



Submittal Review Response

Project Name: *Hilo WWTP Rehabilitation and Replacement Project Phase 1*
Submittal No.: *07410-001.0*
Date: *9/3/2025*

Client: County of Hawai'i Carollo Project No.: 203975
Contractor: Nan, Inc.
Submittal Name: Preformed Metal Roofing and Siding
Reviewed By: Brian Funai – Engineering Partners

SUBMITTAL REVIEW

Review is for general compliance with contract documents. No responsibility is assumed by Carollo for correctness of quantities, dimensions, and details. No deviation or variation is approved unless specifically addressed in these review comments. Refer to Section 01330 for additional requirements. The Contractor shall assume full responsibility for coordination with all other trades and deviations from contract requirements.

Approved	<input type="checkbox"/> No Exceptions
	<input checked="" type="checkbox"/> Make Corrections Noted - See Comments
	<input type="checkbox"/> Make Corrections Noted - Confirm
Not Approved	<input type="checkbox"/> Correct and Resubmit
	<input type="checkbox"/> Rejected - See Remarks
Receipt Acknowledged	<input type="checkbox"/> Filed for Record
	<input type="checkbox"/> With Comments - Resubmit

Review Comments:

1. Submit shop drawings
2. Provide physical samples for approval
3. Ensure fasteners are stainless steel (minimum type 304)

High Priority

CONTRACTOR SUBMITTAL TRANSMITTAL FORM REV. A

Owner: County of Hawaii

Contractor: Nan, Inc.

Project Name: Hilo WWTP Phase 1

Project No.: WW-4705R

Submittal Number:

Submittal Title:

For Information Only

TO:

From: Nan Inc.

Specification No. and Subject of Submittal / Equipment Supplier

Spec: Paragraph:

Authored By:

Date Submitted:

Submittal Certification

Check Either (A) or (B):

- (A) We have verified that the equipment or material contained in this submittal meets all the requirements specified in the project manual or shown on the contract drawings with no exceptions.
- (B) We have verified that the equipment or material contained in this submittal meets all the requirements specified in the project manual or shown on the contract drawings except for the deviations listed.

Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements.

General Contractor's Reviewer's Signature:

Printed Name and Title:

In the event, Contractor believes the Submittal response does or will cause a change to the requirements of the Contract, Contractor shall immediately give written notice stating that Contractor considers the response to be a Change Order.

Firm:

Signature:

Date Returned:

PM/CM Office Use

Date Received GC to PM/CM:

Date Received PM/CM to Reviewer:

Date Received Reviewer to PM/CM:

Date Sent PM/CM to GC:

Nan, Inc

PROJECT: HILO WWTP REHABILITATION
AND REPLACEMENT PROJECT - PHASE 1

JOB NO. WW-4705R

THIS SUBMITTAL HAS BEEN CHECKED BY
THIS CONTRACTOR. IT IS CERTIFIED
CORRECT, COMPLETE, AND IN
COMPLIANCE WITH CONTRACT
DRAWINGS AND SPECIFICATIONS. ALL
AFFECTED CONTRACTORS AND
SUPPLIERS ARE AWARE OF, AND WILL
INTEGRATE THIS SUBMITTAL (UPON
APPROVAL) INTO THEIR OWN WORK.

DATE RECEIVED

SPECIFICATION SECTION #

SPECIFICATION

PARAGRAPH

DRAWING

SUBCONTRACTOR

SUPPLIER

MANUFACTURER

<input checked="" type="checkbox"/>	REVIEWED WITH REMARKS	AMEND AND RESUBMIT
	NO EXCEPTIONS TAKEN	REJECTED

Corrections or comments made on the shop drawings during the review do not relieve the contractor from compliance to the requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction and performing its work in a safe manner.

ENGINEERING PARTNERS
455 E. LANIKAU LA ST
HILO, HI 96720

Check By: BRIAN F. FUNAI

Received Date: 8/00/25 **Reviewed Date:** 8/00/25

Remarks:

1. Submit shop drawings
2. Provide physical samples for approval.
3. Ensure fasteners are stainless steel(minimum type 304).

CERTIFIED BY CQCM or Designee : _____

NEW SECTION

SECTION 07410^{AD3}

PREFORMED METAL ROOFING AND SIDING

PART 1 GENERAL

1.01 SUMMARY

- A. Extent of preformed metal roofing and siding is indicated on the drawings and by provisions of this section. Provide all materials, including all flashings, gutters and downspouts for a complete system.
- B. Type of panels required include the following: Formed sheet panels, intended for exposed fastener installation.
- C. Work includes associated structural secondary framing.

1.02 QUALITY CONTROL

- A. Installer: The roofing and siding system installer shall be factory-trained, approved by the metal system manufacturer to install the system, and have a minimum of 3-years experience as an approved applicator with that manufacturer. The applicator shall have applied five installations of similar size and scope as this project within the previous 3-years.
- B. Installation Crew: Provide and maintain same foreman and crew from start to finish of work unless change is approved by the Contracting Officer and manufacturer's representative. Workmen who will be walking on roof panels shall wear soft-soled shoes that will not damage the panels.
- C. Manufacturer's Technical Representative: Provide a representative with authorization from manufacturer to approve field changes and be thoroughly familiar with the products and with installations in the geographical area where construction will take place. The manufacturer's representative shall be an employee of the manufacturer or their local representative.
- D. Pre-Installation Meeting: Contractor, Roofing and Siding Installer, and the authorized manufacturers' representatives or their independent roofing inspectors shall attend a pre-installation meeting. Include other related trades, such as sheet metal contractor, as applicable. Confirm the required participants with the Contracting Officer. Notify participants at least five days prior to meeting. Intent of the meeting is to review the preparation and installation requirements for the roofing and siding system and to coordinate and schedule the required work.'

1.03 SUBMITTALS

- A. Submit in accordance with Section 01330 – Submittal Procedures.

- Not Included**
- ✓ B. Manufacturer's Data: Submit manufacturer's product specifications, standard details, installation instructions and general recommendations, as applicable to materials and finishes for each component and for total system of preformed panels.
- ✓ C. Shop Drawings: Submit shop drawings of all roofing, siding, flashing, fastenings, supports, anchors, and clearances, and connection details to the Contracting Officer for acceptance.
- ✓ D. Roof Color and Samples:
 1. Roof Color: As selected
 2. Furnish selected color and provide samples for approval.
- ✓ E. Test Reports: Provide test data demonstrating structural capacity, wind uplift and resistance to water infiltration performance as specified.
- ✓ F. Manufacturer's Technical Representative's Reports: Submit copies of all reports to the Contracting Officer.
- ✓ G. Warranty: Submit warranty as noted under Article 1.04.

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Page-(83-106)

Page-(107-109)

1.04 WARRANTY

- A. The warranty provisions and number of years for the warranties required by this article shall take precedence over the standard provisions in the GENERAL REQUIREMENTS AND COVENANTS and SPECIAL PROVISIONS.
- B. Project Warranty: Submit Contractor's warranty, signed jointly by Roofing and Siding Installer covering the work of this section, including all components of roof system without monetary limitation, in which Roof Installer and manufacturer(s) agree to repair or replace components of roofing and siding system that fail in materials or workmanship for the warranty period specified below.
1. Failures include, but are not limited to, the following: Structural failures, loose parts, wrinkling or buckling, failure to remain weathertight, including uncontrolled water leakage, deterioration of metals, metal finishes, and other materials beyond normal weathering, including nonuniformity of color or finish, galvanic action between sheet metal roofing or siding, and dissimilar materials.
 2. A structural failure is defined as a failure to withstand, without damage, basic wind speeds up to 120 mph, Exposure B, and Importance Factor as indicated, as defined by the current edition of the ICC IBC Building Code adopted by the County of Hawaii for the applicable building heights.
 3. Warranty Period: Two years from the Project Acceptance Date.
 4. Warranty shall cover repairs or replacement of damages to the building and its finishes due to leaks.
 5. Warranty shall state the Manufacturer's acceptance that the roof was installed in accordance with the contract requirements and that the Contracting Officer's personnel were properly instructed in the maintenance procedures.
 6. In the event of a failure, Contracting Officer, Contractor, Roofing and Siding Installer, and Manufacturer shall mutually agree and determine roof system failures and remedies.

- C. Special Warranty on Finishes: On manufacturer's standard form which manufacturer agrees to repair finish or replace sheet metal roofing or siding that shows evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: Twenty years from the Project Acceptance Date.
 - 3. The Surety will not be held liable beyond 2 years of the Project Acceptance Date.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle preformed panels, bulk roofing and siding products and other manufactured items in a manner to prevent damage or deformation.
- B. Delivery: Provide adequate packaging to protect materials during shipment. Do not uncrate materials until ready for use except for inspection. Immediately upon arrival of materials at jobsite, inspect materials for damage, dampness, and staining. Replace damaged or permanently stained materials that cannot be restored to like-new condition with new material. If materials are wet, remove moisture, restack and protect panels until used.
- C. Storage: Stack materials stored on the site on platforms or pallets and cover with tarpaulins or other suitable weathertight coverings which prevent water trapping or condensation. Store panels so that water which might have accumulated during transit or storage will drain off. Do not store the panels in contact with materials that might cause staining, such as mud, lime, cement, fresh concrete or chemicals. Protect stored panels from wind damage.
- D. Handling: Handle material carefully to avoid damage to surfaces, edges and ends.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Roof Panels: Formed from minimum 24 gauge "Zincalume" or "Galvalume" coated steel conforming to ASTM A 792/A 792M, Grade 33 with a minimum AZ50 coating. Panel configuration shall be corrugated roofing with exposed fasteners. Panel shall be 1-3/16-inch high with ribs spaced 12-inches apart with two each continuous panel stiffeners between ribs. Panels shall have 36-inch coverage and continuous lengths.
 - 1. Roofing: Basis of Design Product and Manufacturer:
 - a. Pattern/Product Custom 4-Rib manufactured by HPM Building Supply Custom Metal Roofing. Panels shall be prefinished as specified.
 - b. Or equal products: by Macsteel Service Centers USA, Custom-Built Metals, Architectural Metal Products, Tomen Building Components, Inc., Centria, MBCI Metal Roof and Wall Systems, and Knudson.

2. Minimum Class B roof system.
- B. Siding Panels: Formed from minimum 24 gauge "Zincalume" or "Galvalume" coated steel conforming to ASTM A 792/A 792M, Grade 33 with a minimum AZ50 coating. Panel configuration shall be corrugated roofing with exposed fasteners. Panel shall be 1-1/2-inch high with ribs spaced 6-inches on center. Panels shall have 30-inch coverage and continuous lengths.
 1. Siding: Basis of Design Product and Manufacturer:
 - a. Pattern/Product Custom Box-Rib manufactured by HPM Building Supply Custom Metal Roofing. Panels shall be prefinished as specified.
 - b. Or equal products: by Macsteel Service Centers USA, Custom-Built Metals, Architectural Metal Products, Tomen Building Components, Inc., Centria, MBCI Metal Roof and Wall Systems, and Knudson.
- C. Flashing: Formed of prefinished material to match roof panels of manufacturer's standard flashings for the panels specified. Minimum 24-gauge galvanized sheet metal, ASTM A 653. Configuration of flashings shown on the drawings are intended to indicate basic intent. Other flashings which accomplish the basic intent will be acceptable if standard with the panel manufacturer. Provide metal flashings for locations indicated. Furnish sheet metal flashing items in 8-feet to 10-feet lengths and in widths to provide profiles shown. Single pieces less than 8-feet long may be used at corners, and at ends of runs. Provide accessories and other items essential to complete the sheet metal installation of the same materials as the items to which they are applied. Connect all pieces of linear flashing by a slip joint to permit thermal movement. Exposed flashings and metal closure strips shall match finish of roof panel.

2.02 METAL FINISH

- A. General: Apply coatings either before or after forming and fabricating panels, as required by coating process and as required for maximum coating performance capability. Provide low-gloss/low sheen Ultra-Cool color indicated or, if not otherwise indicated, as selected by the Contracting Officer.
- B. For exposed exterior surfaces, provide thick finish of Kynar 500 conforming to AAMA 605.2 with a primer and Kynar topcoat of 1-mil.
- C. Interior/underside finish shall be off white polyester wash-coat of 0.5-mil or better.
- D. Provide a finish touch up kit for coating system at field cut edges and touch up of abraded areas.

2.03 MISCELLANEOUS MATERIALS

- A. Fasteners: Stainless steel (minimum type 304) with composite metal and neoprene composition washers. Lengths required for roofing and siding system to meet the indicated wind resistance criteria. Exposed fasteners shall be gasketed on the exterior side of the covering to waterproof the covering and finished to match roof and siding finish.

- B. Accessories: Except as indicated as work of another specification section, provide components required for a complete roofing and siding system, including stainless steel clips, standoff clips, side lap clips, and uplift clips; trim, flashings and expansion joint flashing; single component polyurethane sealants, gaskets, fillers, closure strips and similar items. All clips shall be stainless steel. Match materials/finish of preformed roof and siding panels where exposed.
 - C. Closure Strips: Formed specifically for this purpose of laminated cross-linked polyethylene closed cell-foam or neoprene materials and as standard with manufacturer. Molded closure strips shall be free of open voids and shall not absorb or retain water. Closure strips shall be formed to match configurations of the roofing and siding and shall be provided where indicated and where necessary to provide weathertight construction.
 - D. Sealants: ASTM C 920, Type S, Grade NS, Class 25, Use NT, polyurethane or as recommended by the roofing and siding manufacturer. Color, where exposed, shall match roofing and siding.
 - E. Mastic: As recommended by the roofing and siding manufacturer.
 - F. Bituminous Coating: Cold-applied asphalt mastic, SSPC paint 12, compounded for 15-mil dry film thickness per coat.
 - G. Underlayment: Polypropylene based roofing and siding underlayment with UV stabilized polyolefin coating.
 - H. Flexible Flashing: Aluminum foil faced 45 mil rubberized asphalt or butyl rubber roll sheet as recommended by roofing and siding manufacturer for waterproofing top set flashings.
 - I. Edge coating: Roofing and siding manufacturer's edge coating or paint to match roofing and siding color.

2.04 ROOF PANEL FABRICATION; PERFORMANCES

- A. General: Fabricate and finish panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, and as required to fulfill performance requirements, which have been demonstrated by factory testing. Comply with indicated profiles and dimensional requirements, and with structural requirements. Fabricate panels in full lengths from ridge to eave to the greatest extent possible.
 - B. Metal Gages: Thicknesses required for structural performances, but not less than manufacturer's recommended minimums for profiles and applications indicated, and not less than specified under "Roof Panels".
 - C. Required Performances: Fabricate panels and other components of roof system for the following installed-as-indicated performances:
 1. Roof Loading: As indicated.
 2. Project Windloads: 105 mph, Exposure C.

- 3. Panels must meet minimum UL windload uplift classification of 90. Provide additional row of clips at eaves for high wind conditions.
- D. Performance Criteria:
 - 1. Provide wind uplift resistance in accordance with the current local ICC IBC as amended, minimum UL580 Class 90.
 - 2. Structural capacity of metal roofing system shall be determined in accordance with ASTM E 1592. A minimum of two tested spans are required in order to interpolate allowable load data between tested spans. Extrapolation of data outside the tested spans is not allowed.
 - 3. Provide a design analysis signed by a registered Professional Engineer, confirming that the structural capacity of the metal roofing system as determined in accordance with ASTM E 1592 is adequate to resist the design loads required by the International Building Code. Analysis shall include calculation verifying the design loads, the uplift pressures, and how those loads affect the various areas of discontinuity clearly shown and distinguished from the typical field roof elements.
 - 4. Resistance to Water Infiltration: Roofing and siding system shall show no infiltration at seams, edges, flashings, counter-flashings and penetrations when subjected to a rainfall of 5-inches per hour with 80 mph wind.
 - 5. Thermal Movement: The system shall be capable of withstanding thermal movement based on a temperature range of 10 degrees F below design low air temperature and 140 degrees F for light colors.

2.05 SIDING PANEL FABRICATION; PERFORMANCES

- A. Unless approved otherwise, fabricate and finish metal wall panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated and specified performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel. Fabricate metal wall panel side laps with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will seal weather-tight and minimize noise from movements within panel assembly.
- C. Roll-form steel wall panels to the specified profile, with $f_y = 40 \text{ ksi}$, 24 gauge and depth as indicated. Material must be plumb and true, and within the tolerances listed:
 - 1. Aluminum-Zinc Alloy-coated Steel Sheet conforming to ASTM A792/A792M and AISI SG03-3.
 - 2. Individual panels must be continuous length to cover the entire length of any unbroken wall area with no joints or seams and formed without warping, waviness, or ripples that are not part of the panel profile and free of damage to the finish coating system.
 - 3. Provide panels with thermal expansion and contraction consistent with the type of system specified.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive metal roofing, siding and flashing. Provide plumb and true surfaces, clean, even, smooth and as dry as possible. Ensure that surfaces are free from defects and projections which might affect the installation.
- B. Report unsuitable conditions to the Contracting Officer. The Manufacturer's Technical Representative shall approve roof and siding substrate as suitable for roofing and siding system application.

3.02 ROOFING INSTALLATION

- A. General: Comply with panel fabricator's and material manufacturers' instructions and recommendations for installation, as applicable to project conditions and supporting substrates. Anchor panels and other components of the work securely in place in full and firm contact with concealed anchor clips with provisions for thermal/structural movement as well as carrying the weight of the panels. Obtain acceptance prior to installation on prefinished panels cut in the field and factory applied coverings or coatings that were repaired after being abraded or damaged during handling or installation. Make repairs with material of same color as weather coating. Completely seal openings through panels. Correct defects or errors in materials in an approved manner. Replace materials which cannot be corrected in an approved manner with new materials. Provide molded closure strips where indicated and where necessary for weathertight construction.
- B. Apply roofing panels with corrugation parallel to slope of roof. Fasten roofing panels at high point of corrugation at spacing required by manufacturer to meet wind resistance criteria specified, assuring that fasteners are anchored securely into roof framing. Dents, depressions or damage to roofing panel caused by fastening shall be cause for replacement of panel. Paint heads and washers of fasteners to match roofing.
- C. Installation Tolerances: Shim and align panel units within installed tolerance of 1/4-inch in 20'-0" on level/plumb/slope and location line as indicated, and within 1/8-inch offset of adjoining faces and of alignment of matching profiles. Layout lines parallel to the rakes at intervals. Use a spacing gage at each row of panels to ensure that panel width is not stretched or shortened.
- D. All field cutting of roofing panels shall be done mechanically, no saw or abrasive cutting will be allowed. Cut ends shall be touched up with paint to match roof finish as provided by manufacturer.
- E. Joint Sealers: Install joint fillers and sealants where indicated and where required for weatherproof performance of panel system. Provide types of sealants/fillers indicated or, if not otherwise indicated, types recommended by panel manufacturer. Refer to SECTION 07920 - SEALANTS of these specifications for installation requirements applicable to indicated joint sealers.
- F. Roof installation shall be for conditions indicated.

