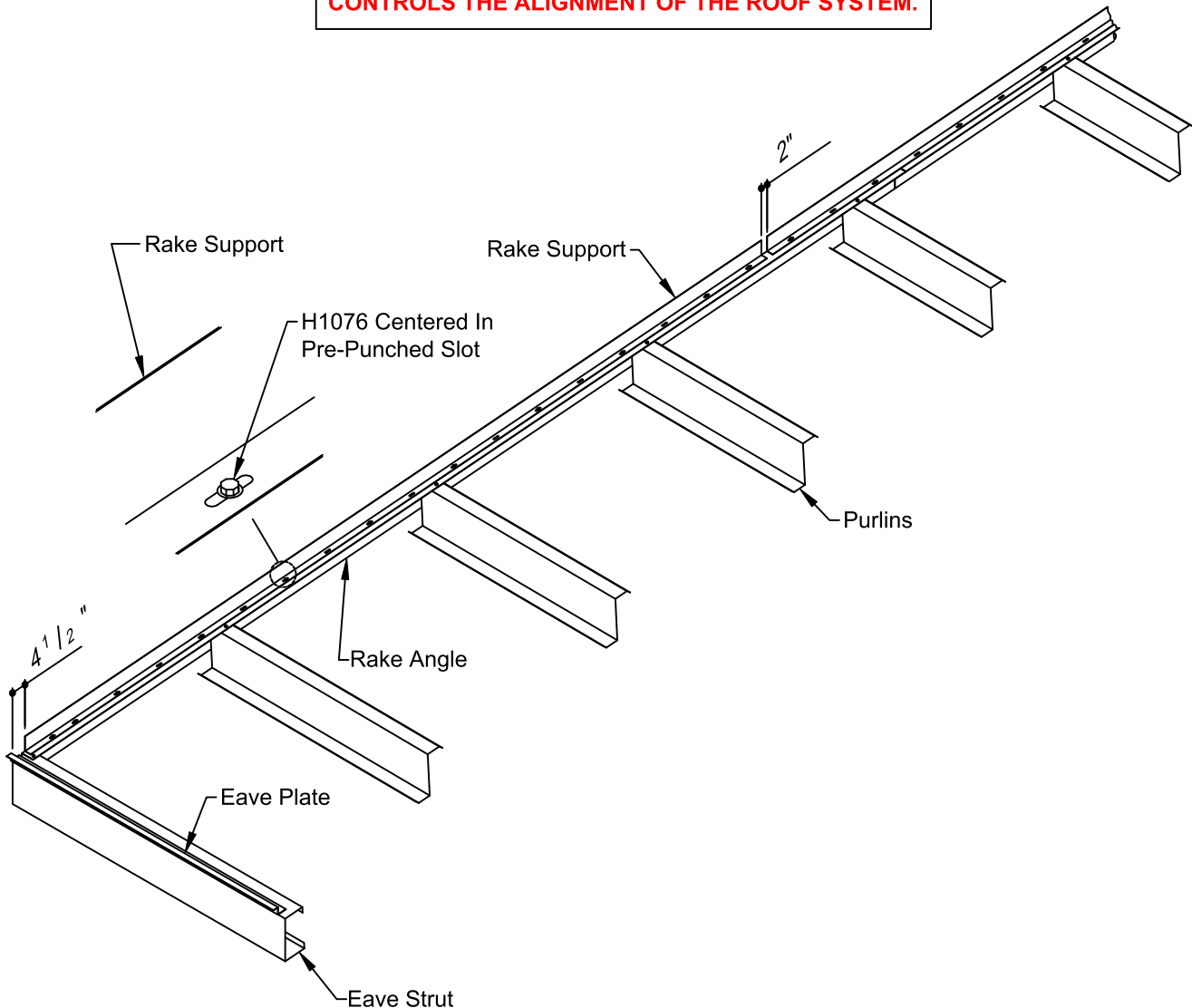


10.4 RAKE SUPPORT INSTALLATION

Hold Rake Support Angles back 4 1/2" from low eaves and peaks. Hold 2" between adjacent Rake Support Angles. do not butt rake supports end to end. Install the Rake Support Angles straight and square with the eaves.

Attach the rake support on top of the rake angle with with a H1076 fastener in the first and last pre-punched slots, then at 2'-0" centers between. Insure the H1076 fasteners are installed in the center of the pre-punched slots.

IMPORTANT :
THE RAKE SUPPORT MUST BE INSTALLED
STRAIGHT AND SQUARE WITH THE EAVE AS, IT
CONTROLS THE ALIGNMENT OF THE ROOF SYSTEM.



10.5 INSULATION

Install the insulation pan (optional, refer to erection drawing ridge detail to see if your project requires insulation pan) at the ridge prior to any insulation installation.

Consult the insulation manufacturer for installation recommendations including proper seaming and taping methods.

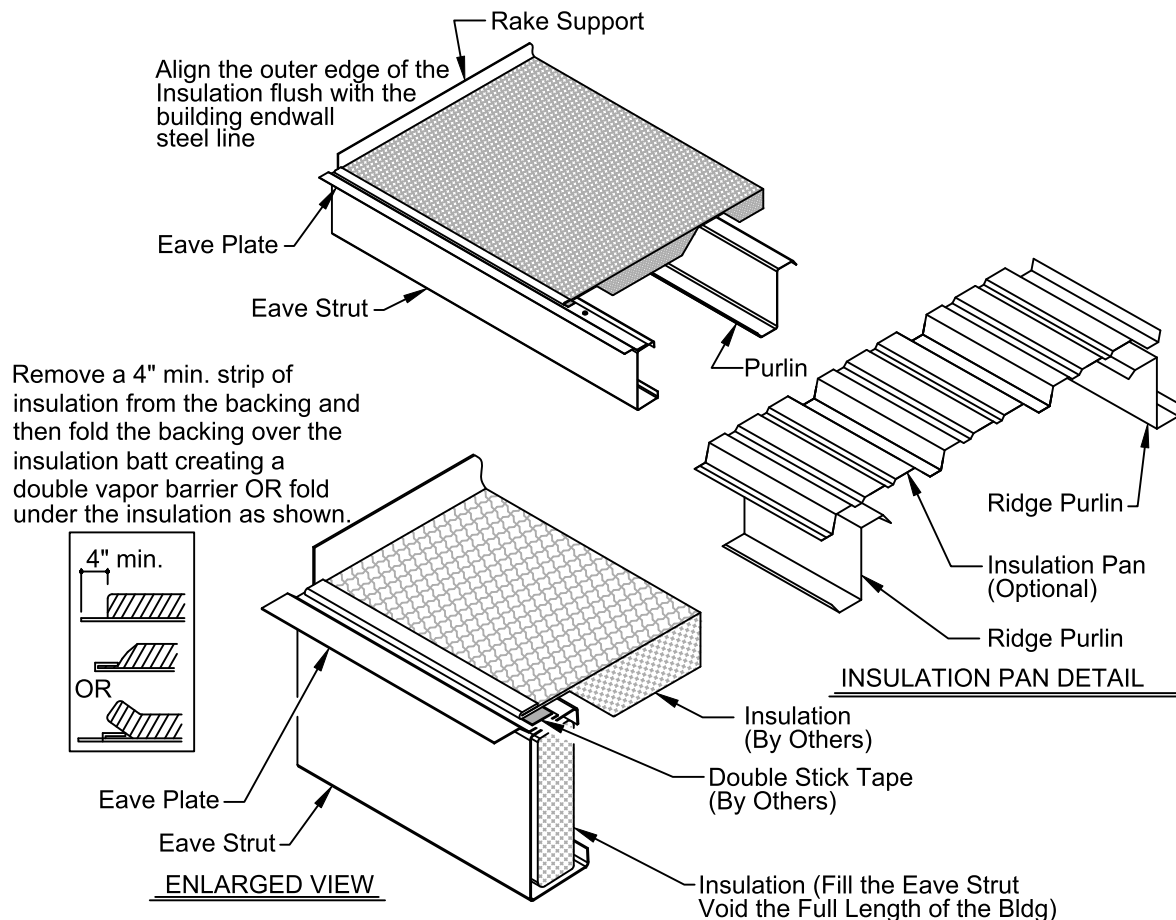
At eaves apply a continuous run of double stick tape to the lower leg of the eave plate.

At the low eave, remove a 4" strip of insulation from the backing leaving a 4" strip of backing exposed. Fold this strip of backing over the insulation batt creating a double vapor barrier.

Align the edge of the insulation with the building steel lines at both the rake and eave.

Pull the insulation toward the ridge/high eave so as to create a smooth appearance of the insulation backing.

At the eaves attach the insulation to the double stick tape.

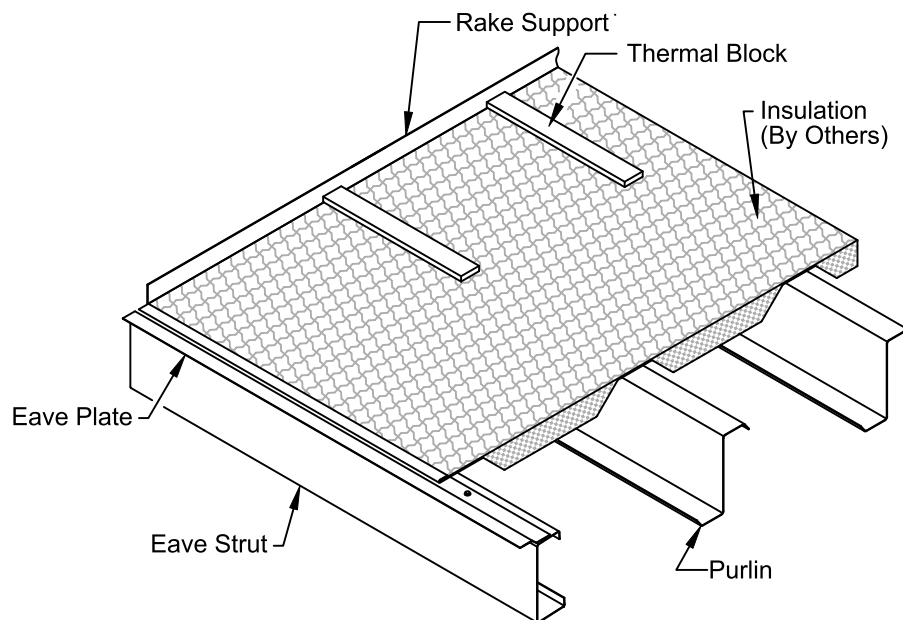


10.10 THERMAL BLOCK INSTALLATION

Thermal blocks are required on all Roof-Lok roofs without insulation. For roofs with insulation, thermal block requirements vary based on clip heights and over the purlin insulation thickness.

