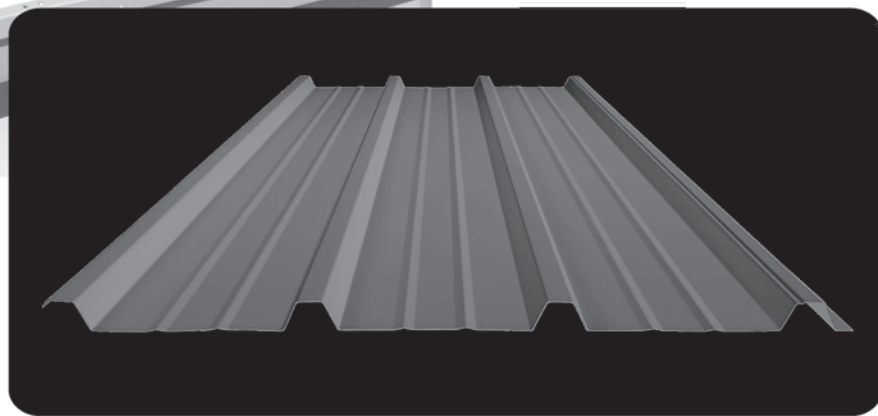


Butlerib[®] II Roof and Wall System

Installation Guide





BUTLER MANUFACTURING
P.O. Box 419917 Kansas City, MO 64141-6917

BUTLERIB II® ROOF SYSTEM INSTALLATION MANUAL

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SAFETY GUIDELINES

SAFETY

Safety must be a prime concern throughout the entire installation process. This manual contains safety information that is important for all workers to know and understand. It is not possible to present complete and comprehensive safety instructions in this manual. All local, state and OSHA safety regulations must be followed at all times. The installation contractor has the ultimate responsibility for the safety of workers and must comply with all applicable safety regulations.

The Occupational Safety and Health Act regulations applicable to the installation of this or any other building are identified as Part 1926, Safety and Health Regulations for Construction and are available from any government book store. These OSHA Regulations should be recognized as a job site requirement and must be fully complied with. Failure to do so may result in worker death or injury as well as substantial fines in the event of an OSHA inspection.

RECOGNIZE SAFETY INFORMATION

This is the safety-alert symbol. When you see this symbol in this manual, be alert to the potential for personal injury. Follow recommended precautions and safe practices.



FOLLOW SAFETY INSTRUCTIONS AND WARNINGS

Carefully read and follow all safety and warning messages in this manual.

All bundles of roof panels have numerous "Roof Panel Warning Labels" attached to them. This label is designed to inform workers of the hazards associated with falls from roof panels. A copy of this label is found in this manual on page BR-2.

The "Roofing Work Safety Instructions" set out in detail the hazards involved in roof installation as well as suggestions on how to prevent falls and a copy of these instructions is found in this manual on page BR-3 and BR-4.

Eight copies of the Roofing Work Safety Instructions, eight copies of the Roof Panel Warning Label and one "Sign Off Sheet" are provided in the "Roof Warning Packet" that is sent with each roof order the envelope of this packet provides instructions to the roofing crew supervisor to hold a safety meeting and review the Roof Panel Warning Label and Roofing Work Safety Instructions with each member of the roofing crew before roof installation begins.

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WARNING

You may fall from roof and be killed or seriously injured.

Any panel can collapse.

Do not step on panels with creased edges.

Do not step on or NEAR edge of panel.

Do not step within 5 feet of panel end.



Panels are slippery.

Use fall protection.



Loose panels may slide out from under you.

Do not step on loose panels or stacks of panels.



Always use fall protection.

Get and read “Roofing Work Safety Instructions” from supervisor.

ROOFING WORK SAFETY INSTRUCTIONS

Working off the ground even a few feet can be extremely dangerous. Falls from a height of ten feet or less can be fatal. You should be aware of the following hazards while installing roof panels:

I. PANELS CAN COLLAPSE

Butlerib II roof panels can be a safe walking surface (except for slipperiness caused moisture) **ONLY** when they are completely fastened to other panels on each side.

Panels not completely seamed or fastened on each side **are not safe** and can collapse suddenly and without warning.

When installing roof panels, **always** use fall protection.

Follow these additional safety precautions:

- 1) Never step, kneel or place weight on the edge corrugation of a Butlerib II panel.



- 2) Use extra care when installing panels with creased or kinked corrugation or edges. Placing weight on any portion of such a panel may cause the panel to collapse.

- 3) Never stand or work within five (5) feet from the end of a panel that is not fully seamed or fastened.

- 4) When fastening a panel to the structural, stand toward the middle away from the raised edge or edge corrugations of the panel **and** directly over the roof structural.

- 5) Never allow more than one worker to stand or work on the same panel between two roof structurals.

Never use unattached roof panels or liner panels as a work platform for any purpose. This is an **extremely** hazardous practice and should never be done.



ROOFING WORK SAFETY INSTRUCTIONS

II. PANELS CAN BE SLIPPERY DUE TO MOISTURE

All roof panels whether painted or unpainted, are slippery to walk on.

Dew, frost, or any other moisture on roof panels, whether painted or unpainted, greatly increases the slipperiness of the panels and extra care should be taken. The pitch of the roof (its slope) can also increase the hazard.

Because of these hazardous conditions, it is **essential** that fall protection be used at all times. It is also recommended that walkboards be used in the flat of the panel when installing roof panels.

III. LOOSE PANELS MAY SLIDE OUT FROM UNDER YOU

Never step on a single roof panel or a stack of several roof panels lying unattached on the roof structurals. The bottom side of roof panels may also have an oil coating. If you step onto a single panel lying unattached on the roof structurals, it may slip causing you to lose your balance and fall. Even a stack of several panels lying unattached on the roof structurals may slip if you step on it.

WHAT TO DO TO PREVENT ROOF FALLS

1. **Always use fall protection**- including but not limited to, lifelines, safety belts, lanyards, safety nets, scaffolding, man-lifts, catch platforms, and The Sky-Web® fall protection and insulation support system.
2. **If You Need a Work Platform**- for laying insulation or any other purpose, you should use a runway as specified in OSHA Section 1926.500 (d) (A walkboard at least 18" wide with a toe board and a 42" high railing made of 2x4's on one side with another rail halfway between the toe and the top rail.) **Never** use unattached or partially attached panels as work platform.
3. **To Avoid Slipping**- wear good work boots while on the roof. The danger from a slip is greatest while installing roof panels or insulation at the edge of the roof. Use walkboards in the flat of panels when installing panels. When working near the edge of the roof, you should use fall protection such as safety lines, safety nets, a catch platform or the like.
4. **To prevent Panels from Slipping**- Do not step on loose roof panels or even a stack of several roof panels.
5. **Walkboards**- One method to add stability to panels and prevent slips at the leading edge and the eave is to place walkboards in the flat of panels. (Use 2x8 stock.) The boards should run the full length of the roof slope and should be fastened together by drilling a hole near the ends of each of each and tying to the next board with rope. Cut a groove in the bottom of each board so that the board will lie flat and not tip back and forth because of the rope. This will prevent the boards from slipping out under you when you step on them. Walkboards are not a substitute for appropriate fall protection.



SAFETY GUIDELINES



FALL PROTECTION

Fall protection is required by OSHA when working at heights. There are many types of fall protection devices available and the installation contractor is responsible for making sure the appropriate device is used in accordance with all local, state and OSHA Regulations. Examples of some fall protection devices are:

- Safety belts and lines
- Safety lanyards
- Safety nets
- Catch platforms
- Scaffolds

In addition to the above devices, fall protection at the leading edge of the roof can also be accomplished by utilizing the Sky-Web® fall protection and insulation support system offered by Butler. The Sky-Web system is an open polyester scrim mesh interwoven on an approximately one half inch by one half inch square grid. The mesh is securely fastened around the perimeter of the building providing workers with protection from falls from the leading edge of roof area. The Sky-Web system, once installed, also offers workers below protection from certain falling objects such as tools, roof seamers and roof panels.

While OSHA does not provide approvals or endorsements of products or methods. OSHA does evaluate concepts to ascertain their likelihood of providing compliance with applicable safety standards. At Butler's request, OSHA reviewed the Sky-Web system and concluded that, when properly installed, it would "...eliminate the fall hazard at the leading edge of the roof on a partially completed metal building roof system."



IMPORTANT: The Sky-Web system protects only the leading edge of the roof surface and other methods of fall protection must be used at the remaining perimeter of the roof. Further, the Sky-Web system does not provide fall protection from heights greater than the plane of the roof and adequate fall protection must be used while installing the Sky-Web system.

For further information on the application, availability and cost of the Sky-Web system, call the Butler Purchasing Group at 800/826-2009 or 816/968-3715.

OTHER ROOF INSTALLATION HAZARDS



INSULATION- Blanket insulation has no load bearing strength and cannot support a workers weight. Always use fall protection. The use of fiberglass blanket insulation may cause an allergic or other physical reaction to some people.



WIND- Carrying roof panels on windy days is extremely hazardous. Panels may act like a sail, throwing you off balance and causing you to fall. Blown panels may also hit and injure other workers.



BUTLER LITE*PANL® translucent roof panel- Do not walk or stand on Lite*Panl roof sheets at anytime. Always place walkboards on or barricades around Lite*Panl roof sheet area.

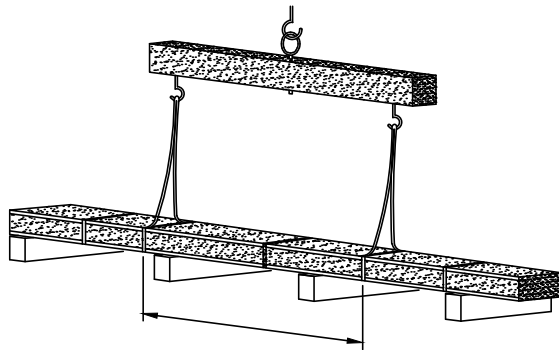


HANDLING GUIDELINES

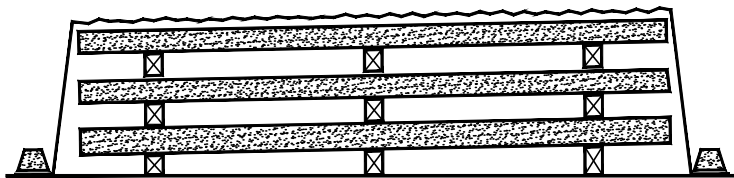
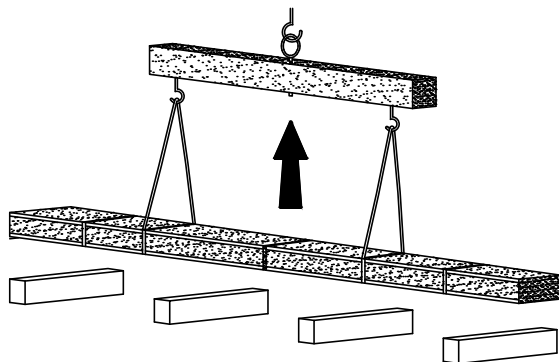
FULL CRATES: UNLOADING AND STORAGE

When unloading crates of panels upon arrival of shipment or handling to preload onto roof structurals, it is important to rig the bundles properly for a safe lift.

Incorrect handling may break the panel crate, severely damaging panels beyond use.



SLIGHTLY LESS THAN HALF THE PANEL LENGTH



When using a crane and wire rope sling, examine the wood crating to make sure the wood prevents the slings from damaging the panels. Nylon slings are necessary when handling crates that have been opened or no longer have the wood crating for protection. The distances between the slings should be a little less than half the length of the panel.

With 40 foot panels, the slings should be a little less than 20 feet apart, which will allow the bundle to arch slightly as the lift is made. The use of a spreader bar is preferred.

When using a forklift for unloading, spread the forks and make a test lift at the center of the crate. If upward bow is not excessive, carefully lift. If the crates are too long or the forks cannot be used under the crate safely, use a spreader bar and slings from the forks. Normal crates of 32 panels will weight approximately 4,000 lbs. maximum.

when unloading and storing at jobsite, always place dunnage under the crate, cover and slope for drainage of water from rain or snow.

Check these parts for damage and store in a protected area. The trim parts may be covered with a strippable film, to eliminate transit scratching. If the part is not to be protected from the weather while in storage, then the film must be removed. This is to avoid sun exposure which will make the film brittle and difficult to remove.

Strategically place materials so they are near their use to prevent unnecessary handling



BUTLER II ROOF AND WALL SYSTEM

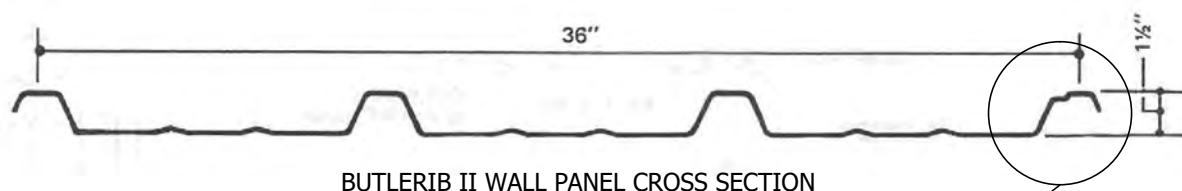
Introduction

The roof of any type of structure is the area most subject to problems... the wall most subject to critical inspection. These areas should receive particularly careful attention during installation.

Butler II panels are designed to withstand the severest of weather conditions and incorporate design features aimed at the elimination of common installation errors.

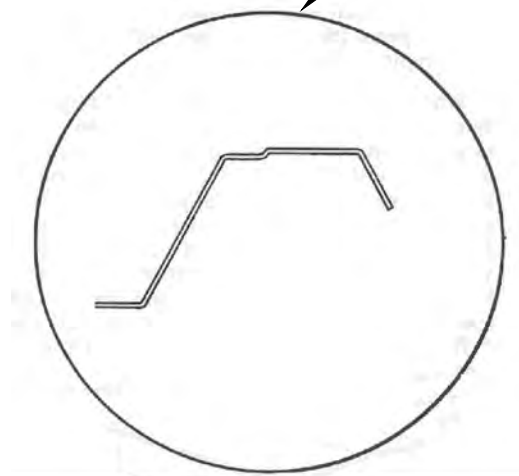
The roof and wall systems are offered in several combinations of punched or unpunched panels with punched or unpunched secondary structurals. Installation procedures will vary with the options selected.

Butler II Wall Panels



Butler II wall panels are offered either unpunched or factory punched. Factory punched panels are punched at the top and bottom for alignment with and attachment to factory punched eave struts, base angles and gable angles. The recommended installation procedures are the same for each type of panel except that field drilling of holes is required for the unpunched panels.

Wall secondary structurals are factory punched for the panel-to-structural connections. Panel-to-girt connections are through field punched or drilled holes in the panel.

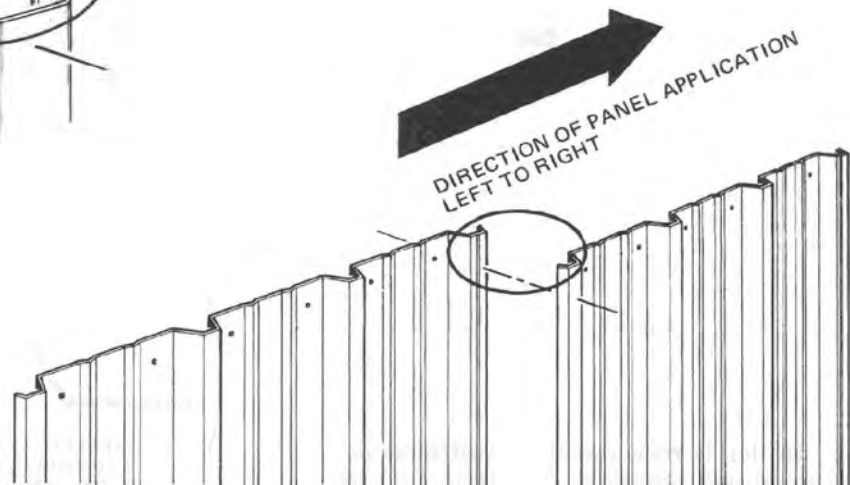
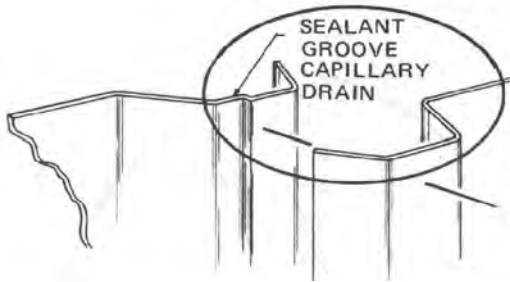


Direction Of Wall Panel Installation

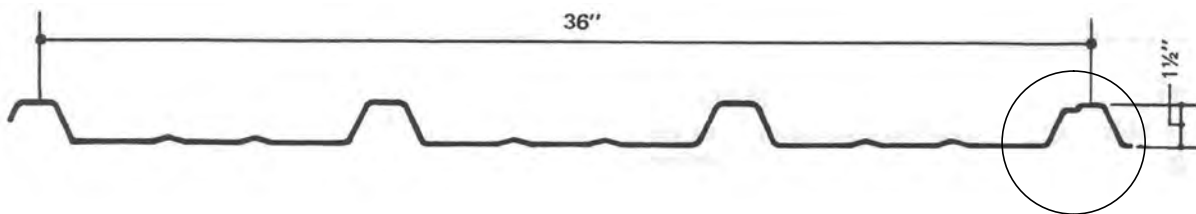
The nonsymmetrical shape of Butlerib II panels require that careful attention be given to the direction of panel installation.

Butlerib II wall panels should be installed from left to right. This will automatically place the corrugation with the groove on the underside of the panel side lap.

NOTE: Should it be necessary to panel from right to left, you will have to "tuck" the grooved corrugation under each panel side lap.



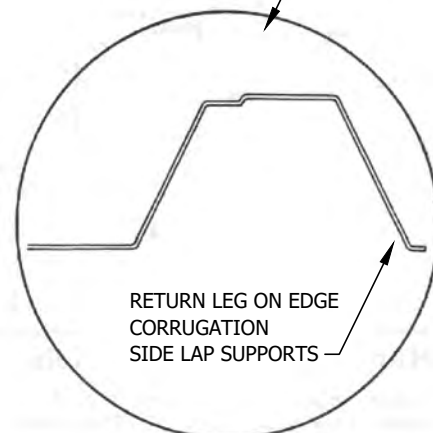
Butlerib II Roof Panels



CROSS SECTION - BUTLERIB II ROOF PANEL

Butler II roof panels are offered in several combinations of unpunched or factory punched panels and secondary structurals. The recommended installation procedures will vary with the option selected.

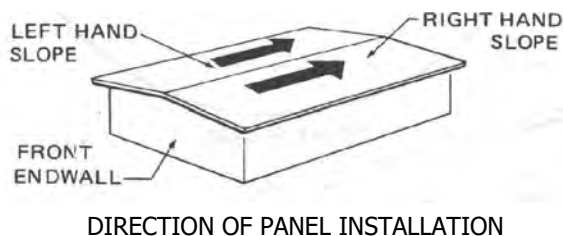
Butler II roof panels are the same basic shape as wall panels except that one edge corrugation returns to the purlin to provide support for accurate side lap nesting.



Handing Of Roof Panels

Design features in the Butlerib II roof system have made "handing" of the panels necessary. Costly errors can be avoided by carefully determining the proper starting end of the building for paneling the roof and properly identifying the "left hand" and "right hand" panels.

When the building roof is completely symmetrical, application of panels can start at either end of the building. If the building roof is not symmetrical, and the panels are factory punched, the application of roof panels must be in the directions as planned at the time of fabrication of panels. This will be as specified on the order to Butler Manufacturing. In the absence of specific instructions, the "front endwall", as defined on the building data sheet, is the starting endwall.



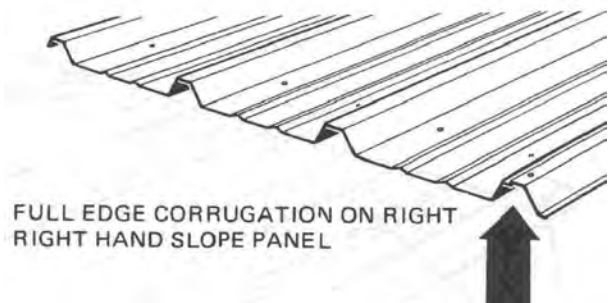
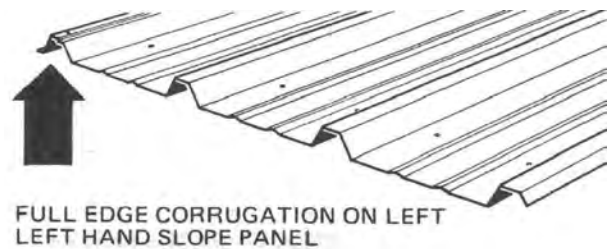
If the roof panels are unpunched, the panel application can start at either end of the building. However, pre-drilling of the unpunched panels "hands" the panels so the identification of handing for these panels becomes the same as for factory punched panels. By carefully planning the pre-drilling the installer selects his own starting end.

To identify the handing of the panels:

-Identify the right and left hand slopes of the building roof. Facing the "front" (or starting) endwall, the roof slope to the

right is the right hand slope. The roof slope to the left is the left hand slope.

- In laying the panel on the roof the panel edge with the full corrugation must always be away from the end of the building where the paneling is started.



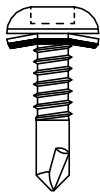
- If you face the bottom end of the panel and the full edge corrugation is on your right, the panel is right hand. If the full edge corrugation is on the left, the panel is left hand.

Panel Fasteners And Tools

Before starting paneling, be sure that the proper tools, in good repair, are on hand. An inefficient drill motor, a dull drill bit, too few tools, an inadequate power source or other equipment deficiencies slows down your entire crew. The cost of their lost time can be much greater than the cost of providing adequate equipment.

There are several fastener options for the application of Butlerib II panels. The proper locations for each is shown on the installation drawings. The shipping manifest accompanying the building is used to determine the actual fasteners furnished.

Self-Drilling Screws



Wall Torx Head



Roof Hex Head

Use depth locating or torque control electric screwgun for driving 1/4" self-drilling screws. For the self-drilling screws high RPM (2000-2500 RPM) drivers are necessary to attain optimum speeds. High tool amperage (4 to 7 AMPS) is required to achieve the proper torque for secure fastening.