3.03 SIDING INSTALLATION

- A. Examination: Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal wall panel supports, and other conditions affecting performance of the work.
 - 1. Examine primary and secondary wall framing to verify that girts, studs, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal wall panel manufacturer, UL, ASTM, ASCE 7 and as required for the geographical area where construction will take place.
 - 2. Examine solid wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.
 - 3. Examine roughing-in for components and systems penetrating metal wall panels to verify actual locations of penetrations relative to seam locations of metal wall panels before metal wall panel installation.
- B. Installation: Provide full length metal wall panels, from sill to eave as indicated, unless otherwise indicated or restricted by shipping limitations. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement. Erect wall panel system in accordance with the approved erection drawings, the printed instructions and safety precautions of the manufacturer. Sheets are not to be subjected to overloading, abuse, or undue impact. Bent, chipped, or defective sheets shall not be applied. Sheets must be erected true and plumb and in exact alignment with the horizontal and vertical edges of the building, securely anchored, and with the indicated eave, and sill. Work is to allow for thermal movement of the wall panel, movement of the building structure, and to provide permanent freedom from noise due to wind pressure.
- C. Field Cutting: Field cutting metal wall panels by torch is not permitted.
- D. Tolerances: Erect metal wall panels straight and true with plumb vertical lines correctly lapped and secured in accordance with the manufacturer's written instructions.
- E. Leakage Tests: Finished application of metal wall panels are to be subject to inspection and test for leakage by request of the Contracting Officer. Inspection and testing is to be made promptly after erection to permit correction of defects and the removal and replacement of defective materials.

3.04 FLASHING INSTALLATION

- A. Flashings: Provide flashing and related closures and accessories in connection with preformed metal panels as indicated and as necessary to provide a weathertight installation. Install flashing to ensure positive water drainage away from roof penetrations. Flash and seal roof at ridge, valleys, eaves and rakes, at projections through roof, and elsewhere as necessary. Accomplish placement of closure strips, flashing, and sealing material in an approved manner that will ensure complete weathertightness. Details of installation which are not indicated shall be in accordance with the NRCA CD, SMACNA ASMM, panel manufacturer's printed

instructions and details of the accepted shop drawings. Installation shall allow for expansion and contraction of flashing.

- B. Flashing Fasteners: Fastener spacings shall be in accordance with the panel manufacturer's recommendations and as necessary to withstand the indicated design loads. Install exposed fasteners in panel valleys as recommended by the manufacturer of the panels. Install fasteners in straight lines within a tolerance of 1/2-inch in the length of a bay. Drive exposed penetrating type fasteners normal to the surface and to a uniform depth to seat gasketed washers properly and drive so as not to damage factory applied coating. Exercise extreme care in drilling pilot holes for fastenings to keep drills perpendicular and centered. Do not drill through sealant tapes. After drilling, remove metal filings and burrs from holes prior to installing fasteners and washers. Torque used in applying fasteners shall not exceed that recommended by the manufacturer. Remove panels deformed or otherwise damaged by over-torqued fastenings, and provide new panels.
- C. Closure, Closure Strips: Install closure strips as indicated and as recommended by the manufacturer.
- D. Apply bituminous coating or other permanent separation materials on concealed panel surfaces where panels would otherwise be in direct contact with wood or other substrate materials which are noncompatible (i.e. copper and aluminum) or could result in corrosion or deterioration of either material or finishes.

3.05 CLEAN UP AND PROTECTION

- A. Damaged Units: Replace panels and other components of the work which have been damaged or have deteriorated beyond successful repair by means of finish touch-up or similar minor repair procedures. Touch-up paint shall not be used without the permission of the Contracting Officer.
- B. Cleaning: Upon completion of panel installation, clean finished surfaces as recommended by panel manufacturer, and maintain in a clean condition during construction. Remove metal shavings, filings, nails, bolts, and wires from roofs and gutters on completion to prevent discoloration and harm to the panels and flashing. Remove grease and oil films, excess sealants, handling marks, contamination from steel wool, fittings and drilling debris and scrub the work clean. Exposed metal surfaces shall be free of dents, creases, waves, scratch marks, and solder or weld marks.

3.06 MANUFACTURER'S FIELD INSPECTION

- A. Manufacturer's technical representative shall visit the site as necessary during the installation process to assure panels, flashings, and other components are being installed in a satisfactory manner. Manufacturer's technical representative shall perform a field inspection of the installation at substantial completion and prior to issuance of warranty. After each site visit, a report, signed by the manufacturer's technical representative, shall be submitted to the Contracting Officer noting the overall quality of work, deficiencies and any other concerns, and recommended

corrective actions in detail. Notify the Contracting Officer a minimum of two working days prior to site visit by manufacturer's technical representative.

END OF SECTION

AD3 Addendum No. 3 - June 2024



91-1210 Kaikohola Street
Ewa Beach, HI 96706
(808) 445-8226

LETTER OF TRANSMITTAL

Date	Job No.
7/29/2025	WW-4705R

DLA Relocation B393 Outdoor Storage

To: Nan, Inc.	TRANSMITTAL No: 02
Jyun-Cheng Jhuo, Project Engineer	RE: Metal Wall and Roof Panels

WE ARE SENDING YOU
THE FOLLOWING ITEMS

ATTACHED UNDER SEPARATE COVER VIA _____

<input type="checkbox"/> SHOP DRAWINGS	<input type="checkbox"/> PRINTS	<input type="checkbox"/> COPY OF LETTER	<input type="checkbox"/> SAMPLES	<input type="checkbox"/> SPECIFICATIONS
<input type="checkbox"/> CHANGE ORDER	<input type="checkbox"/> PLANS	<input checked="" type="checkbox"/> OTHER		

Item	Spec	Copies	DESCRIPTION
1	07410	pdf	Manufacturer's Product Data
2	07410	pdf	Installation Instructions
3	07410	pdf	Test Reports
4	07410	pdf	Warranty Sample

REASON FOR TRANSMITTAL, CHECKED BELOW:

<input checked="" type="checkbox"/> FOR APPROVAL	<input type="checkbox"/> APPROVED AS SUBMITTED	<input type="checkbox"/> RESUBMIT COPIES FOR APPROVAL
<input type="checkbox"/> FOR YOUR USE	<input type="checkbox"/> RETURNED FOR CORRECTIONS	<input type="checkbox"/> SUBMIT COPIES FOR DISTRIBUTION
<input type="checkbox"/> AS REQUESTED	<input type="checkbox"/> FOR REVIEW AND COMMENT	<input type="checkbox"/> RETURN CORRECTED PRINTS
<input type="checkbox"/> APPROVED AS NOTED	<input type="checkbox"/>	<input type="checkbox"/> PRINTS RETURNED AFTER LOAN TO US
<input type="checkbox"/> FOR BIDS DUE ---->	/ /	

REMARKS

Copy to:

Signed:

Hilo Wastewater Treatment Plant (WWTP)
Rehabilitation and Replacement Project, Phase 1
Waiakea, Hilo, Hawaii
County and State of Hawaii Job No. WW-4705R

Section 07410

Preformed Metal Roofing and Siding

SUBMITTAL PACKAGE CONTENTS

Manufacturer Product Data – Panel Rib Siding

Manufacturer Product Data – Panel Rib Roofing

Manufacturer Product Data – Roof Curbs

Manufacturer Product Data – Ridge Vents

Manufacturer Product Data – Sheet Metal Coating

Installation Instructions – Basic Roofing and Siding Panels

Test Reports – Panel Rib Roofing

Test Reports – Panel Rib Siding

Sample Warranty

Manufacturer Product Data – Panel Rib Siding

WALL SYSTEMS

PANEL RIB™ WALL

Features

- 36" Coverage with 1-3/16" high ribs 12" on center
- Available in 24^g and 26 gauge
- Variety of color options with KXL finish and 25 year paint warranty
- Installed with self-drilling stainless steel capped fasteners
- Lengths up to 48'
- Florida and Miami-Dade County Approved



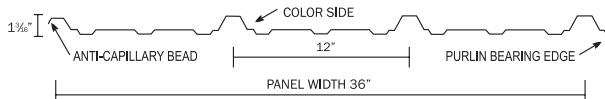
Benefits

- Variety of gauge thicknesses to meet most codes and specifications
- Engineered for durability and aesthetically pleasing
- Long panel lengths minimize end laps for optimum wall integrity
- Superior paint finishes reduces maintenance costs
- Crimped base option eliminates the need for base trim, and accelerates installation
- Economical panel for most building applications

ECONOMICAL EXTERIOR WALL SYSTEM

Panel Rib is more economical than wood, concrete or masonry alternatives. It is available in lengths up to 48' which can provide a continuous panel from foundation to eave. This can eliminate the need for end laps and assures wall integrity and weather-tightness. Panels are attached with self-drilling, stainless steel capped color-matched fasteners.

PANEL RIB WALL PROFILE



Optional Crimped Base



VP offers an exclusive crimped base Panel Rib option, which saves installation time and cost of material, because it eliminates the need for notched metal or rubber closures. Using this panel also saves the building owner the need for painted base trim. And once constructed, crimping and notching reduce access for uninvited pests, and a Crimped Based Panel Rib affords no openings.

Panel Rib can effectively utilize blanket insulation as well as up to 2-1/2" of rigid board insulation. Your VP Builder can assist you in selecting the optimal insulation approach, considering up-front costs and long term energy savings.

All gauges of Panel Rib are available in a wide selection of standard colors with KXL finishes. The KXL paint system is a PVDF finish applied to the zinc aluminum coated steel to give a long-life color that resists fading and chalking. KXL is a 1 mil nom. PVDF finish with 70% Kynar® 500 or Hylar® 5000 standard.

- Kynar 500® is a registered trademark of Arkema.
- Hylar 5000® is a registered trademark of Solvay Solexis.
- Galvalume® is a registered trademark of BIEC International, Inc.

Manufacturer Product Data – Panel Rib Roofing

PANEL RIB™ ROOF



FEATURES

- Roof slopes as low as $\frac{1}{2}":12"$
- 1-3/16" rib height with 36" coverage
- 26 ga. standard thickness, 24 & 22 ga. optional
- Dade County Product Approval
- Purlin bearing edge
- Available in a variety of KXL colors and unpainted Galvalume
- Attached with stainless steel capped color-matched, self-drilling fasteners
- Meets UL 60 and UL 90 wind uplift ratings
- Lengths up to 48'-0"

BENEFITS

- Purlin bearing edge improves weathertightness and simplifies installation
- Panel Rib Roof is an economical quality roof system that delivers years of performance
- Attractive color options and enhanced energy-efficiency with cool color choices
- Varco Pruden meets the highest standards for certification in the industry

PANEL RIB™ ROOF

Panel Rib Roof is an economical choice for an attractive, high-quality, low-maintenance roof

If you are on a tight budget, but still need an attractive, high-quality, low-maintenance roof, VP's Panel Rib Roof offers the best combination of economy and durability.

Panel Rib Roof panels are standard in 26 gauge with 24 gauge option. The steel panel is 36" wide with 1-3/16" high ribs and is available in lengths up to 48'. The panel includes a purlin bearing edge (PBE) for superior strength and rigidity. Additionally, a narrow ridge (anti-capillary bead) runs the length of each sidelap for increased weathertightness.

The panels are attached with self-drilling, stainless steel capped color-matched fasteners. Installation is fast since no field seaming is required. In addition, the panel's wide module and long length minimizes sidelaps and endlaps which increases both installation speed and improves weathertightness. Sealant is applied to every metal-to-metal contact point, resulting in a weather-resistant roof. Roof slope can be as low as ½:12".

Panel Rib Roof can accommodate up to 6" of fiberglass blanket insulation for high levels of energy efficiency.

All gauges of Panel Rib Roof are available with acrylic coated Galvalume® steel finish. All gauges of Panel Rib are available in a wide variety of standard colors with KXL finishes as well as custom colors. The KXL paint system is a PVDF finish applied to the Galvalume surface to give a long-life color that resists fading and chalking. The KXL paint system is a 1 mil nom. PVDF finish with a 70% Kynar® 500 or Hylar® 5000 standard.

Panel Rib Roof will meet the requirements for UL Class 60 or UL Class 90 wind uplift. Varco Pruden Buildings meets the highest standards and certifications in the industry, including IAS and Miami-Dade County, Florida Product Approvals. Panel Rib is backed by industry leading warranties for material and workmanship.

Panel Width: 36" coverage

Panel Length: Min. 1' Max. 48'*

Gauges: 26 or 24 gauge

Substrate: AZ50 coated or AZ55 for Galvalume

Exterior Coating: KXL (70% PVDF)

Interior Coating: Gray primer

Ext. Coat Warranty: 25 yrs. conditional†

Finish: Smooth

Profile: Ribbed

For information about this or any other VP product or service, contact your local authorized VP Builder.

Note: All panels formed from light gauge metal may exhibit waviness, also known as "Oil Canning," commonly occurring in, but not restricted to, flat portions of a panel. This inherent characteristic is not a defect of material or manufacturing and is not cause for rejection.

• Kynar 500® is a registered trademark of Arkema.

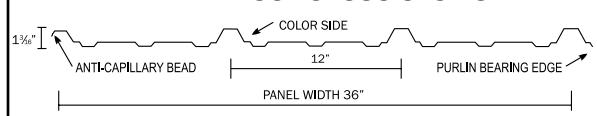
• Hylar 5000® is a registered trademark of Solvay Solexis.

• Galvalume® is a registered trademark of BIEC International, Inc.

*Maximum lengths vary by manufacturing location.



PANEL RIB ROOF CROSS SECTION



Varco Pruden Buildings, 3200 Players Club Circle, Memphis, TN 38125

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2062 Panel Rib Roof

Issue Date: 1969

Revised: 12/16

Manufacturer Product Data – Roof Curbs



ACCESSORIES

V A R C O P R U D E N B U I L D I N G S

DURACURB™



FEATURES

- Internal flange design provides water-tight barrier
- Factory welded seams provide long-term maintenance-free performance
- All-aluminum curb with built-in rigid board insulation
- Includes complete installation kit with support framing, mastic, caulking and fasteners
- Water diverter channels rainwater to prevent ponding
- The only curb approved for VP's Optima Warranty

BENEFITS

- Curb comes ready to install on VP's SSR™ or SLR II™P roof systems
- Lightweight aluminum construction for long-term, low-maintenance performance
- Excellent for new construction or retrofit roofs
- Engineered and manufactured to accommodate HVAC loads
- Unique design and support system adapts to normal expansion and contraction

DURACURB™

The recommended solution for curb requirements for HVAC, skylights, vents and roof hatches

DuraCurb is designed, engineered and manufactured to meet the exacting standards required by Varco Pruden Buildings. Specifically built to fit VP roofing systems, DuraCurbs are easy to install, maintenance-free and offer building owners weathertight protection for roof penetrations at HVAC units, sky-lights, smoke hatches and other roof openings.

Built from durable, light-weight aluminum, these curbs feature concealed fasteners with an enclosed, internal flange design that eliminates the opportunity for water to penetrate the roof. Further, water shedding laps and a water diverter provide additional protection against leaks. The unique design and support system allow DuraCurbs to adjust to normal expansion and contraction cycles without compromising the weathertight seal of the curb.

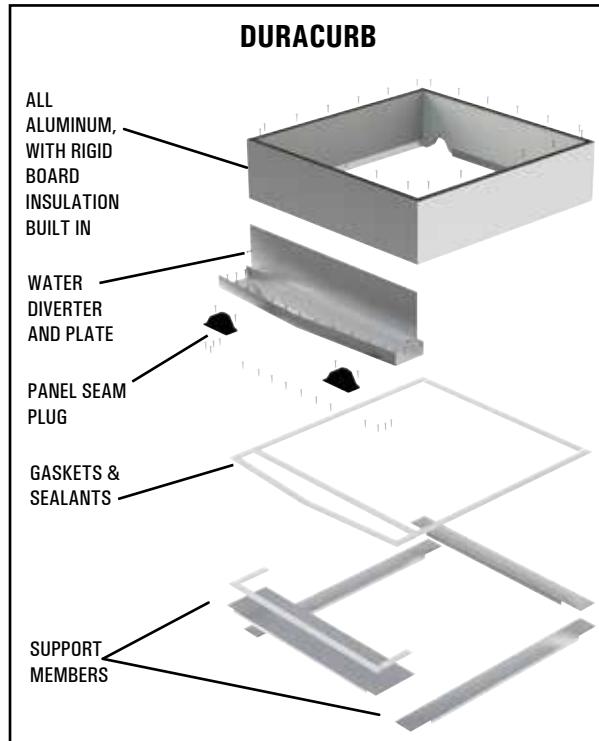
DuraCurbs are custom manufactured to meet the exact requirements for each location on the roof. The curb design matches the necessary opening size and load requirement for HVAC units, roof hatch access or sky-lights. With DuraCurb, owners can be confident that they are using the best curb solution available for their Varco Pruden Building. In fact, **DuraCurb is the only approved curb product available for Varco Pruden's Optima warranty.**

The standard DuraCurb is an all-aluminum, mill finished curb body. Painted curbs are also available. Packaged as kits, these curb units arrive at the jobsite, ready to install — complete with support framing, closures, fasteners, sealants and installation guide. For more information about Varco Pruden roof systems and DuraCurb, talk with your local, authorized Varco Pruden Builder.

Additional Curb Options

In addition to our premiere DuraCurb product, VP offers a complete line of curb products and accessories that meet commercial metal roof conditions from basic penetrations to complex shapes, sizes and loadings. Whatever your building specifications require, your VP Builder can provide.

- Manufactured to specific requirements
- Painted to match roof
- Aluminum or stainless steel construction
- Additional height
- Single or compound pitch for level top
- Made to seam into roof
- Burglar bars
- Damper trays
- Square to round transitions
- Metal liner over insulation
- Solid metal covers



Varco Pruden Buildings, 3200 Players Club Circle, Memphis, TN 38125

©All rights reserved. Varco Pruden Buildings® is a division of BlueScope Buildings North America, Inc. Varco Pruden meets or exceeds the most comprehensive testing and compliance standards in the building system industry. To learn more about our products, services and qualifications, visit our website, www.vp.com. **Building Solutions... one relationship at a time.**

2078 DuraCurb
Issue Date: 2009
Revised: 8/16

Manufacturer Product Data – Ridge Vents



LOW PROFILE RIDGE VENTILATOR



► TDI APPROVED

ALSO AVAILABLE



Metallic Products' low profile ridge ventilators are also available in Florida Product Approved and Miami-Dade HVHZ Approved specifications.

SPECIFICATIONS

STANDARD SIZE

Each 10' unit features 180 square inches of free area with a base rating of 450 CFM of air movement. Units in lengths less than 10' can be manufactured upon request. Throat size is determined by roof pitch

DESIGN

Aerodynamic, low-profile design enhances the look and performance of architectural roof systems. The unit moves toward the ridge on floating roofs. Vents are made to match roof slope to maintain low-profile appearance.

CONSTRUCTION

Unit is factory assembled and ready for installation. Vent features the Cor-A-Vent®, a time-tested, economical, self-cleaning and durable ventilation core. All steel parts are 24-gauge.

FINISH

Galvalume or Polar White finish is standard, and other colors are available, including Kynar®.

NOTE

Please specify flat or die formed skirts, roof pitch and color when ordering.