When thermal blocks are required, position the thermal block over each purlin line (on top of the insulation when insulation is present) before installing the roof panels.

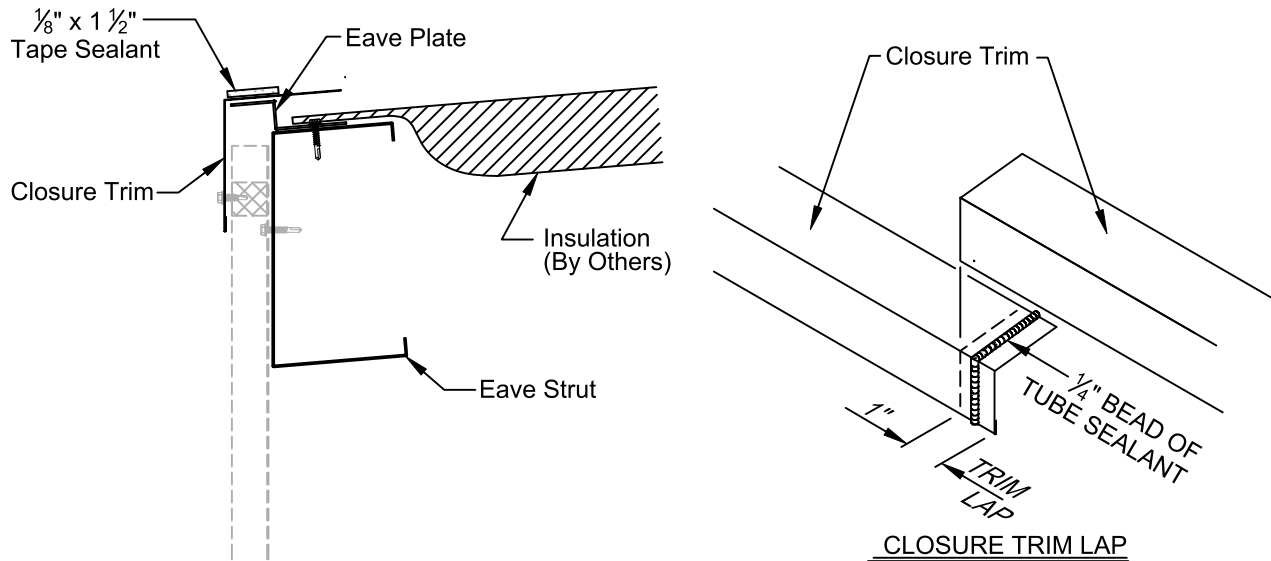
Place the first run of thermal block tight against the rake support. Thereafter, the blocks will be placed between panel clips.



10.13 EAVE CLOSURE TRIM INSTALLATION

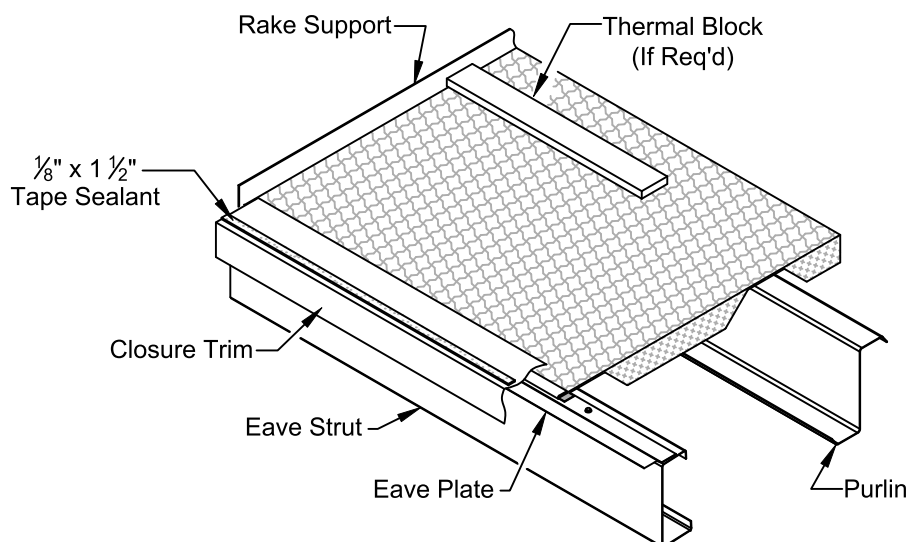
Install eave closure trim to the top of the eave plates with pop rivets. Use three rivets per 10' piece.

Apply a continuous run of $\frac{1}{8}$ " x $1\frac{1}{2}$ " tape mastic on top of the closure trim at the outside edge of the trim.



10.14 FINAL PRE-PANEL INSTALLATION DETAIL

The detail below is a summary of all of the "Preparation for Roof Panel Installation" steps. Make sure that all the necessary steps have been taken and have been properly followed. Before installing any roof panels, refer to the erection drawing roof sheeting plan and roof details to see if there are any other special requirements.



FIRST PANEL RUN INSTALLATION

PANEL DESCRIPTION

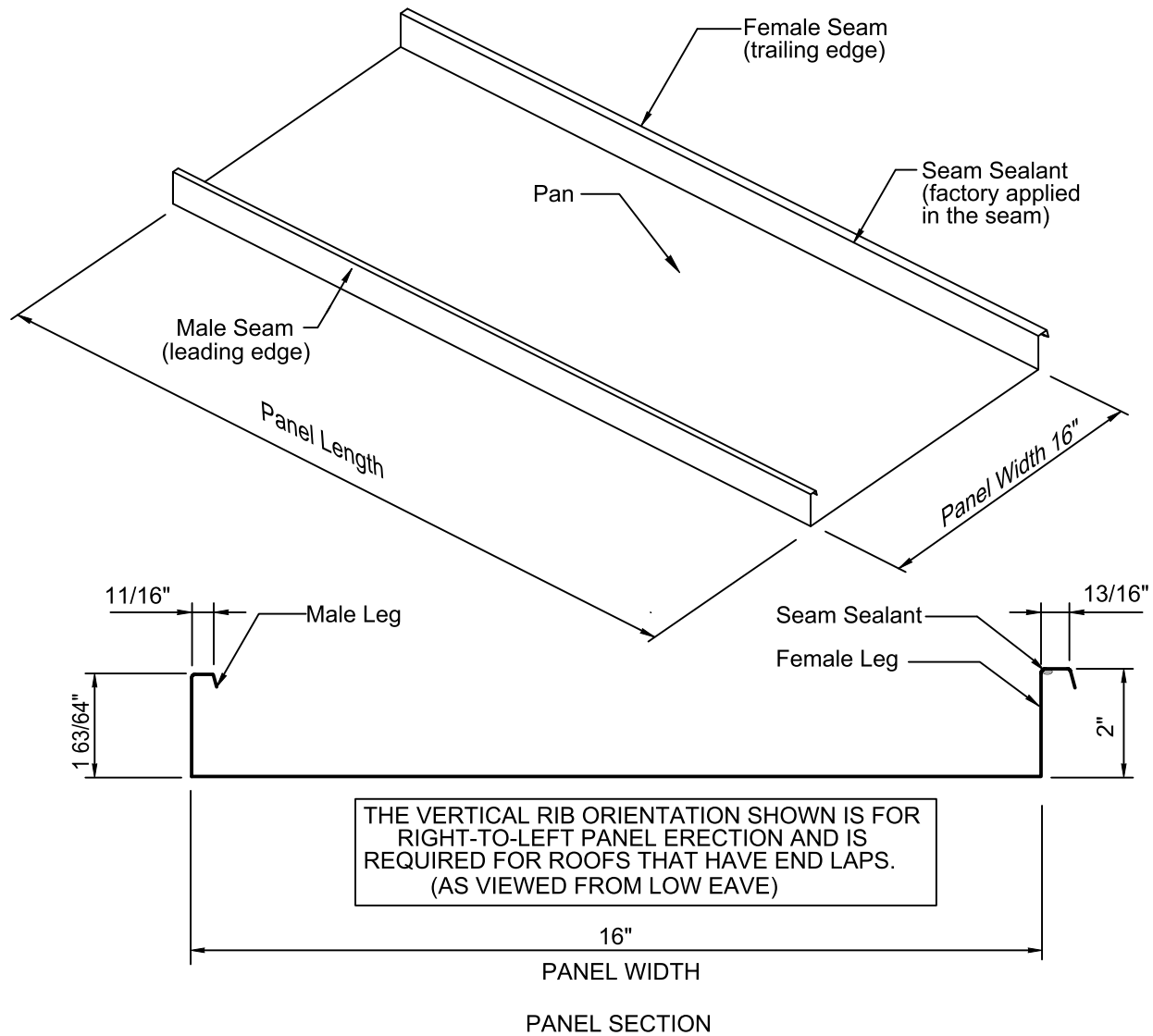
11.1 PANEL SECTION, DESCRIPTION, AND NOMENCLATURE

Throughout this manual the references to the panel will be made using the terms in the illustration below.

As a standard the Roof-Lok panel is designed to be installed in a right-to-left direction. However, if no endlaps are required the panel can be installed in either direction..Check the erection drawings and job conditions to determine if the roof must be installed in a specific direction.

The leading edge of the roof panel is the edge toward the installation direction. The male seam of the Roof-Lok panels always the leading edge..

Before loading the panels onto the roof secondary members, orient the panels so that the male seam is the leading edge.