Location: Panel - To - Panel
Panel - To - Structural

Socket Size - 5/16" Hex or Torx T30

Fastening Tool - Electric Screwgun



ELECTRIC SCREWDRIVER

Self-Tapping Screws

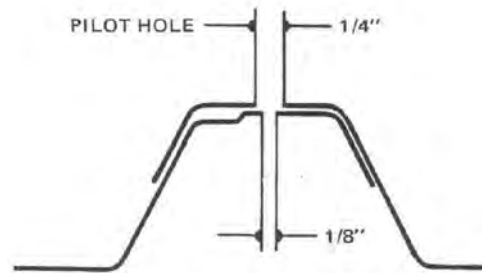


Wall Torx Head



Roof Hex Head

Use depth locating or torque control electric screwgun for driving 1/4" self-tapping screws.



For correct panel-to-panel installation of self-tapping screws, the top panel should be drilled with a pilot hole equal to the thread diameter of the fastener. The underneath panel is drilled with a smaller hole (1/8") in order to obtain full engagement of the screw thread. Since there is no engagement of the thread in the top panel, tightening the screw draws two panels together.

For correct panel-to-structural installation of self-tapping screws, the drilled hole should be sized to suit the material thickness of the structural and the driving torque capability of the screwgun, usually 3/16" to 7/32".

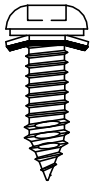
Location: Panel - To - Panel
Panel - To - Structural

Socket Size - 3/8" Hex or Torx T30

Fastening Tool - Electric Screwgun



Scrubolt®



Wall Torx Head



Roof Hex Head

The scrubolt is used only for panel-to-structural connections and is specifically designed to engage in the factory-punched secondary structurals. Only a pilot hole in the panel, 1/8" diameter or larger, is required when a 1/2" drive impact tool is used to drive the fastener.

Location: Panel - To - Structural

Socket Size - 3/8" Hex or Torx T45

Fastening Tool - 1/2" Drive Impact Wrench



Lock - Rivets (Roof Only)

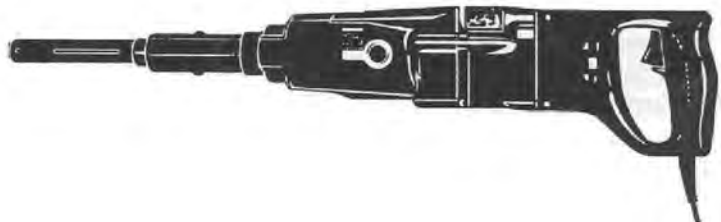


The Lock-Rivet is a fastener designed for and used exclusively in Butler buildings. It is used for both panel-to-structural (on roof only) and panel-to-panel connections. It does, however, require a special tool for installation.

Location: Panel - To - Panel

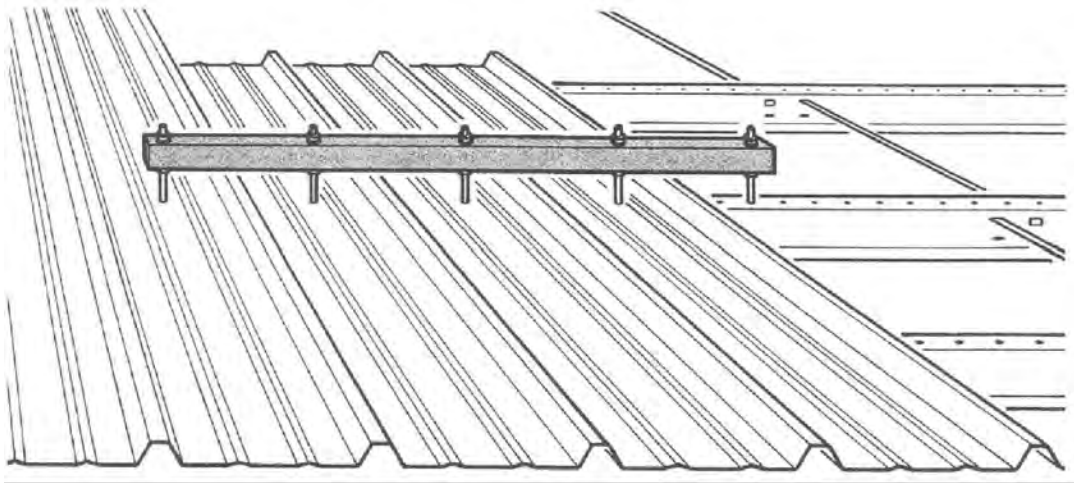
Panel - To - Structural

Fastening Tool - Lock-Rivet Pulling Tool



Lock-Rivet pulling tools may be purchased from Dynamic Fastener 800/821-5448.

Hole Finder



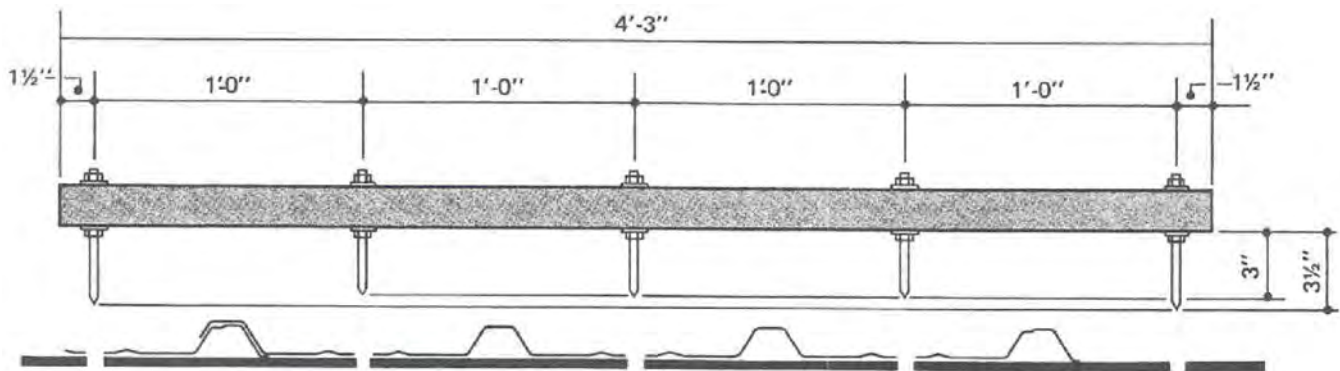
USE OF HOLE FINDER IN LOCATING HOLES IN BUTLERIB II ROOF

For locating the factory punched holes in intermediate purlins and girts, through the panels, use a "hole finder". This tool, that can be fabricated from locally available materials, can be as simple as a 2 X 2 with spikes driven through, or as complicated as steel tubing with spring loaded, hardened steel punches. Hole finder can also be purchased from Dynamic Fastener 800-821-5448.

The hole finder is not used to punch holes. A hammer blow on the inside punches will mark the panel, in line with the factory punched holes in the purlin. Remove the hole finder and drill the panel with the proper size drill for the fastener to be used. For Lock-Rivets, 5/16" diameter; for Scrubolts, 1/8" diameter.

NOTE: Be sure purlins have been properly aligned before using the holefinder to mark panels.

The two outside punches are guide punches and should be tapered so they will set deep enough into the purlin holes for the inside punches to contact the panel. The three inside punches have sharpened points for marking the panel.



CROSS SECTION-BUTLERIB II HOLE FINDER



Fastener Installation

The selection of these specialized fasteners are important but their application is also important.

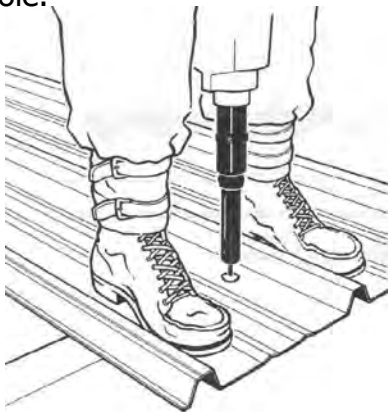
Screw Type Fasteners

Do not overdrive screws. Overdriving can strip the threads and/or damage the sealing washer. When possible, use drivers with torque control set to function properly for the combination of fastener size, hole size and material thickness. The screw should be driven until the materials to be joined are pulled together. Continue to tighten until the neoprene washer begins to expand beyond the edge of the metal washer.

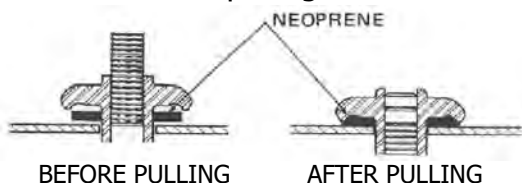


Lock-Rivets

All holes for Lock-Rivets should be drilled. To function properly the rivet must be used in a free-fit hole with a flat, undisturbed surface at the periphery of the hole.

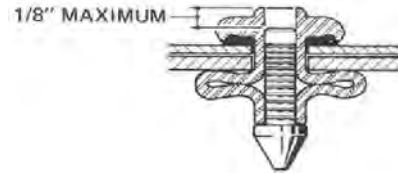


The rivet must be perpendicular to the surface and firmly seated against the surface before the pulling tool is actuated.

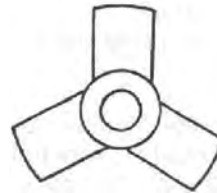


NOTE: Use the expansion of the neoprene washer to gauge the driving of the screw.

A properly installed rivet will be firmly seated against the panel. Occasionally a very small part of the neoprene washer will be showing.



The rivet stem will break off from a point slightly above the head to a point as much as 1/8" below. If the break-off point is more than 1/8" below the head, a malfunction is indicated, and the rivet should be replaced.



A properly installed rivet will always have three tines expanded on the underneath side.

Drilling

For drilling, use a 3/8 heavy duty high speed drill motor. Short shank, split point sheeters bits will reduce drilling time. A sharp bit should be used at all times and sufficient pressure should be exerted to obtain a good cutting action.

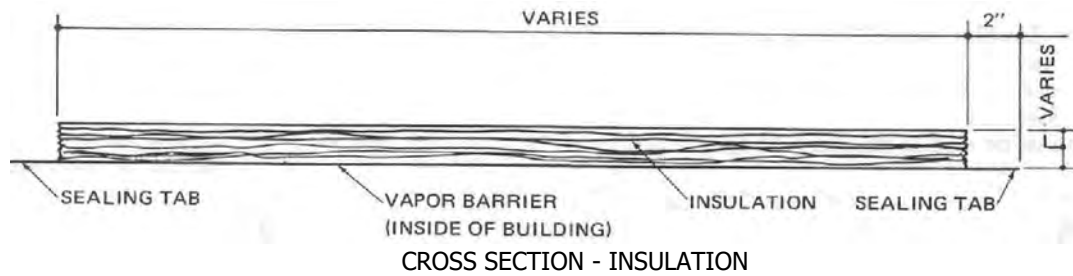
Materials to be drilled should be tightly nested or in contact with one another. This is important to assume drilling accuracy. If the material is separated and the drill is not perpendicular to the material the resulting drilling error will result in fit-up problems.

Always drill and install panel-to-structural fasteners before drilling for panel-to-panel fasteners.

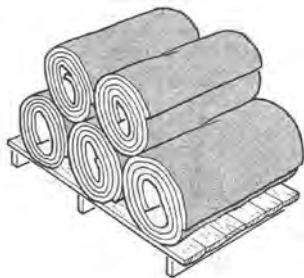
Wipe off or sweep off drill filings. Filings that are not removed from the surface of wall or roof panels will rust very quickly and damage the panel finish.



Insulation



The majority of buildings are insulated. The most common type of insulation used is 3 ft. wide (or wider) fiberglass blanket in various thicknesses with a vapor barrier of vinyl, aluminum foil or some combination of each.



When the rolls of insulation are received they should be carefully stored, protected from the weather. Handle the rolls with care to avoid damaging or puncturing the insulation facing. Do not store the rolls on end as damage to the facing edges may result.

Prior to actual start of insulating, study the roll lengths furnished. Roof insulation is normally shipped in roll lengths to span from eave to eave. Wall insulation normally will be furnished in rolls which are multiples of the wall height and are to be field cut to required length.

Vapor Barrier

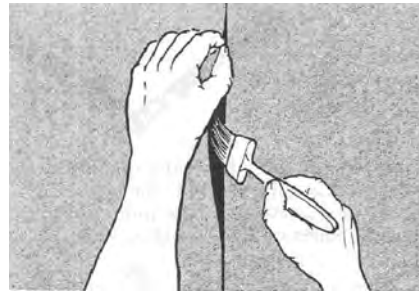
It is essential that the insulation facing provide a complete vapor barrier to prevent airborne moisture from condensing within the insulation. All insulation joints must be sealed and any facing damage repaired promptly.

Sealing Tabs

The fiberglass insulation facing is available with either a 2" tab on one side or two 2" tabs, one on each side. The tabs may be

plain or with factory applied adhesives.

Single Tab - Plain



The plain, single tab should be sealed with a good quality, moisture proof adhesive. After the insulation is in place, spray or brush adhesive on the tab from inside the building. Wipe the tabs with a damp cloth to remove excess adhesive and provide a smooth seam.

Single Tab - Pre Glued



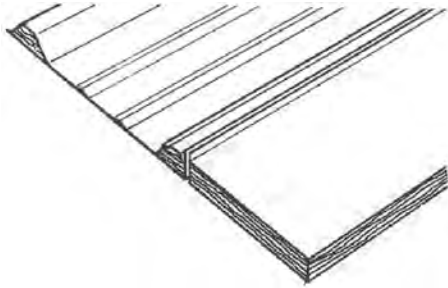
The pre-glued single tab insulation has the factory applied adhesive protected by a release paper. After the insulation is in place, pull the release paper from the tab and the other facing simultaneously. Use the other hand to press the tab into good contact with the facing and to smooth the joint.

NOTE: Adhesive sealing of insulation tabs is effective but the system usually will not qualify for the U.L. frame spread ratings.

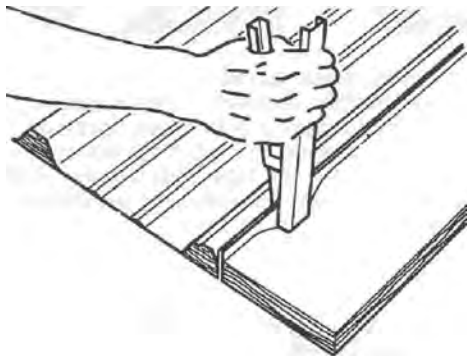


Double Tabs

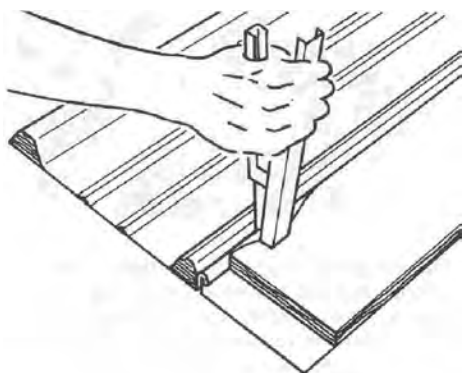
The double, plain 2" tabs are sealed together at the joints by folding and stapling. A good quality plier-type stapler (such as Bostitch Model P6-8 with 3/8" STH5019 staples or equal) should be used.



Stapling is done from the outside as the insulation is applied. Pull the adjoining facing tabs outward at the joint and align the top edges of the tabs.

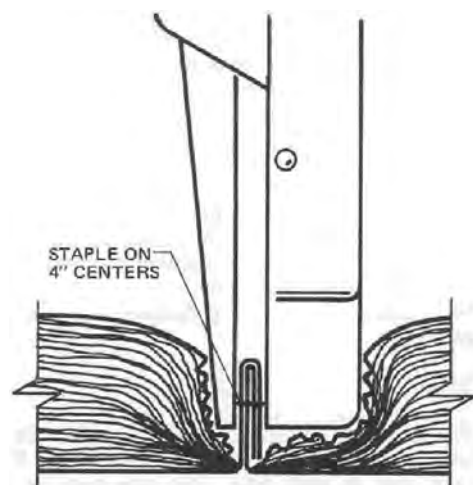
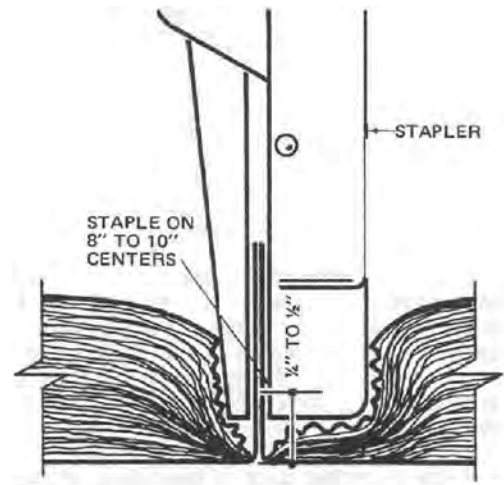
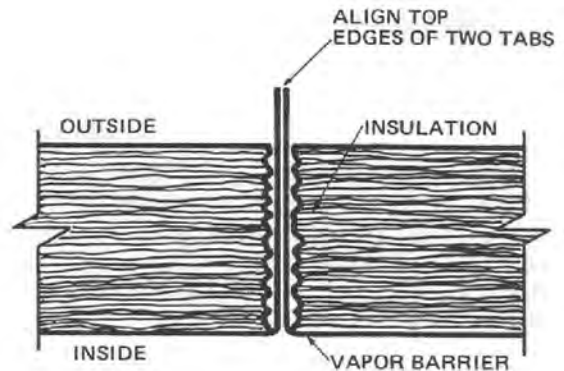


Staple the two tabs together approximately 1/4" to 1/2" from the inside on 8" to 10" centers.



Fold the tab over and staple on 4" centers.

NOTE: Glass fibers from the insulation will jamb most stapler pliers. Keep tools clean using an appropriate oil or sealant.

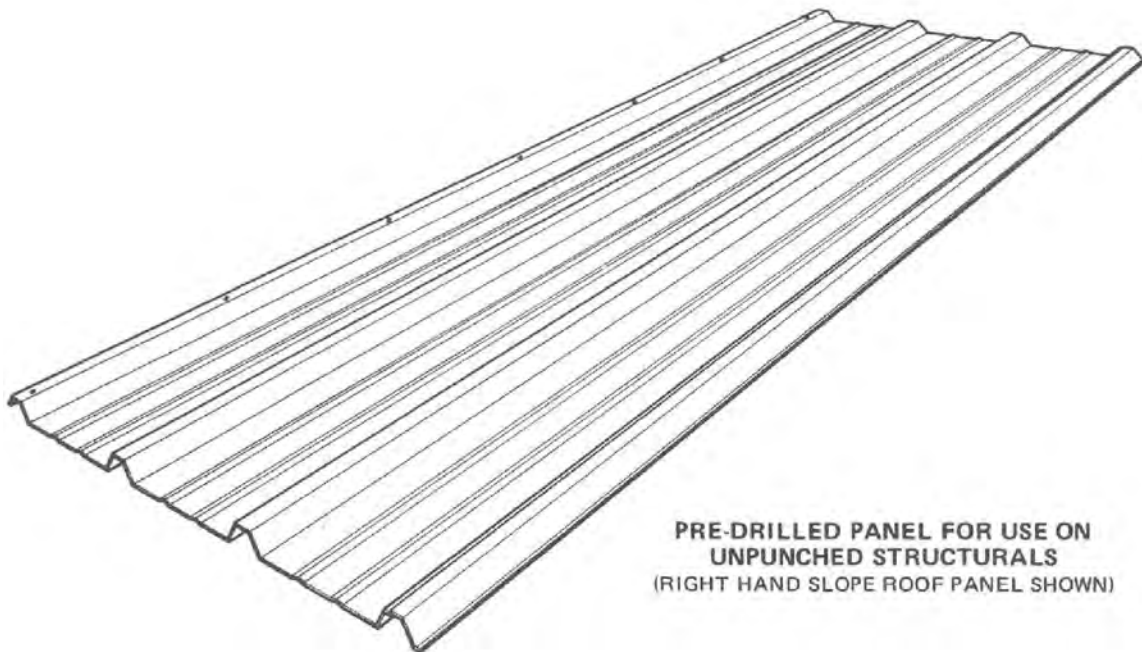


Pre-Drilling Panels



**PRE-DRILLED PANEL FOR USE ON
PUNCHED STRUCTURALS**
(RIGHT HAND SLOPE EAVE ROOF PANEL SHOWN)

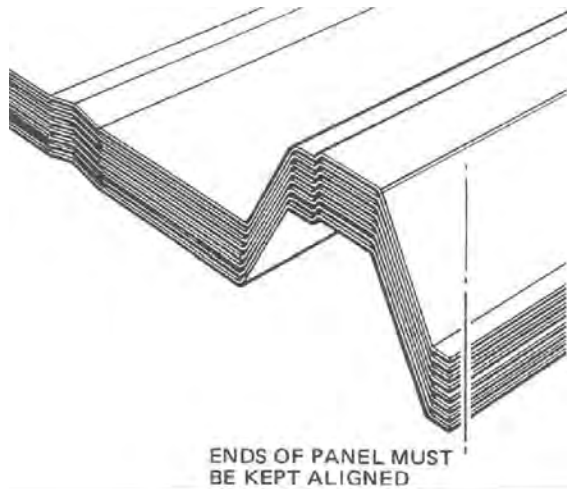
Unpunched roof and wall panels that are to be used on punched structurals should be pre-drilled for alignment purposes. The panels should be drilled at the top and bottom for panel-to-structural fastening and on one edge corrugation for panel-to-panel fastening.