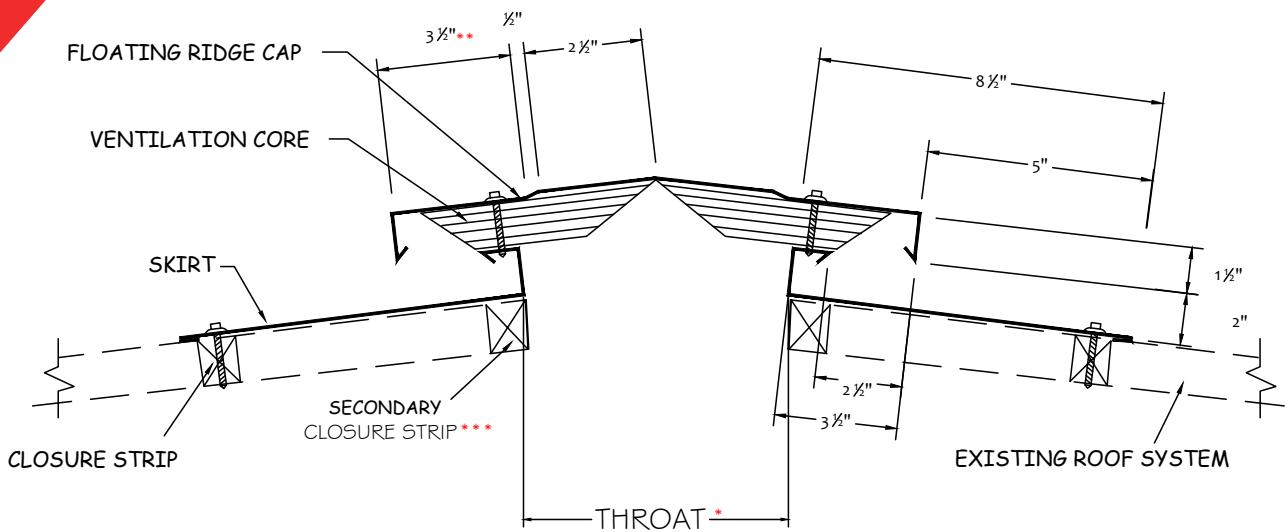
OWNER VERIFY VENTILATOR IN POLAR WHITE COLOR IS ACCEPTABLE
SPECIFY IF COLOR IS REQUIRED TO MATCH ROOFING COLOR SELECTION



7777 Hollister Street | Houston, Texas 77040 | p 713.856.9696 | tf 800.356.7746 | f 713.856.9686 | mpvent.com



TECHNICAL SPECIFICATIONS



THROAT SIZE

(Determined by Roof Pitch)

PITCH	THROAT SIZE
1:12	4-1/8"
2:12	4-1/8"
3:12	4-1/8"
4:12	4-1/8"
5:12	3-1/2"
6:12	2-7/8"
7:12	4-5/8"
8:12	4-1/8"
9:12	3-1/2"
10:12	3"
11:12	2-9/16"
12:12	2"

NOTE

Roof panel must extend to throat of vent for proper support and drainage. End caps and splice kits (if necessary) are shipped loose for field installation.

* Throat varies with roof slope. (See table)

** This dimension changes to 5" on roof slopes 7:12 – 12:12.

*** Secondary closure at ridge is recommended at each skirt splice in a continuous run.

TECHNICAL SPECIFICATIONS

TABLE A

Air Movement Per Lineal Foot Factors

HEIGHT (ft.)	TEMPERATURE DIFFERENCE					
	5°	10°	15°	20°	25°	30°
10'	16.65A	22.05A	26.10A	28.80A	31.50A	34.20A
15'	18.90A	27.00A	31.95A	36.00A	38.70A	41.40A
20'	23.85A	31.50A	36.45A	41.40A	44.50B	48.15B
25'	26.10A	34.65A	40.05A	45.00B	48.60B	53.10C
30'	28.35A	37.35A	43.65B	48.60B	52.65C	57.60C
35'	29.70A	39.15B	45.90B	51.30B	55.80C	60.75C
40'	31.50B	41.85B	48.60B	54.90C	58.50C	63.45C
45'	33.30B	43.20B	50.40B	57.60C	62.10C	66.60C
50'	34.65B	45.45B	53.10C	59.85C	64.80C	70.20D



TABLE B

Wind Velocity Factors

WIND (mph)	FACTORS			
	A	B	C	D
3	1.14	1.09	1.05	1.02
5	1.25	1.18	1.13	1.09
7	1.41	1.29	1.22	1.16
9	1.62	1.43	1.33	1.25
11	1.82	1.57	1.43	1.32

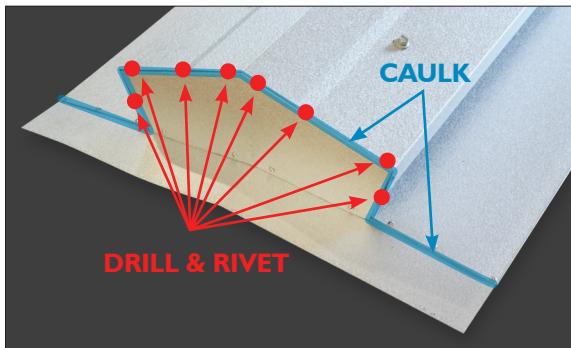
TOTAL CFM = (Table A) x (Table B) x Length



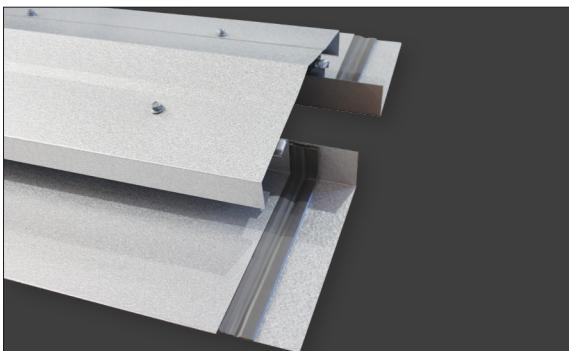


INSTALLATION INSTRUCTIONS

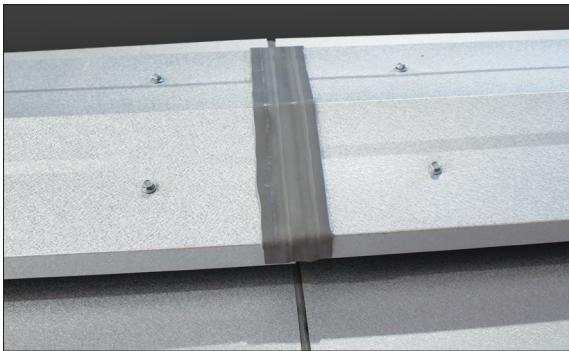
► LOW PROFILE RIDGE VENTILATOR (Flat Skirt)



STEP 1: For continuous runs, install end cap to vent on each end of the run. Drill 9/64" holes. Insert end cap and rivet (rivets provided). Then, continue through steps 2–6. (If single unit, vent is ready to attach to the roof once end caps are installed on both ends.)



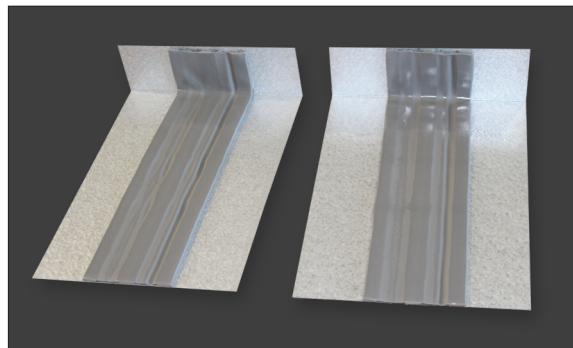
STEP 3: Place skirt splices on one end of vent.



STEP 5: Place tape seal over the two top hoods as shown.



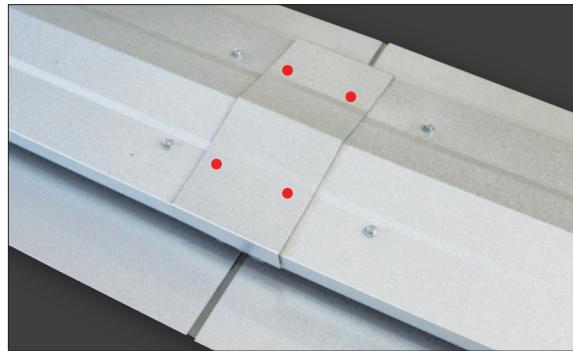
SCAN TO SEE
MORE INFORMATION



STEP 2: Firmly press tape seal on skirt splices as shown.



STEP 4: Butt second vent to first vent, ensuring skirt is firmly pressed on tape seal. Then, attach vent to roof (not pictured.)



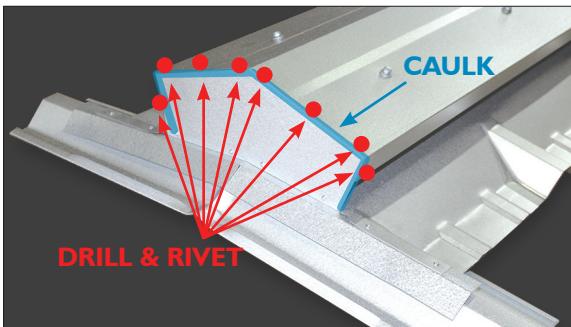
STEP 6: Place top hood splice over tape seal and attach with screws, as indicated by dots. (Screws should be placed along same line as hood screws. Do not place screws along seam between each vent.)



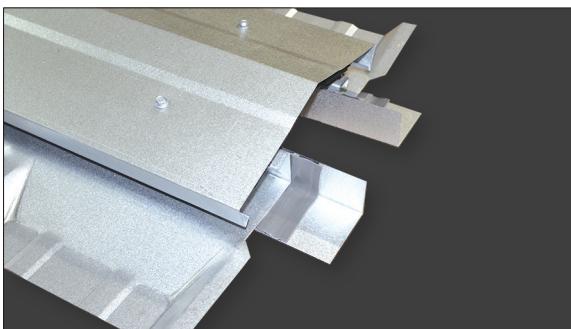


INSTALLATION INSTRUCTIONS

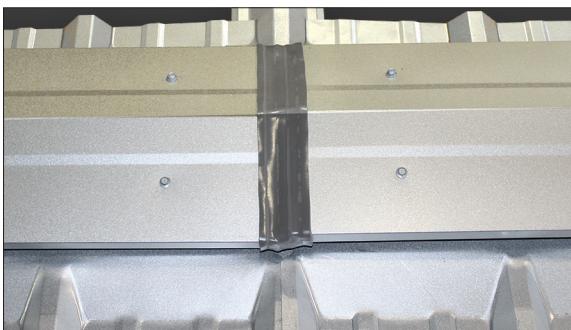
► LOW PROFILE RIDGE VENTILATOR (Die Formed Skirt)



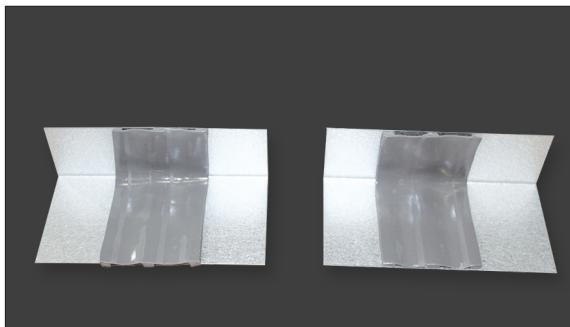
STEP 1: For continuous runs, install end cap to vent on each end of the run. Drill 9/64" holes. Insert end cap and rivet (rivets provided). Then, continue through steps 2 – 6. (If single unit, vent is ready to attach to the roof with included end skirts installed under each end cap.)



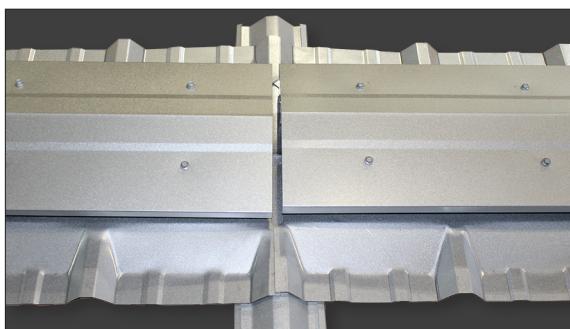
STEP 3: Place skirt splices on one end of vent. Then place end skirt underneath skirt splices before placing the assembly over roof rib panel.



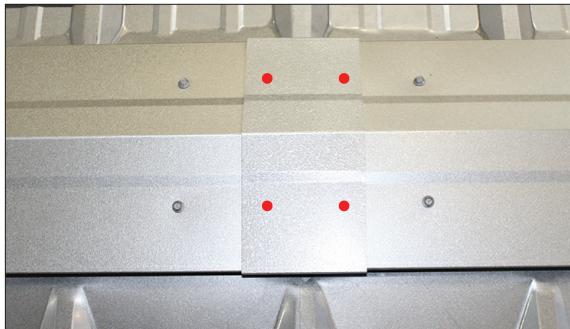
STEP 5: Place tape seal over the two top hoods as shown.



STEP 2: Firmly press tape seal on skirt splices as shown.



STEP 4: Butt second vent to first vent, ensuring vent skirts line up on center line of the end skirt rib. Be sure to attach included tape seal between roof panel and vent skirt to ensure a water-tight seal prior to screwing the vents down to the roof. The vents are ready to attach to the roof at this point. (Not pictured.)



STEP 6: Place top hood splice over tape seal and attach with screws, as indicated by dots. (Screws should be placed along the same line as hood screws. Do not place screws along seam between each vent.)



SCAN TO SEE
MORE INFORMATION



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Manufacturer Product Data – Sheet Metal Coating

1. Kynar KXL Coating
2. Standard Colors for Selection
 - a. Owner to Select Roof Panel Color from Standard Colors
 - b. Owner to Select Siding Panel Color from Standard Colors
 - c. Owner to Select Trim Color from Standard Colors. Trim consists of Rake Trim, Eave Trim, Corner Trim, Base Trim. Framed Opening Trim, Gutters, Downspouts, Misc. Other. All Trim will be formed from 24 Gauge Sheet Metal with Kynar KXL Coating.

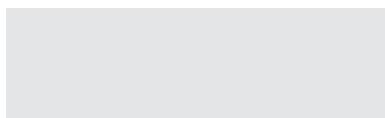
COLORS AND FINISHES

OWNER PROVIDE COLOR SELECTION FOR ROOF, WALLS, AND TRIM

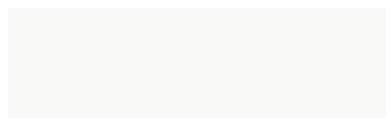
I STANDARD WALL, TRIM & ROOF COLORS

Varco Pruden uses high quality paint systems designed to provide long-term performance and protection. Each coating is formulated with thoroughly researched, tested and field proven pretreatments, primers, resins and pigments that can meet your design and performance requirements.

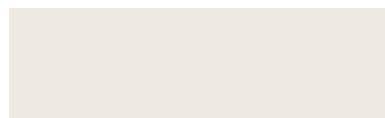
This paint system combines ceramic pigmentation with polyvinylidene fluoride for superior, long-lasting performance. PVDF finishes are respected for their durability, resistance and color retention. Our KXL finishes are warranted for up to 25 years.



Cool Arctic White



Cool Cotton White



Cool Egyptian White



Cool Sierra Tan



Cool Granite Gray



Cool Zinc Gray



Cool Straw Gold



Cool Dark Bronze



Cool Colonial Red



Cool Hemlock Green



Cool Leaf Green



Cool Bermuda Green



Cool Cobalt Blue



Cool Imperial Blue



Cool Ebony (trim only)



Acrylic Coated Galvalume®*

Colors printed on this page may not exactly match actual panel colors. Please request panel swatches for true color match.

Wall panel colors for Panel Rib, RPR, Tech Four & Vee Rib. Roof panel colors for Panel Rib Roof, SSR and 26 & 24 ga. Deck-Liner. Deck-Liner panel colors are limited to 24 & 26 ga. 22 & 28 ga. Deck-Liner is available in Polyester Interior White only. Panel Rib Panel Liner is available in SMP Cool Cotton White only.

*Acrylic Coated Galvalume® is an option for SSR, Panel Rib Roof or Wall & Deck-Liner.

LONG-TERM BEAUTY, UNMATCHED PROTECTION, COOL COLOR PERFORMANCE AND SUPERIOR QUALITY.

70% PVDF finishes meet both Kynar 500® and Hylar 5000® specifications. All colors shown approximate actual paint colors as accurately as possible. Actual paint colors may vary. Colors in this guide are for reference only. Varco Pruden Buildings reserves the right to change color offerings shown here without notice. Painted metal samples are available.

Custom color matching is available through Varco Pruden. Orders with custom colors are subject to special pricing and delivery considerations. For SLR II colors, see selection card #6020.

PHYSICAL AND PERFORMANCE PROPERTIES ON COATED STEEL ¹		
Specular Gloss at 60°	ASTM D 523 ⁽²⁾	25-35
Pencil Hardness	ASTM D 3363	F-2H
T-Bend ⁽³⁾	ASTM D 4145	2T; No pick off
Adhesion	ASTM D 3359	Reverse impact 1/16" crosshatch; No adhesion loss
Humidity Resistance 100% humidity @ 95° F	ASTM D 2247 ASTM D 714	Passes 1500 hours No #8 blisters
Reverse Impact	ASTM D 2794	3.0 x metal thickness, no cracking or adhesion loss
Salt Spray Resistance 5% salt fog @ 95° F	ASTM B 117	Passes 1000 hours less than 1/8" avg. creepage from scribe. None or few #8 blisters
South Florida Exposure 10 yrs. @ 45°	ASTM D 2244 ASTM D 4214	Max 5 fade Max 8 chalk
Dry Film Thickness	ASTM D 1400	0.20 mil primer; 0.75 mil topcoat
Acid Resistance	ASTM D 1308	10% muratic acid 24 hours — no effect; 20% muratic acid 18 hours — no effect
Acid Rain Test	Kesternich SO ₂	15 cycles min. DIN 50018, no objectionable color change
Alkali Resistance	ASTM D 1308	10%, 25% NaOH, 1 hour; no effect

Includes G90 hot dip galvanized and Galvalume 2. American Society for Testing and Materials. 3. Fracturing or rupturing of substrate will rupture coatings. Heavy gauge and clad steel substrates impose limitations on formability. KXL coatings are generally flexible beyond the point of substrate rupture.

VP COOL COLOR INFORMATION

Color Name & Code	Solar Reflectance ¹	Thermal Emmitance ²	SRI ³	LEED 2.2 Low Slope Initial SRI>or=78	LEED 4.0 Low Slope Initial SRI>or=82	LEED 2.2 Steep Slope Initial SRI>or=29	LEED 4.0 SteepSlope Initial SRI>or=29
Acrylic Coated Galvalume (no code)	0.68	0.30	65	No	No	Yes	Yes
Cool Arctic White - BN5W183B	0.64	0.84	76	No	No	Yes	Yes
Cool Bermuda Green - BN5G176B	0.30	0.84	29	No	No	Yes	No
Cool Cobalt Blue - BN5L148B	0.33	0.84	33	No	No	Yes	No
Cool Colonial Red - BN5R143B	0.34	0.85	35	No	No	Yes	No
Cool Cotton White - BN5W184B	0.76	0.84	93	Yes	Yes	Yes	Yes
Cool Dark Bronze - BN5N239B	0.32	0.84	32	No	No	Yes	No
Cool Ebony - BN5B114B	0.30	0.84	29	No	No	Yes	No
Cool Egyptian White - BN5I137B	0.63	0.83	74	No	No	Yes	Yes
Cool Granite Gray - BN5A221B	0.55	0.84	63	No	No	Yes	Yes
Cool Hemlock Green - BN5G175B	0.34	0.85	35	No	No	Yes	No
Cool Imperial Blue - BN5L149B	0.30	0.84	29	No	No	Yes	No
Cool Leaf Green - BN5G174B	0.30	0.85	30	No	No	Yes	No
Cool Sierra Tan - BN5N235B	0.49	0.84	55	No	No	Yes	Yes
Cool Straw Gold - BN5I136B	0.61	0.84	72	No	No	Yes	Yes
Cool Zinc Gray - BN5A222B	0.37	0.85	39	No	No	Yes	Yes

Authorized Independent Testing Laboratory Results: 1 = AITL ASTM C1549 CRRC Tested Lab Results. 2 = AITL ASTM C1371 CRRC Tested Lab Results. 3 = AITL ASTM E1980 CRRC Tested Lab Results. (Low Slope < 2:12; Steep Slope >2:12)

Note: All panels formed from light gauge metal may exhibit waviness, also known as "Oil Canning," commonly occurring in, but not restricted to, flat portions of a panel. This inherent characteristic is not a defect of material and is not cause for rejection.