FIRST PANEL RUN INSTALLATION

EAVE STARTER PANEL INSTALLATION

11.2 INSTALLING THE EAVE START PANEL

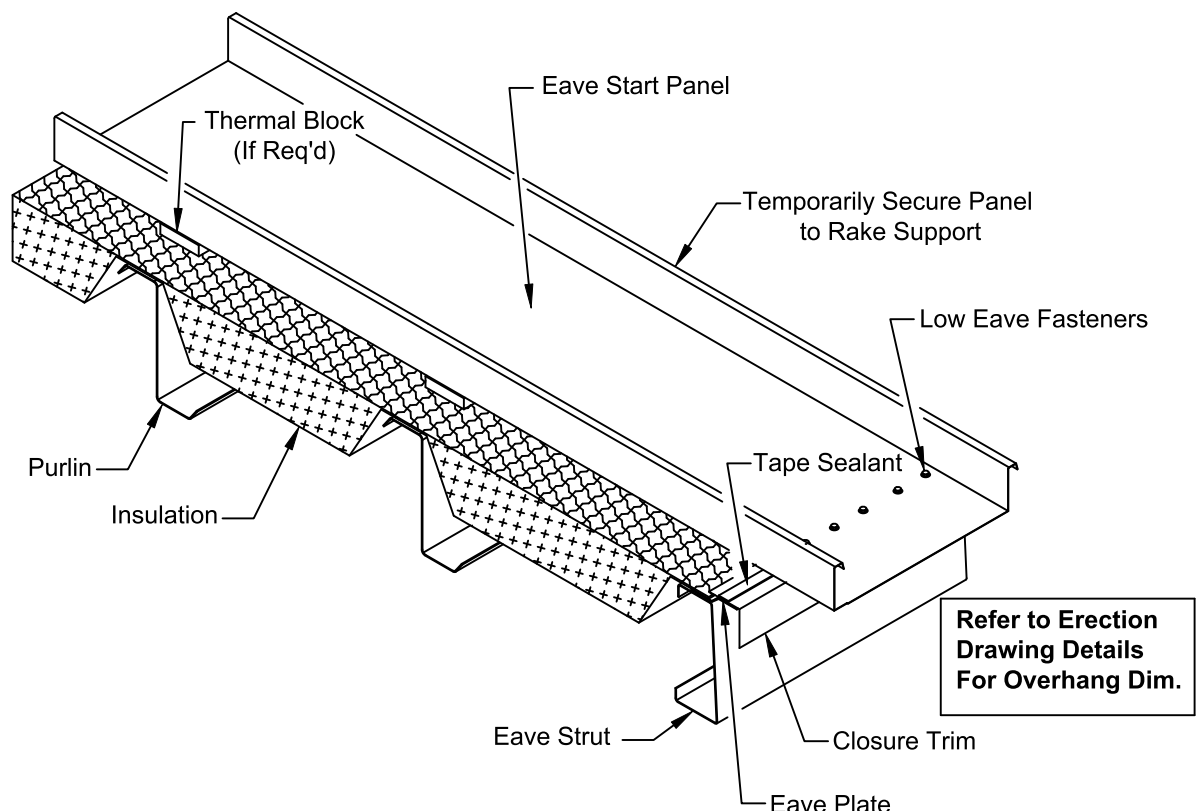
Refer to the erection drawing rake details to determine the required start panel detail. This manual shows the standard application with a full panel starting at the building steel line.

The roof panel eave overhang dimension is critical as it establishes the location of end laps and ridge cap attachment points. Refer to the low eave detail on the erection drawings for the correct overhang dimension.

Remove the backing on the 1-½" wide eave tape mastic as needed to place the start panel. Place the panel using the eave overhang dimension and holding the vertical portion of the female rib tight against the rake support. Temporarily clamp the female rib of the panel to the rake support. These clamps need to remain in place until the rake trim is installed.

NOTE: Once the panel has contacted the mastic, it cannot be moved. Be sure the start panel is properly positioned before seating.

Install the H1029 low eave fasteners by first measuring up from the low eave of the panel to the center of the mastic on the closure trim. Establish a line by using a felt tipped marker (Do Not use pencil). Next, measure along that line, from the panel rib to rake support, marking fastener locations at 1", 4 ¼", 7 ½", 10 ¾" and 14". Install fasteners moving from the rake support toward the panel rib.



11.3 INSTALLING PANEL CLIPS

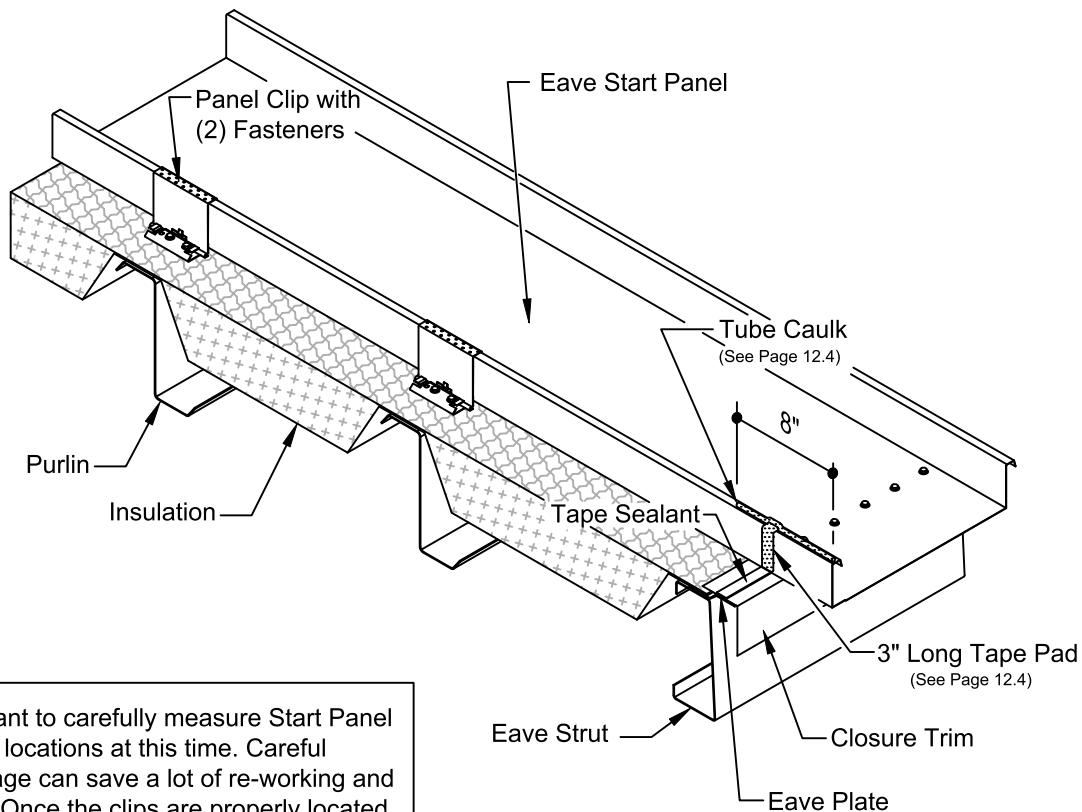
Install roof panel clips to the leading edge of the roof panel, at each roof secondary structural member.

NOTE: Panel clips are not required at the eave.

To install the clips, tilt the clip so that the tab can be hooked over the edge of the roof panel male seam, then rotate the clip down into the vertical position. Position the clip base so that the clip fasteners can be installed through the holes in the base and into the roof secondary member.

When fiberglass insulation is used, the panel clips sit on top of the insulation and the insulation is compressed between the clip base and top of the roof secondary member.

Specific panel clip details are shown on the following page.



NOTE: It is important to carefully measure Start Panel coverage and Clip locations at this time. Careful planning at this stage can save a lot of re-working and adjusting later on. Once the clips are properly located, make sure that they are installed in a vertical manner.

11.4 TYPICAL PANEL CLIP ATTACHMENT

Panel clips are available in either tall or short heights. Refer to the erection drawings to determine the type of clip required for each roof condition.

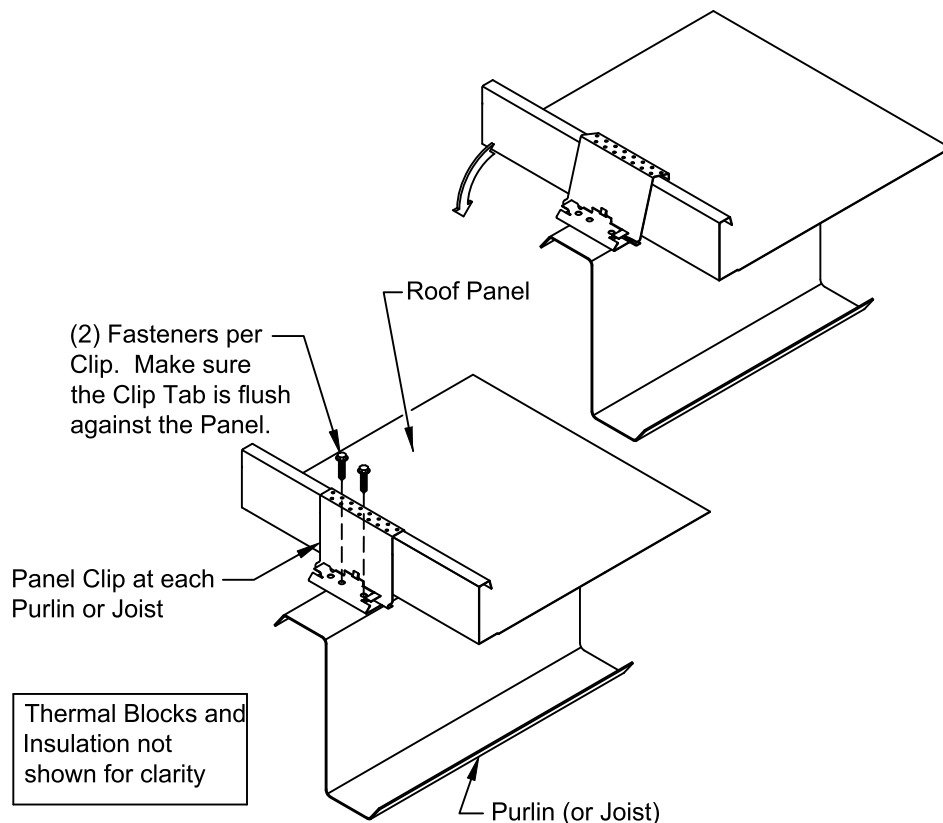
Check that the panel clip tab is seated tightly next to the roof panel seam and that the panel clip hook has captured the panel lip.

Check that the clip tab is vertical and that the clip base is set square and firmly over the roof secondary member.

Panel clips require two fasteners per clip. Use H1040 fasteners at purlins, use H1075 fasteners at joists.

Check that the clip fasteners are equally spaced through the clip base holes and are securely engaged into the roof secondary member. **Tighten screws in the clip to allow the lower part of the clip to disengage the self-centering tab located on the upper part of the clip.**

Do not over-drive screws. Over-driving can strip the threads. Use screw gun with torque control set to function properly for the combination of fastener size, hole size and material thickness.



11.5 INSTALLATION OF THE BACK-UP PLATE AT THE EAVE START PANEL

IF YOUR BUILDING DOES NOT REQUIRE MORE THAN ONE PANEL TO REACH THE HIGH EAVE OR RIDGE, YOU MAY SKIP TO PAGE 12.4.