**PRE-DRILLED PANEL FOR USE ON
UNPUNCHED STRUCTURALS**
(RIGHT HAND SLOPE ROOF PANEL SHOWN)

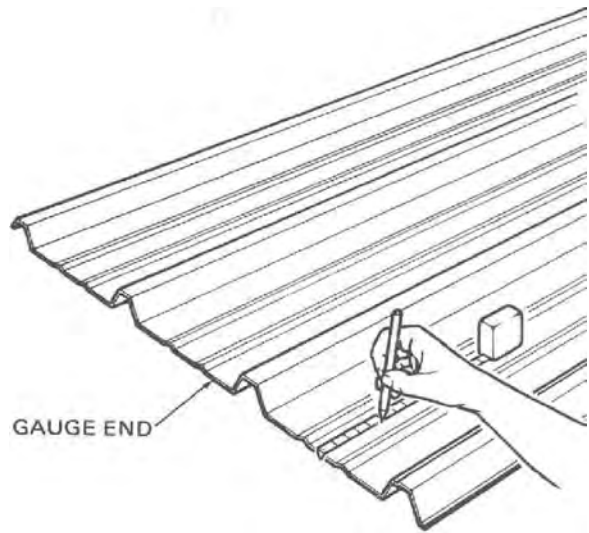
Unpunched panels that are to be used on unpunched structurals should be pre-drilled on the one edge corrugation only, for alignment of side lap fasteners.





POSITIONING PANELS FOR
STACK DRILLING

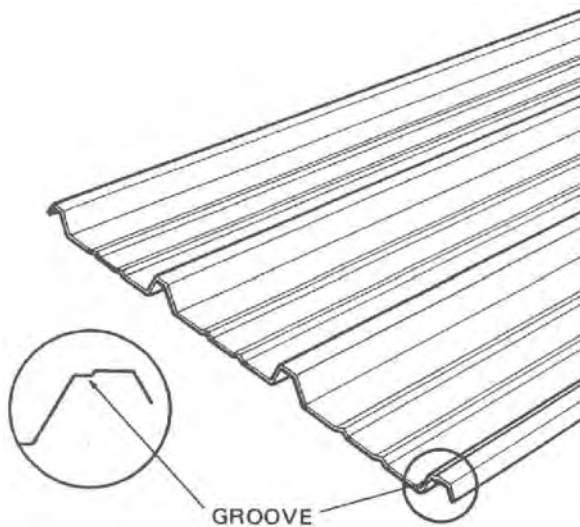
Panels are normally stack drilled, 6 to 8 panels at a time. Panels should be stacked so the bottom end is in near perfect alignment. When re-stacking panels do not slide panels from the bundle to avoid scratching the finished surface.



LOCATING BOTTOM SET OF HOLES

The panel end condition holes are laid out on a panel to prepare a drilling template. Paneling installation drawings will show specific hole location dimensional information.

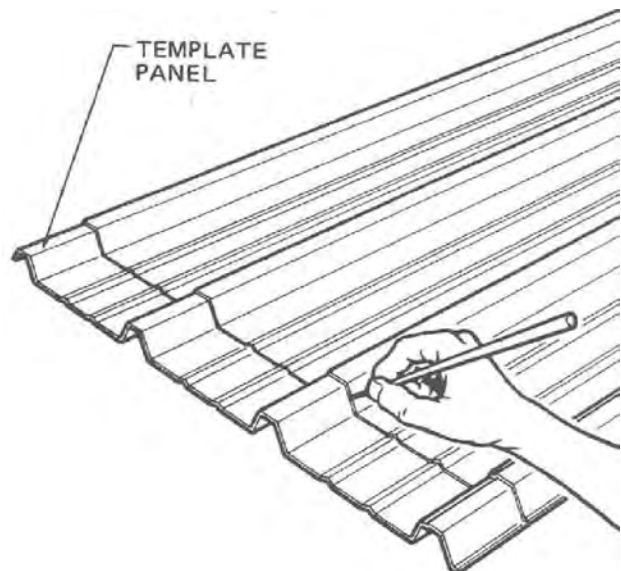
Determine the distance the bottom set of holes are from the end of the panel. This becomes the "gauge" end of the panel and all other dimensions should be taken from this end or line of holes.



IDENTIFYING BOTTOM OF WALL PANEL

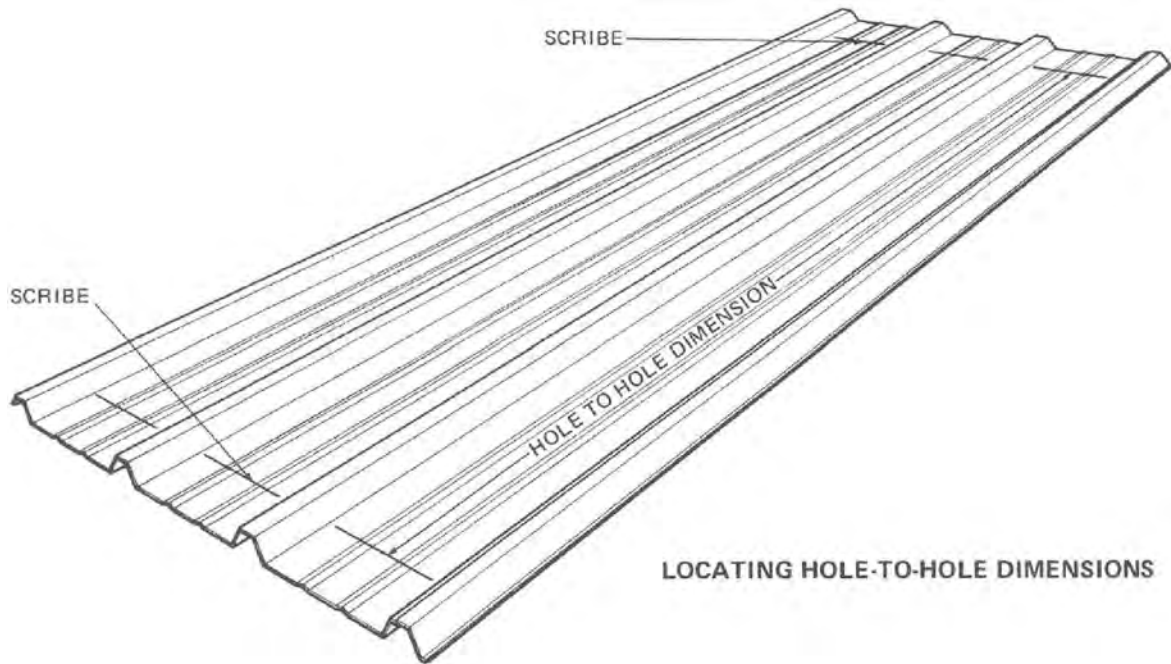
Be sure to identify the handing of roof panels on page BR-9 before drilling panels. The bottom of wall panels are easily identified. If you are facing the bottom of the wall panel, the corrugation with the groove will be on your right.

NOTE: Refer to installation drawings for hole location information. Measure all holes from the same end of the panel.



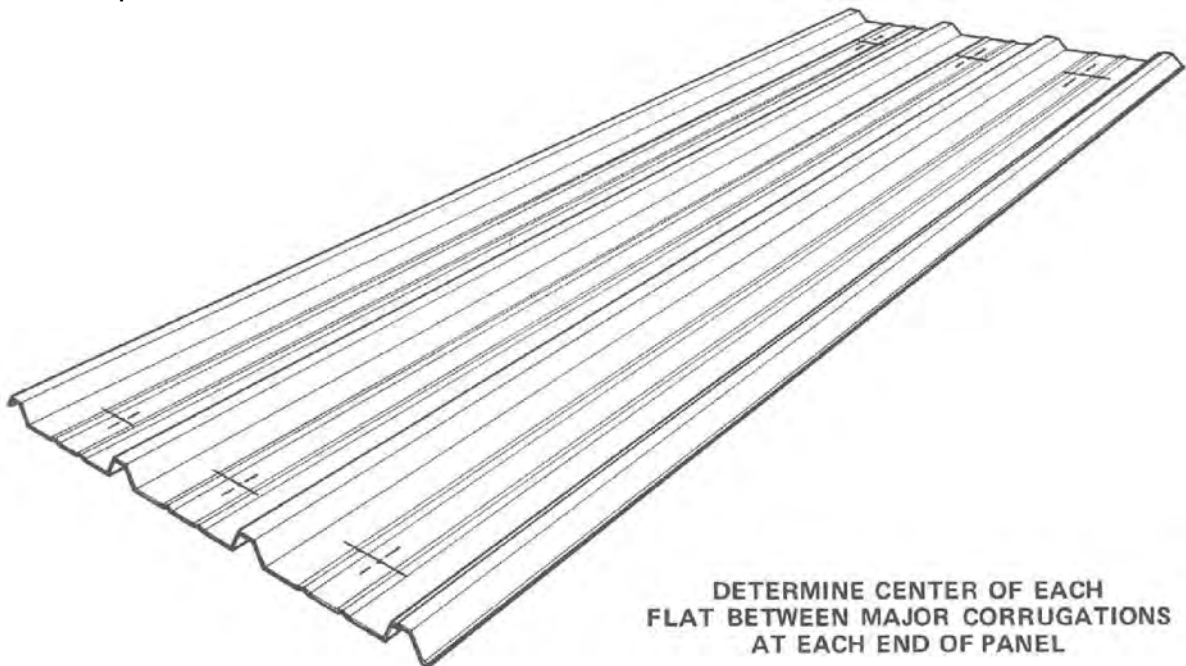
SCRIBING TEMPLATE PANEL

Another panel can be used as a straight edge to scribe a line across the template panel to mark the line of holes.



LOCATING HOLE-TO-HOLE DIMENSIONS

Determine the distance between the bottom and top lines of holes and scribe a line at the top.



DETERMINE CENTER OF EACH FLAT BETWEEN MAJOR CORRUGATIONS AT EACH END OF PANEL

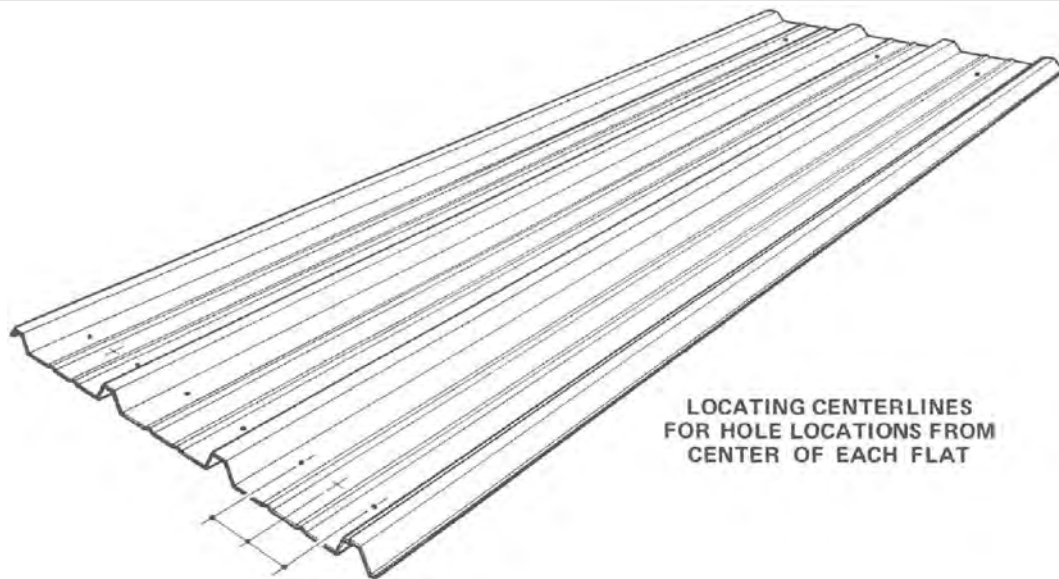


PANEL CROSS SECTION-LOCATING CENTER OF EACH PANEL FLAT

Since width variations may occur in the panel corrugation the centerline of each panel "flat" is determined to use as measuring point for the horizontal location

of holes. This center should be determined at the scribed lines at both ends of the panel.

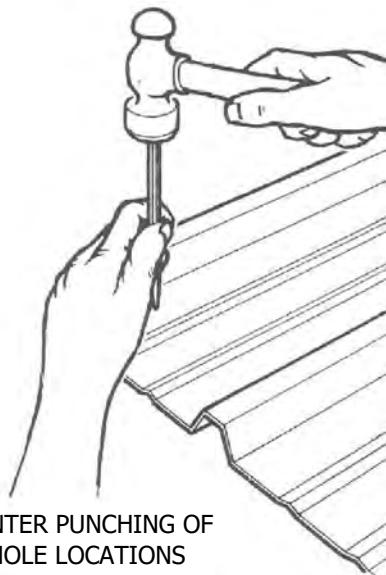




LOCATING CENTERLINES
FOR HOLE LOCATIONS FROM
CENTER OF EACH FLAT

Measuring from the centerlines the hole locations for panel-to-structural fastening are established. Hole location dimensions are shown on the paneling installation drawings.

NOTE: Center punch all hole locations before drilling to assure drilling accuracy.



CENTER PUNCHING OF
HOLE LOCATIONS

To assure drilling accuracy, center punch the hole locations before drilling.

Panel-to-panel sidelap holes should be marked on the template panel in a similar manner. Uniform location of fasteners is assured and the probability of the underneath corrugation in a wall panel lap rolling away from the drill is reduced. Sidelap holes are pre-drilled on only the overlapping corrugation, the corrugation without the groove.



DRILLING 1/8" HOLES AT
CENTER PUNCH LOCATIONS

Drill 1/8" holes in the template panel at all center punch locations. The small hole will assure accuracy in center punching the other panels through the template panel. Place the completed template panel over the stack of panels and center punch hole locations through the template. Remove the template and drill the stack of panels.

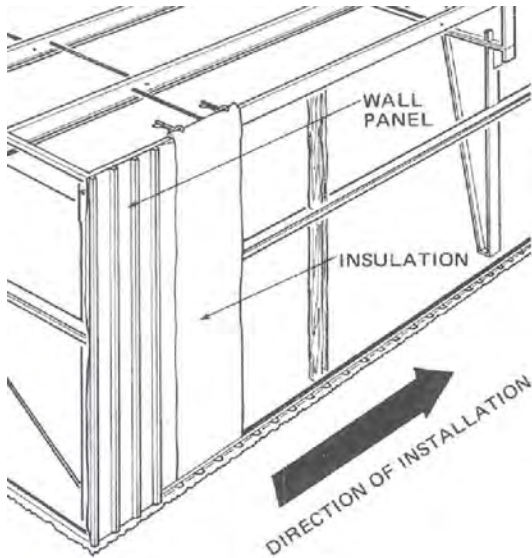
Refer to pages BR-10 and BR-11 for hole size requirements.

On the last stack of panels drill through the template panel to properly size the holes in that panel



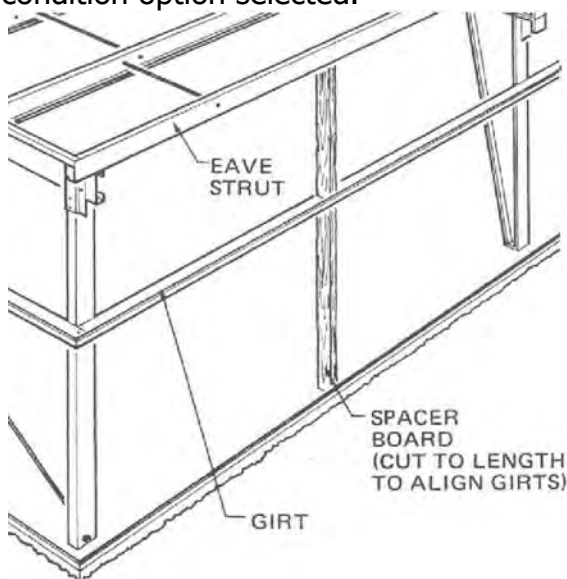
BUTLERIB II WALL PANEL INSTALLATION PROCEDURES

Installing wall panels before roof panels is generally easier for the paneling crew, particularly in the handling of the wall insulation. Roof traffic distortion of eave struts is also eliminated by paneling the walls first.



STARTING THE WALL PANEL INSTALLATION

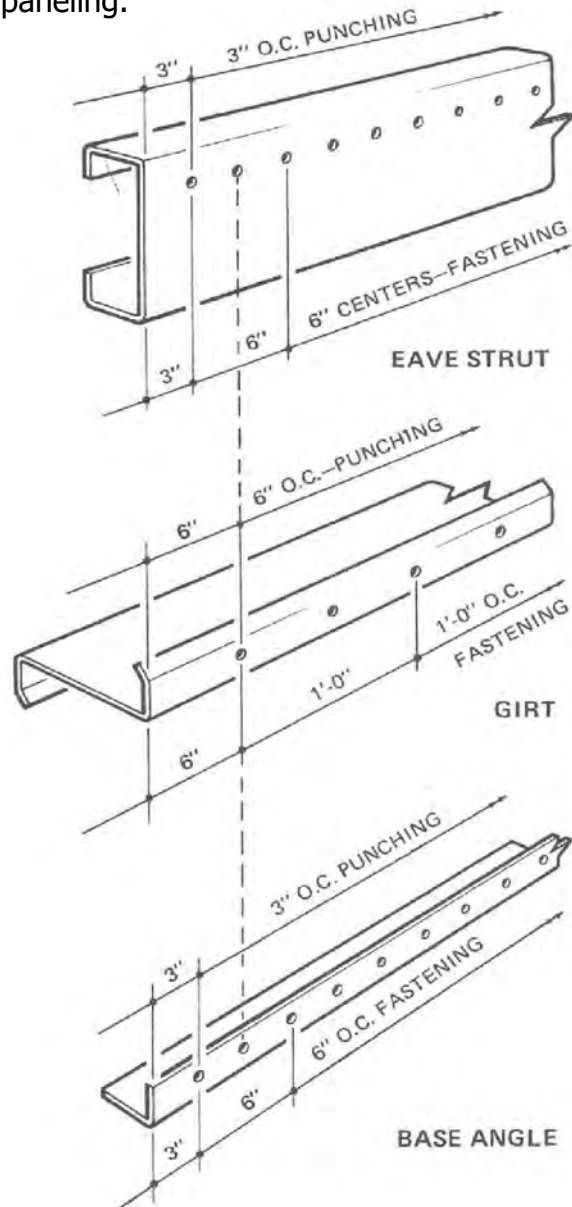
The general practice is to install Butlerib II wall panels and insulation at the same time, working from left to right. Procedures will vary with the insulation method selected and with the wall base condition option selected.



ALIGNING WALL STRUCTURALS

Wall structurals should be aligned in the horizontal position before starting

paneling. This can be done with scrap lumber cut to proper length and wedged between the wall structurals. As each bay is finished, the spacers can be moved to the next before proceeding with the paneling.



PROPER VERTICAL ALIGNMENT OF
WALL STRUCTURALS

The structure must be plumb and square and the panel punching in the wall structurals in proper vertical alignment.

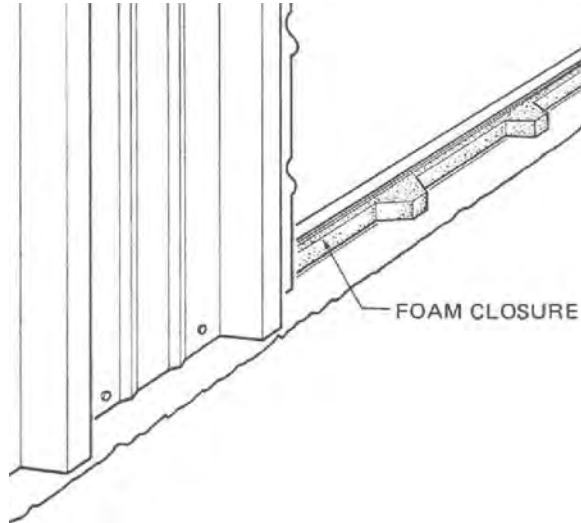
NOTE: When framing is properly plumb and base angle properly positioned, every other hole in the eave strut and base angle will be in vertical alignment with holes in the girts.



Base Conditions

Three different types of wall base conditions are used with Butlerib II walls. Before starting paneling, be sure to determine which condition is furnished with your building.

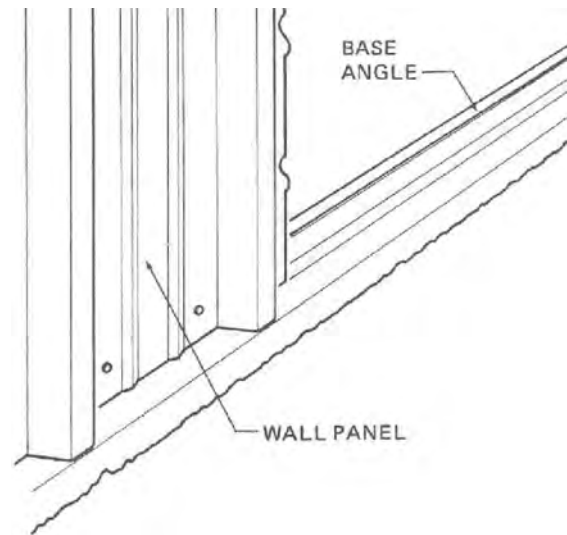
Foam Closure



FOAM CLOSURE AT WALL PANEL BASE

A foam closure can be used in lieu of or in addition to the metal base flashing to effect better light or air closure. The closure is not opaque so complete light closure should not be expected.

Notched Foundation

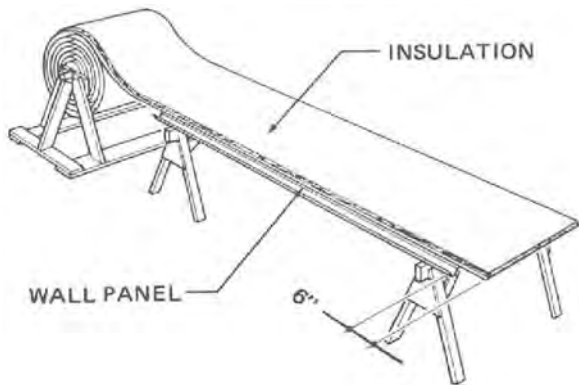


FOUNDATION NOTCH AT
WALL PANEL BASE

A notched foundation edge may be used in lieu of or in addition to either closure method to provide a base of wall closure.

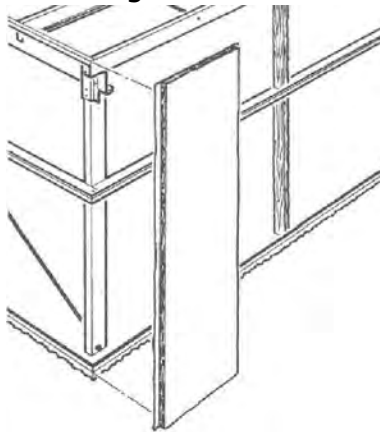
NOTE: Optional trim conditions available. See installation drawings for optional trim conditions.