- Kynar 500® is a registered trademark of Arkema.
- Hylar 5000® is a registered trademark of Solvay Solexis.
- Galvalume® is a registered trademark of BIEC International, Inc.

Installation Instructions – Basic Roofing and Siding Panels

V A R C O P R U D E N B U I L D I N G S

Basic Panels & Accessories



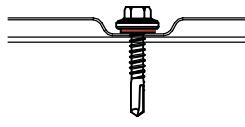
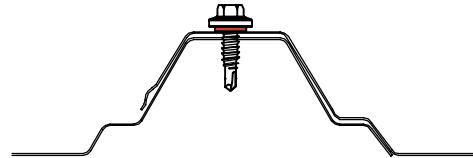
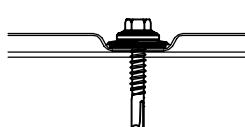
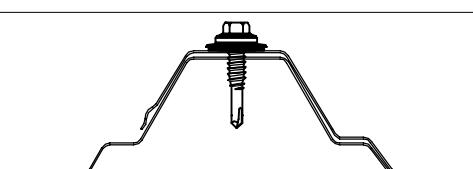
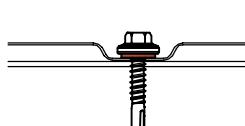
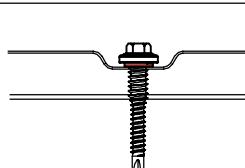
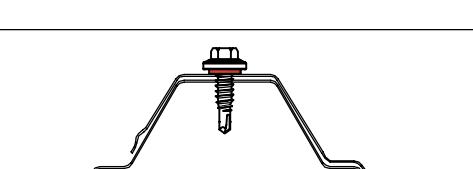
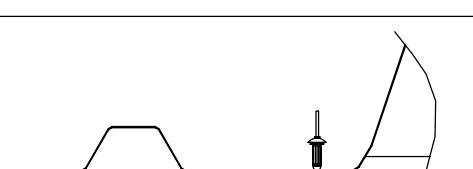
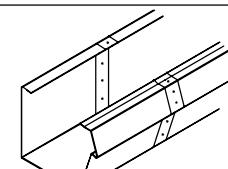
The field guide for correct installation of Varco Pruden's Wall and Roof Systems,
Tuff-Lites, Wallites, Doors, Windows, Gutters and Trim.



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•	MULTI-GUTTER _____	D9-D10
•	HARD RUBBER INSIDE CLOSURE PLUG _____	D11
•	PANEL CLOSURES _____	D12

NOTE: BUILDING PLANS AND SED'S SUPERCEDE INSTALLATION GUIDE.
SEE SED'S FOR SPECIFIC PART NUMBERS AND SEALANTS REQUIREMENTS.

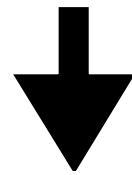
FASTENER		APPLICATION	
ROOF	#12-14 x 1 1/4" SELF - DRILL STRUCTURAL FASTENER W/ 5/8" O.D. SEALING WASHER (1 1/2" OPTIONAL)	<ul style="list-style-type: none"> PANEL TO STRUCTURAL CONNECTIONS TUF-LITE INSTALLATION (UL-60) 	
ROOF	1/4-14 x 7/8" SELF - DRILL STITCH FASTENER W/ 5/8" O.D. SEALING WASHER	<ul style="list-style-type: none"> PANEL TO PANEL CONNECTIONS TUF-LITE INSTALLATION (UL-60) GUTTER 	
ROOF	#12-14 x 1 1/4" SELF - DRILL STRUCTURAL FASTENER W/ 7/8" O.D. SEALING WASHER (1 1/2" OPTIONAL)	<ul style="list-style-type: none"> PANEL TO STRUCTURAL CONNECTIONS TUF-LITE INSTALLATION (UL-90) 	
ROOF	1/4 - 14 x 1 1/8" SELF - DRILL STITCH FASTENER W/ 7/8" O.D. SEALING WASHER	<ul style="list-style-type: none"> PANEL TO PANEL CONNECTIONS TUF-LITE INSTALLATION (UL-90) 	
WALL	#12-14 x 1 1/4" SELF - DRILL STRUCTURAL FASTENER W/ 5/8" O.D. SEALING WASHER	<ul style="list-style-type: none"> PANEL TO STRUCTURAL CONNECTIONS TRIM TO STRUCTURALS 	
WALL	#17/12-14 x 1 7/8" SELF - DRILL STRUCTURAL STAND-OFF FASTENER W/ 5/8" O.D. SEALING WASHER	<ul style="list-style-type: none"> PANEL TO STRUCTURAL CONNECTIONS WITH GREATER THAN 4" BLANKET INSULATION (EXCEPT AT CRIMPED BASE AND AT FRAMED OPENINGS) 	
WALL	1/4-14 x 7/8" SELF - DRILL STITCH FASTENER W/ 5/8" O.D. SEALING WASHER	<ul style="list-style-type: none"> PANEL TO PANEL CONNECTIONS TRIM TO PANELS 	
MISC.	VP-205 RIVET	<ul style="list-style-type: none"> LOUVERS WALL LITES 	
MISC.	1/8" BLIND RIVET	<ul style="list-style-type: none"> BUILDING TRIM, EAVE GUTTER LAPS & CLOSURES 	
<ol style="list-style-type: none"> CHECK THE WAREHOUSE SHIPPING LIST FOR THE TYPE AND NUMBER OF FASTENERS SHIPPED. THE ABOVE INFORMATION IS TO BE USED AS AN IDENTIFICATION GUIDE FOR THE PROPER APPLICATION OF EACH TYPE OF FASTENER. 			
 VP BUILDINGS VARCO-PRUDEN		FASTENER IDENTIFICATION / APPLICATION GUIDE	03/15/14
A-1			

**1/4-14 X $\frac{7}{8}$ "
SELF-DRILLING
STITCH FASTENER**

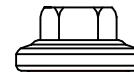
DEEP THREADS DRAW
PANELS SECURELY
TOGETHER

LARGE THREAD BODY,
SMALL DRILL POINT,
EXTRUDES HOLE IN
PANEL, INCREASING
HOLDING POWER.

PANEL TO PANEL APPLICATION



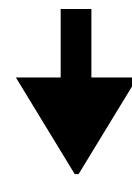
**12-14 X $1\frac{1}{4}$ "
($1\frac{1}{2}$ " OPTIONAL)
SELF-DRILLING
STRUCTURAL
FASTENER**



**$\frac{5}{8}$ " ROOF
SEALING WASHER**

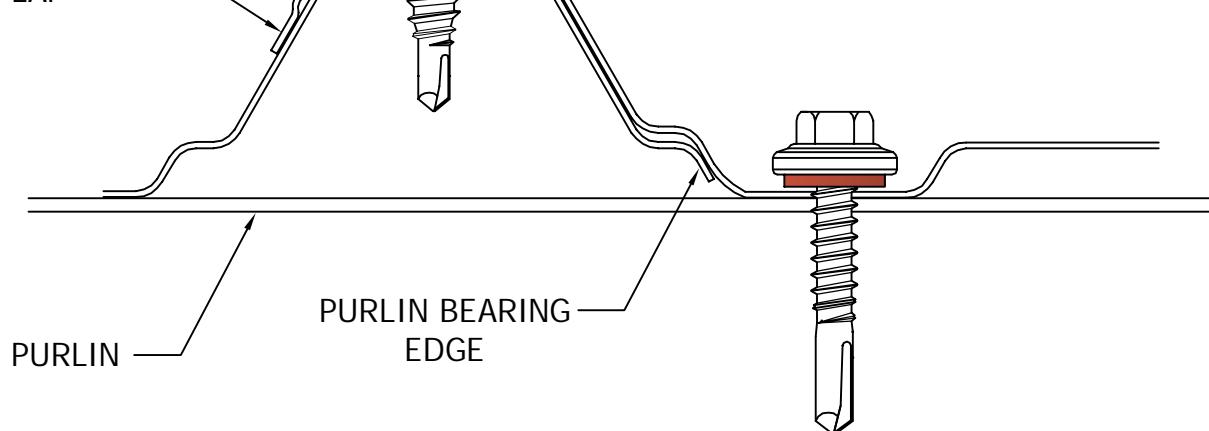
**NON
WALKING-HIGH
SPEED DRILL POINT**

PANEL TO STRUCTURAL APPLICATION



TAPE SEALANT

ROOF
PANEL
LAP

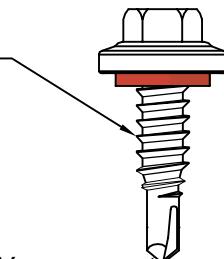


**SECTION THROUGH ROOF
SHOWING CORRECT
FASTENER APPLICATION**

**NOTE: AFTER PRE-DRILLING, METAL
SHAVINGS MUST BE CLEANED FROM
PANEL SURFACE TO PREVENT
CORROSION.**

**1/4-14 X $\frac{7}{8}$ "
SELF-DRILLING
STITCH FASTENER**

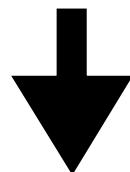
DEEP THREADS DRAW
PANELS SECURELY
TOGETHER



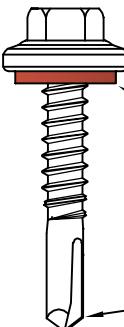
.

LARGE THREAD BODY,
SMALL DRILL POINT,
EXTRUDES HOLE IN
PANEL, INCREASING
HOLDING POWER.

PANEL TO PANEL APPLICATION



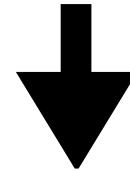
**12-14 X $1\frac{1}{4}$ "
($1\frac{1}{2}$ " OPTIONAL)
SELF-DRILLING
STRUCTURAL
FASTENER**



5/8" ROOF
SEALING WASHER

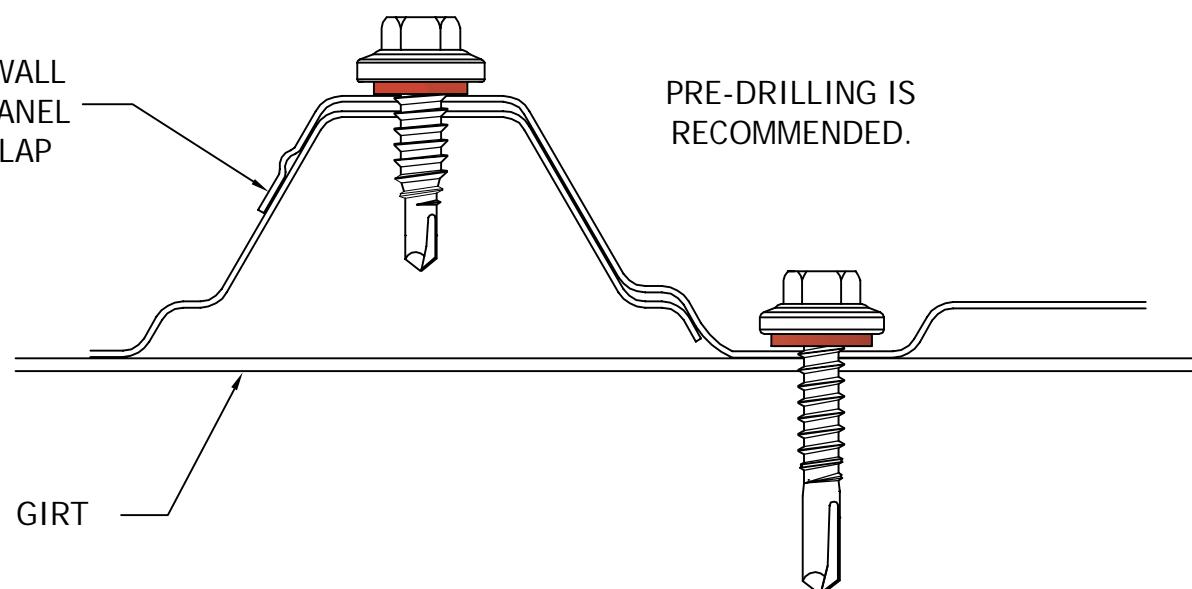
NON
WALKING-HIGH
SPEED DRILL POINT

PANEL TO STRUCTURAL APPLICATION



WALL
PANEL
LAP

PRE-DRILLING IS
RECOMMENDED.



SECTION THROUGH WALL
SHOWING CORRECT
FASTENER APPLICATION

NOTE: AFTER PRE-DRILLING, METAL SHAVINGS
MUST BE CLEANED FROM PANEL
SURFACE TO PREVENT CORROSION.

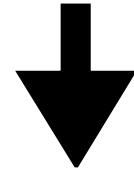
**1/4-14 X $\frac{7}{8}$ "
SELF-DRILLING
STITCH FASTENER**

DEEP THREADS DRAW
PANELS SECURELY
TOGETHER

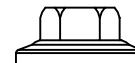
LARGE THREAD BODY,
SMALL DRILL POINT,
EXTRUDES HOLE IN
PANEL, INCREASING
HOLDING POWER.

PANEL TO PANEL APPLICATION

NOTE:
AFTER PRE-DRILLING,
METAL SHAVINGS MUST
BE CLEANED FROM
PANEL SURFACE TO
PREVENT CORROSION.



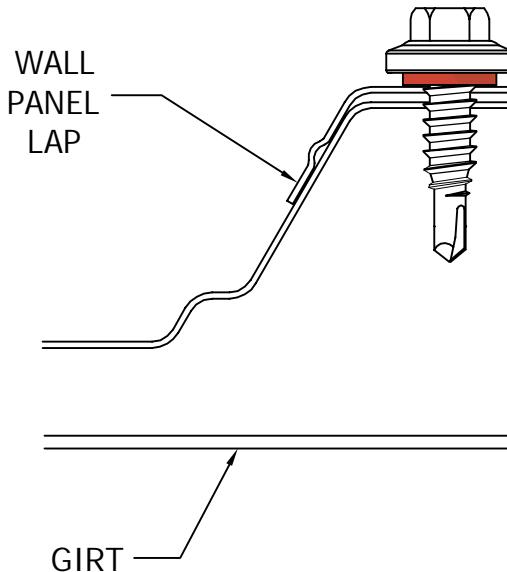
**17/12-14 X 1 7/8"
SELF-DRILLING
STAND-OFF
STRUCTURAL
FASTENER**



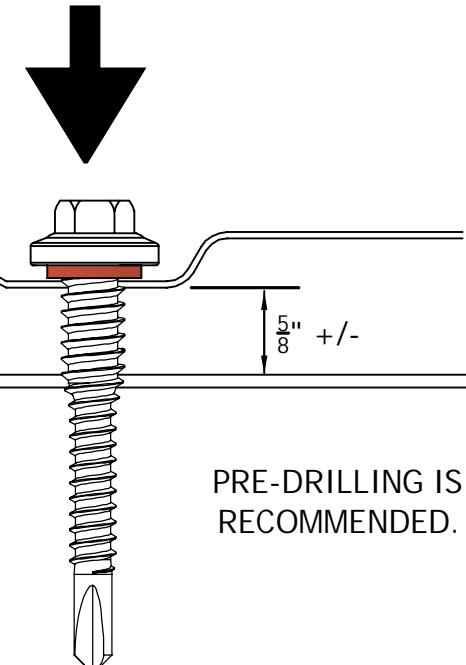
$\frac{5}{8}$ " ROOF
SEALING WASHER
#17 STAND-OFF
SHOULDER
NON
WALKING-HIGH
SPEED DRILL POINT

NOTE: USE STANDARD $1\frac{1}{4}$ " FASTENERS AT
CRIMPED BASE AND AROUND FRAMED
OPENINGS.

PANEL TO STRUCTURAL APPLICATION

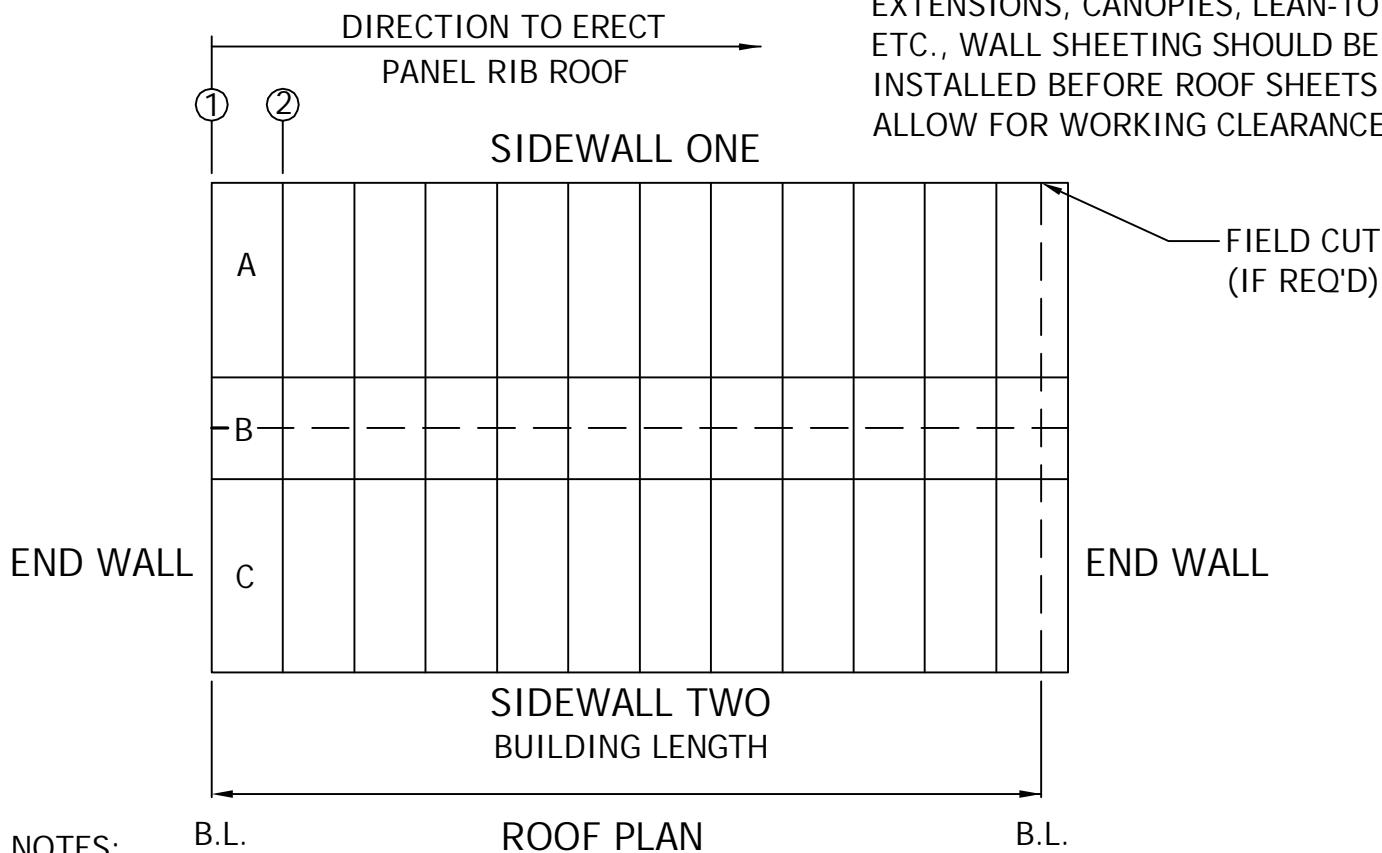


SECTION THROUGH WALL
SHOWING CORRECT
FASTENER APPLICATION



IMPORTANT NOTE:

FOR BUILDINGS HAVING ROOF EXTENSIONS, CANOPIES, LEAN-TO'S, ETC., WALL SHEETING SHOULD BE INSTALLED BEFORE ROOF SHEETS TO ALLOW FOR WORKING CLEARANCES.