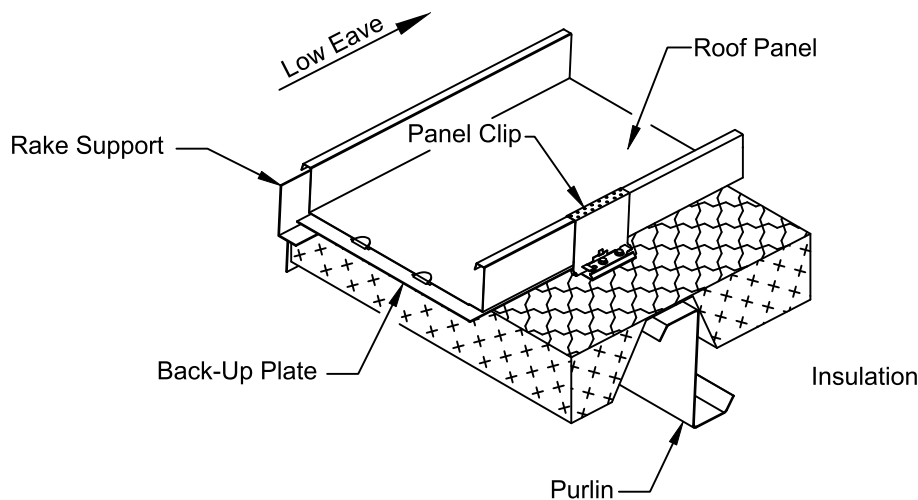
Before installing the back-up plate, make sure that the panel overhang dimension at the up-slope end of the installed panel is correct. Refer to the detail the erection drawing details.

Slide the back-up plate (LSLS-1) onto the end of the start panel.

This manual shows the standard application with a full panel starting at the building steel line.

If the erection drawings indicate the start panel is to be cut to a width less than 16". The back-up plate must be field cut. To determine this width, measure the flat of the start panel and subtract $\frac{1}{4}$ ".

If there are less than 2 tabs left on the lap stiffener after field cutting to width, drill and fasten the panel to the back-up plate with (2) pop rivets (H1100).



FIRST PANEL RUN INSTALLATION

INTERMEDIATE START PANEL MASTIC & CAULK

12.1 INTERMEDIATE START PANEL INSTALLATION

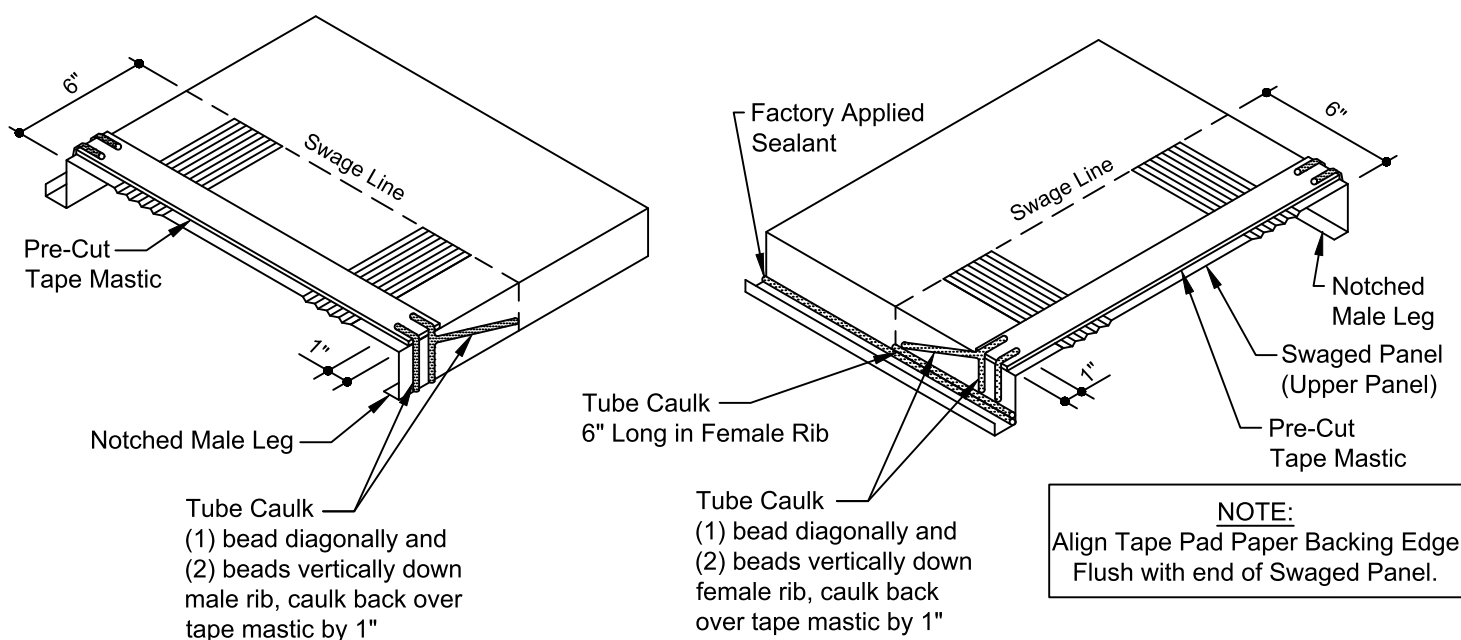
Roof-Lok panels are shipped with a thin plastic film along each shoulder of the panel. **Prior to installing any tape mastic this film must be removed.**

The proper placing of the end lap tape mastic and tube caulk is critical to the weather-tightness of the roof end laps. Before installing any tape mastic or tube caulk, the roof panels in the panel lap area must be wiped clean and dry.

Apply (1) piece of **1-1/2" pre-cut tape mastic** (1-1/2 TP-L) across the width of the underside of the swaged panel beginning and ending at the vertical seams (legs). After the mastic is correctly positioned, uniformly press the mastic against the roof panel surface to assure adhesion. Do not use excess pressure, which can thin the mastic. The mastic's protective paper helps to retain the mastic's shape during installation and protect the mastic's surface from damage and contamination. Do not remove the protective paper until immediately before the installation.

Caulking along the male rib: Apply (2) beads of butyl tube caulk (H3151) vertically, making sure to caulk back onto tape mastic by 1" (remove paper backing on tape mastic slightly). Apply (1) bead of butyl tube caulk (H3151) diagonally, starting from the vertical bead to the swage line (approx 6" up slope).

Caulking along the female rib: Apply (2) beads of butyl tube caulk (H3151) vertically, making sure to caulk back onto tape mastic by 1" (remove paper backing on tape mastic slightly). Apply (1) bead of butyl tube caulk (H3151) diagonally, starting from the vertical bead to the swage line (approx. 6" up slope). Also apply (1) bead of butyl tube caulk (H3151) in the corner of the female rib, from the end of panel to the swage line (approx. 6" up slope).



FIRST PANEL RUN INSTALLATION

INTERMEDIATE START PANEL INSTALLATION

12.2 ALIGNMENT & INSTALLATION OF THE INTERMEDIATE START PANEL

Before installing tube caulk, the roof panels in the panel lap area must be wiped clean and dry.

Apply (2) beads of butyl tube caulk (H3151) on the upper end of the receiving panel in the male vertical rib area, as shown in the detail below.

Apply (1) bead of butyl tube caulk (H3151) on the upper end of the receiving panel in the female vertical rib area, as shown in the detail below.

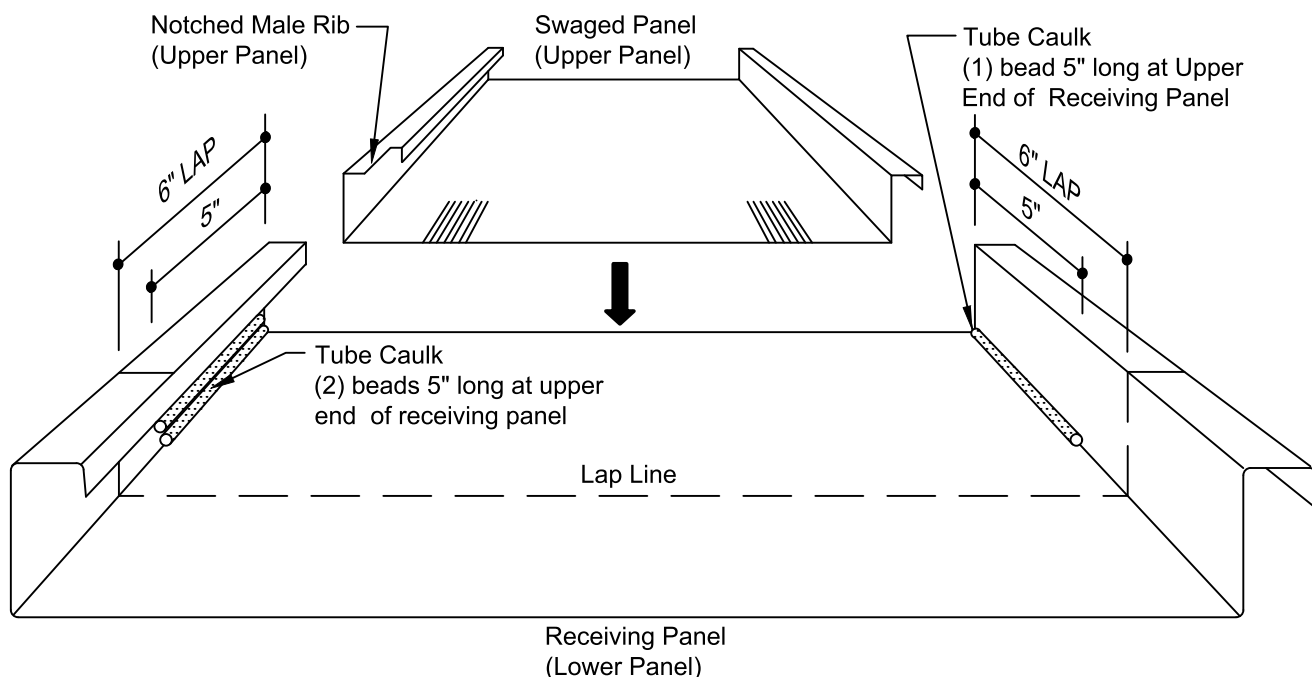
Remove the protective paper from the end lap tape mastic on the upper swaged panel. While installing the upper panel, bow the end of the panel by pulling up on its center. This will allow the panel to nest more readily into the lower panel.

Install the upper swaged panel onto the lower receiving panel, using care during installation to avoid swiping the caulk from the vertical legs of the upper panel.

Position the end of the upper panel to make a 6" lap over the lower panel.

Check that the 1-1/2" pre-cut tape mastic (1-1/2 TP-L) is positioned correctly in the lap area, make any adjustments before fastening.

NOTE: Once the mastic contacts both panels, the upper panel should not be moved. Be sure the start panel is properly positioned before seating.