INSULATION



CUTTING WALL INSULATION TO PROPER LENGTH

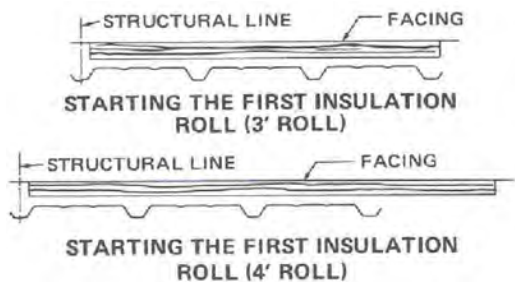
Using the Butlerib II wall panel as a guide, the insulation is unrolled and cut to length allowing 6" or more extra length to facilitate handling.



INSTALLING THE FIRST WALL INSULATION BLANKET

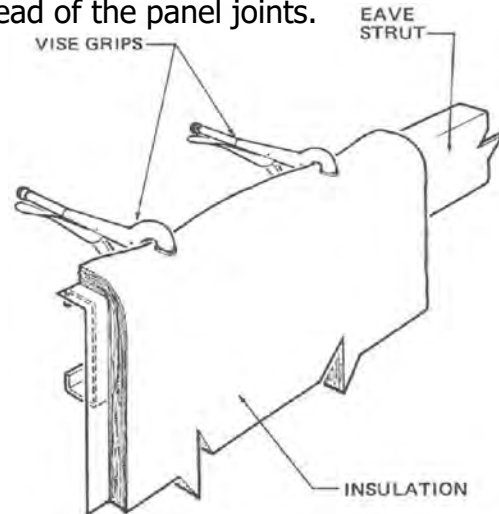
The first wall insulation blanket is located so that the forward edge of the fiberglass blanket will be at or slightly ahead of the edge of the Butlerib II panel. This will offset the panel and insulation joints to allow folding and stapling the insulation tabs.

NOTE: The insulation facing always faces the inside of the building.



The joints can be offset by working the insulation slightly ahead of the panel or by using a 4 ft. wide starter roll. With the

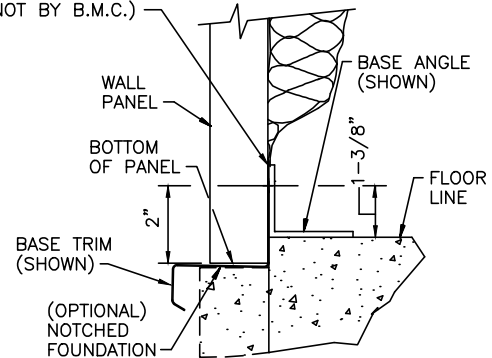
remainder of the insulation in 3 ft. or 6 ft. wide rolls the insulation joints are kept 1 ft ahead of the panel joints.



TEMPORARY ATTACHMENT METHOD INSULATION TO THE EAVE STRUT

The insulation is attached temporarily to the top of the eave strut. A pair of vise grip pliers or other clamping arrangements can be used to hold the insulation. Pull the insulation at the bottom to obtain a taut, smooth inside surface.

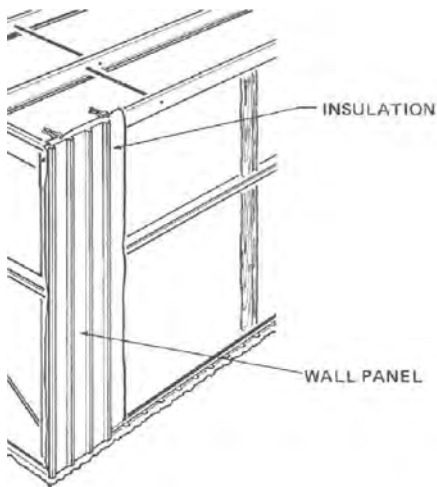
STRETCH INSULATION TIGHT & ATTACH TO BASE TRIM WITH DOUBLE FACED TAPE (NOT BY B.M.C.)



RETAINING INSULATION AT BASE WITH METAL BASE FLASHING

If the metal base flashing is to be used, it can also be used to retain the insulation. Use panel fasteners through the base flashing at corrugation locations only.

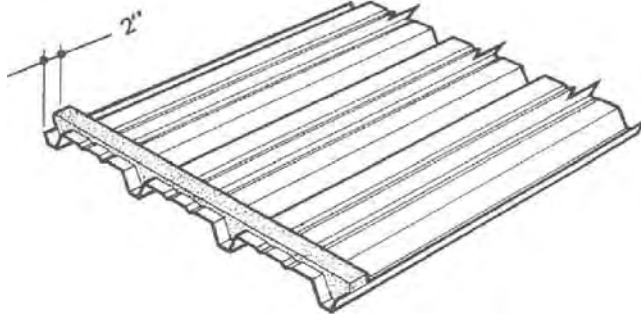




INSTALLING THE FIRST WALL PANEL

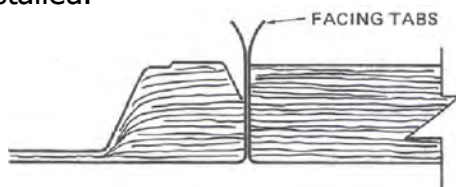
Apply the first panel over the insulation and install the top and bottom panel-to-structural fasteners. Remove the clamps and trim the insulation, both top and bottom.

If the base flashing is not used, it is necessary to hold the insulation until the panel is in place.



INSTALLING THE FOAM CLOSURE BY GLUING METHOD

If the optional foam closures are used, their installation can be made easier by gluing them to the panel before the panel is installed.

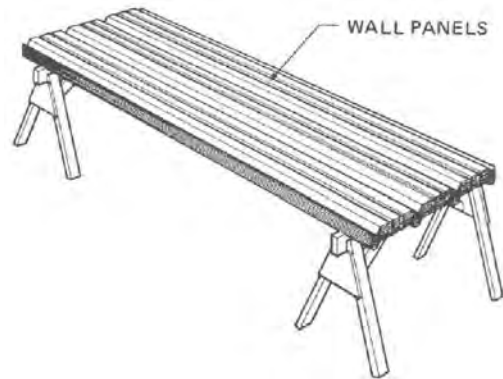


BUTTING ADJACENT INSULATION BLANKETS

Succeeding rows of insulation are attached to the eave strut in the same manner as the first. The insulation blankets should be positioned so the insulation is butted tight together. Facing tabs should be sealed as shown on pages BR-8 and BR-9 before installing the next panel.

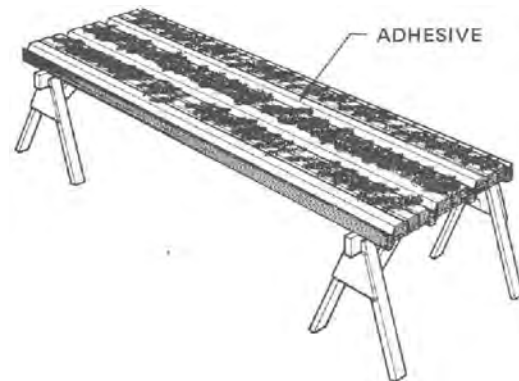
Adhesive Application of Insulation

Insulation may be installed by gluing it to the Butlerib II panel prior to applying the panel to the building. This method is particularly suited to application of insulation under windy conditions. The insulation should be purchased the same width as the panel, 36".



STACKING PANELS PRIOR TO APPLICATION OF ADHESIVE

Panels are stacked with the inside surface up.



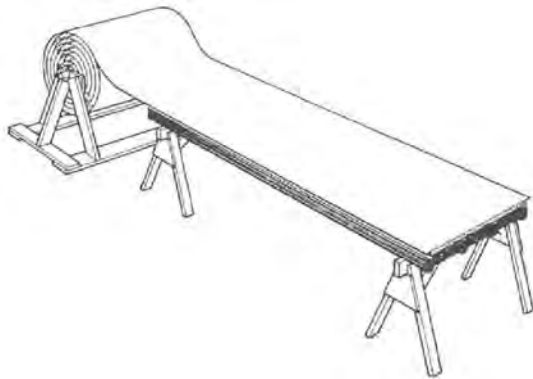
APPLYING INSULATION ADHESIVE

Adhesive is applied to the inside of the panel. The adhesive is applied liberally to random areas of the panel to adequately hold the insulation in place while the panel is being handled. The aerosol adhesives marketed through the insulation facers are most commonly used.

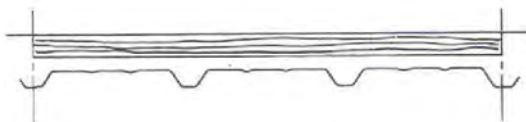
Unroll the insulation over the pre-glued panel. Line up the edge of the insulation with the end of the panel. Smooth the insulation by hand and cut at the other end of the panel.

The preceding process is followed with each panel as the pre-insulated panels are installed on the building.

Two points to watch when using the glue-on insulation method: (1) the standard metal base flashing must be omitted and, (2) the insulation tabs must be sealed from the inside of the building. A single tab insulation for adhesive sealing is most suited for sealing from the inside.



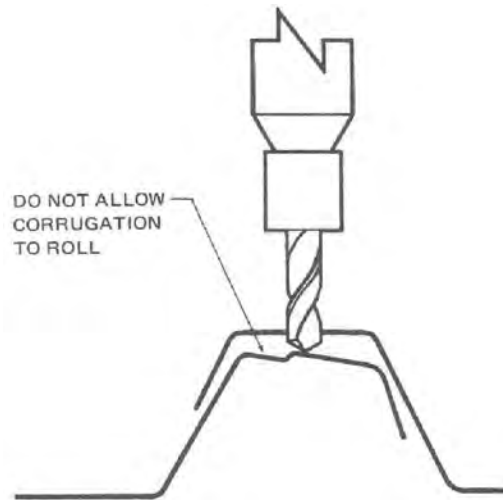
UNROLLING THE INSULATION OVER
GLUED PANELS



SECTION-SHOWING RELATIONSHIP OF
INSULATION BLANKET TO GLUED PANEL

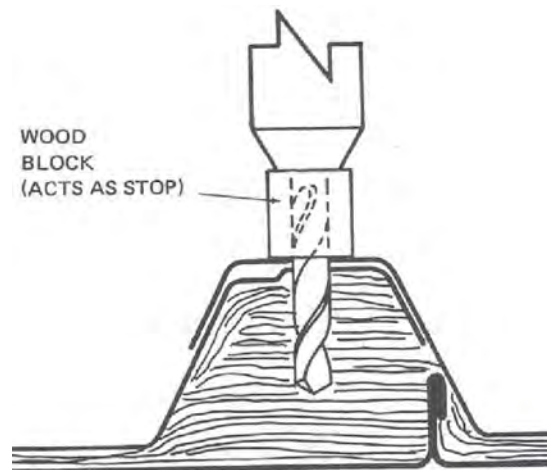
Panel Installation

Panel-to-girt and panel-to-panel fastening can be done as the paneling progresses or as a follow-up operation.



DRILLING FOR SIDELAP FASTENERS

When drilling for sidelap fasteners, do not permit the drill pressure to push the bottom panel away from the top panel before the drill penetrates. If the corrugation rolls away before the hole is drilled, the resulting hole will not be in the center of the corrugation and an unsightly sidelap can result.



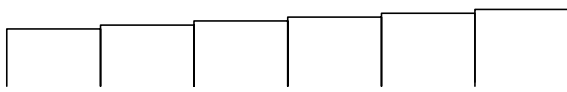
DRILLING FOR SIDELAP FASTENERS FOR
INSULATED PANEL

Be sure the drill does not penetrate the insulation facing. A block of wood can serve as a stop or depth gauge.

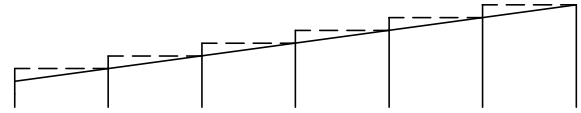
Endwall Panels

Endwall panels are square cut at the top for all roof panels except Butlerib II® system panels with a slope less than or equal to 1:12, panel lengths are stepped each 3ft. or width of building.

The void in the wall panel created by the step is covered by the gable trim. For >1:12 roof slope buildings, it is necessary to cut the top of each panel to match the necessary roof slope.



1/2:12 Roof Slope

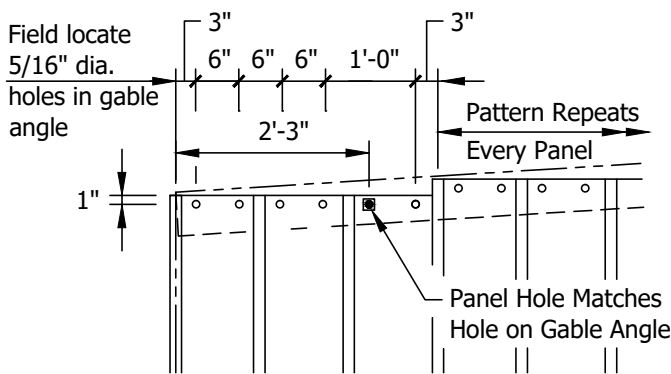


>1:12 Roof Slope

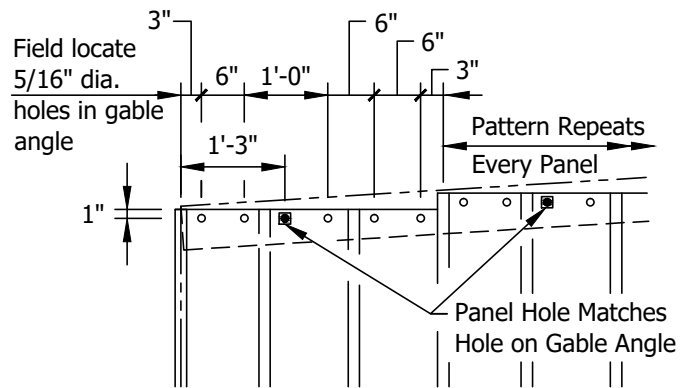
Endwall Panel Variations

Factory punched endwall panels are punched at the top to match with some, not all, of the gable angle holes.

Fastening is required on 12" centers. Any missing panel attachment holes in the gable angle must be field located.



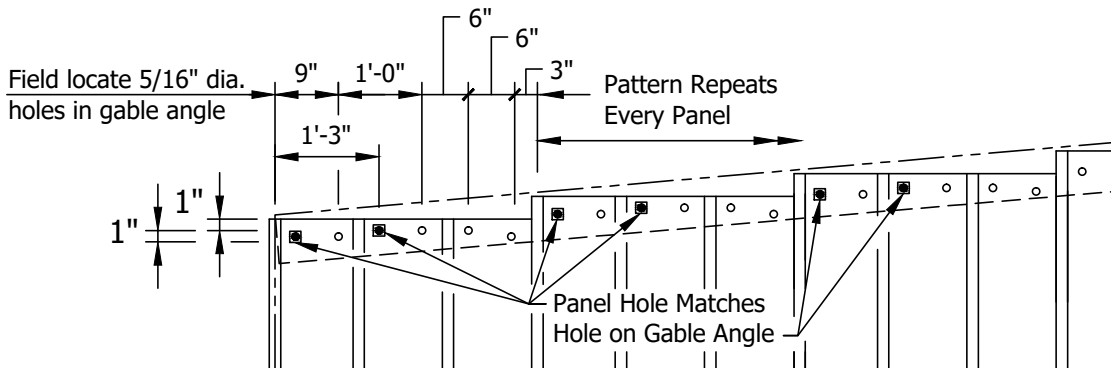
Panel Punching Matching with Gable Angle
1/4:12 Roof Slope



Panel Punching Matching with Gable Angle
1/2:12 Roof Slope

For 1/4:12 slope roof buildings one hole in each panel matches with holes in the gable angle. Other fasteners are field located and installed through the panel.

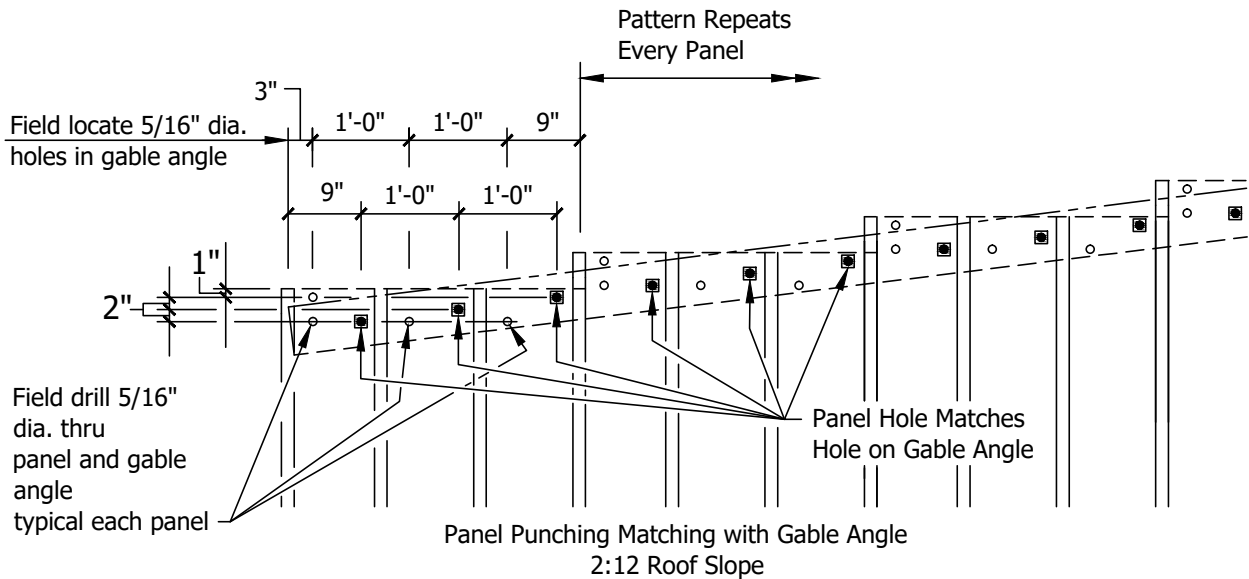
For 1/2:12 slope roof buildings one hole in each panel matches with holes in the gable angle. Other fasteners are field located and installed through the panel.



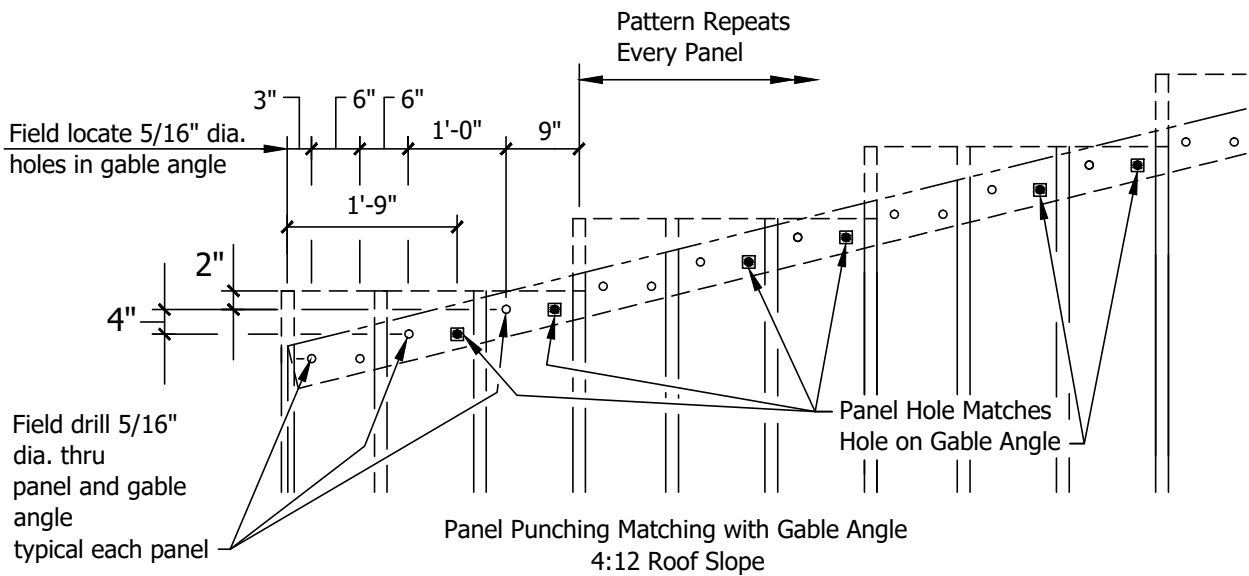
Panel Punching Matching with Gable Angle
1:12 Roof Slope

For 1:12 (Uninsulated ONLY) slope roof buildings, two holes in each panel matches with holes in the gable angle. Other fasteners are field located and installed through the panel. For 1:12 (Insulated) roofs, all holes need to be field located or use self drilling screws.

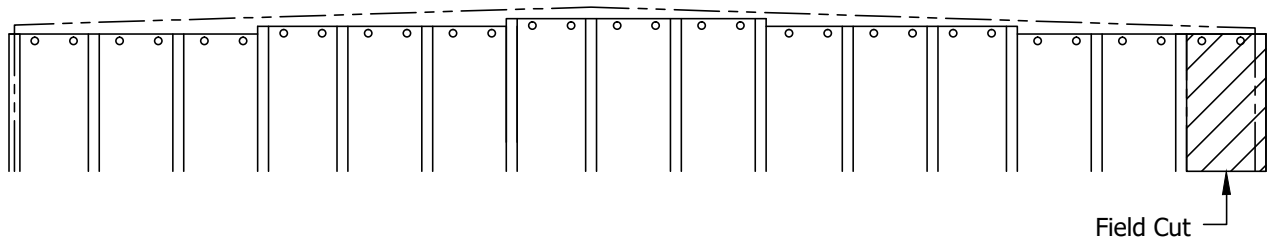




For 2:12 slope roof buildings three holes in each panel matches with holes in the gable angle. Other fasteners are field located and installed through the panel.