NOTES: B.L.

ROOF PLAN

B.L.

1. (A) & (C) denote panel rib roof sheets (B) denotes panel rib cap sheet.
2. Line (1) is location of the lap rib & line (2) represents the purlin bearing rib of panels (A) & (C) and cap sheet (B).
3. Locate the center of the lap rib exactly over B.L. Attach panels (A) & (C). Then attach cap sheet (B).
4. Each side of the panel rib roof and the panel rib cap must be run in conjunction with each other to insure correct alignment.
5. Refer to different sections of this manual for details relating to eave alignment of roof panels, mastic application, fastener types and spacing and building accessories located on the roof.
6. All damaged paint finishes are to be retouched to prevent rusting.
7. In the event a screw is installed in the wrong location or should a screw break during the driving process, remove the screw and install one of a larger diameter to prevent a potential leak. If removal of a screw remnant is not possible, water proofing measures are to be taken to insure water tightness.

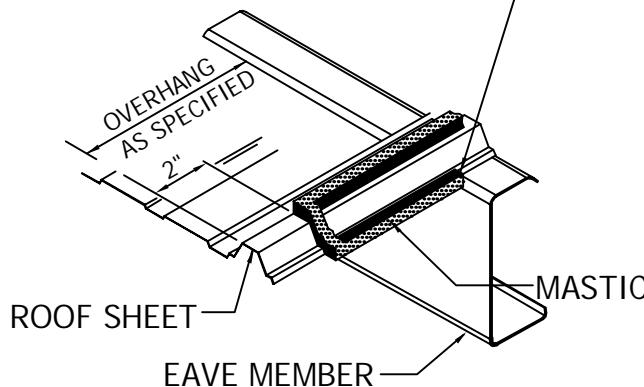


NOTES:

8. Concentrated heavy loads (personnel or materials) occurring on the roof during construction shall be distributed uniformly over a large area in such a manner as to prevent damage to building components.
9. All metal shavings occurring as a result of drilling operations on the roof are to be removed in such a manner as to prevent damage or staining of roof finish.



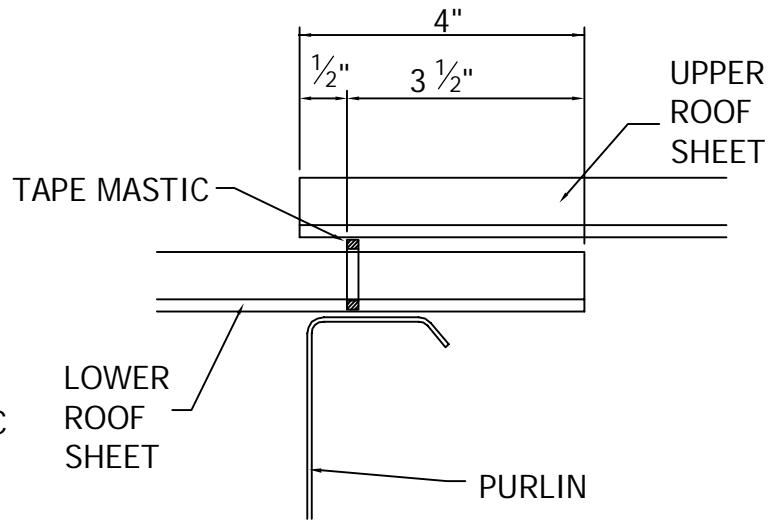
EXTEND MASTIC DOWN PURLIN BEARING EDGE AND RETURN TO WEB SIDE OF EAVE MEMBER



MASTIC DETAIL AT EAVE PURLIN

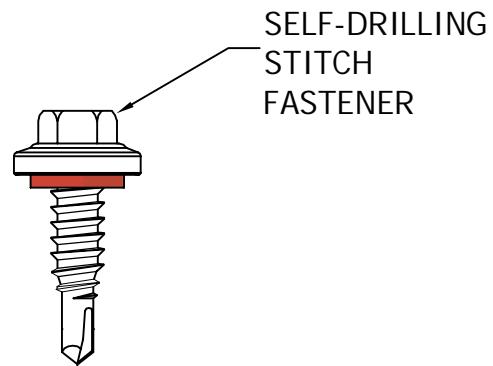
Clean area where mastic will be applied.

Install mastic on purlin bearing lap rib of roof (prior to installing next roof sheet), apply pressure over entire area to obtain adhesion.

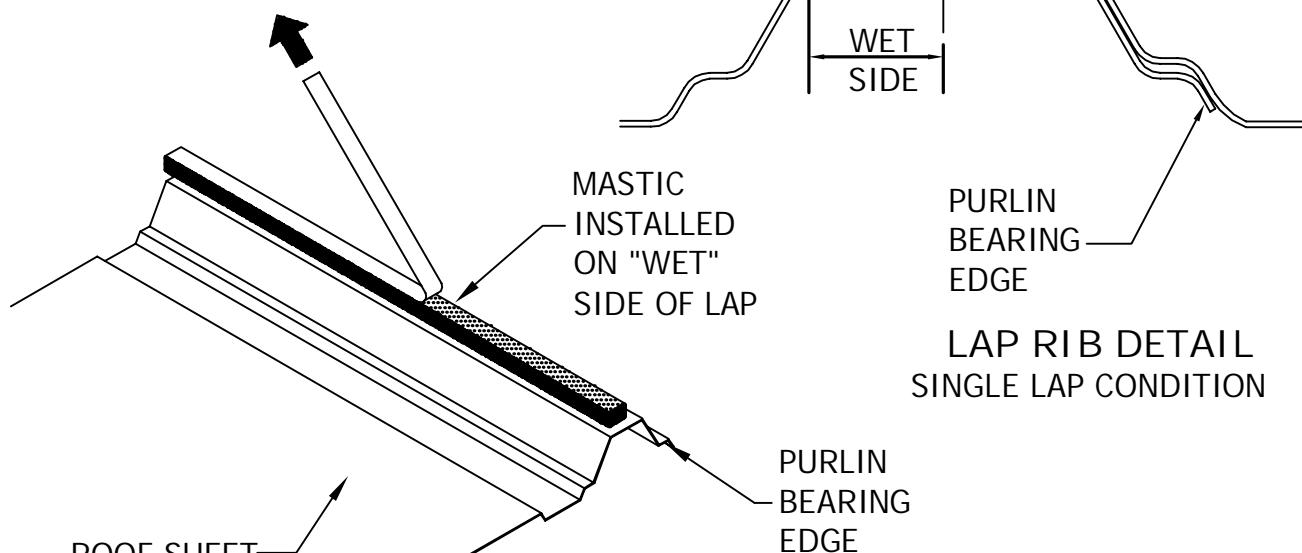


END LAP DETAIL

Install mastic at end lap edges as shown (all roof sheet end laps)



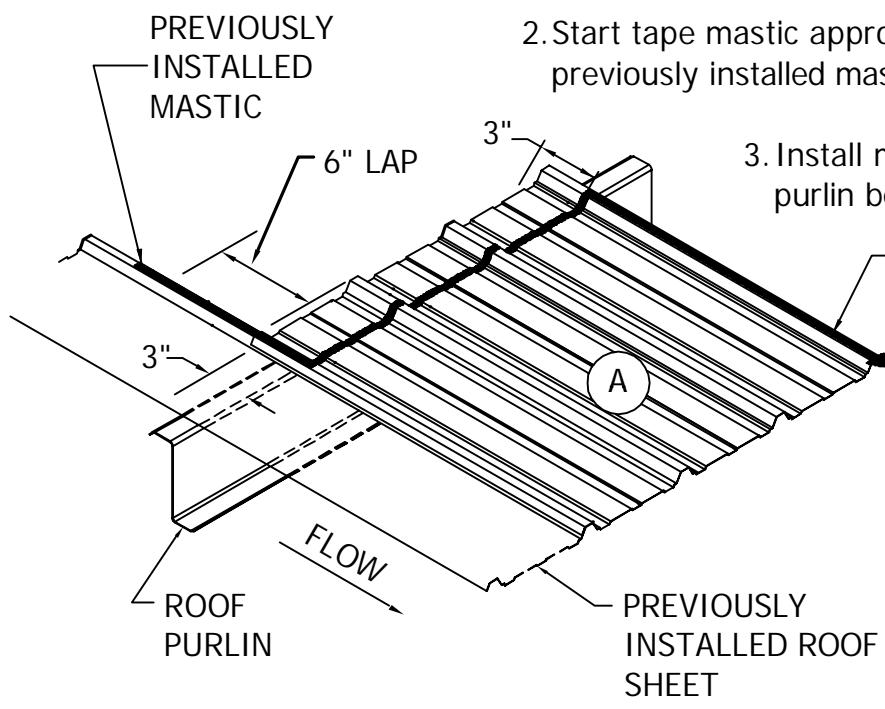
IMPORTANT: REMOVE RELEASE PAPER BY PULLING PAPER BACK AT APPROXIMATELY 180°.



LAP RIB DETAIL
SINGLE LAP CONDITION

REMOVING RELEASE PAPER

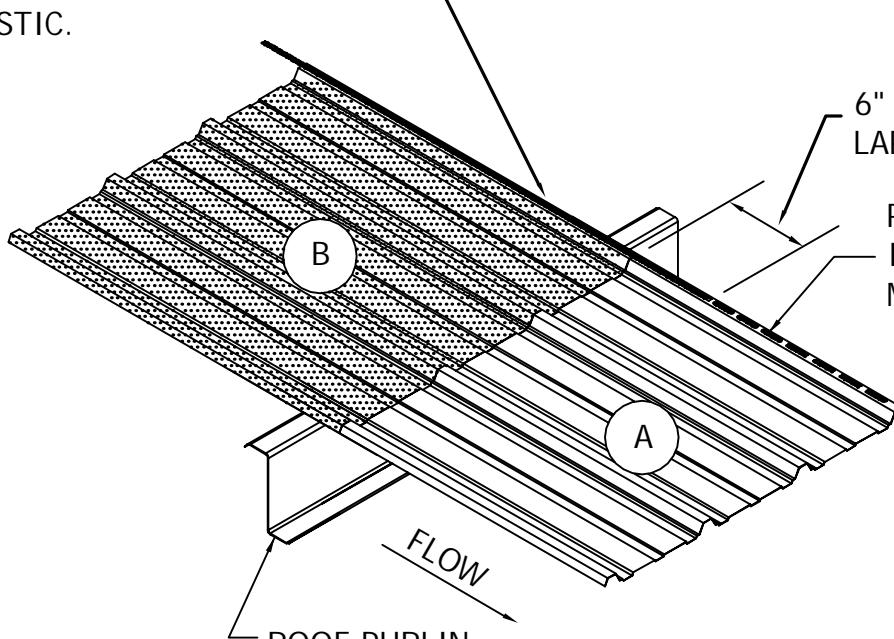
INSTALLATION PROCEDURE / TAPE MASTIC



STEP ONE

ROOF SHEET END LAP CONDITION

INSTALL MASTIC ON "WET" SIDE OF
SIDE-LAP AND EXTEND DOWN 6"
OVER PREVIOUSLY INSTALLED
MASTIC.



STEP TWO

ROOF SHEET END LAP CONDITION

1. Position roof sheet "A" lap rib over previously installed roof sheet purlin bearing edge. Use standard lap dimensions.

2. Start tape mastic approx. 6" up adjacent sheet overlapping previously installed mastic.

3. Install mastic across roof sheet and down purlin bearing rib as shown.

TAPE
MASTIC

4. Install mastic on "WET" side of purlin bearing edge as shown.

5. Fasten roof sheet to purlins other than purlin at end lap condition. Refer to fastener details for recommended types and placement of roof fasteners.

6. Remove release paper before installing sheet "B".

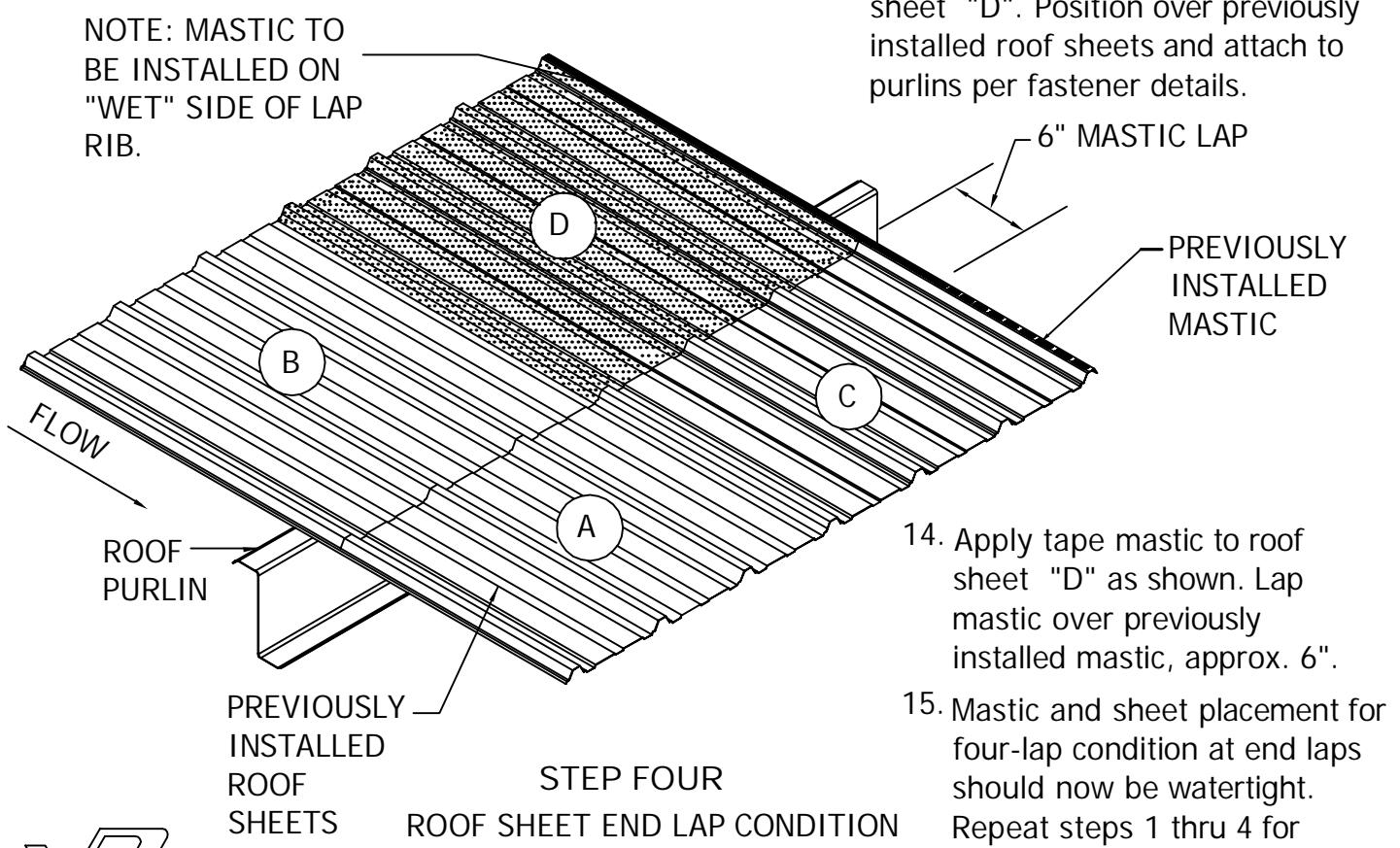
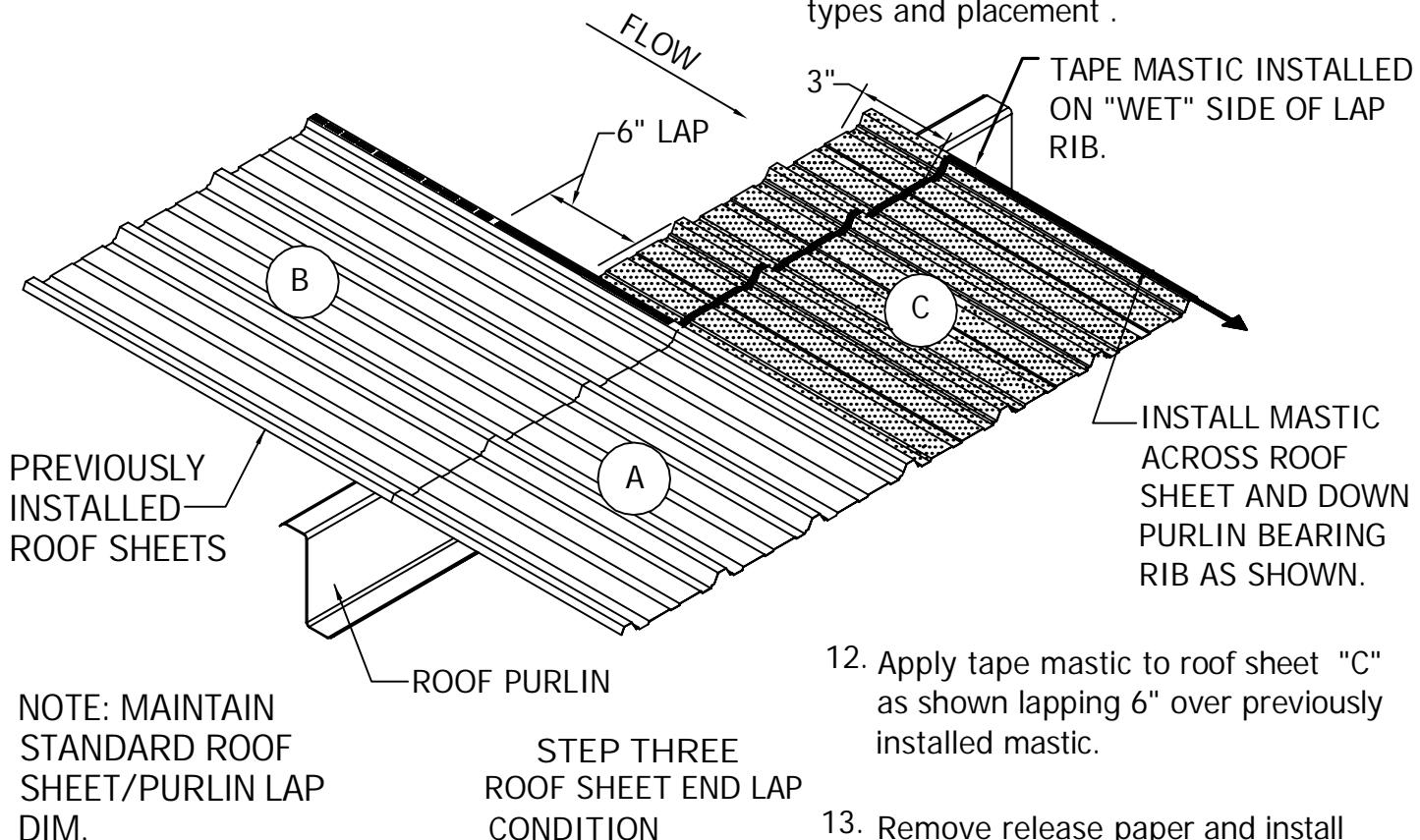
7. Position sheet "B" over previously installed roof sheets. Used standard roof sheet lap dimensions.

8. Attach sheet "B" to purlins per fastening details. Use only recommended roof fasteners and install in sequence as shown.