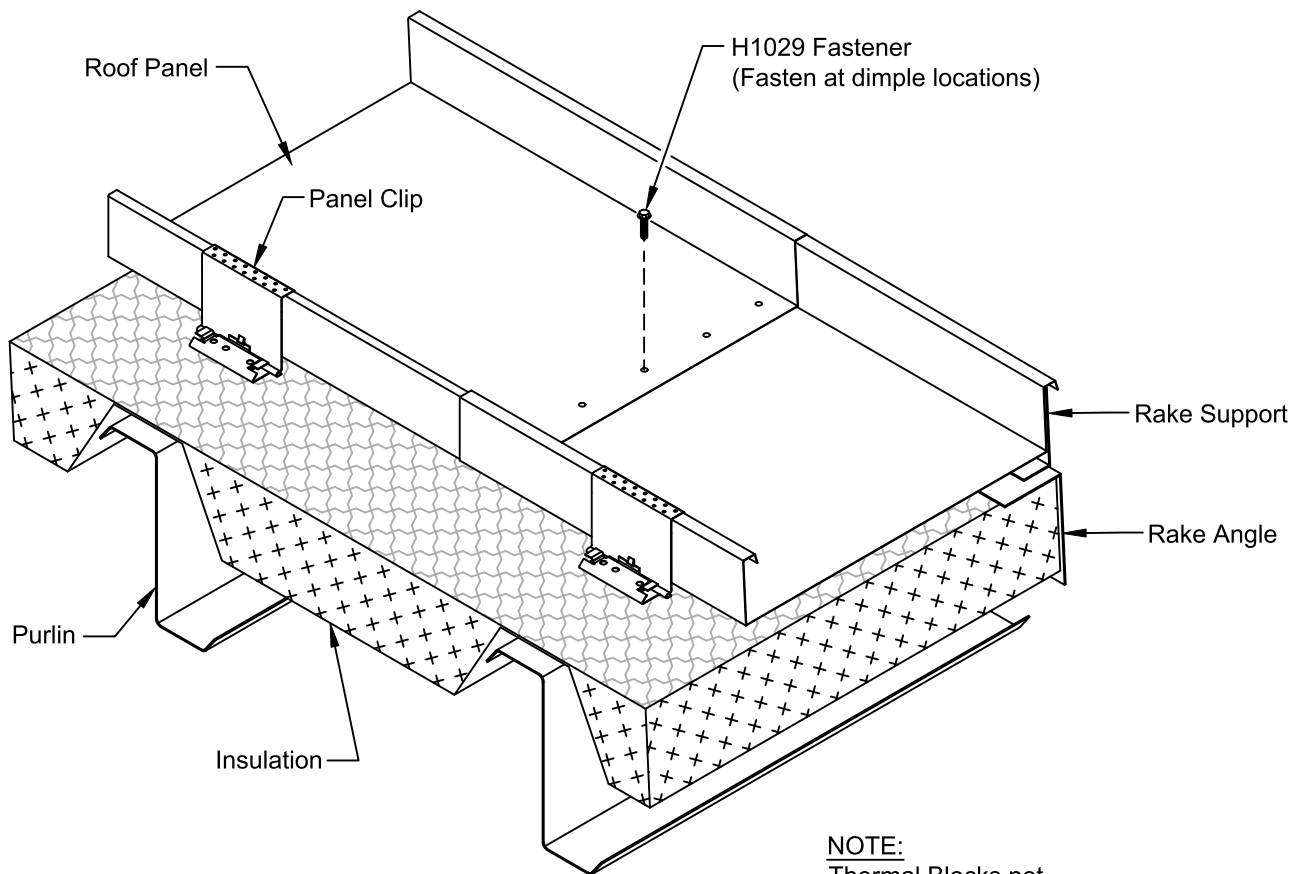
12.3 FASTENING OF THE STARTER PANEL

Fasten the panels with H1029 fasteners at **dimple locations**.

Install fasteners working from left to right. This ensures the lap stiffener tabs will stay intact. The dimples are located in the end of the upper swaged panel. The fasteners should penetrate through the center of the mastic and securely engaged into the back-up plate.

Temporarily clamp the female rib of the panel to the rake support. These clamps need to remain in place until the rake trim is installed.

Install the roof clips as described in sections 11.3 and 11.4.

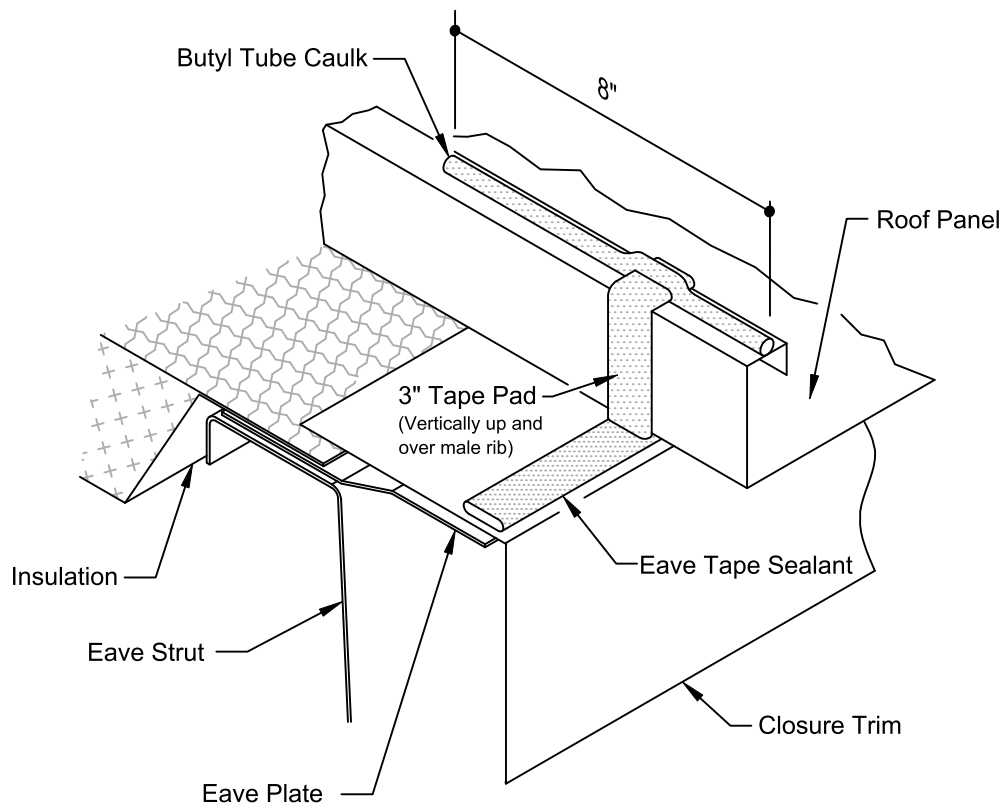


NOTE:
Thermal Blocks not
shown for Clarity

12.4 EAVE SEALANT

Apply a 3" long tape pad (3 TP) on the male vertical leg, making sure the tape pad covers the horizontal leg on the male rib and ties into the eave tape sealant.

Next apply a bead of butyl tube caulk (H3151) along the male horizontal leg, making sure to start at the end of the panel and caulk a distance of 8".



INTERIOR PANEL RUN INSTALLATION

LOW EAVE PANEL INSTALLATION

13.1 INTERIOR EAVE PANEL RUN INSTALLATION

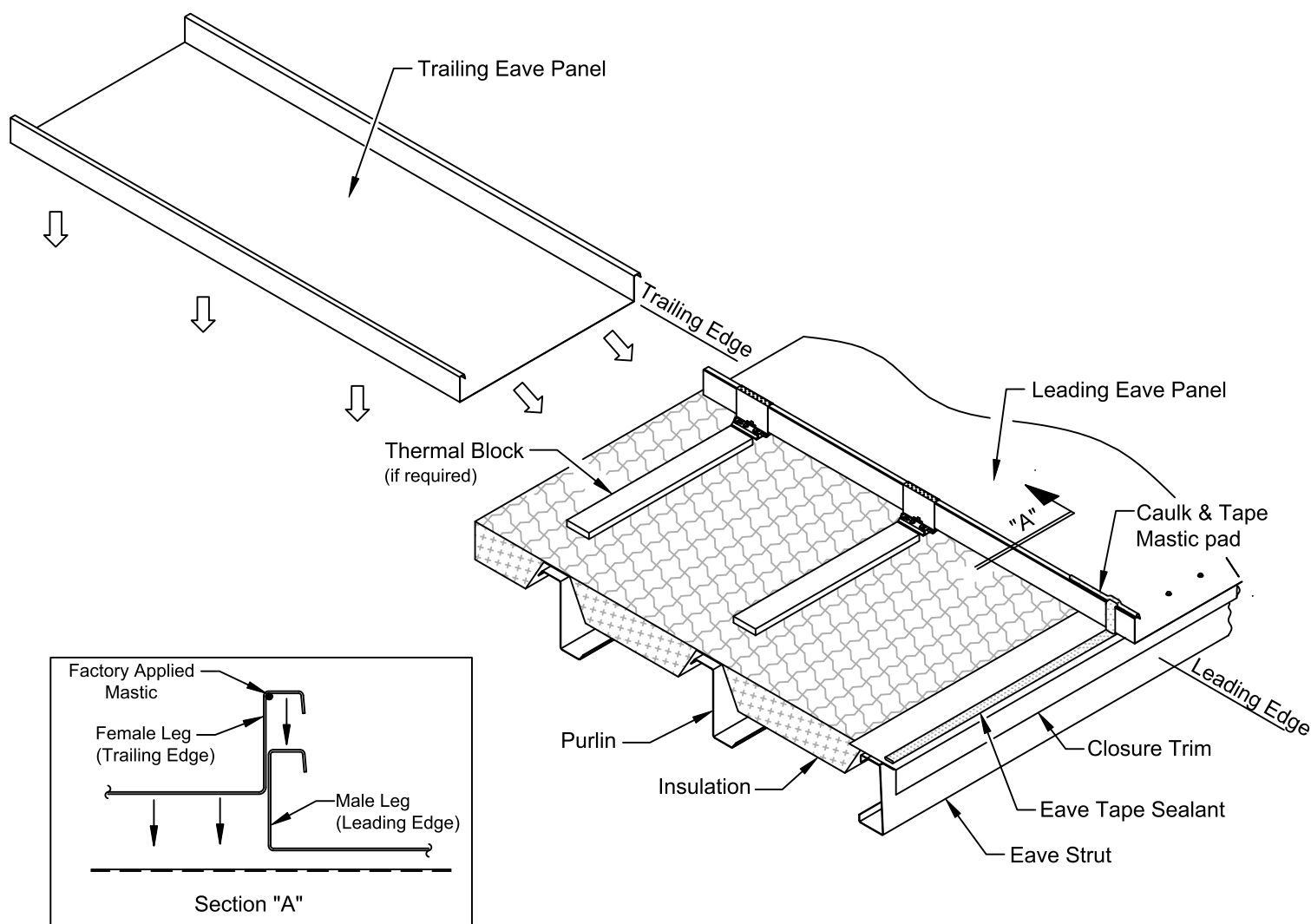
Remove the protective paper from the eave tape sealant. Remove only enough of the protective paper to allow the installation of the next roof panel.

If required, place the insulation thermal blocks on top of the insulation, directly over the roof secondary member.