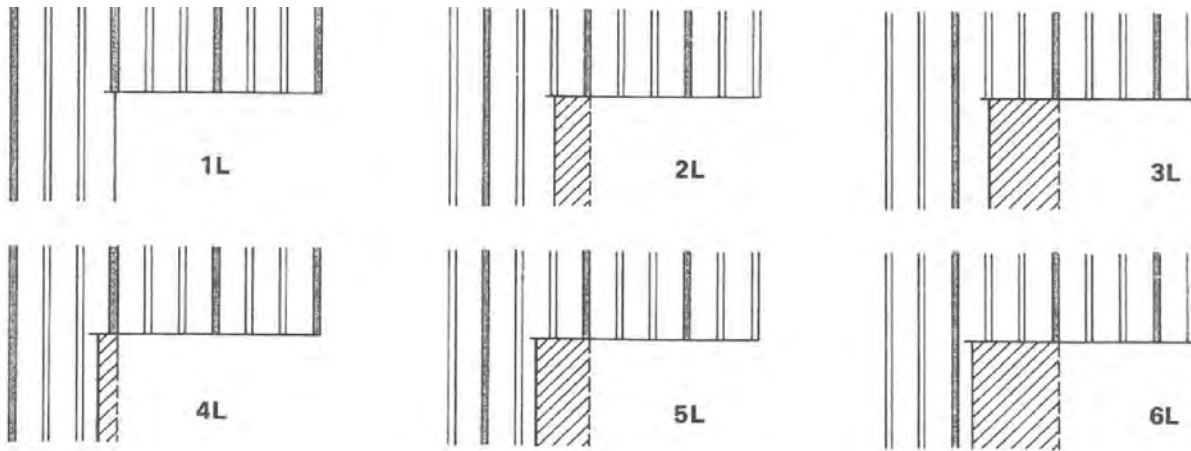
For 4:12 slope roof buildings two holes in each panel matches with holes in the gable angle. Other fasteners are field located and installed through the panel.



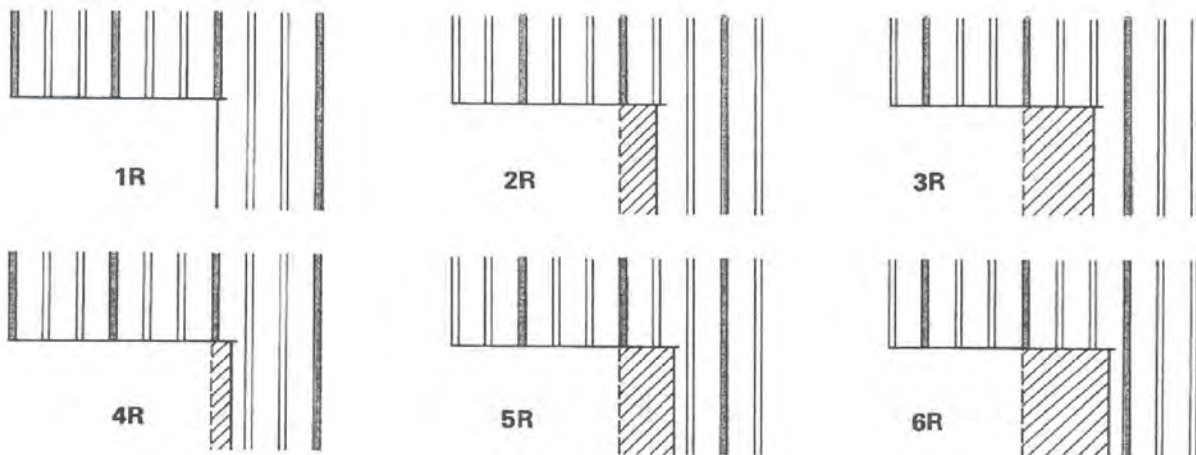
Wall panel direction is left to right. Unless the building is divisible by three feet, field cutting will be required at the right hand corner of wall.



Overhead or Side Doors

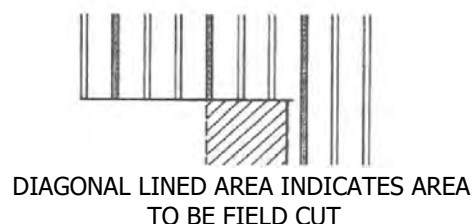
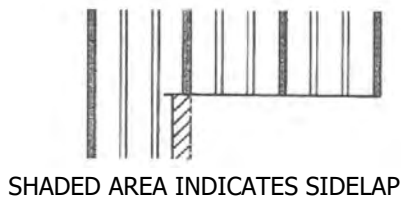


LEFT HAND DOOR SIDE



RIGHT HAND DOOR SIDE

DOOR PANELING ARRANGEMENTS - OVERHEAD OR SLIDE DOOR

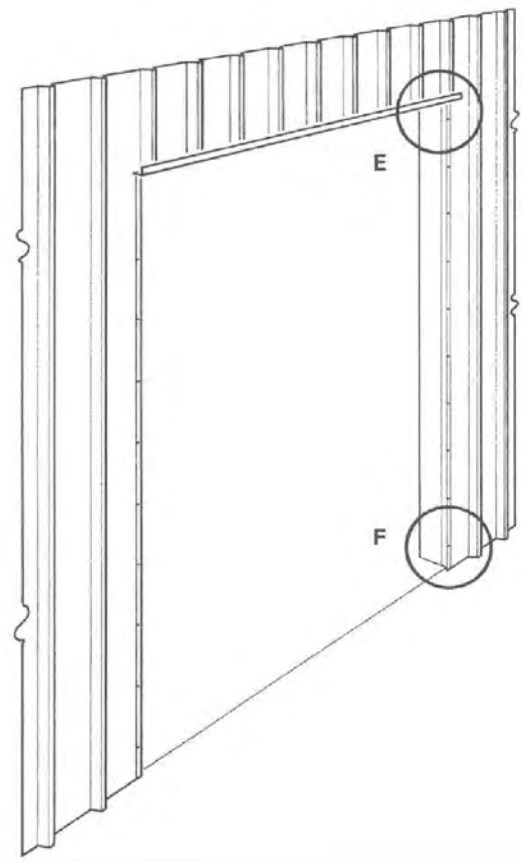


The paneling arrangement around an overhead or slide door will be determined by the relative position of the left hand edge of the door to a panel sidelap position. (One of the illustrations numbered 1L through 6L)

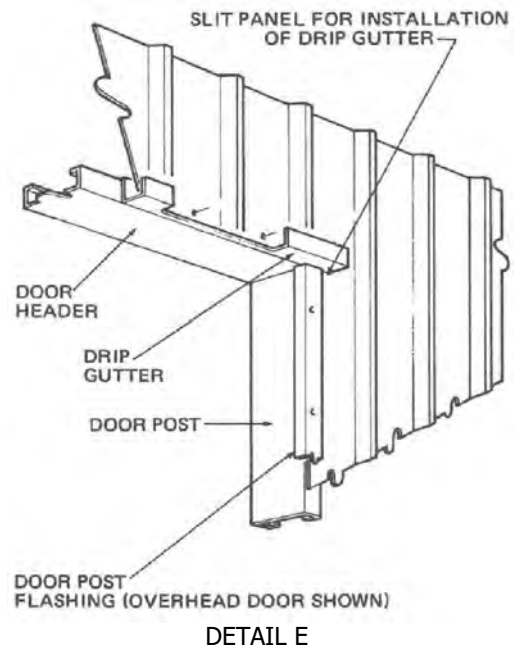
The right hand edge will be one of the conditions numbered 1R through 6R. Any combination of the left and right hand conditions is possible depending on the size and location of the door opening.

Wall panels at the edge of the door opening must be field cut to clear the door opening and slit to provide for installation of a drip gutter above the door.

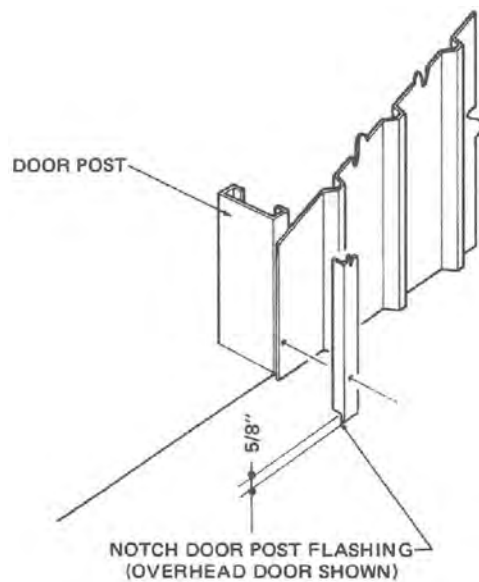
Panels above the door are provided by notching of panels beside the door and short panels between the notched panels. The short panels may be factory or field cut to length depending on how the building is ordered.



PANEL OPENING FOR
OVERHEAD OR SLIDE DOOR



DETAIL E



DETAIL F

Door structurals must be properly located and the paneling arrangements determined before cutting panels. Extra panels are not furnished and improper panel arrangements or errors in cutting will result in parts shortages.

Drip gutters above the door and door post flashings are installed as part of the paneling operations.

Windows

Windows in Butlerib II walls are designed for installation in full width panels. If the required window location is on other than a 3'-0" module (from starting point of paneling to edge of window) it will be necessary to adjust the panels beside the window by notching or backlapping.

If the notching or backlapping is necessary be sure sufficient panels are on hand to do so. Extra panels are not furnished for these adjustments unless specifically ordered with the building.

Panels above and below windows are field cut from full length wall panels. Cutting schedules are shown on the window installation drawings. Dimensions on the drawings are based on the top of the window in line with the top of a 7'-0" high personnel door.

Windows should be installed as the wall paneling progresses.

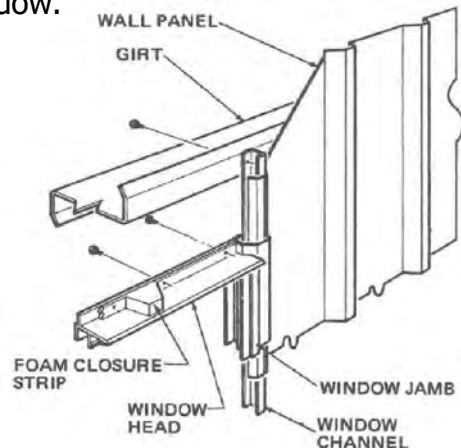
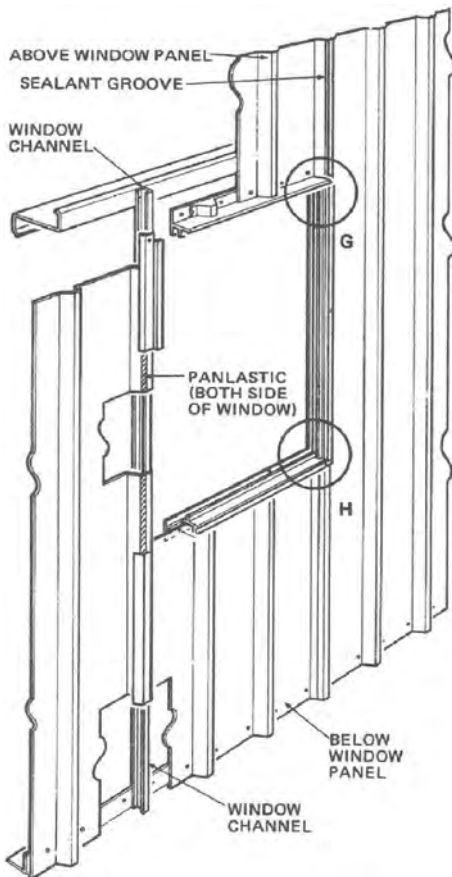
Insulation is stretched over the wall structurals in the normal manner. Window support channels are then bolted to the wall structurals through the insulation.

Wall panels adjacent to and below the window are installed so the panel sidelaps are the same as other wall panels, with the grooved corrugation covered.

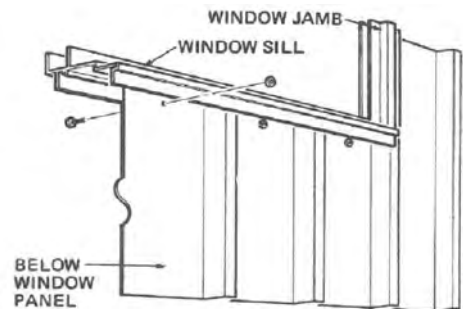
The panels above and below the window should be pre-drilled for the window attachment. Hole location dimensions are shown on the window installation drawings.

Complete window installation details and the trimming of insulations around the windows are covered on the window installation drawings.

As the panels above the window are installed, outside exposure of the groove in panel at the upper right of the window will occur due to the construction of the window.



DETAIL G



DETAIL H

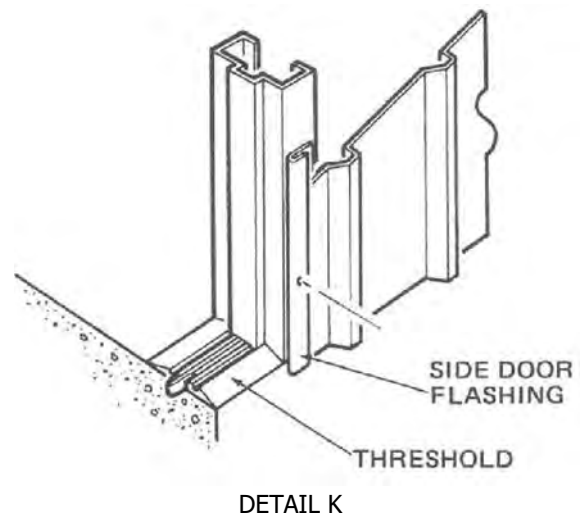
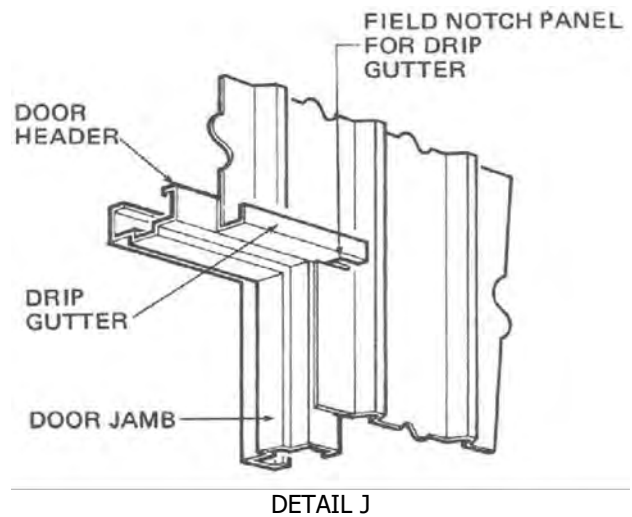
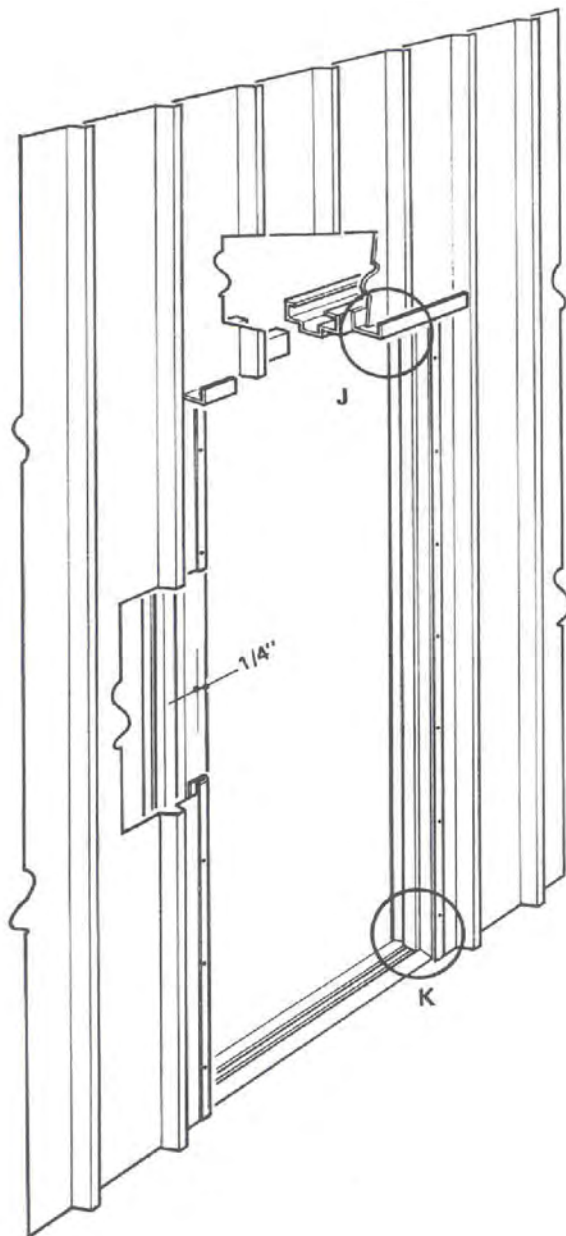


Personnel Doors

All panel openings for personnel doors are field cut. Flashings beside the doors are designed for flashing to the flat of the Butlerib II panels. Doors should be located so the door jambs are in the panel flats. Locate the centerline of 3'-0" wide and 3'-4" wide doors on 1'-0" increments from the endwall or sidewall structural line; 6'-0" wide doors 6" off the 1'-0" increment from structural line.

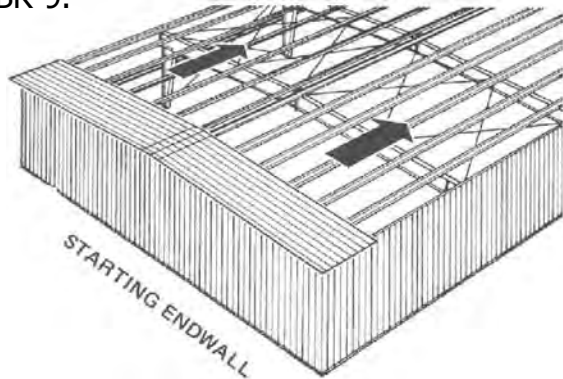
The hollow metal door framing is usually installed before the panel opening is cut. The cutting can then be matched to the in-place frame making it possible to compensate for minor variations in door locations, plumbness of wall, etc.

Panels are field notched at each top corner of the door to receive the drip gutter.



BUTLERIB II ROOF PANEL INSTALLATION PROCEDURES

Butlerib II roof panels and insulation are installed at the same time, working from the "starting" endwall as defined on page BR-9.

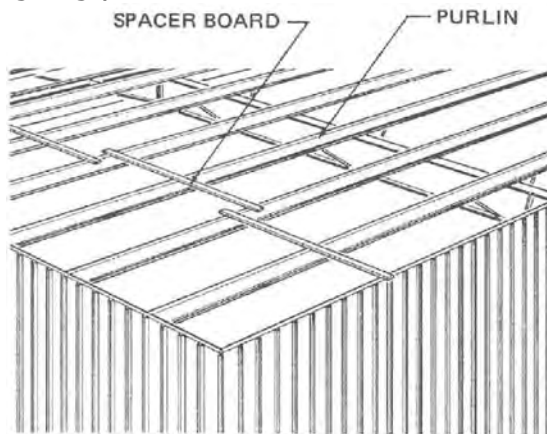


INSTALLATION OF ROOF PANELS
DIRECTION OF INSTALLATION

For proper end lapping of panels, the panels are laid, one row at a time, completely across the width of the building.

Installation procedures will vary with the fastening and punching options selected.

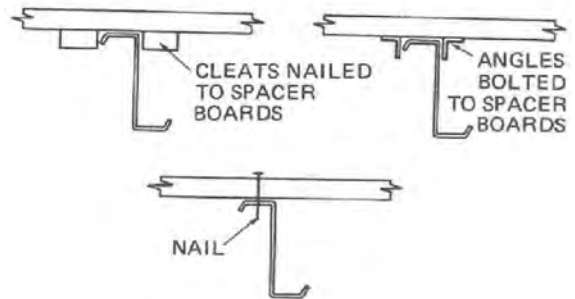
The building structural must be plumb and square and the roof secondary structurals aligned before starting paneling. The use of purlin bracing is recommended for aligning purlins.



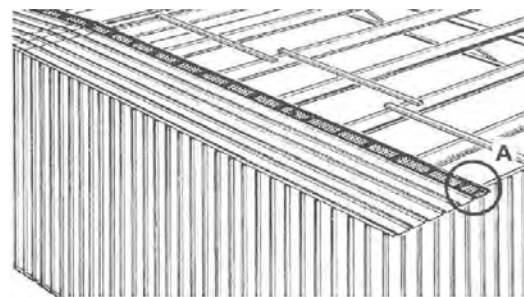
USE OF SPACER BOARDS FOR PURLIN
ALIGNMENT

Spacer boards can be used as shown. As paneling progresses the boards are moved ahead to the next bay.

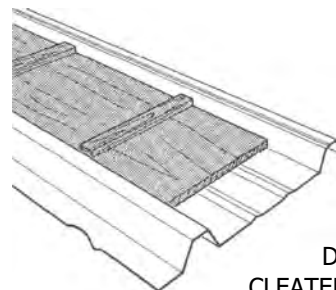
NOTE: Before starting paneling, recheck the building structural to be sure it is still plumb and square.



METHODS OF ATTACHING
SPACER BOARDS TO PURLINS



WALKBOARDS ON ROOF PANELS



DETAIL A
CLEATED WALKBOARD

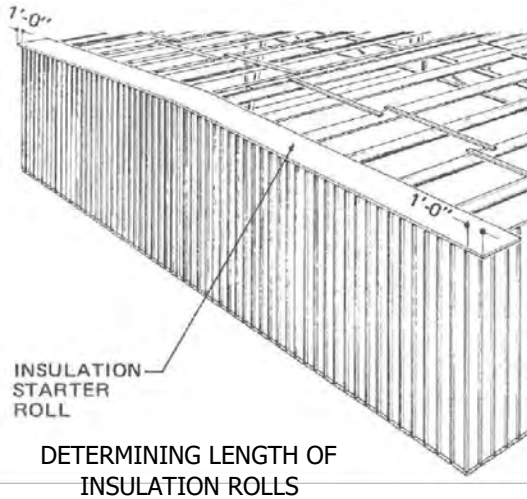
Butlerib II panels may be damaged by installation traffic. Traffic damage can be avoided by the use of walkboards. Two are suggested: one for the workmen laying or fastening panels, the other for traffic up and down the roof.