9. Install mastic as shown, lapping previously installed mastic approx. 6". Remove release paper from mastic.

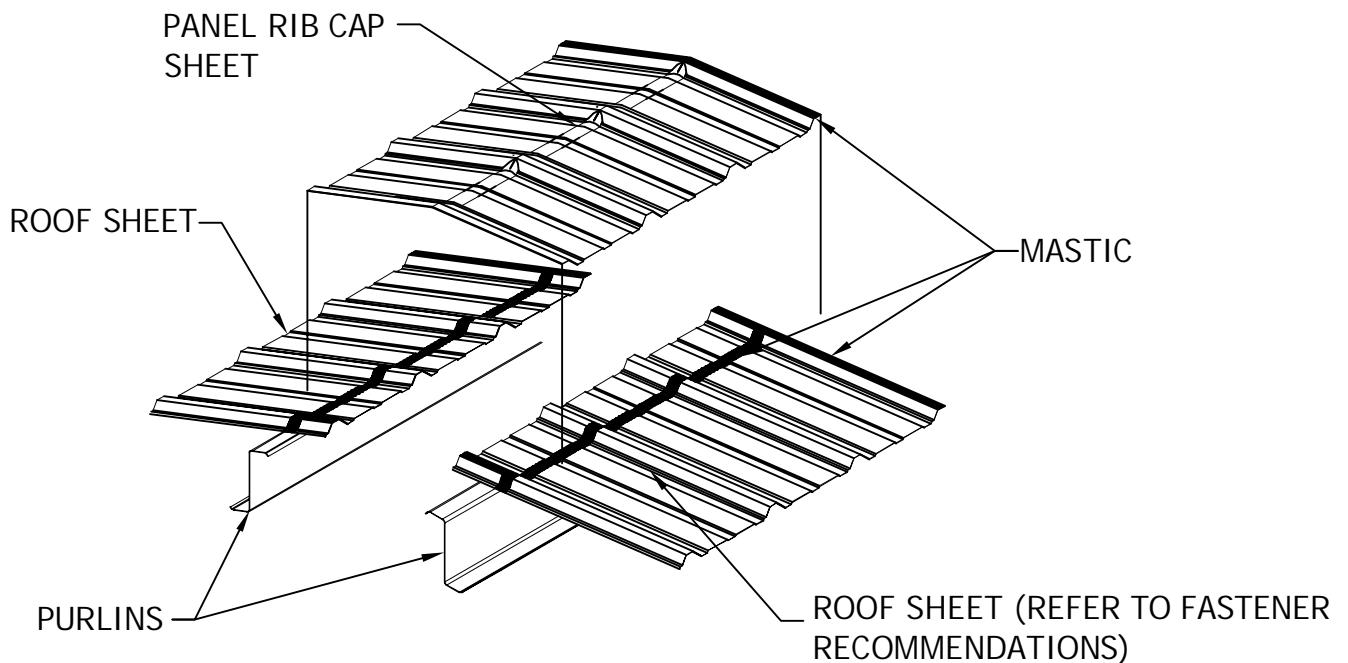
10. Position roof sheet "C" over previously installed roof sheets as shown. Maintain standard lap dimension.

11. Fasten roof sheet to purlins other than purlin at end lap condition. Refer to fastener details for recommended fastener types and placement .



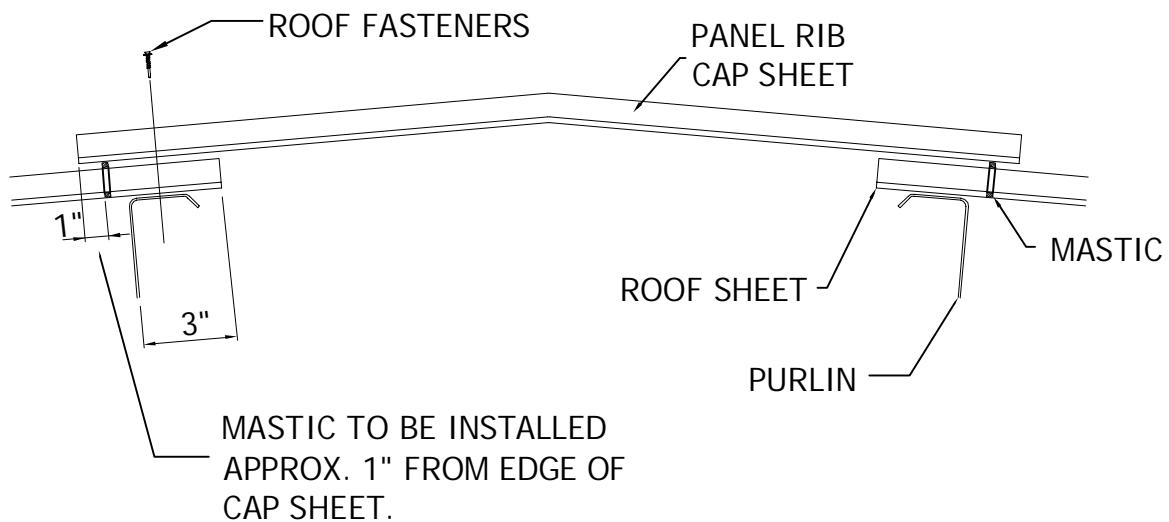
14. Apply tape mastic to roof sheet "D" as shown. Lap mastic over previously installed mastic, approx. 6".

15. Mastic and sheet placement for four-lap condition at end laps should now be watertight. Repeat steps 1 thru 4 for remaining roof sheets.



NOTE: CAP SHEET TO BE USED AS
AN ALIGNMENT GUIDE WHEN
STARTING SHEETING ON OPPOSITE
SIDE OF RIDGE.

CAP SHEET INSTALLATION

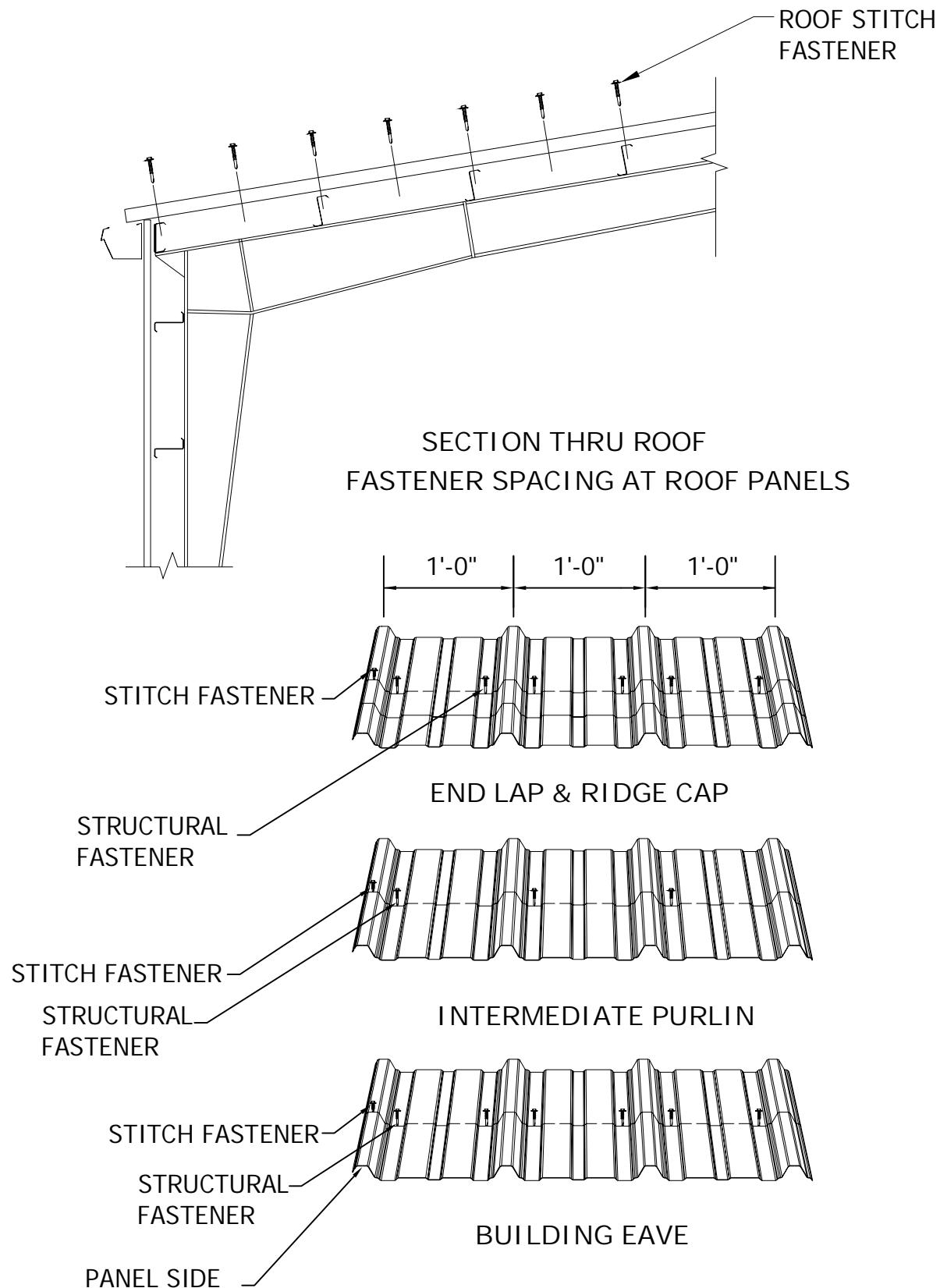


SECTION THRU RIDGE

FASTENER APPLICATION ON ROOF

VP "STANDARD" ROOF CONSTRUCTION

(QUALIFIES AS UL CLASS 60 UPLIFT RATED ROOF)



NOTE: INSTALL ROOF STITCH FASTENERS AT MID-POINTS BETWEEN EACH INTERMEDIATE PURLIN.

4" PANEL LAP

3"

1"

PURLIN

B

D

1 1/2"

C

NOTE: INSTALL ROOF STRUCTURAL FASTENERS FIRST. (IN SEQUENCE AS SHOWN).

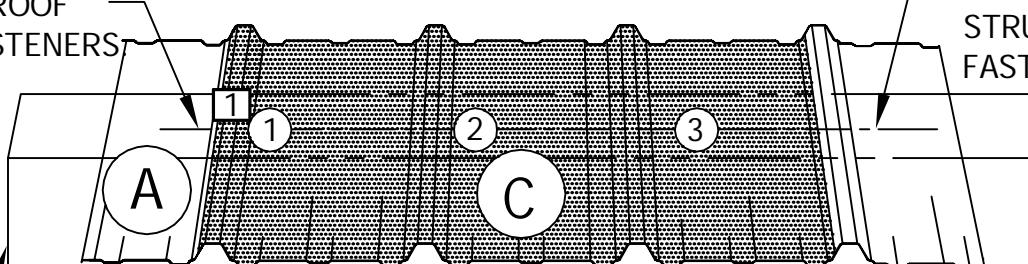
CENTERLINE ROOF STRUCTURAL FASTENERS.

2"

TYPICAL AT RIDGE CAP & ROOF SHEET END LAPS

CENTERLINE PURLIN FLANGE & ROOF STITCH FASTENERS

PURLIN

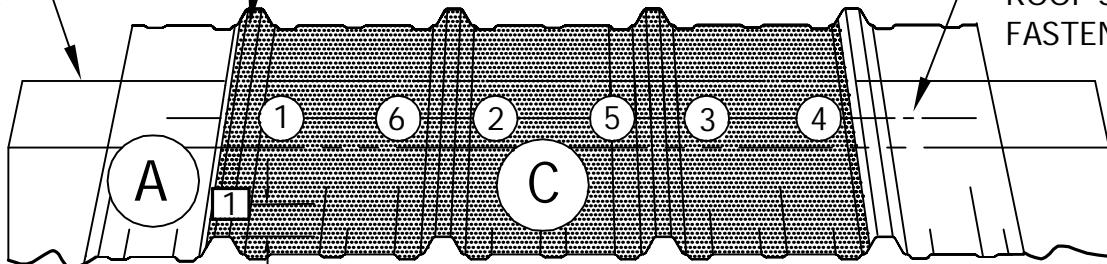


TYPICAL AT INTERMEDIATE PURLINS

CENTERLINE PURLIN FLANGE & ROOF STRUCTURAL FASTENERS.

EAVE MEMBER

STITCH FASTENER (TYPICAL)



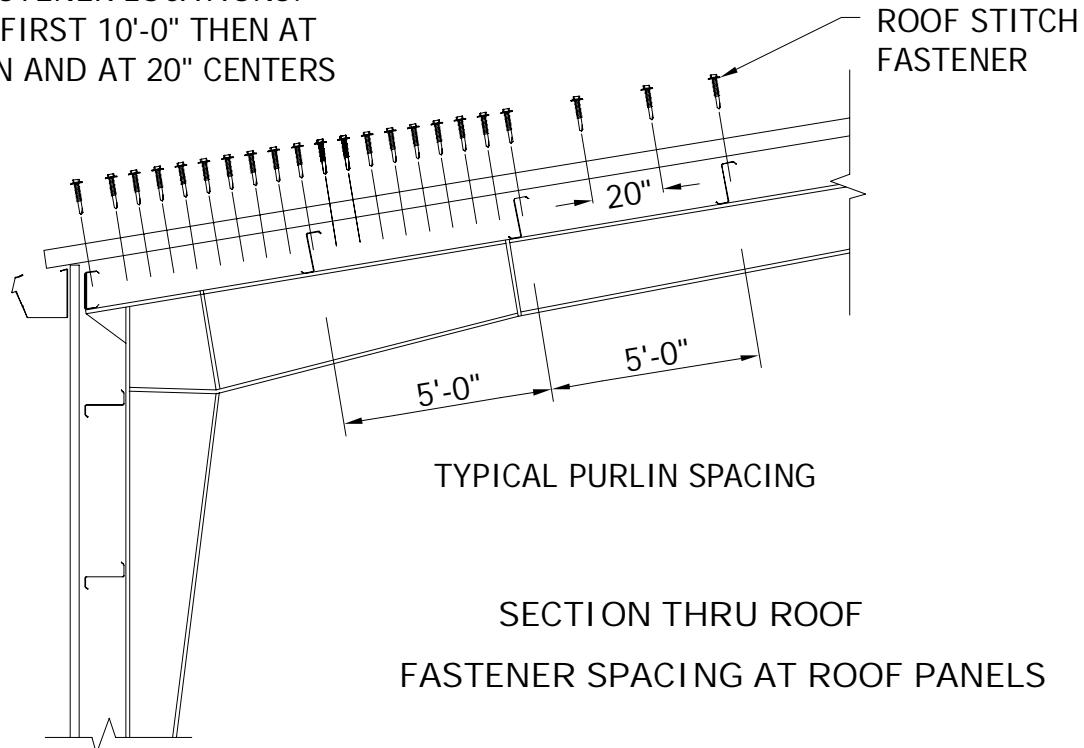
TYPICAL AT INTERMEDIATE PURLINS

CENTERLINE EAVE MEMBER FLANGE & ROOF STRUCTURAL FASTENERS.

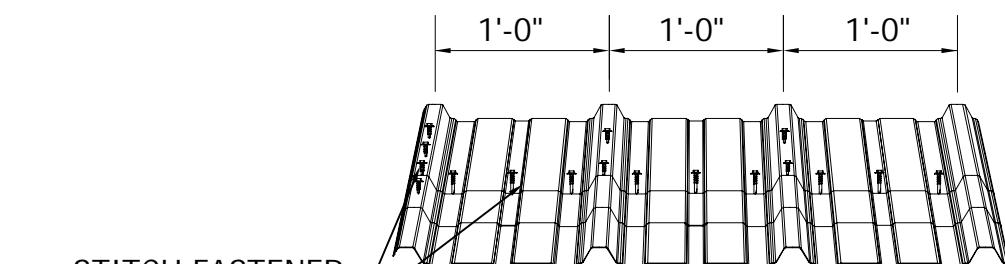
FASTENER APPLICATION ON ROOF

"ICE DAMMING"

SIDE LAP FASTENER LOCATIONS:
6" O.C. FOR FIRST 10'-0" THEN AT
EACH PURLIN AND AT 20" CENTERS
TO RIDGE.

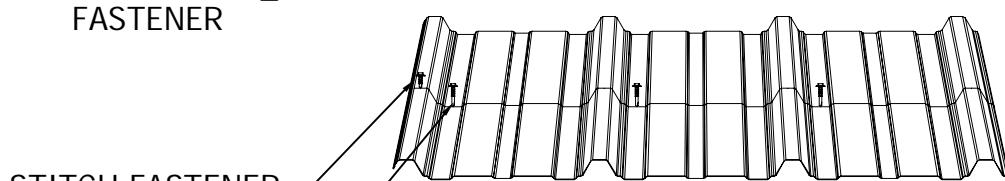


1'-0" 1'-0" 1'-0"



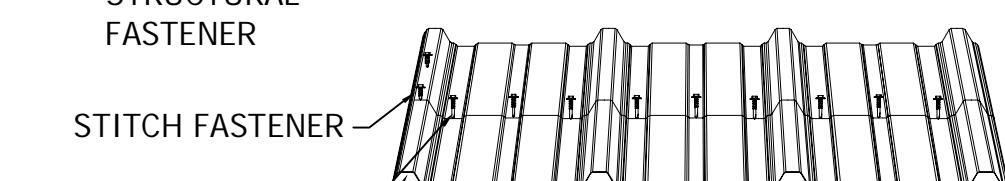
STRUCTURAL
FASTENER

END LAP & RIDGE CAP



INTERMEDIATE PURLIN

STRUCTURAL
FASTENER

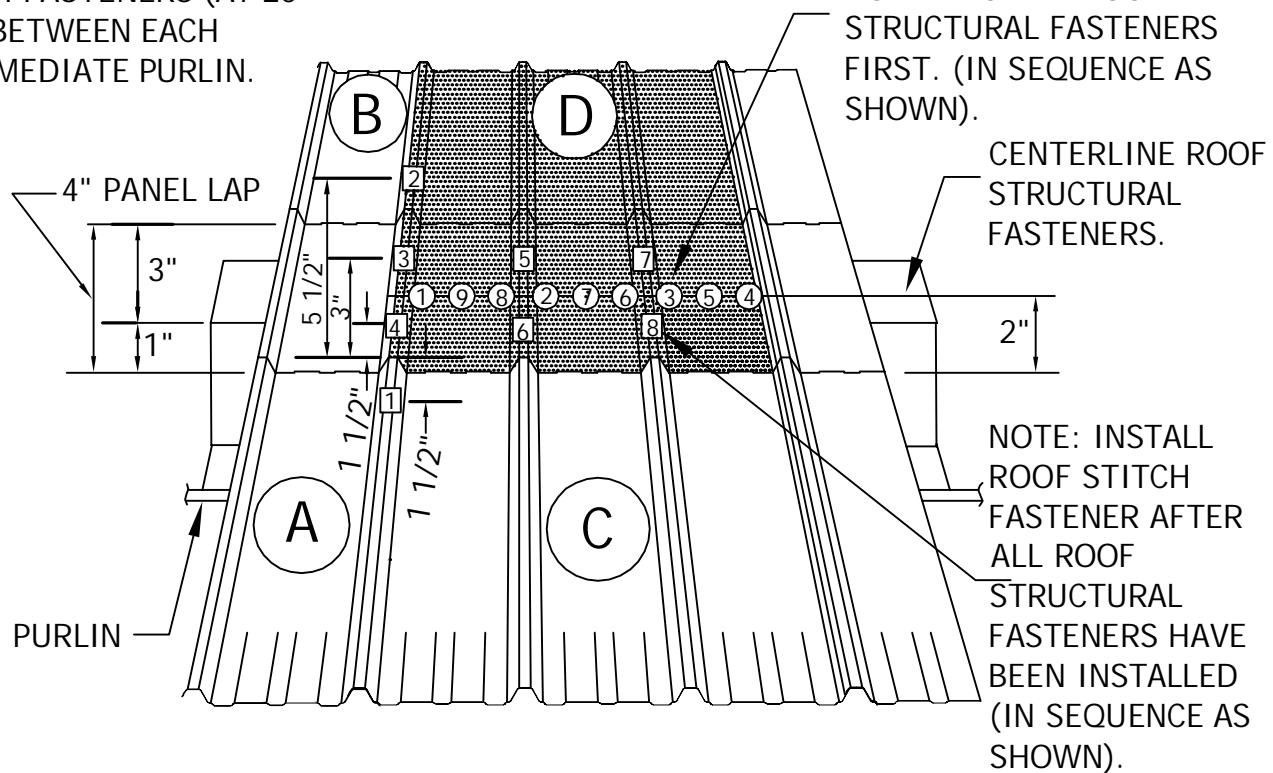


BUILDING EAVE

STRUCTURAL
FASTENER

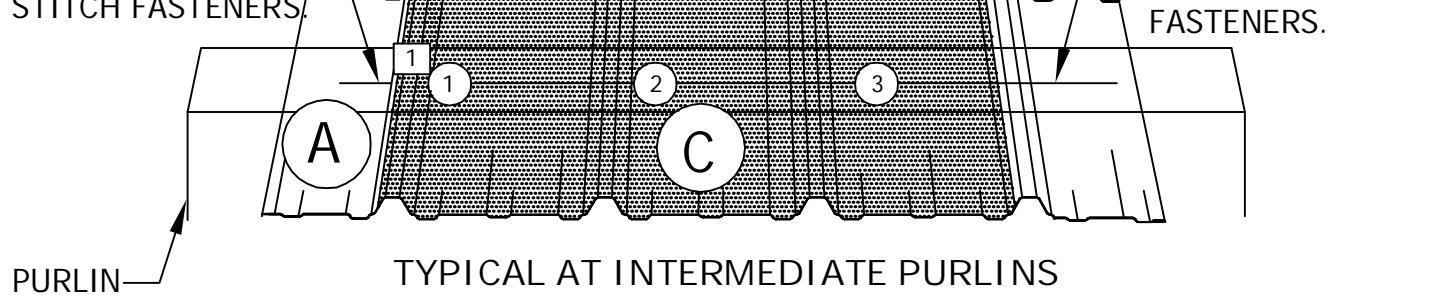
PANEL SIDE LAP

NOTE: INSTALL (2) ROOF STITCH FASTENERS (AT 20° O.C.) BETWEEN EACH INTERMEDIATE PURLIN.