The roof panel eave overhang dimension is critical as it establishes the location of end laps and ridge cap attachment points. Refer to the low eave detail on the erection drawings for the correct overhang dimension.

Position the trailing edge of the uninstalled roof panel over the leading edge of the previously installed roof panel.

Lay the panel down as shown, so the female leg can lie over the male leg of the previously installed roof panel, making sure to hold the correct panel overhang dimension at the panel ends.



INTERIOR PANEL RUN INSTALLATION

LOW EAVE PANEL FASTENING AND CLIPS

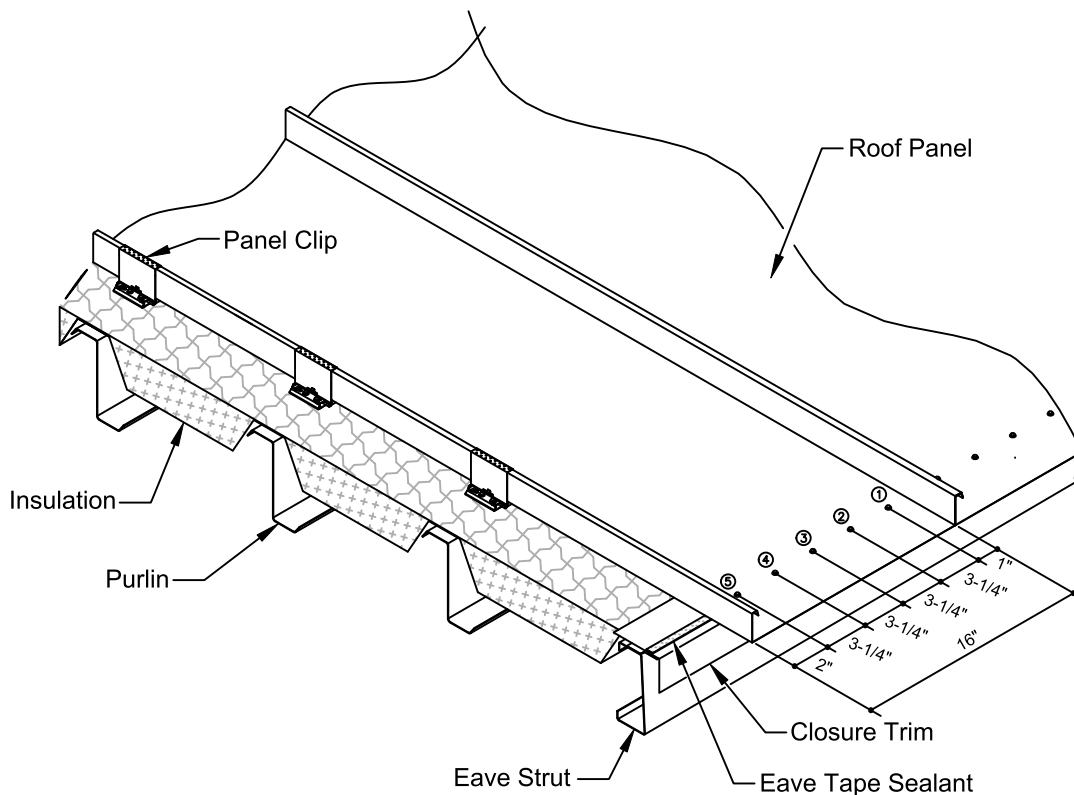
13.2 INTERIOR EAVE PANEL FASTENERS AND THE LEADING EDGE CLIPS

Install the H1029 low eave fasteners by first measuring up from the low eave of the panel to the center of the mastic on the closure trim. Establish a line by using a felt tipped marker (Do Not use pencil). Next, measure along that line, from the panel rib to rake support, marking fastener locations at 1", 4 $\frac{1}{4}$ ", 7 $\frac{1}{2}$ ", 10 $\frac{3}{4}$ " and 14". Install fasteners moving from the rake support toward the panel rib. It is important to keep the eave fasteners in a straight line.

Follow the instructions as shown in previous sections 11.3 and 11.4 for clip installation.

Once the clips are properly located, make sure that they are installed in a vertical manner.

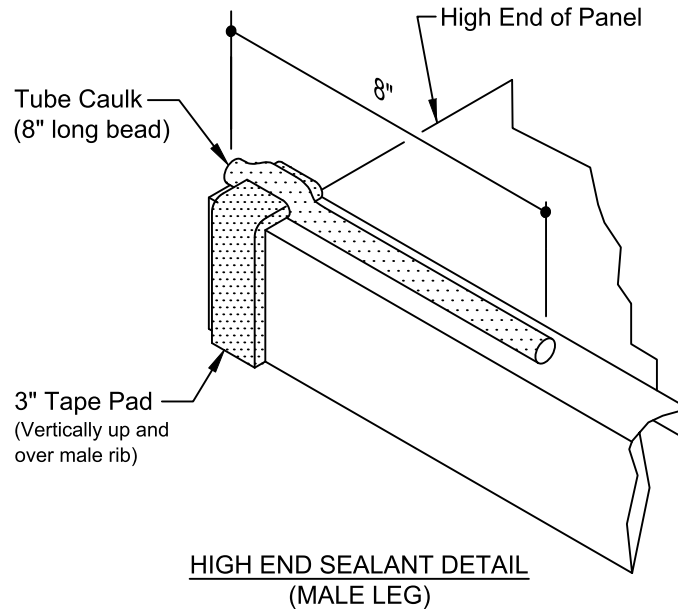
Before the next up-slope panel (if required) can be installed, the low eave fasteners and the clips at the leading edge of the down-slope panel must be installed. This **MUST** be done in order to hold panel modularity and to ensure that the end lap detail will assemble correctly.



13.3 APPLY RIDGE/HIGH EAVE MALE RIB SEALANT

Apply a 3" long tape pad (3 TP) on the male vertical leg, making sure the tape pad covers the horizontal leg on the male rib. Place the tape pad at the end of the panel as shown below.

Next apply a bead of butyl tube caulk (H3151) along the male horizontal leg, making sure to start at the end of the panel and caulk the required distance of 8" as shown in the detail below.



INTERIOR PANEL RUN INSTALLATION

PREPARING FOR INTERIOR INTERMEDIATE PANEL

13.4 PREPARING TO INSTALL INTERMEDIATE INTERIOR PANELS

IF YOUR BUILDING DOES NOT REQUIRE MORE THAN ONE PANEL TO REACH THE HIGH EAVE OR RIDGE, YOU MAY SKIP TO SECTION 13.6.

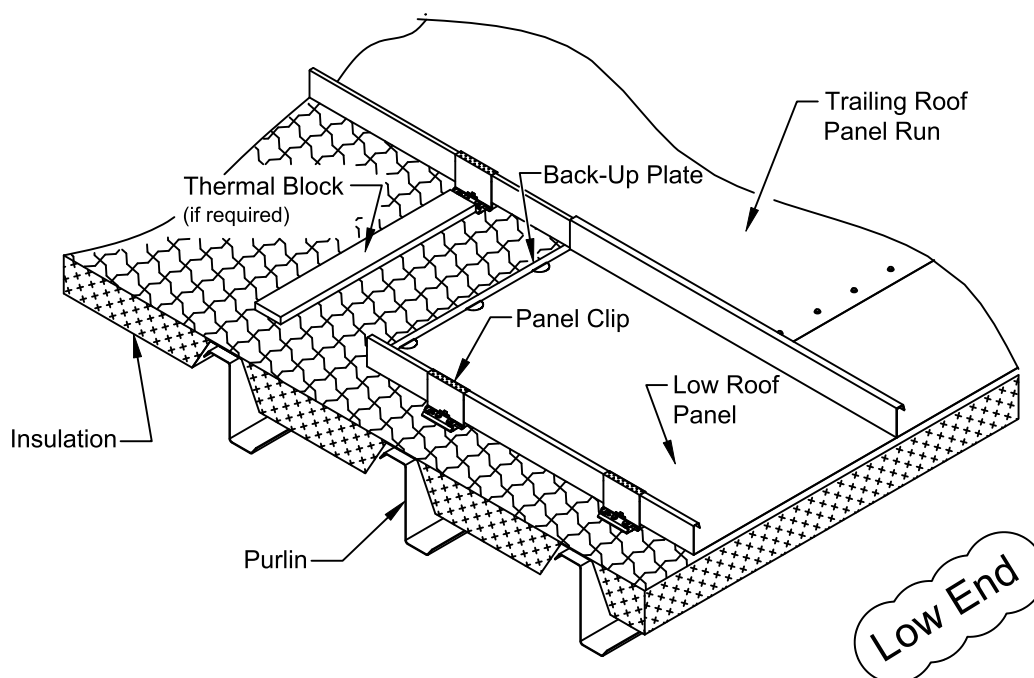
Before installing the back-up plate, make sure that the panel overhang dimension at the up-slope end of the lower installed panel is correct. Refer to the details the erection drawing details.

Slide the back-up plate (LSLS-1) onto the end of the lower panel.

When thermal blocks are required, position the thermal block over each purlin line (on top of the insulation when insulation is present) before installing the upper roof panel. Place the thermal blocks tight against the panel clips.

Before installing the upper interior panel, the pre-cut end lap mastic (1-1/2 TP-L) and the butyl tube caulk (H3151) must be installed on the underside of the low end of the panel. Also, apply (2) beads of butyl tube caulk (H3151) on the upper end of the receiving panel in the male vertical rib area, and (1) bead of butyl tube caulk (H3151) on the upper end of the receiving panel in the female vertical rib area. **Refer to sections 12.1 and 12.2 for specific details**

Roof-Lok panels are shipped with a thin plastic film along each shoulder of the panel. Prior to installing any tape mastic this film must be removed. Before installing the any tape mastic or tube caulk, the roof panels in the panel lap area must be wiped clean and dry.



INTERIOR PANEL RUN INSTALLATION

INTERMEDIATE PANEL INSTALLATION AND END LAP

13.5 INTERMEDIATE INTERIOR PANEL INSTALLATION AND END LAP ASSEMBLY

After applying the endlap sealant to both the upper and lower panels as specified in Sections 12.1 and 12.2.

Position the end of the upper panel to make a 6" lap over the lower panel.