The cleated walkboards also provide a degree of safety protection on steep roofs.

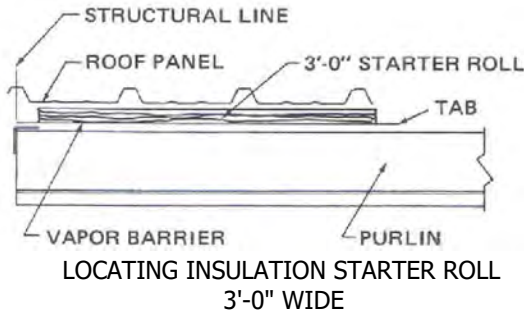
If reasonable care is exercised in walking on the roof, walkboards are not mandatory. When walking on the panels, walk in the flat of the panel on or near the purlins. NEVER WALK ON THE MAJOR CORRUGATIONS.



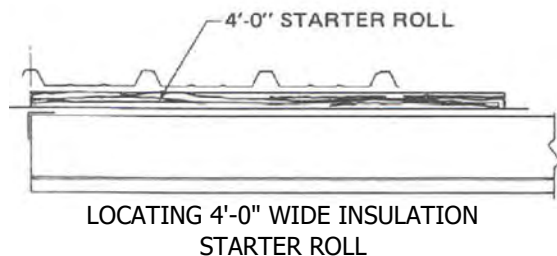
Insulation



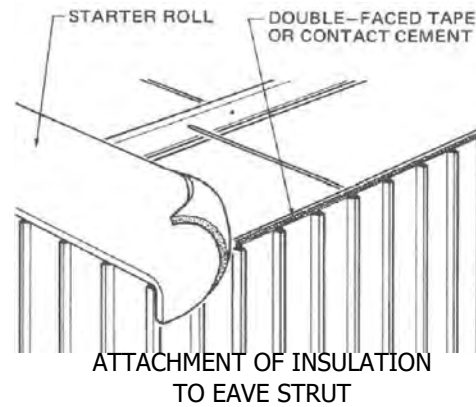
Use insulation blankets cut to the required length to reach from eave to eave. Dimensional information on the primary framing drawings will give you actual dimensional requirements. Allow approximately 2'-0" additional length to aid in the application.



The first insulation blanket is located so the forward edge of the insulation will be at or slightly ahead of the edge of the roof panel. This will offset the insulation and panel joints to allow folding and stapling the insulation tabs.

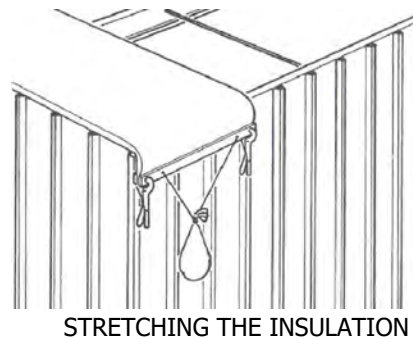


The joints can be offset by working the insulation slightly ahead of the panel or by using a 4'-0" wide starter roll. With the remainder of the insulation in 3'-0" or 6'-0" wide rolls the insulation joints are kept 1'-0" ahead of the panel joints.



The insulation is held at one end and unrolled across the purlins. If the wall panels have not been installed, the end of the insulation can be attached to the eave strut by wrapping it around and clamping with vise-grip tools. Clamps and weights, double-faced tapes, or contact cements are effective in holding the insulation if the wall panels have been installed.

NOTE: The insulation facing always faces the inside of the building.

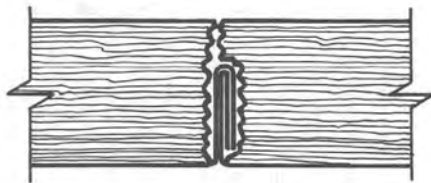


Stretch the insulation to provide a taut, smooth, inside surface. The tensioning can be accomplished with weighted end clamps. Be sure the insulation is properly placed and aligned with the structurals.

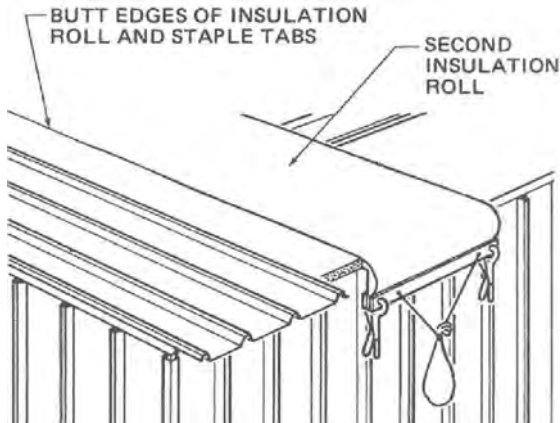
After the panels are installed the clamps are removed and the overhanging insulation is trimmed.

NOTE: Use "soft" or padded weights to tension the insulation to avoid damage to the wall panels.

Succeeding rows of insulation are installed in the same manner. The insulation should be positioned so the insulation is butted tight together. Facing tabs should be sealed as shown on page BR-9 before installing the next panel.

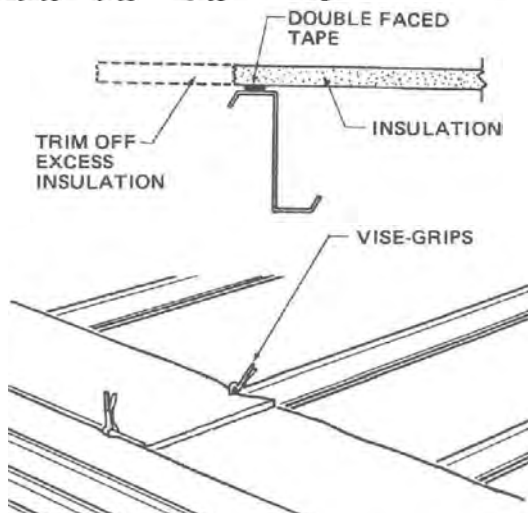
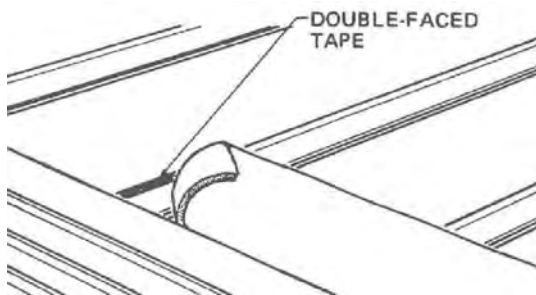


COMPLETED DOUBLE TAB INSULATION SEAL

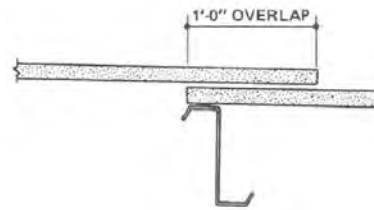


INSTALLING SECOND AND ADDITIONAL INSULATION RUNS

Insulation Splices



ROOF INSULATION SPLICING DETAILS



ROOF INSULATION SPLICING DETAILS CONTINUED

When it is necessary to splice the roof insulation, cut the insulation rolls so the insulation splices over the purlin. Be sure to allow the extra length required for handling to both rolls of insulation.

Attach one end of the insulation to the purlin where the splice is to be made. The attachment can be made using panel fasteners, located so they will be under the panel corrugation; using contact cement; or using double-faced tape.

Trim off excess insulation at the top edge of the purlin and tension the insulation over the eave strut.

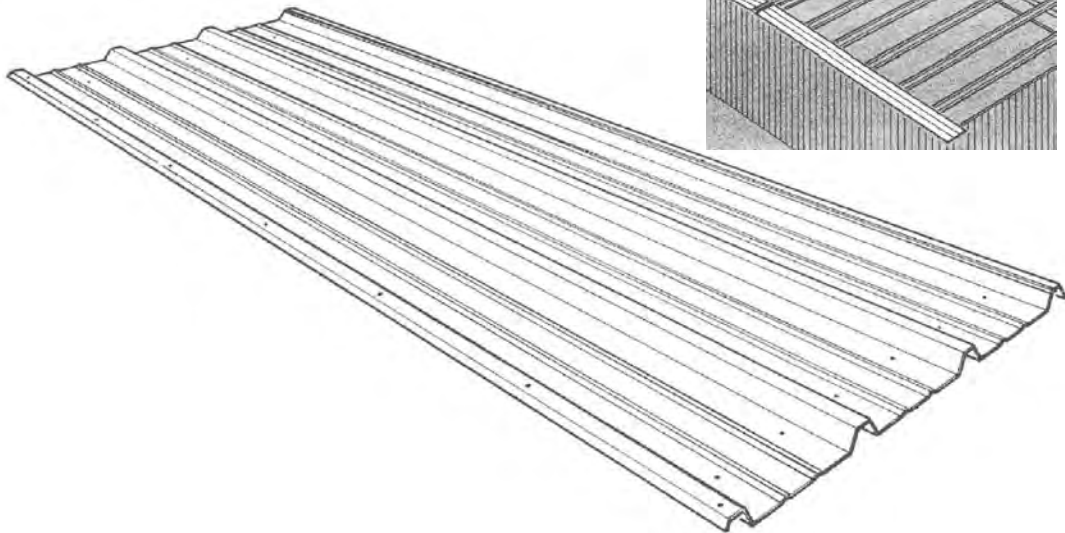
The second roll of insulation is unrolled across the purlins so it overlaps the first strip approximately 12". Vise-grip bending tools can be used to hold the overlapping and facing tabs together. The insulation is tensioned and the overlapping tabs are then stapled together.

The vise-grips are removed as the panel is applied over the splice.

Refer to your installation drawings for fastener recommendations for the various insulation thicknesses.

NOTE: Where the insulation blankets overlap, excess insulation should be peeled off so the total insulation thickness does not interfere with normal panel fastener installation

Panel Installation On Punched Purlins



PRE-DRILLED OR FACTORY PUNCHED ROOF PANEL

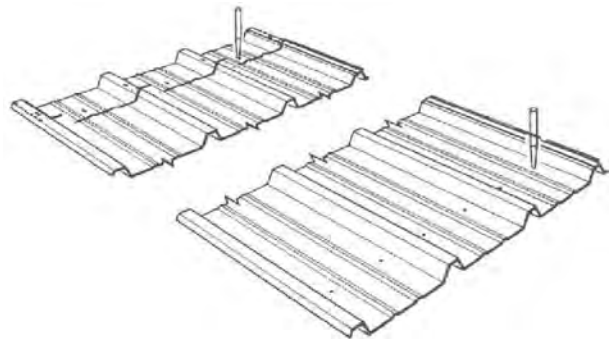
This panel installation sequence assumes that unpunched Butlerib II roof panels have been pre-drilled as recommended on page BR-16, or that factory punched Butlerib II roof panels are used.

While there may be several ways to lay roof panels, experience has proven the following procedures to be the most expedient; to be applicable to both insulated and uninsulated buildings; and, assures proper placement of sealants and weatherlapping of panels. In some instances, wall panels and insulation may not appear in the following series of illustrations for purposes of clarity.

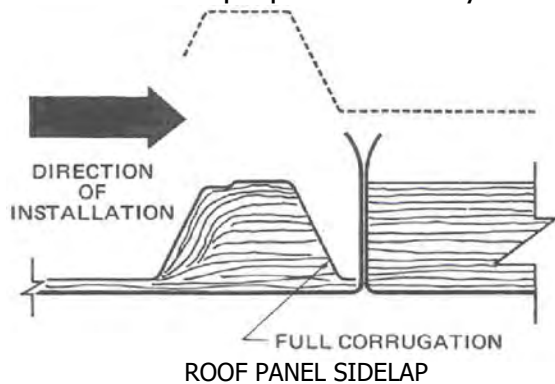
the underneath corrugation in the panel sidelap.

Panels are laid in rows across the full width of the building working from eave to ridge on both roof slopes simultaneously.

NOTE: Always drill and install panel to structural fasteners before drilling the panel to panel fasteners.



ALIGNMENT OF PANELS WITH TAPERED PUNCHES

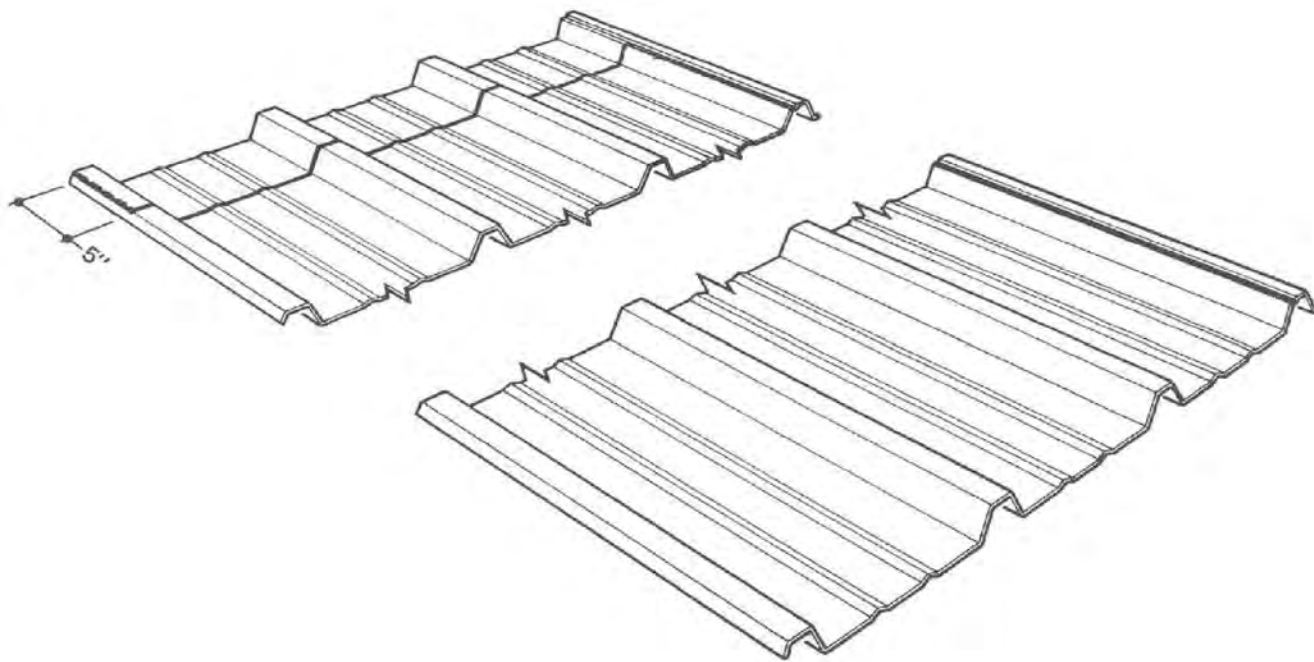


Use tapered punches to pin the top and bottom of the starting panels and align to the structurals. When the holes in the panel are in alignment with the holes in the eave strut and purlin, install the panel to eave strut fasteners.

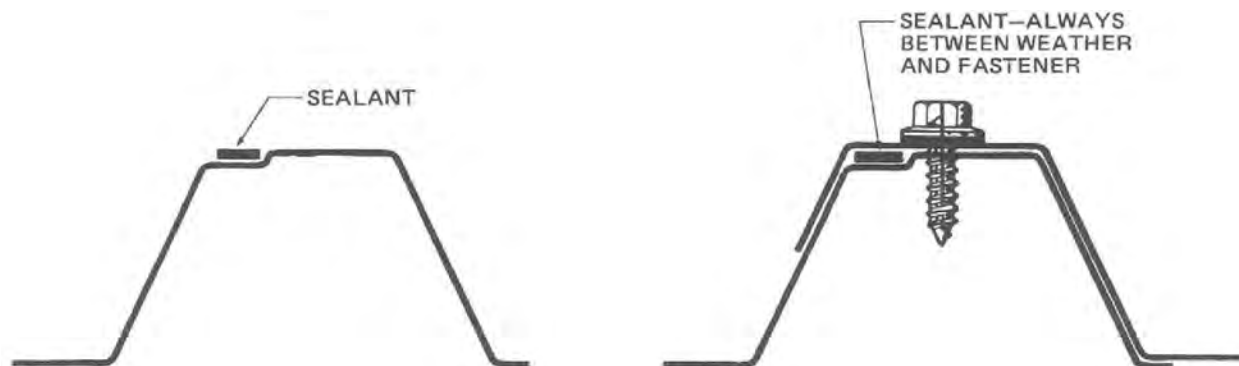
In laying the panels on the roof the full edge corrugation must always be away from the end of the building where the paneling is started. As successive panels are laid, the full edge corrugation becomes

Use a hole finder to locate the factory punched holes in the intermediate purlins, through the panel. Drill the proper size hole through the panel and install the panel to purlin fasteners.





SEALANT APPLICATION LOCATION



DETAIL-SEALANT APPLICATION AT SIDELAP

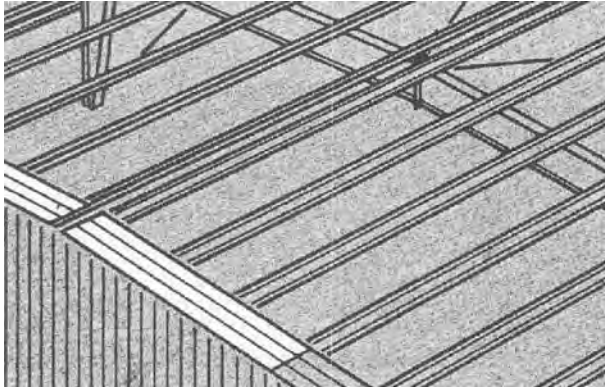
Sealant is applied after the panel is laid on the roof. Apply 1/4" x 3/16" bead panlastic to the panel as shown.

Sealant on the full edge corrugation must be in the grooved portion of the corrugation. This sealant extends from the bottom end of the panel to a point 5" from the top end of the panel. Do not extend the sealant to the end of the panel.

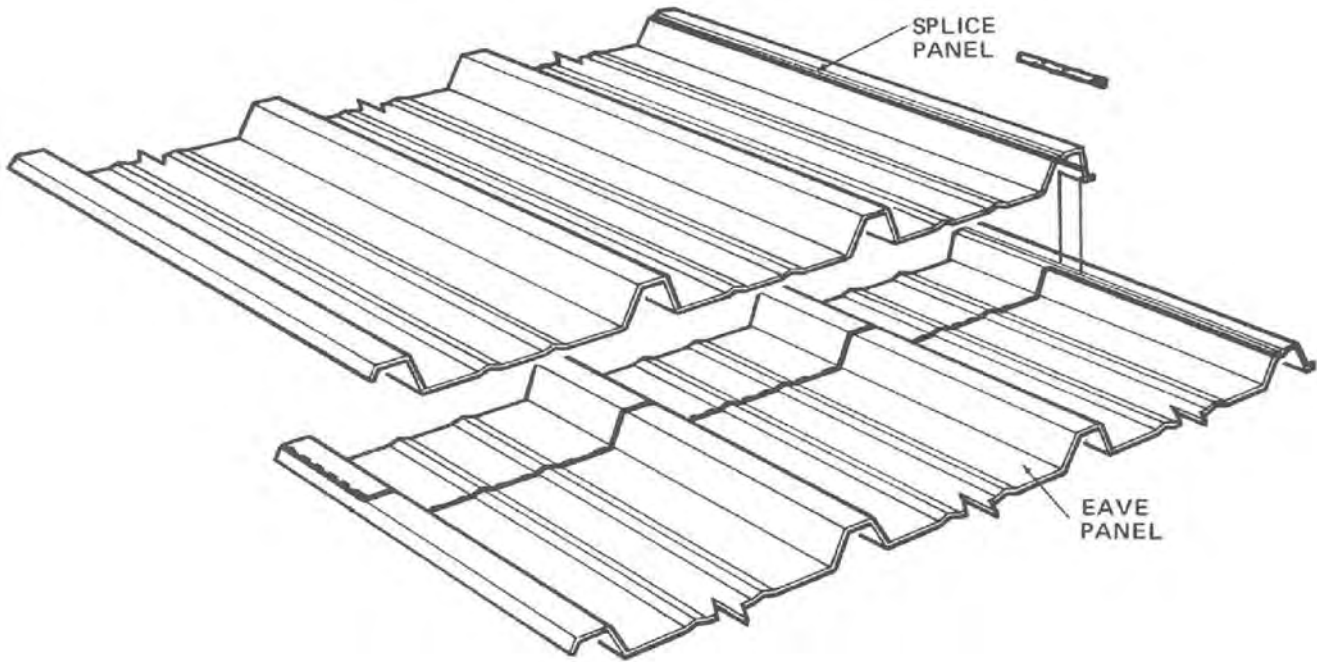
Sealant across the width of the panel is located 5" from the top end of the panel.

The partial edge corrugation requires a 5" long bead of sealant from the end of the panel to the sealant across the width of the panel.

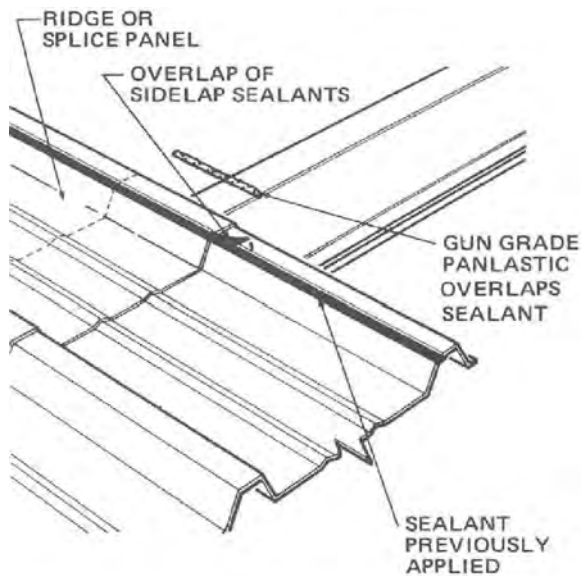
Areas where sealants are to be applied must be clean, dry and free of oil.



If the building is wide enough to require more than one panel from eave strut to ridge purlin, the splice panel(s) are installed following the same procedure.