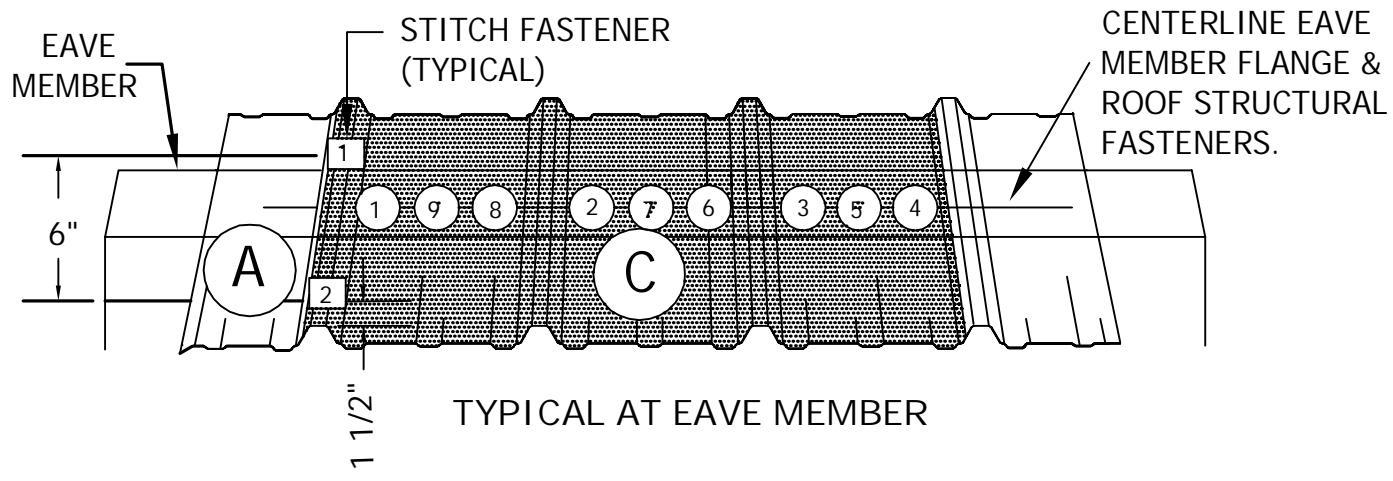


TYPICAL AT RIDGE CAP & ROOF SHEET END LAPPS

CENTERLINE PURLIN FLANGE & ROOF STITCH FASTENERS.



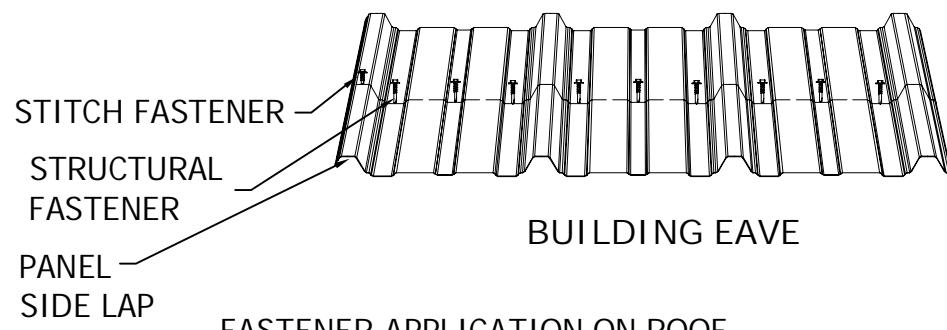
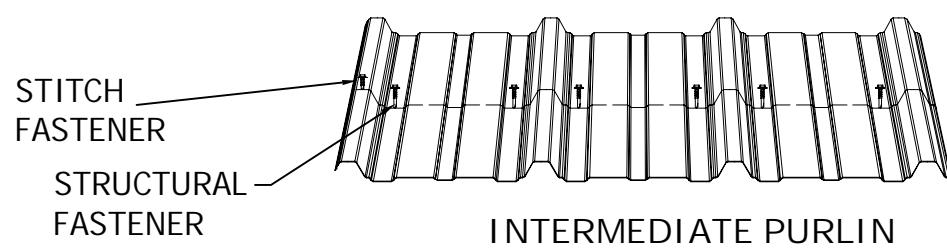
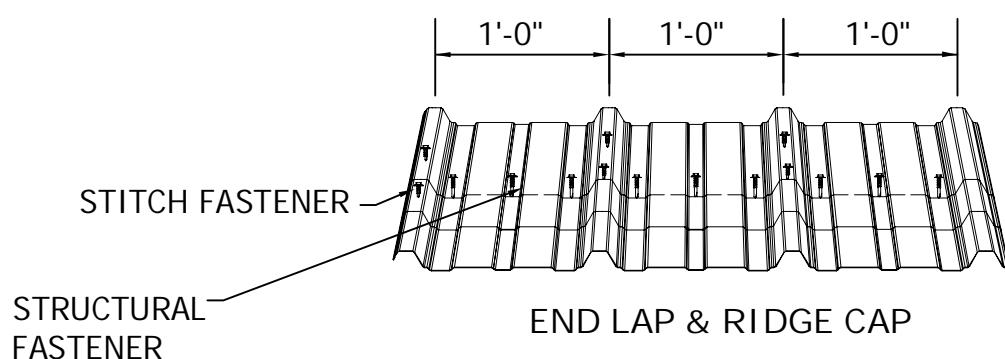
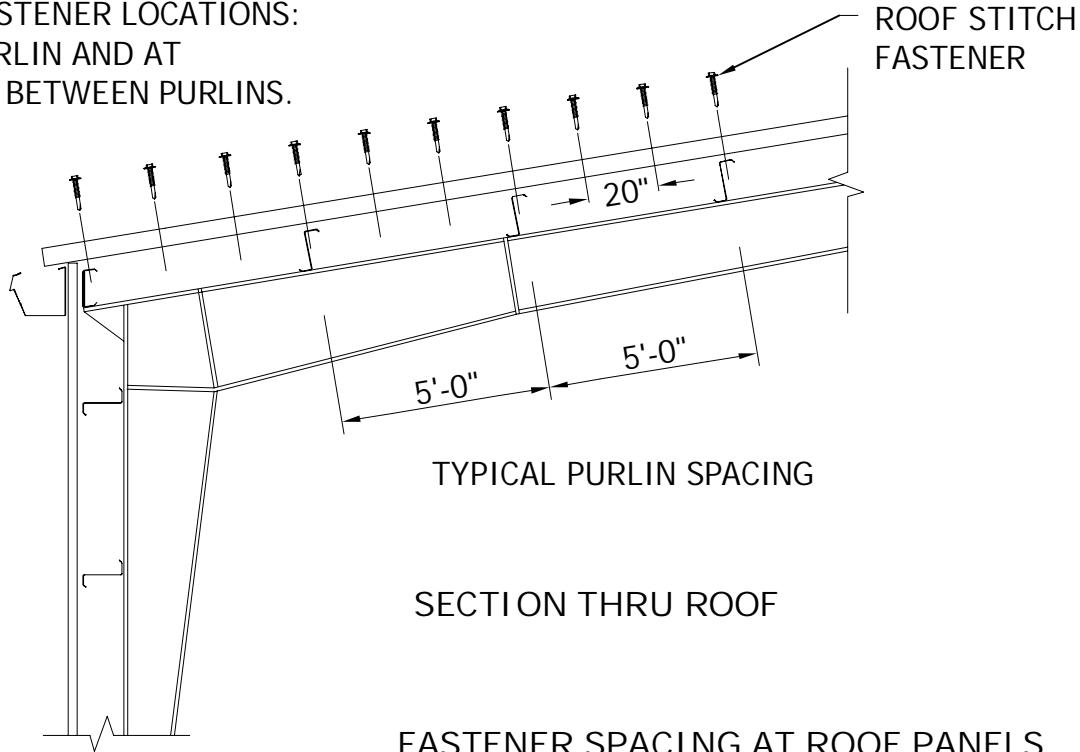
TYPICAL AT INTERMEDIATE PURLINS



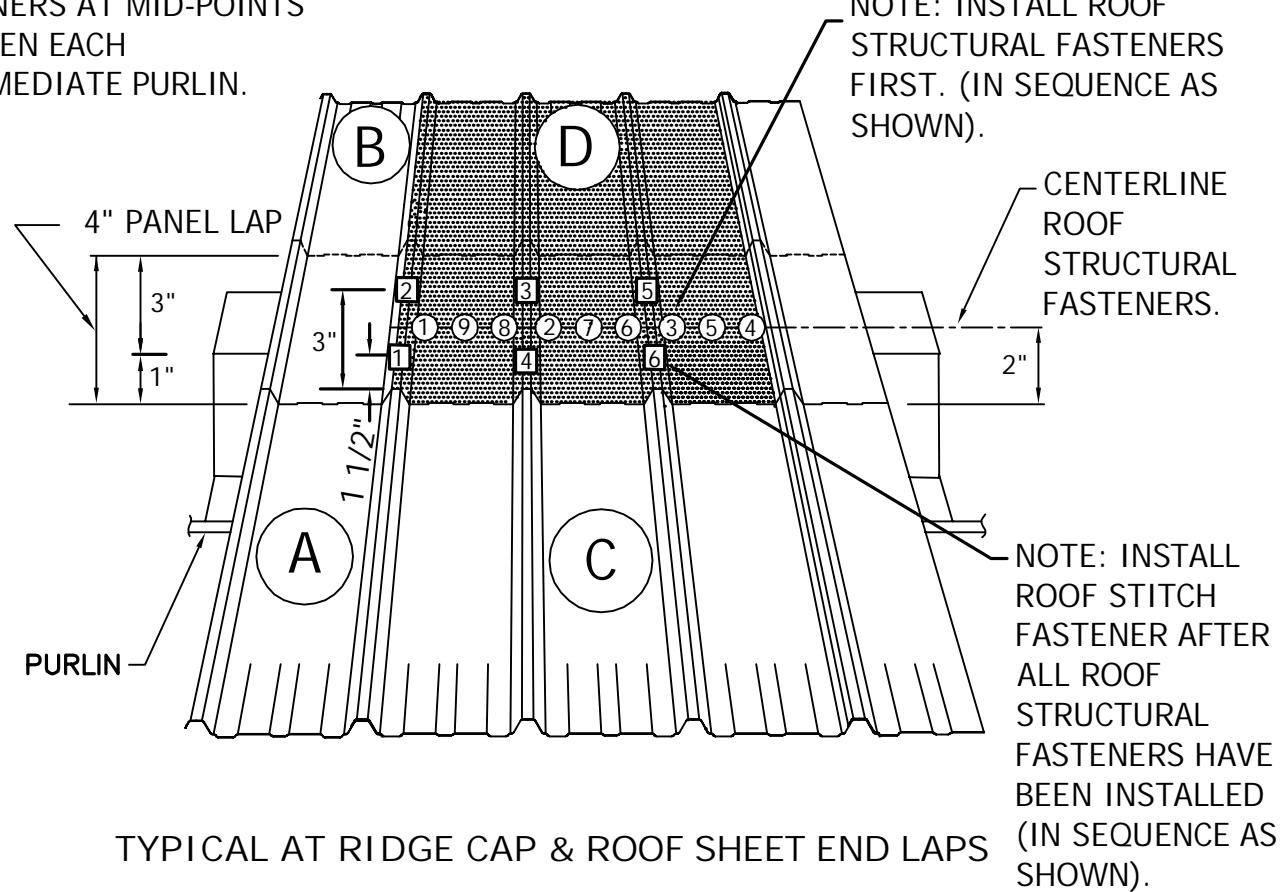
FASTENER APPLICATION ON ROOF

"UL CLASS 90-UPLIFT RATED"

SIDE LAP FASTENER LOCATIONS:
AT EACH PURLIN AND AT
MID-POINTS BETWEEN PURLINS.



NOTE: INSTALL ROOF STITCH
FASTENERS AT MID-POINTS
BETWEEN EACH
INTERMEDIATE PURLIN.



CENTERLINE
PURFLIN FLANGE
& ROOF STITCH
FASTENERS.

CENTERLINE
PURFLIN FLANGE &
ROOF STRUCTURAL
FASTENERS.

PURLIN

TYPICAL AT INTERMEDIATE PURLINS

EAVE
MEMBER

CENTERLINE EAVE
MEMBER FLANGE &
ROOF STRUCTURAL
FASTENERS.

STITCH
FASTENER

1 1/2"

TYPICAL AT EAVE MEMBER
B-12

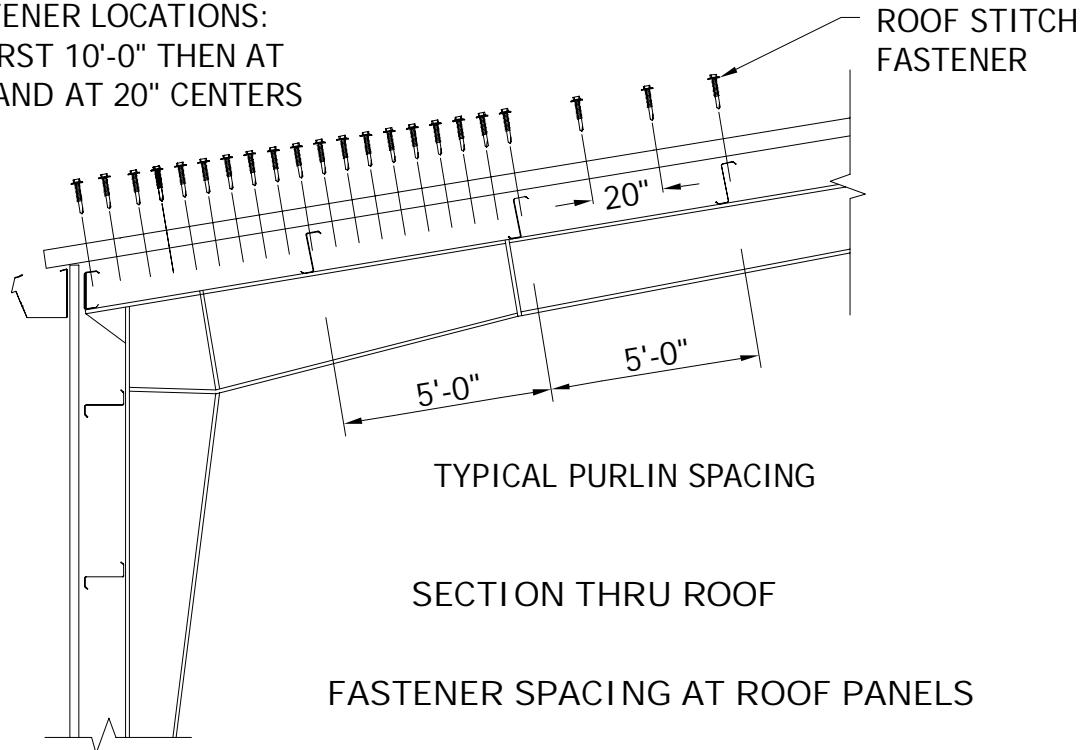
03/15/14

FASTENER APPLICATION ON ROOF

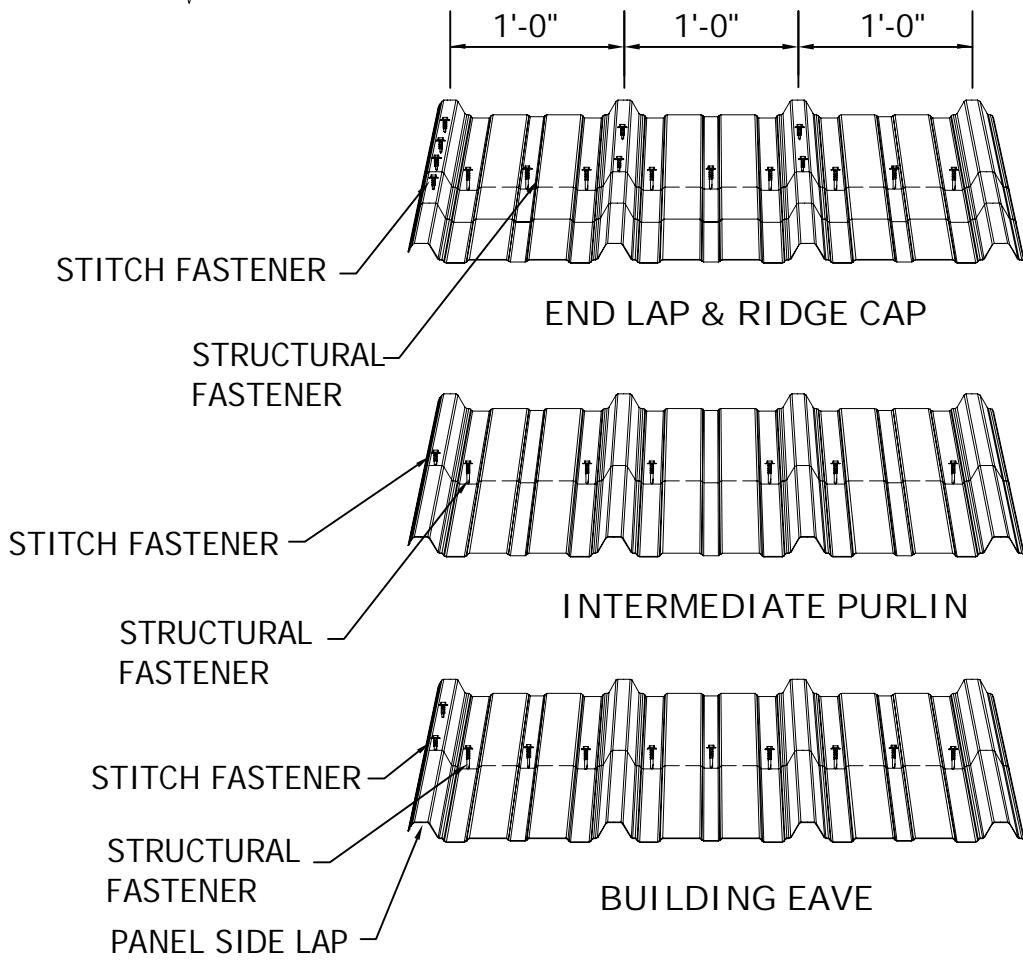
"UL CLASS 90-UPLIFT RATED & ICE DAMMING"