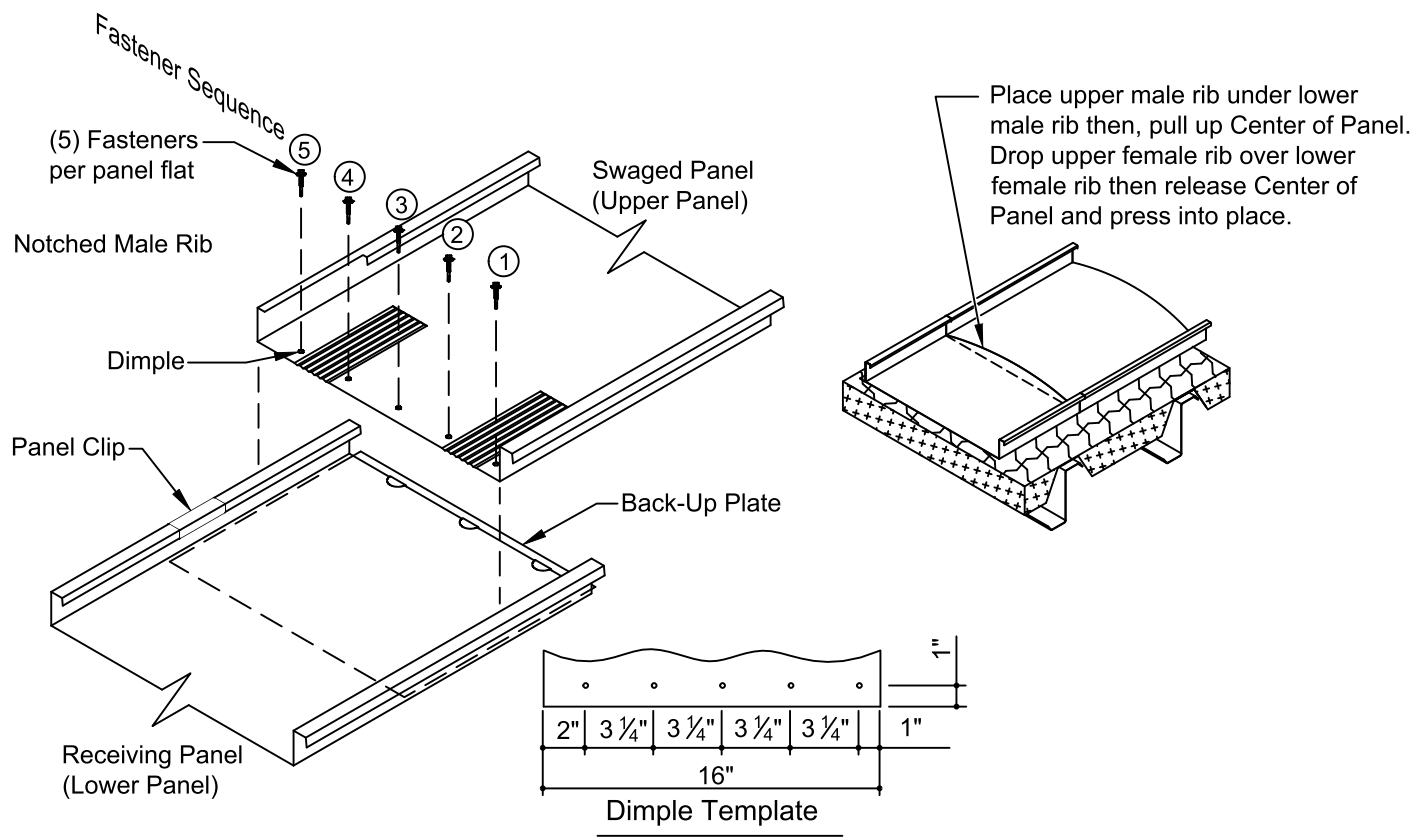
Check that the 1-1/2" pre-cut tape mastic (1-1/2 TP-L) is positioned correctly in the lap area, make any adjustments before installing.

Install the upper swaged panel onto the lower receiving panel, using care during installation to avoid swiping the caulk from the vertical legs of the upper panel. While installing the upper panel, bow the end of the panel by pulling up on its center. This will allow the panel to nest more readily into the lower panel.

NOTE: Once the mastic contacts both panels, the upper panel should not be moved. Be sure the start panel is properly positioned before seating.

Fasten the panels with H1029 fasteners at **dimple locations**.

Install fasteners working in the sequence shown below. This ensures the lap stiffener tabs will stay intact. The dimples are located in the end of the upper swaged panel. The fasteners should penetrate through the center of the mastic and securely engaged into the back-up plate.



13.6 PANEL MODULARITY

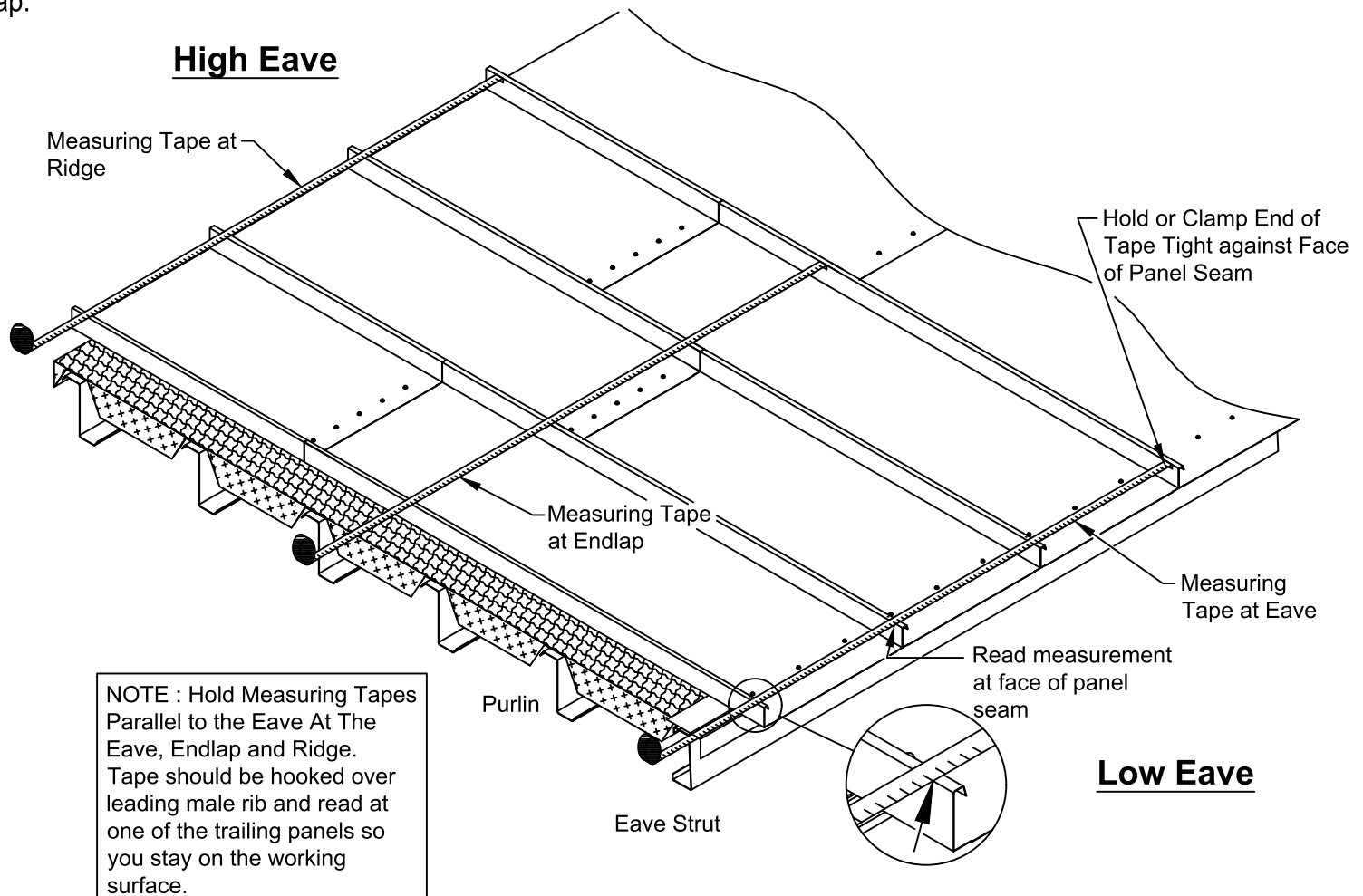
Maintaining panel modularity is **EXTREMELY IMPORTANT**, as the panels may shrink or grow during installation.

Check the panel modularity every four to five panel runs by measuring from a fixed plumb line (possibly the endwall steel line) over the completed panel runs. Measurements should be taken at the ridge/high eave, at end laps, at the low eave, and at random clip locations on long panel runs. The dimensions at these locations (as well as any other points along the panel run) should be the same.

13.7 ADJUSTING PANEL MODULARITY

Eave fastener placement is critical, as this helps control proper panel modularity.

Modularity can be adjusted at each purlin line by slightly tilting the panel clip. However, **DO NOT ADJUST THE PANEL WIDTH BY MORE THAN 1/8" ON ANY PANEL AREA**. Adjustments may be required to several panels to get back on proper module. These adjustments should be made at the low eave and ridge/high eave to match the end lap.



13.8 ZEE CLOSURE INSTALLATION

After several Roof-Lok panel runs have been installed, start installing full pieces of the Zee Closure (TRCZ) at the high side/ridge.

Installing the Zee Closure helps maintain panel modularity. Temporarily clamping of the panel will insure mastic engagement and to maintain modularity until the fasteners are installed.