SPLICE PANEL END LAP

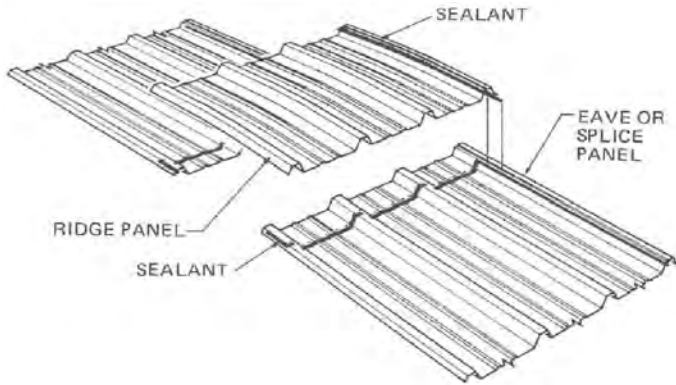
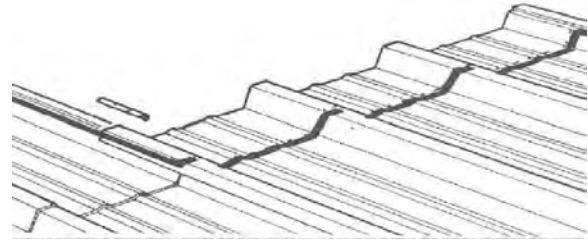
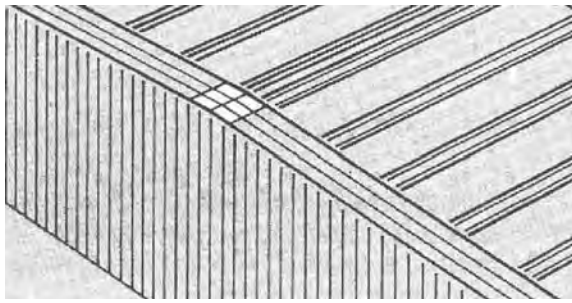


Tapered punches are used to pin the top and bottom of the panel, the panel to purlin fasteners at the end lap installed, intermediate purlin fasteners installed, and sealant applied.

The sealant application is the same as for the first panel except sealant applied to the groove of the second panel should overlap the sealant on the panel below.

An overlay of gun grade panlastic is made at this point to add the volume of sealant required at this point to make a water-tight joint.





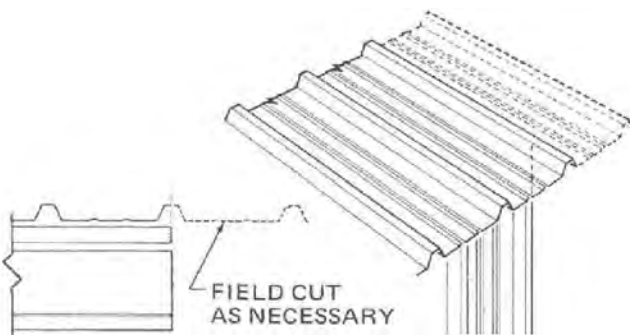
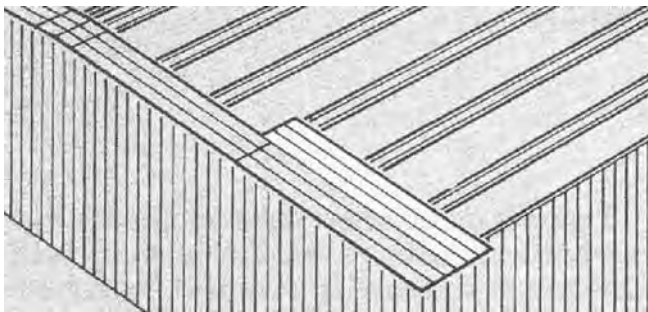
RIDGE PANEL INSTALLATION

The ridge panel is installed to complete the row of panels.

The last row of panels may not fit due to the total roof length not being divisible by the panel cover module. Should this condition occur, the last row of panels should be cut to fit. The panels can be backlapped to fit but is very easy to miss or mislocate sealants required in the backlapped area.

Panel-to-panel fasteners should be installed as the roofing progresses. They can be installed as a follow-up operation but there is a possibility of damage to insulation, panels, and sealants if the panel sidelaps are left open.

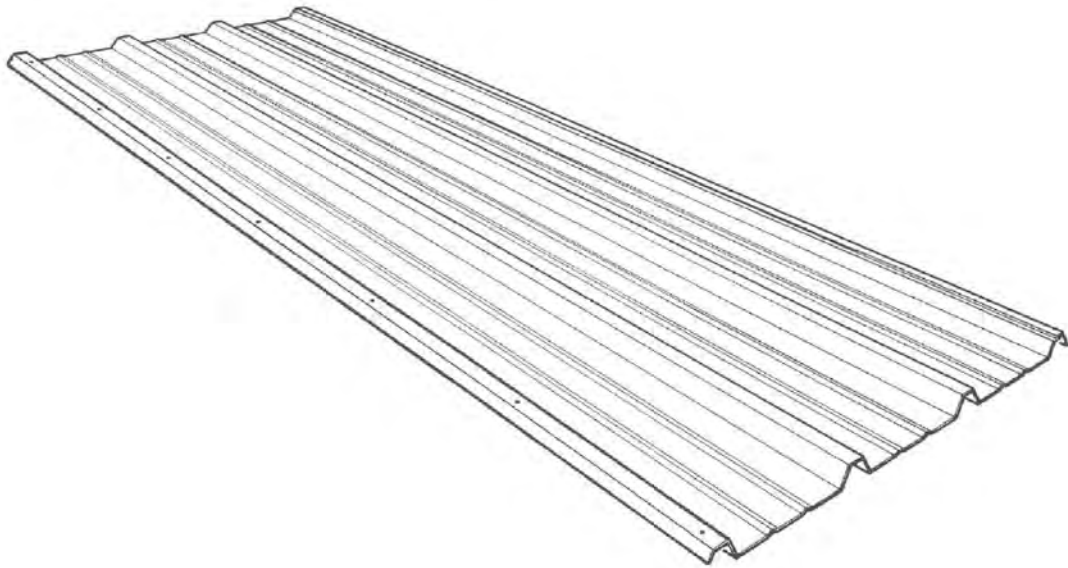
Completing The Roof



As each succeeding row of panels is installed, the same procedures are repeated. The overlapping of sealants and the overlay of gun grade panlastic also occurs at the 5" return of panlastic at the end laps.



Panel Installation On Unpunched Purlins



UNPUNCHED PANEL FOR UNPUNCHED PURLINS

Unpunched panels, with self-tapping or self-drilling screws for panel-to-structural fastening, are recommended for use on unpunched roof structurals. Punched panels can be used but the factory punched hole size is not always suitable for the usual fastener selection. Other fastener options can be used but the degree of difficulty in drilling purlins for the larger fasteners must be considered.

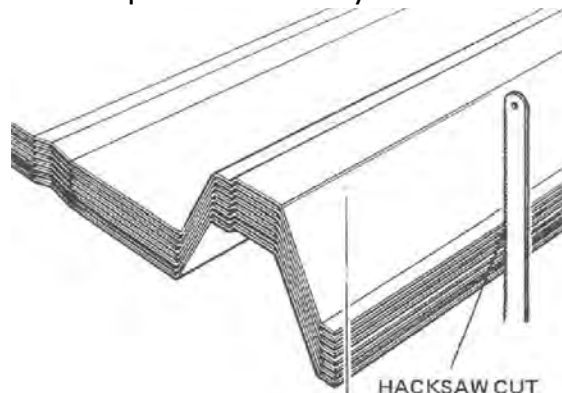
The sequence of installation of the unpunched roof system, insulation, panels and sealants is the same as covered previously. Procedural differences are in the steps necessary to maintain alignment and control of panel creep or shrinkage.

Alignment At Eave

The roof panels are designed to overhang at the eave to provide for proper roof drainage. Overhang dimensions may vary with the eave conditions so it is necessary to follow the dimensional information on the installation drawings furnished with your building.

Do not attempt to align the overhang by eye. Misalignment at the eave will result in problems with eave trim, gutters, and at

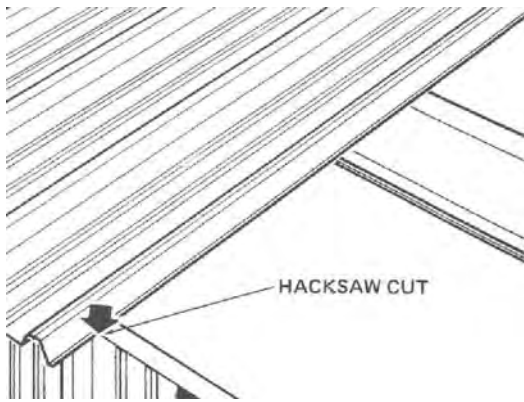
panel end laps. The following method can be used to avoid measuring the overhang for each panel individually:



PREPARING EAVE PANELS FOR EAVE ALIGNMENT

Stack the panel so the eave end of the panels are in near-perfect alignment.

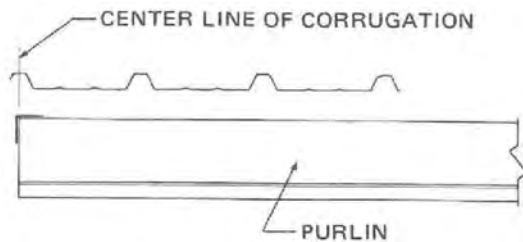
Mark the edge of the corrugations the distance from the end of the panels as indicated on the installation drawings. The mark can be a small hacksaw cut.



POSITIONING MARKED PANELS ON
EAVE STRUT

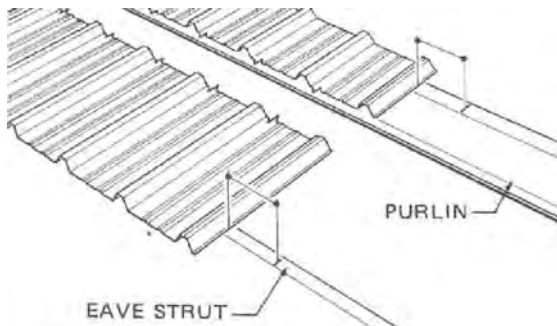
As the panels are placed, the mark is lined up with the edge of the eave strut and the opposite corrugation is lined up with the end of the previously laid panel.

Alignment Of Panel To Structurals



ALIGNMENT OF FIRST PANEL

It is essential that the panel covering module be maintained throughout the length of the building. The starting panel is placed with the centerline of the edge corrugation in line with the edge of the gable angle.



MARKING EAVE STRUTS AND SPLICE
PURLINS FOR ALIGNMENT

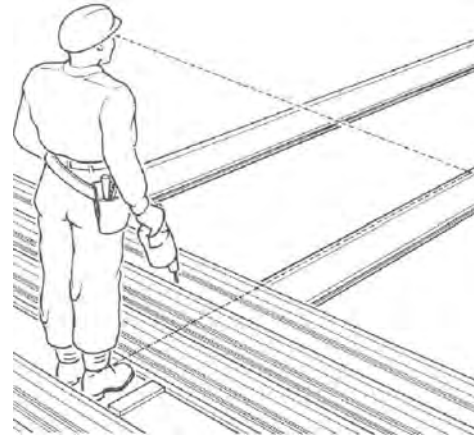
Eave struts and splice purlins can be marked to maintain a check of cover module. By measuring from the marks

back to the panels, it is easy to determine if the panel module is being maintained. It is not necessary to mark for each panel but the greater the frequency of the mark the better the alignment of the panel. A minimum recommendation is to use each frame line and two places between frame lines as check points.

NOTE: Always drill and install panel to structural fasteners before drilling the panel to panel fasteners.

FASTENERS

After the panel is in proper alignment, the panel and structural is drilled and the fasteners installed. Be sure fasteners are installed at locations indicated on the building installation drawings.

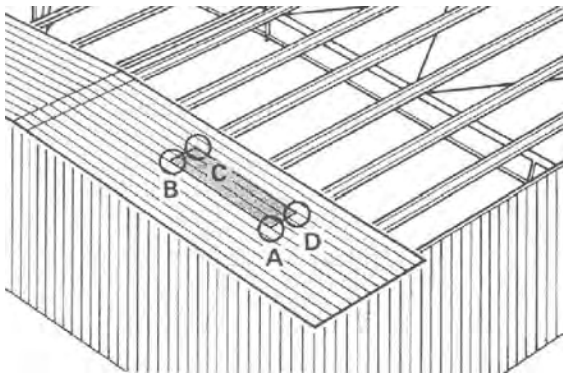


LOCATING PANEL-TO-STRUCTURAL
HOLE LOCATIONS

Panel-to-structural connections are usually located by "eye". It is easy to misjudge the location of the purlin, resulting in a fastener off the purlin or below the sealant at an end lap. The installer should stand 90° to the panel, facing the purlin to drill the holes. By sighting on the purlins the possibility of error is minimized.

Be sure drill shavings are cleaned from the panels. The rusting drill clips from the purlins can damage or cause very unsightly discoloration of panels.

Lite*Panl Installation



The installation of Lite*Panl is very similar to the installation of the metal Butlerib II panel.

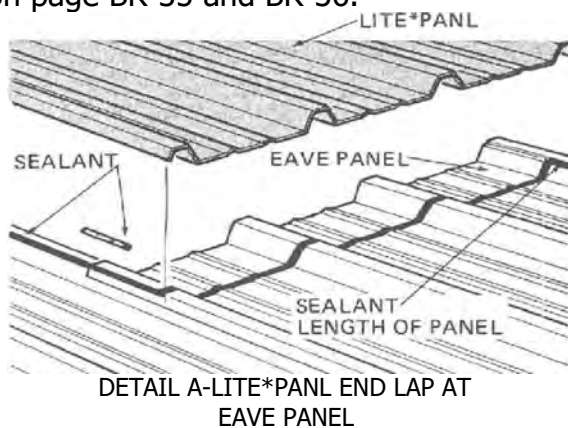
The application of sealants is the same except that the ends of the panel are not fluted to indicate sealant location and the full edge corrugation sealant groove is not as clearly defined as on the metal panel.

-Lite*Panls will not be factory punched for alignment.

-End laps may not coincide with the end laps of the metal panels, resulting in some differences in conditions at the corners of the Lite*Panl.

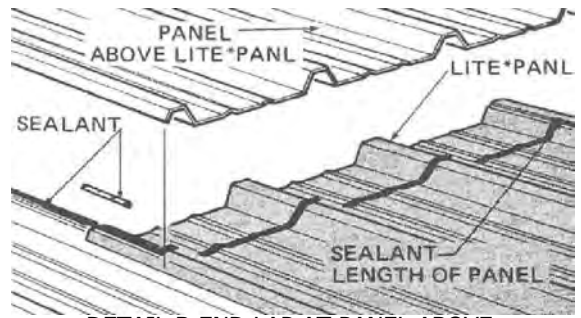
-The Lite*Panl is installed after the panel below the Lite*Panl is in place.

Apply sealants to the eave panel as shown on page BR-35 and BR-36.



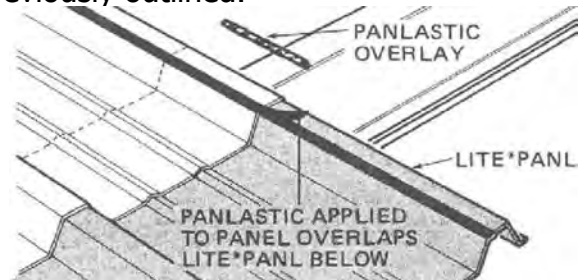
DETAIL A-LITE*PANL END LAP AT EAVE PANEL

Position the Lite*Panl so it overlaps the eave panel by 6". Make all necessary adjustments for excess length of the Lite*Panl at the upper end lap. Apply sealants as shown in the illustration.

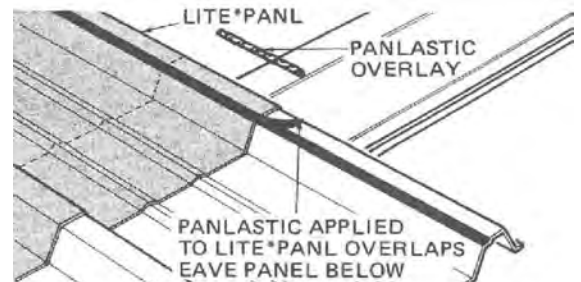


DETAIL B-END LAP AT PANEL ABOVE LITE*PANL

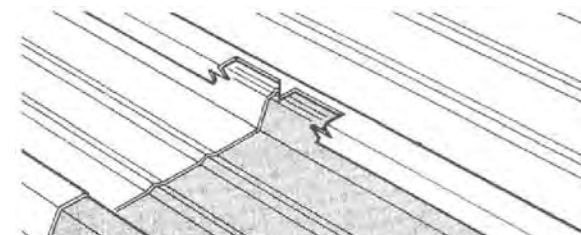
After the Lite*Panl is installed, install the panel above the Lite*Panl and continue paneling following the same procedures previously outlined.



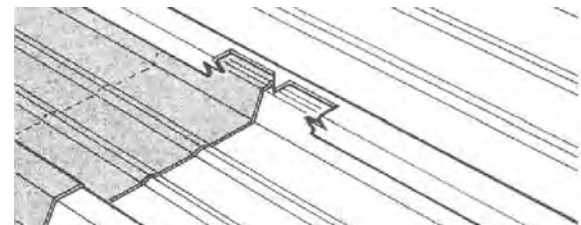
DETAIL C- END LAP WITH SEALANTS



DETAIL D- END LAP WITH SEALANTS



DETAIL C- COMPLETED END AND SIDE LAP (SEALANTS ELIMINATED FOR CLARITY)



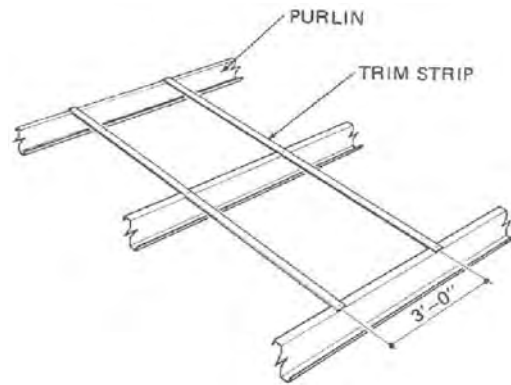
DETAIL D- COMPLETED END AND SIDE LAP (SEALANTS ELIMINATED FOR CLARITY)

NOTE: See page BR-41 for preparation for Lite*Panl installation in an insulated roof.



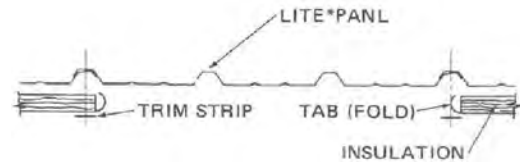
The installation of Lite*Panl in an insulated roof calls for special attention in order to provide for good appearance and the vapor barrier. A trim strip at each side of the Lite*Panl will trim out the edge of the insulation and hold the rolled tab.

Install the trim strips to the purlins where the Lite*Panl is to be located.

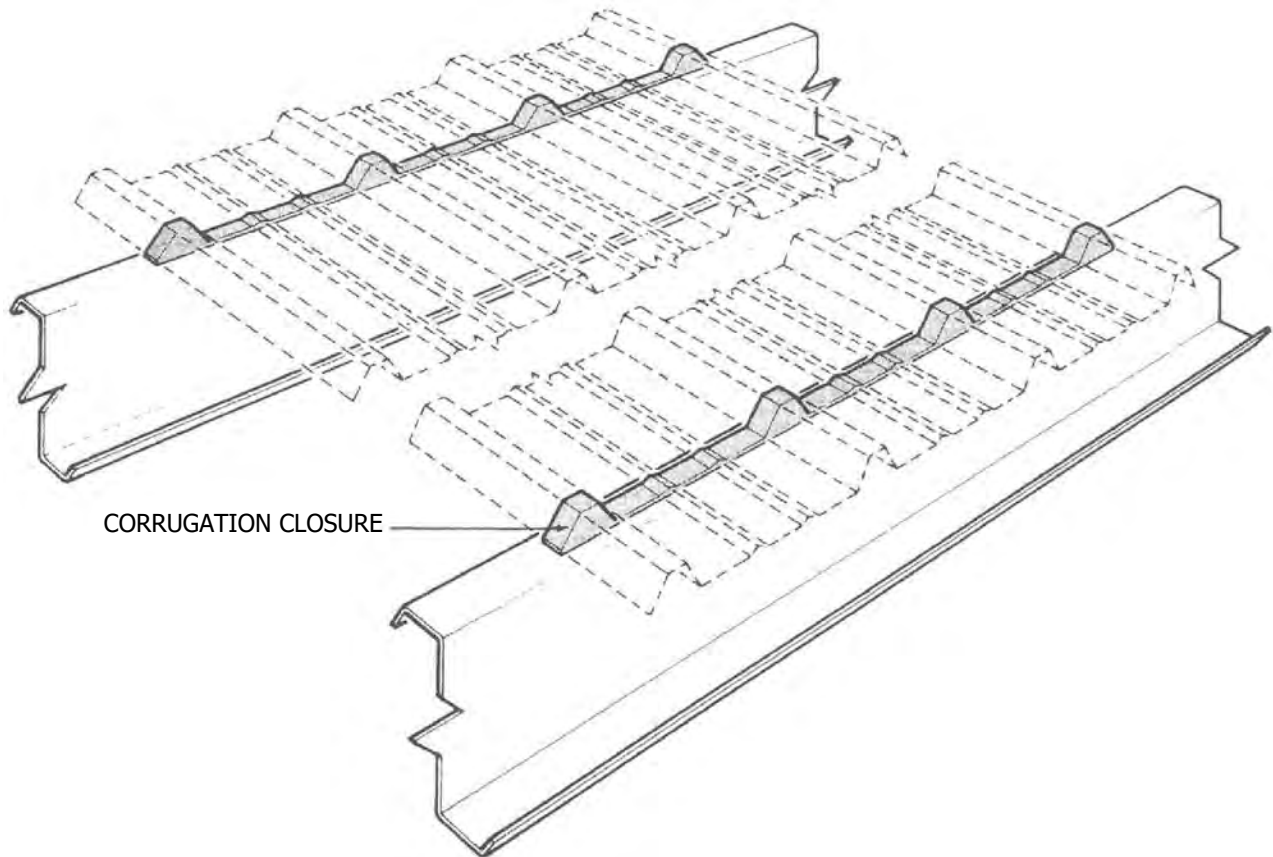


TRIM STRIP INSTALLATION

As the Butlerib II panel is installed, fold the two inch tab over the fiberglass to seal the edge.



CROSS SECTION-INSULATION AT LITE*PANL LOCATION



LITE*PANL CORRUGATION CLOSURE INSTALLATION

Corrugation closures may also be installed at the top and bottom of the Lite*Panl to vapor-seal the major corrugations at these points.



PERIMETER TRIM

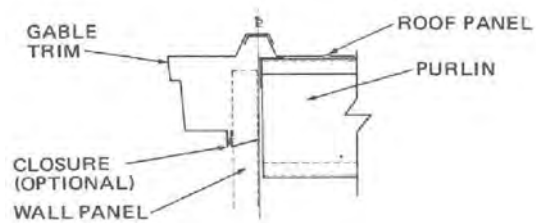
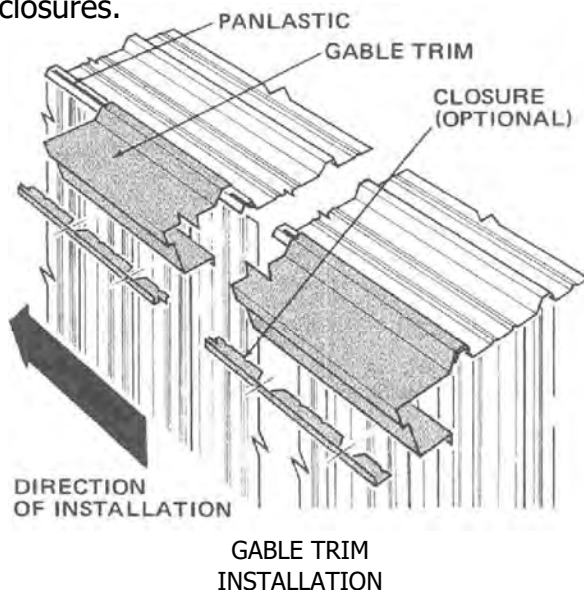
The perimeter trim system provides for attractive, weathertight transition from wall to roof.

Before starting the installation of the perimeter trim parts, study your installation drawings carefully. Materials furnished will vary with the options selected, such as the degree of weather protection required due to local climatic conditions, appearance options and regional marketing policies.

The key drawing for each trim system is an index drawing which lists all of the drawings required for all of the possible perimeter trim conditions. Use the index drawing to select and organize your trim installation drawings in a logical installation sequence.

Gable Trim Installation

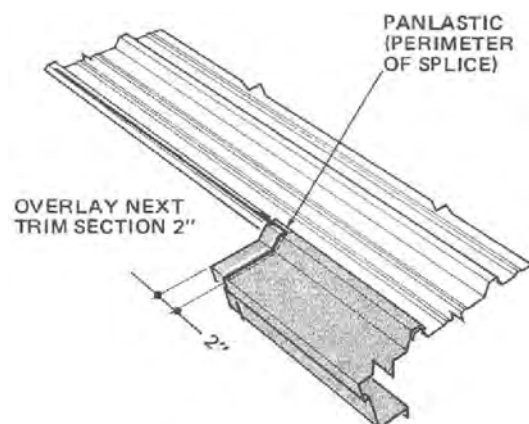
Gable trim is furnished in 10'-5" lengths and is designed for joining to the Butlerib II roof panels the same as a panel-to-panel joint. Like the panels, the gable trim is installed from eave to ridge. Gable trim should be installed before gutter to provide access to the eave ends of the gable trim for the installation of bird closures.



CROSS SECTION-GABLE TRIM

Apply 1/4"x3/16" bead Panlastic to the roof edge corrugation, the same as for any panel side lap. Start at the eave and position the trim flush with the end of the roof panel. For some wall systems it may be necessary to notch the bottom leg of the gable trim to clear the projection of the wall corner trim. Attach the trim to the roof panel with panel-to-panel fasteners and to the wall with blind rivets. Be sure the bottom of the trim is properly aligned. The bottom edge of the trim should be positioned at a point 6" below the top of the gable angle.

If the optional closures for closing the area between wall panel corrugations are used, they should be cut to fit as required and installed at the same time as the gable trim is attached to the wall.

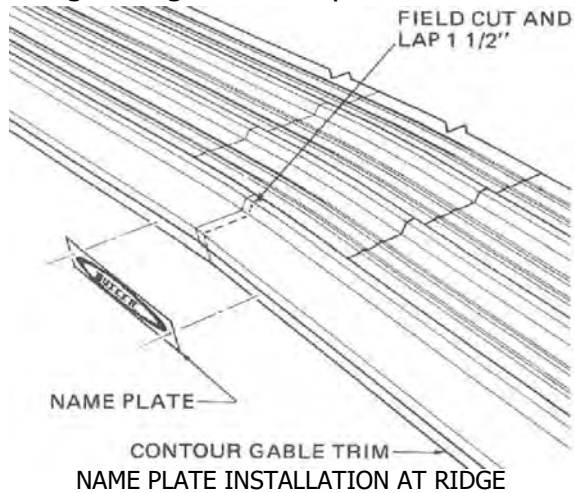


DETAIL-GABLE TRIM SPLICE

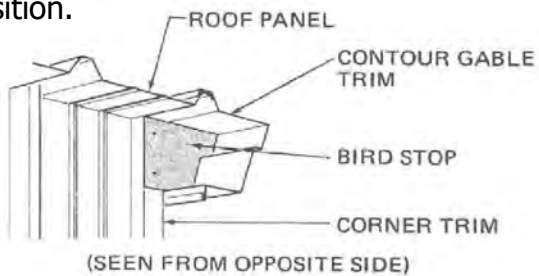
Apply a bead of gun grade Panlastic to the upper end of the trim and overlap the next trim section 2". The remainder of the trim sections are installed the same way. Cut off the last sections of gable trim so they overlap 1-1/2" at the center of the building.



Complete the trim splices by drilling holes at the splices and installing blind rivets. If the building width exceeds 120ft. the gable trim splices should not be fastened so as to compensate for thermal expansion and contraction of the roof system. Gable trim to roof panel fasteners should also be located so they do not pass through the gable trim splices.



A name plate is installed at the center of the building to cover the trim splice at that position.



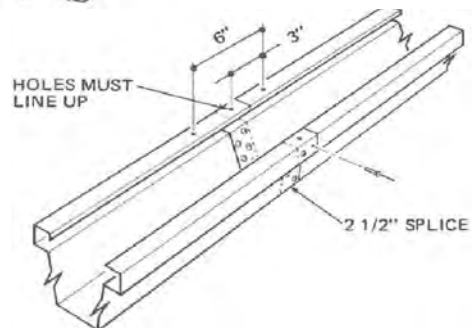
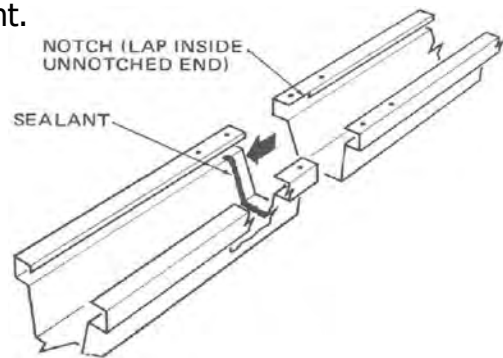
If the building eave is untrimmed or is to receive gutter, the installation of bird closures, to prevent the entry of birds into the gable area, completes the trim installation.

NOTE: Bird Stops are not required if the eave trim is to be used.

Gutter Assembly

Gutter sections are preassembled on the ground and raised into position for installation. The sections are to be completely assembled to include the spliced sections, corrugation closures (if they have been ordered with your building), end caps, corner trim, gutter outlets and sealants at specified locations.

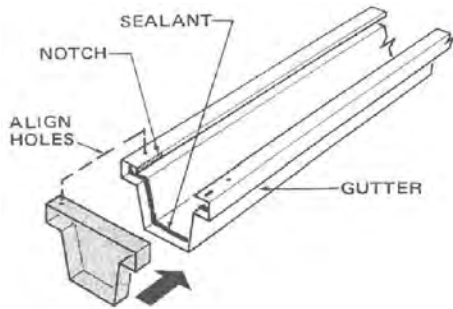
Gutter assemblies should be made up in as long a length as can be handled by the crew and equipment available up to 125ft. This is the normal maximum length of gutter run without the use of an expansion joint.



ASSEMBLED GUTTER SECTIONS

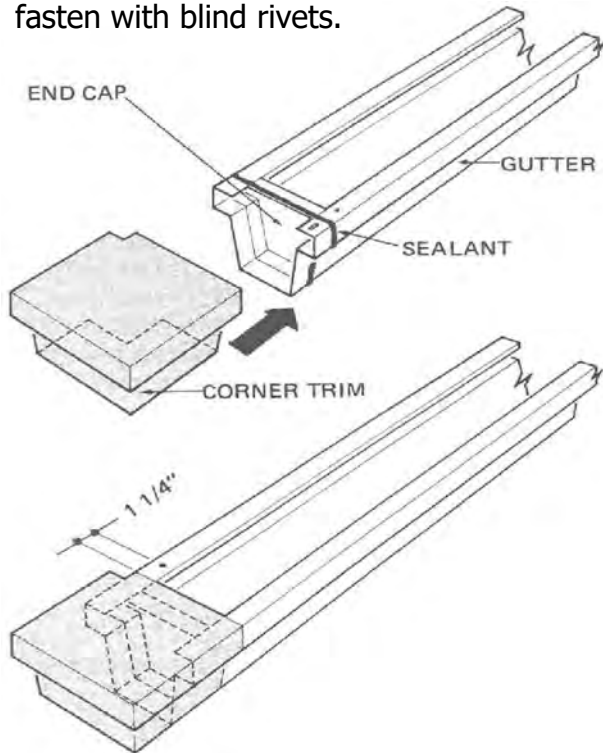
Standard gutter sections are 25ft. in length and any excess on the last section must be field cut after the length is established. Assemble the sections together with the notched end of the gutter section lapped inside the unnotched end of the adjoining section to form a 2-1/2" lap splice. Apply a 5/16" bead of gray gun grade sealant before making the lap. Be sure the holes in the back legs of the two sections line up at the lap, then field drill a double row of holes at the lap and secure with blind rivets. Cut any excess length from the notched end of the gutter assembly.





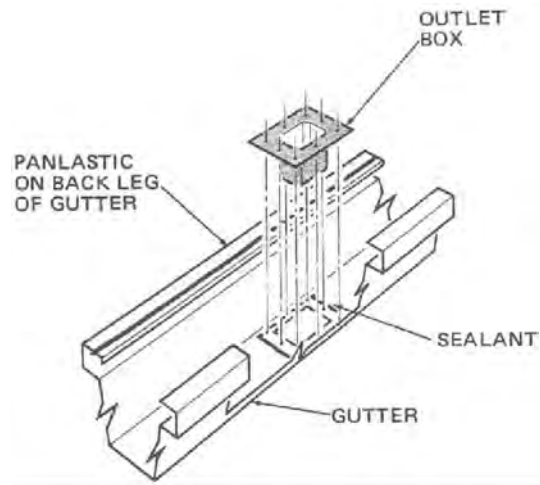
END CAP INSTALLATION

Install the end caps. One end of the gutter assembly will have to be field notched in order to install the cap. Before installing the cap, apply a 5/16" bead of gray gun grade sealant inside the gutter at the cap locations. Install the end cap so the hole in the end cap is aligned with the hole in the top of the gutter. Then drill holes and fasten with blind rivets.



CORNER TRIM INSTALLATION

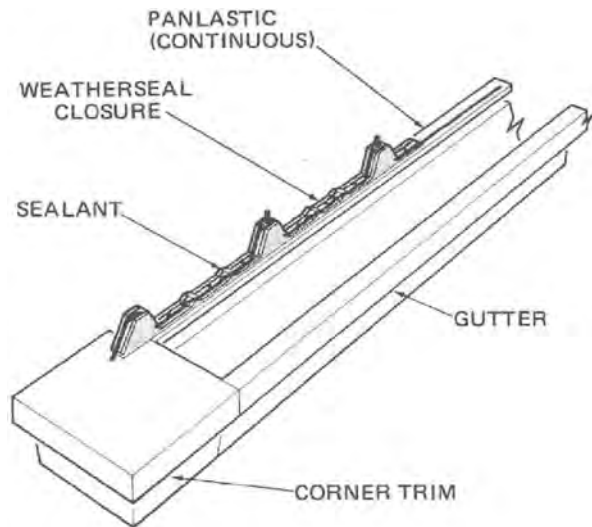
Apply a 5/16" bead of gray gun grade sealant along the top of the end cap and around the outer surface of the gutter. Inspect the fit between end cap and gutter and fill any voids with a large bead of sealant before installing the corner trim. Align the corner trim relative to the end of the gutter by dimensions shown on the installation drawings. Square the corner trim, field drill holes at the lap and secure with blind rivets.



GUTTER OUTLET INSTALLATION

Determine gutter outlet locations, cut out the opening and apply a 5/16" bead of gun grade gray sealant around the edge. Position the gutter outlet, drill holes, and secure with blind rivets.

An application of 1/4"x3/16" bead Panlastic to the back leg of the gutter completes the gutter assembly.

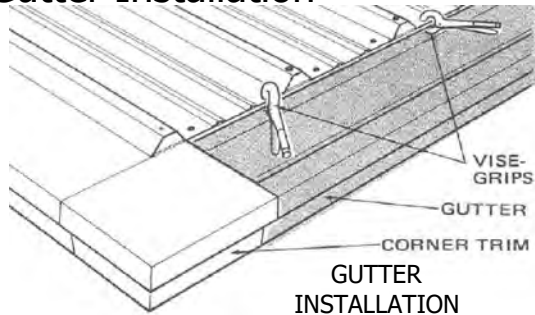


WEATHERSEAL CLOSURE INSTALLATION (OPTIONAL)

When the optional weatherseal closures are to be used they should be assembled before hanging the gutter. A continuous bead of gun grade Panlastic is applied to the back leg of the gutter, the corrugation closures positioned and bolted in place using long 1/4" diameter bolts and speed nuts. A continuous bead of sealant is then applied to the outside of the closure.

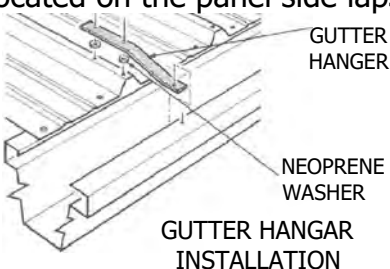


Gutter Installation



Place the assembled gutter in position and attach the back leg of the gutter to the roof panel with Lock-Rivets. For the basic gutter installation the shorter of two roof Lock-Rivets, identified by a green stem, is used for this connection. For gutter with the optional weatherseal, the longer of the two Lock-Rivets, identified by a gold stem, is used. The back leg of the gutter must be tight against the roof panel before the Lock-Rivet is pulled if the fastener is to be effective. Vise-Grips can be used very effectively for this purpose.

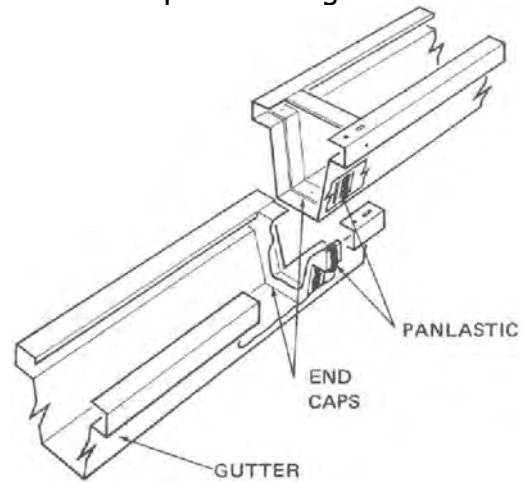
Position gutter hangers so they are located on the roof panel corrugations 1'-0" from each end of the building, then a maximum of 6'-0" centers for gutter without weatherseal; a maximum of 3'-0" centers for gutter with the weatherseal closures. The gutter hangers, except for those at each end of the building, should be located on the panel side laps.



Gutter hangers are attached to the front edge of the gutter and to the roof panel corrugation with green stem Lock-Rivets. A neoprene washer is placed between the hanger and the panel to assure a weathertight connection. When the optional weatherseal closure is used, one of the hanger fasteners is replaced by the 1/4" bolt that was used to attach the closure to the gutter.

Gutter Expansion Joint Installation

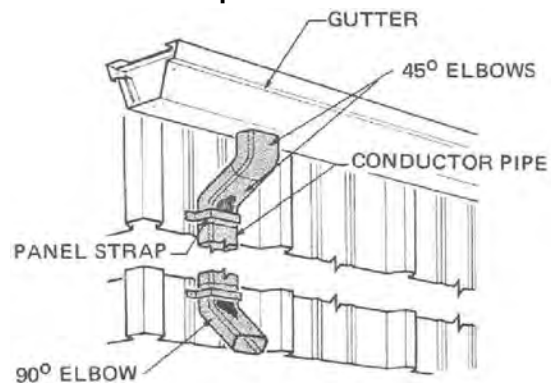
For buildings with gutter lengths exceeding 125', it will be necessary to plan for an expansion joint in the gutter. The expansion joint should be located so it centers on a panel corrugation.



DETAIL-GUTTER EXPANSION JOINT

The expansion joint is made by installing gutter ends, each side of the gutter splice. The two sections are lapped the standard 2-1/2" but are not connected by fasteners. The end of one of the gutter sections is cut so that 3" of the back leg of the gutter is removed. The end cap is the installed flush with the notch. The remainder of the gutter installation is the same as for a one-piece gutter assembly.

Conductor Pipe Installation



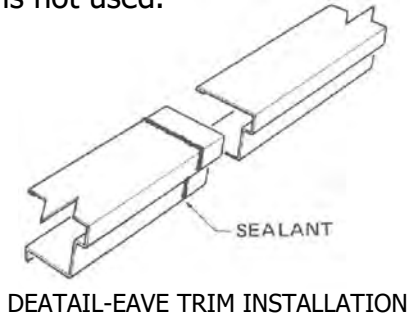
CONDUCTOR PIPE INSTALLATION

Cut conductor pipe to required length and assemble, using the 45° elbows to make the return to the wall. The 90° elbow is used at the bottom of the downspout. Conductor straps are formed from a flat 2"x12" piece of painted metal.

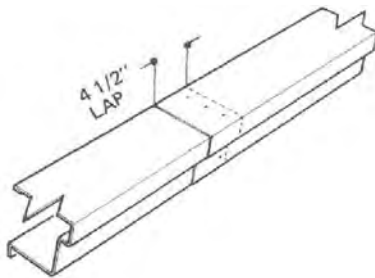


Eave Trim Installation

Eave trim is used to provide a finished appearance to the building eave when gutter is not used.

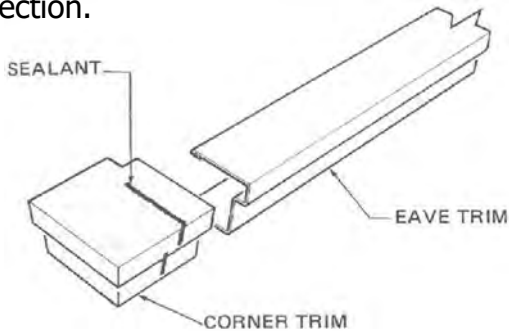


DETAILED-EAVE TRIM INSTALLATION



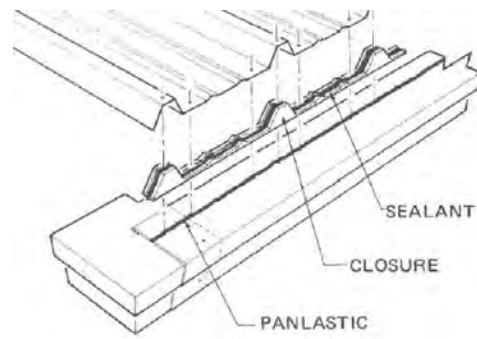
DETAILED-EAVE TRIM SPLICE

Eave trim is furnished in 12'-10-1/2" lengths and lapped 4-1/2" for a 12'-6" cover length. The last piece installed is field cut as required for the building length. Eave trim can be installed in either direction.



CORNER TRIM INSTALLATION

Corner trim is assembled to the starting and ending trim pieces before the trim is installed. The bottom of the corner trim must be notched to clear the wall panel corner trim. Apply a bead of gun grade Panlastic to the corner trim and align the corner trim relative to the end of the eave trim by dimensions shown on the installation drawings. Square the corner trim, field drill holes at the lap and secure with blind rivets.



EAVE TRIM CLOSURE INSTALLATION

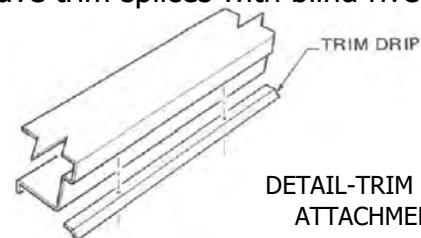
Apply a continuous bead of gun grade Panlastic over the factory punched holes in the eave trim and set the three foot long rubber closures into the sealant, matching the holes in the closures with the holes in the trim. Apply a continuous bead of sealant to the outside of the closures.

The eave trim is attached to the roof panel with long Lock-Rivets (gold stem). The trim and closures must be tight against the roof panel before the Lock-Rivet is pulled if the fastener is to be effective, Lock-Rivets installed through the panel corrugations expand in the rubber closure to stabilize the closure position.

Attach the bottom of the trim to the wall with blind rivets. Be sure the bottom of the trim is properly aligned.

If the optional closures for closing the area between wall panel corrugations are used, they should be cut to fit as required and installed at the same time as the eave trim is attached to the wall.

Apply a bead of sealant to the end of the trim and install the next section of trim the same way, lapping the ends 4-1/2". Fasten the eave trim splices with blind rivets.



DETAIL-TRIM DRIP ATTACHMENT

The trim drip is attached to the eave trim to direct roof run off away from the wall. These parts can be attached before installing the eave trim.