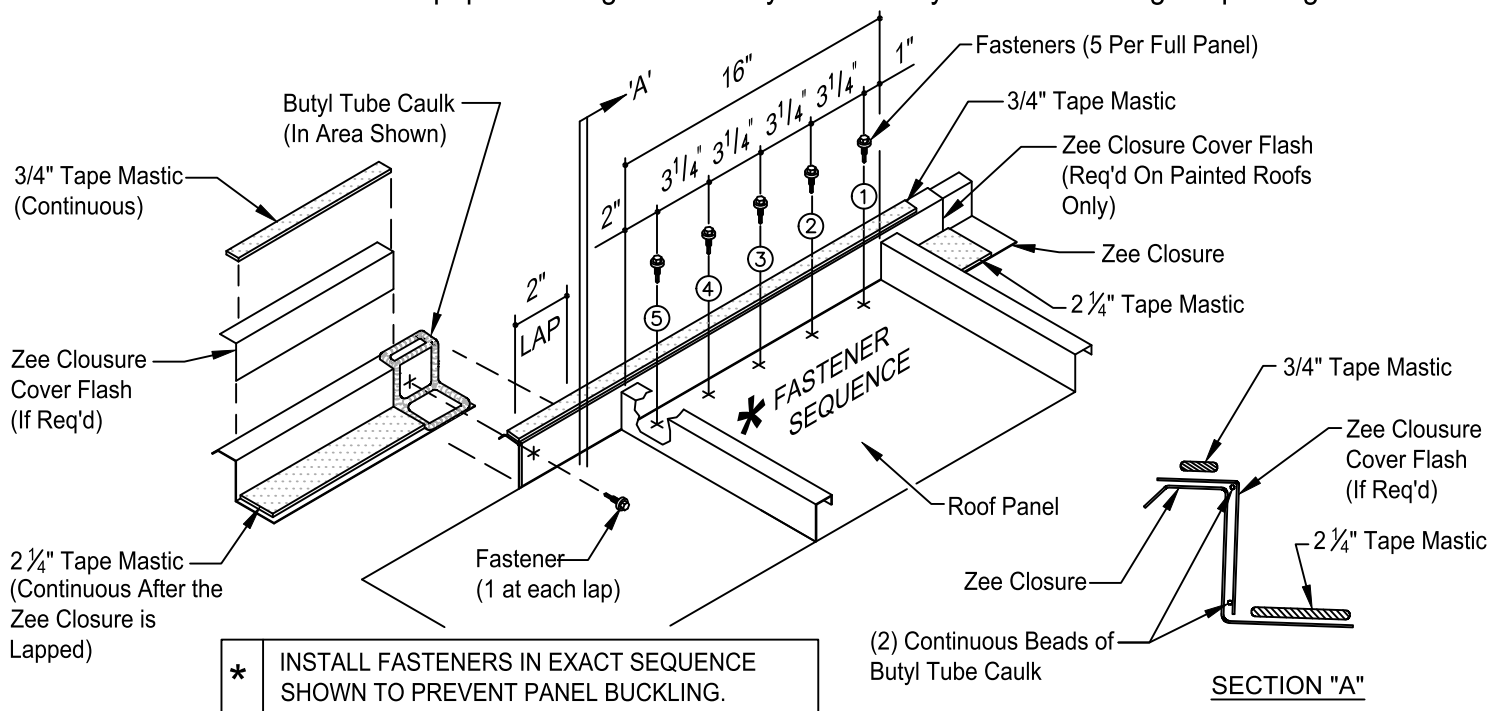
If building has a painted roof, apply two beads of Butyl Tube Caulk (H3151) to the Zee Closure Cover Flash (TL1) as shown in the detail below. Then install a roof colored Zee Closure Cover Flash (TL1) over each Zee Closure (TRCZ) before installing the Zee Closures.

Place a continuous piece of 2 ¼" tape mastic (H3020) on the bottom leg of the Zee Closure (TRCZ). Next peel the paper backing off the tape mastic and place the Zee Closure (with the Zee Closure Cover, if req'd) under the panel and on the ends of the panels. Fasten with (5) H1029 roof fasteners per panel using the fastener sequence shown in detail below.

Zee Closure Lap Instructions:

On the lapped Zee Closure, start the 2 ¼" tape mastic (H3020) 2" from the end as shown. Next apply Butyl Tube Caulk (H3151) around each surface of the Zee piece as shown in the detail below. Place over the back of the previous installed Zee Closure and repeat the installation and attachment as covered in the previous steps above. Add (1) H1029 fastener into the lapped Zee's.

After all of the Zee Closure have been installed, run a continuous strip of ¾" tape mastic (H3000) along the top of the Zee Closure as shown. Leave the paper backing intact until you are ready to install the ridge cap or high side trim.



INTERIOR PANEL RUN INSTALLATION

LAST PANEL RUN AND HAND CRIMPING

13.9 INSTALLING THE LAST PANEL RUN

The installation instructions and details at last panel run are similar to the start panel run.

Follow the instructions as outlined in sections 10.10 10.13, 11.2, 11.5 and 12.1 through 12.4.

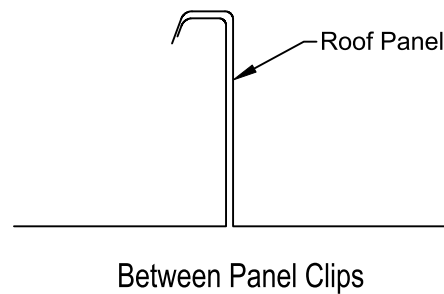
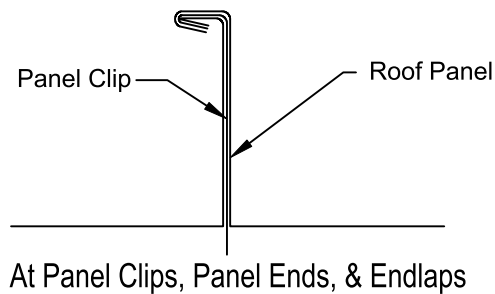
Additionally, the roof seamer will need to be run up the male rib of the last panel before the panel is installed. This will flatten the male rib and allow for the rake trim to be installed.

This manual indicates application with a full panel starting and ending at the building steel line. Refer to the erection drawings for job specific last panel ending details.

13.10 HAND CRIMPING AND SEAMING THE PANELS

Hand crimping at **ALL** roof clips, low eave, high eave and end laps is required during panel installation to temporarily secure the panels.

TEMPORARY HAND CRIMPING



The installed roof panels must be mechanically seamed prior to leaving the roof un-attended. If high winds, rain, or snow are imminent, the roof panels must be seamed before conditions occur.

Refer to the instructions supplied with the mechanical seaming machine for proper operation and seaming instructions.

CAUTION: Un-seamed roof panels cannot provide their designed wind load and weather resistance.

17.0 Roof-Lok CHECKLIST

The following checklist is intended to assist the builder and/or erector in troubleshooting and punching out the KIRBY Roof-Lok ROOF SYSTEM. This list is not intended to serve as a certification of the roof system, because many details such as mastic installation are impossible to inspect after the roof has been erected. However, in conjunction with continuous quality control measures during the erection process, this list should help insure a safe, weather-tight roof system.

Kirby recommends that detailed notes be taken during the inspection and punching out of the roof. The erector or the actual person doing the work should have access to these notes. Do not place pencil markings on the galvalume panels, because pencil lead will cause rusting and will void your galvalume warranty. Instead, consider using clothes pins attached to the seam of the panel to point out problem/unfinished areas. These work well, do not create a mess, and can be seen from across the roof.

ROOF-LOK CHECKLIST

LOW EAVE, RAKE AND ENDLAP

17.1 ROOF DETAIL COMPLIANCE LIST

LOW EAVE CONDITION

- Y N Is the eave plate installed per the details on the erection drawings?
- Y N Is the eave plate fastened at 12" on center?
- Y N Has eave closure trim (CLH) been properly installed with sealant at the trim end laps?
- Y N Is mastic applied continuous along the top of the eave closure trim?
- Y N Has the proper panel overhang been maintained?
- Y N Has tape pad/butyl tube caulk been installed on the low eave panel rib prior to next panel installation?
- Y N Is the insulation visible at the eave closure trim (from the outside)? (If so, this is not correct.)
- Y N Are there (5) fasteners installed into the flat of the panel through the mastic at the low eave?
If gutter is present:
- Y N Has the back leg been properly attached to the panel with H1050 fasteners at 12" on center?
- Y N Have gutter straps been installed at 32" on center?
- Y N Are gutter straps attached by two H1050 fasteners and with 3/16" x 3/4" tape sealant between the gutter strap and the panel surface?

RAKE CONDITION

- Y N Are the Rake Supports installed correctly with shoulder Tek fasteners through the center of the slots?
- Y N Is there a 2" gap between the ends of the rake supports?
- Y N Is the mastic installed correctly between the rake trim and the roof panel.
- Y N Is the rake trim installation sequence maintained from the eave toward the ridge, so the end laps will properly shed water?
- Y N Is tube caulk and 3/16" x 3/8" tape sealant present at all rake trim end laps and are they secured with H1050 fasteners and pop rivets to maintain a weather tight seal?
- Y N Are the rake trim fasteners to the rake supports installed at 12" on center?
- Y N Has the rake slide (RS) been installed at the rake fascia to end wall panel interface, to allow for proper thermal movement?
- Y N Does the rake fascia (RRF) properly corrugate with the end of the gutter to form a functional corner?

ENDLAP CONDITION

- Y N Is the swaged panel in the proper location? The swaging is on the lower end of the up slope panel.
- Y N Does the end lap appear to be 6" above the web of the purlin?
- Y N Is the endlap mastic and tube caulk in the proper location?
- Y N Are the panel ends lapped 6" at an endlap?
- Y N Does the endlap have a back-up plate with all (3) tabs engaged?
- Y N Has the endlap tube caulk been properly placed in the panel notch?
- Y N Are the back-up plates properly engaged by the fasteners?
- Y N Are there any stripped or missing fasteners at the panel endlaps?
- Y N Are there (5) H1029 fasteners installed at the endlap through the tape mastic?

ROOF-LOK CHECKLIST

SIDELAP, RIDGE AND GENERAL

17.1 ROOF DETAIL COMPLIANCE LIST (Continued)

PANEL SIDELAP CONDITION

- Y N Do all clips have two fasteners?
- Y N Does it appear the upper portion of the seam clip was properly centered on the base of the clip during installation to allow for thermal movement?
- Y N Are all panel sidelaps properly engaged?
- Y N Can you see insulation or paper tabs protruding from sidelaps? (If so, this is not correct.)
- Y N Have the roof seams been temporarily hand crimped? (as a minimum, until seaming can occur)
- Y N Are the FINAL seam types utilized and completed per design (Roof-Lok 90 or Roof-Lok 360)?
- Y N Was damage observed on the panel side lap ribs?

RIDGE OR HIGH EAVE CONDITION

- Y N Has butyl tube caulk been installed on highside panel before next panel has been installed?
- Y N Is the ridge closure zee mastic placed in the proper location?
- Y N Were the ridge closure zeers installed as the roof was erected for proper coverage and alignment?
- Y N Are all 5 the ridge closure zee fasteners installed per panel?
- Y N Was mastic installed on top of ridge closure zee?

Is the ridge cap installed properly including:

- Y N Are the ridge cap fasteners 6" O.C. and 2" away from each panel rib?
- Y N Was caulk applied at the ridge cap end laps?

GENERAL CONDITION

- Y N Are the roof panel runs installed straight?
- Y N Are there any damaged panels installed?
- Y N Have all pencil lead and markings been cleaned from the panels?
- Y N Have all metal shavings, dirt, etc., been cleaned from the roof?
- Y N Are HVAC units drained into gutter with PVC?
- Y N Has the roof curb framing/flashings been installed properly?
- Y N Has treated lumber been avoided as a means of supporting piping & other roof accessories?
- Y N Have the downspouts been properly spaced according to the erection instructions?
- Y N Are the downspout openings in the gutter cut to the proper size to allow for adequate water drainage?
- Y N If the Roof-Lok roof is being installed over a non-Kirby structure, has the Engineer of Record reviewed the purlins for adequate bracing?
- Y N Have lead, iron or copper pipes been coated or painted to protect against corrosion with galvalume?
- Y N If required, are wall panel to trim, foam panel closures installed at the proper locations? (Low Eave, Ridge/High eave, Rake/Rake Parapets etc.)