SIDE LAP FASTENER LOCATIONS:

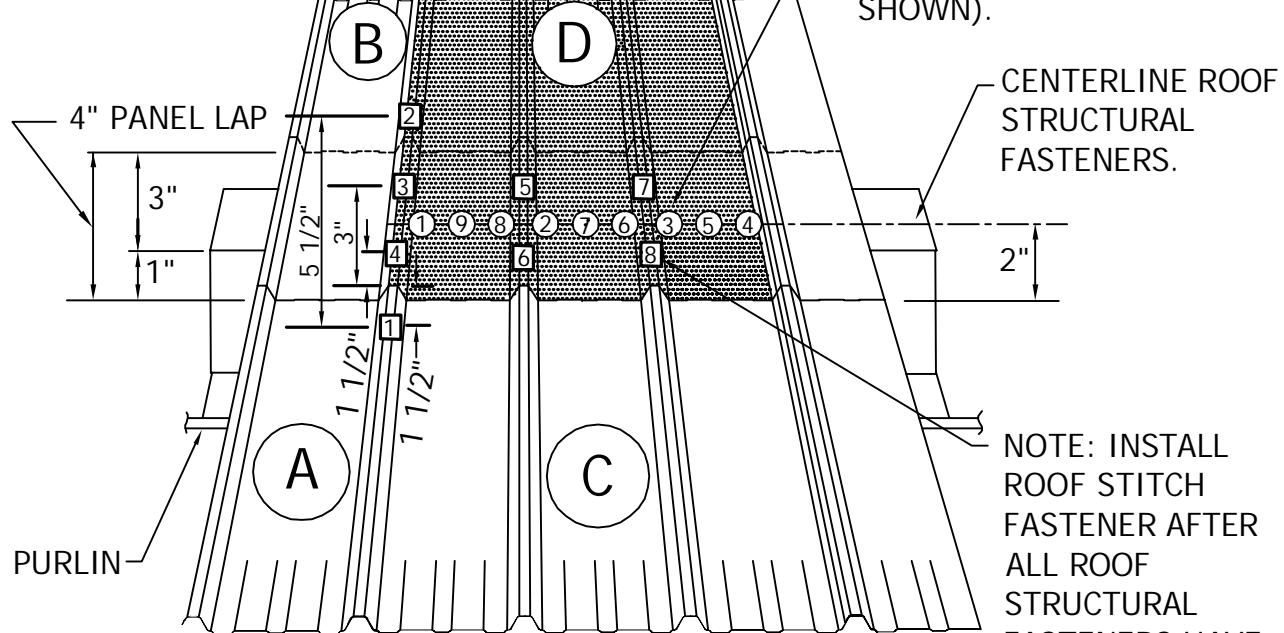
6" O.C. FOR FIRST 10'-0" THEN AT
EACH PURLIN AND AT 20" CENTERS
TO RIDGE.



FASTENER SPACING AT ROOF PANELS



NOTE: INSTALL (2) ROOF STITCH
FASTENERS AT (AT 20" O.C.)
BETWEEN EACH INTERMEDIATE
PURLIN.



NOTE: INSTALL ROOF
STRUCTURAL FASTENERS
FIRST. (IN SEQUENCE AS
SHOWN).

CENTERLINE ROOF
STRUCTURAL
FASTENERS.

NOTE: INSTALL
ROOF STITCH
FASTENER AFTER
ALL ROOF
STRUCTURAL
FASTENERS HAVE
BEEN INSTALLED (IN
SEQUENCE AS
SHOWN).

TYPICAL AT RIDGE CAP & ROOF SHEET END LAPS

CENTERLINE
PURLIN FLANGE
& ROOF STITCH
FASTENERS.

CENTERLINE
PURLIN FLANGE &
ROOF STRUCTURAL
FASTENERS.

PURLIN

TYPICAL AT INTERMEDIATE PURLINS

EAVE
MEMBER

STITCH FASTENER
(TYPICAL)

CENTERLINE EAVE
MEMBER FLANGE &
ROOF STRUCTURAL
FASTENERS.

6"

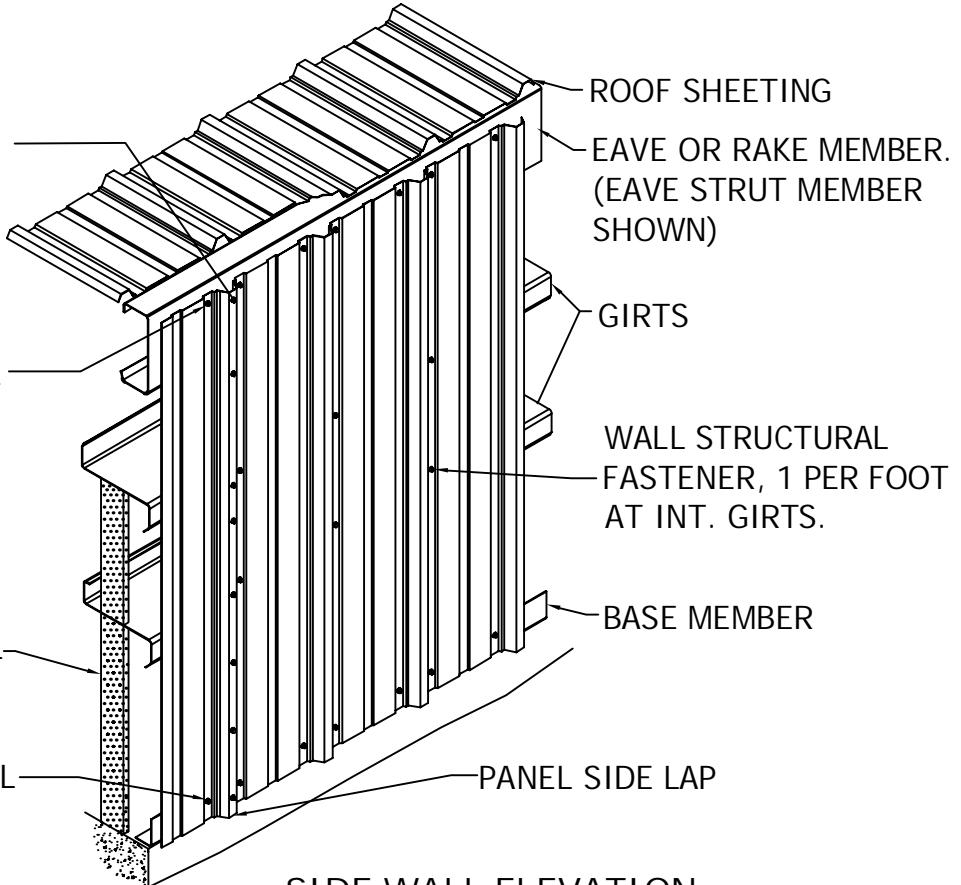
TYPICAL AT EAVE MEMBER

WALL STITCH FASTENER, 1 PER SUPPORT AND 1 PER GIRT SPACE, 2 FASTENERS REQUIRED WHEN SPACE EXCEEDS 6'-0".

WALL STRUCTURAL FASTENER, 2 PER FOOT.

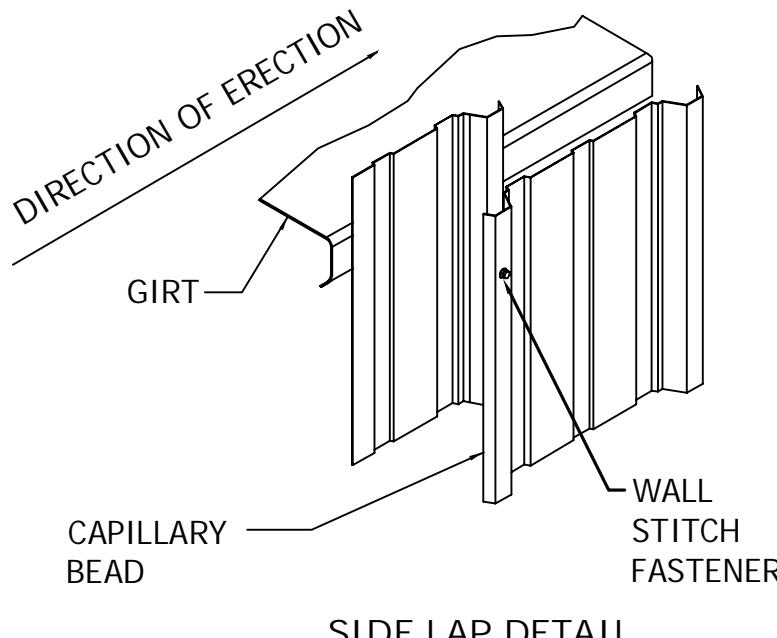
TEMPORARY BLOCKING MATERIAL (NBVP)

WALL STRUCTURAL FASTENER, 2 PER FOOT.



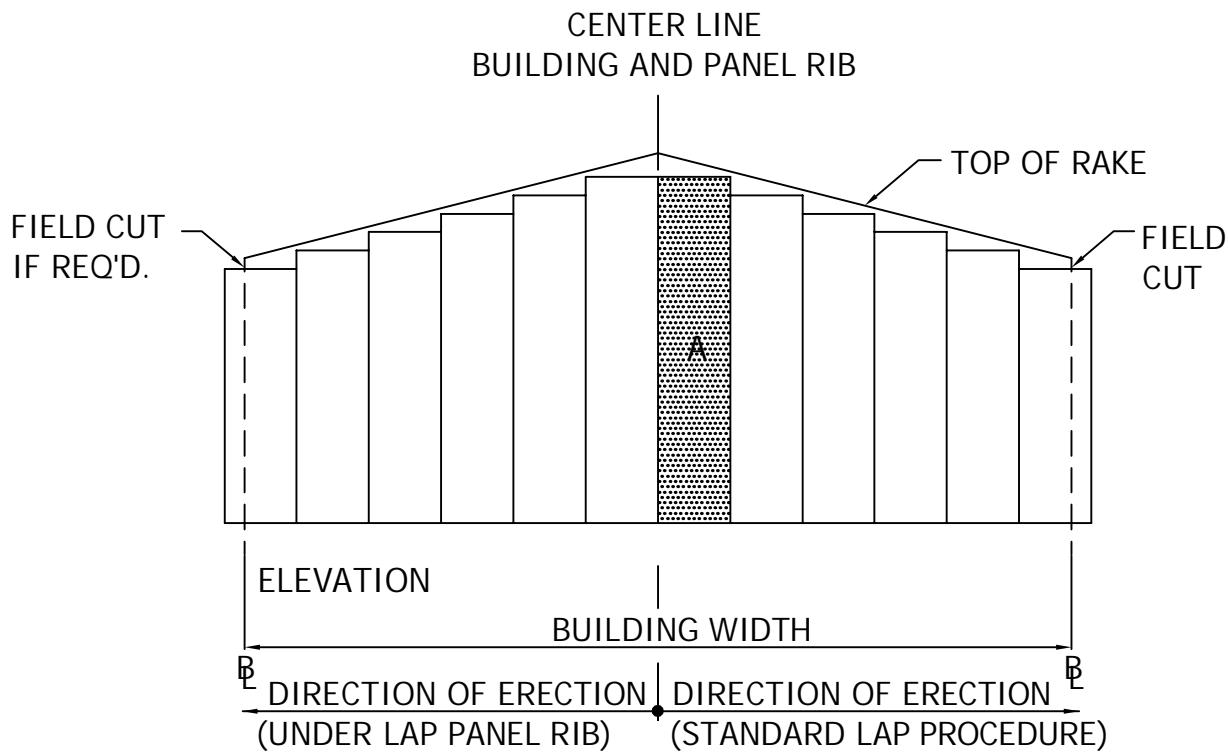
SIDE WALL ELEVATION

NOTE: FOR INSULATION GREATER THAN 4", USE #17/12-14 X 1 $\frac{7}{8}$ " STAND-OFF STRUCTURAL FASTENERS. ALWAYS USE 12-14 X 1 $\frac{1}{4}$ " AT CRIMPED BASE AND AT FRAMED OPENINGS.



NOTES:

1. Block girts to "LEVEL POSITION" before starting panel erection. Maintain blocking until panel to structural fasteners are installed.
2. Align and plumb first wall panel with the roof panel (making sure notched top of side wall panel fits ribs of first roof panel).
3. Attach panel to secondary framing (see recommendations for fastener type and spacing).
4. Proceed to install adjacent panel. Use only a minimum number of fasteners to hold panels in place until chalk lines can be popped, to assure a straight line run of fasteners.
5. Install side lap fasteners only after all structural fasteners are in place.

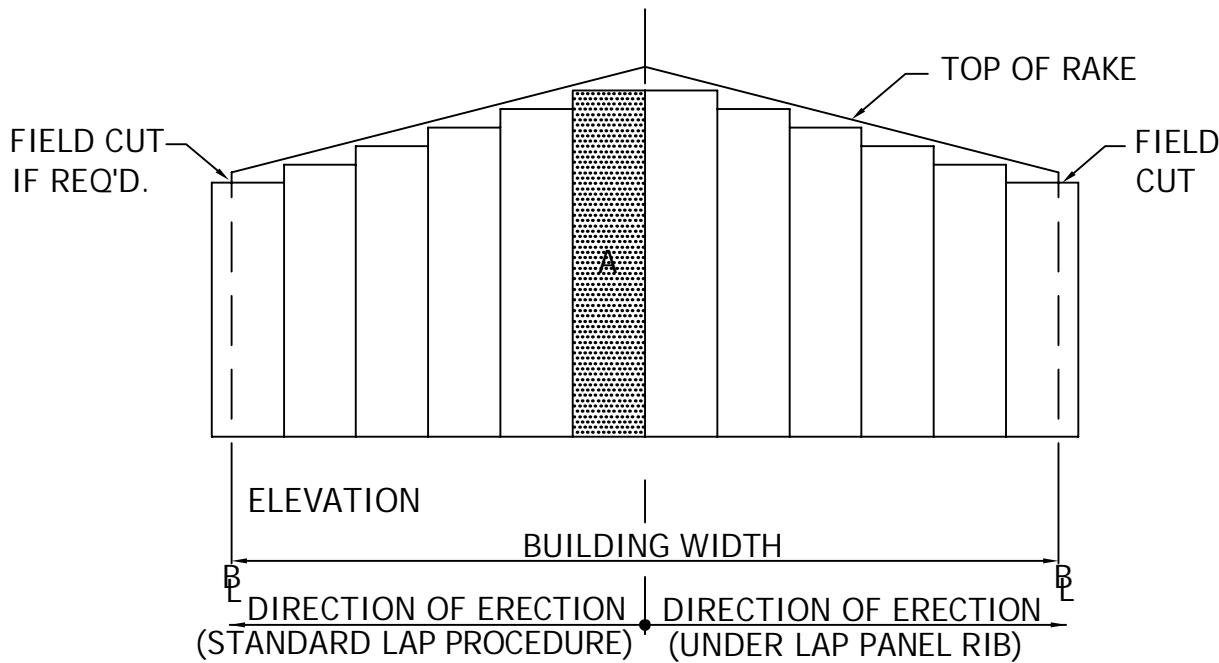


NOTE:

1. Endwall panel marked "A" will be installed first, make sure panel is plumb and that the center of the panel rib is located at the exact center of the building ridge .
 2. Attach panel "A". Do not fasten along the left hand edge of panel. The rib of all remaining panels to the left of panel "A" must be underlapped.
 3. Field cut panels at building line if required or back lap if acceptable.
 4. As roof pitch increases, protective measures are to be taken to prevent personnel or materials from falling from building and resulting in bodily injury.



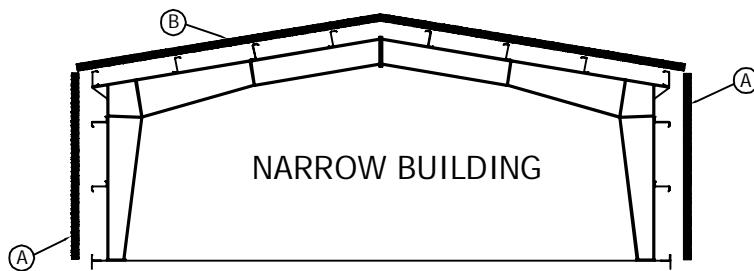
CENTER LINE
BUILDING AND PANEL RIB



NOTE:

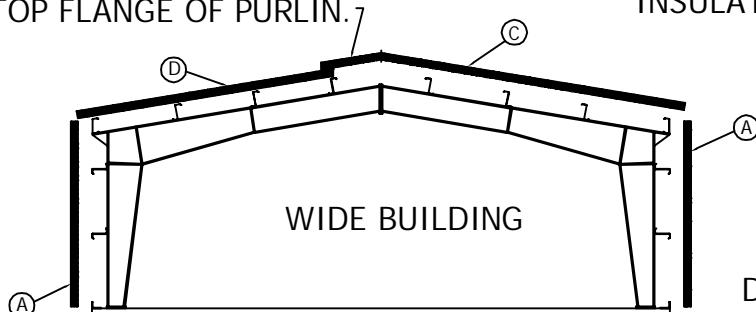
1. Endwall panel marked "A" will be installed first. Make sure panel is plumb and that the center of the panel rib is located at the exact center of the building ridge.
2. Attach panel "A". Do not fasten along the right hand edge of panel. The panel rib of all remaining panels to the right of panel "A" MUST BE UNDERLAPPED.
3. Field cut panels at building line if required or back lap if acceptable.
4. As roof pitch increases, protective measures are to be taken to prevent personnel or materials from falling from building and resulting in body injury.

INSTALLATION

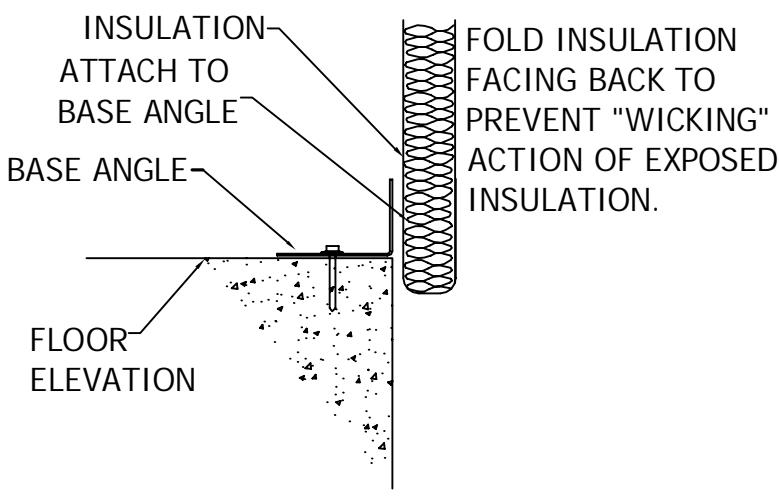


INSULATION METHOD #1

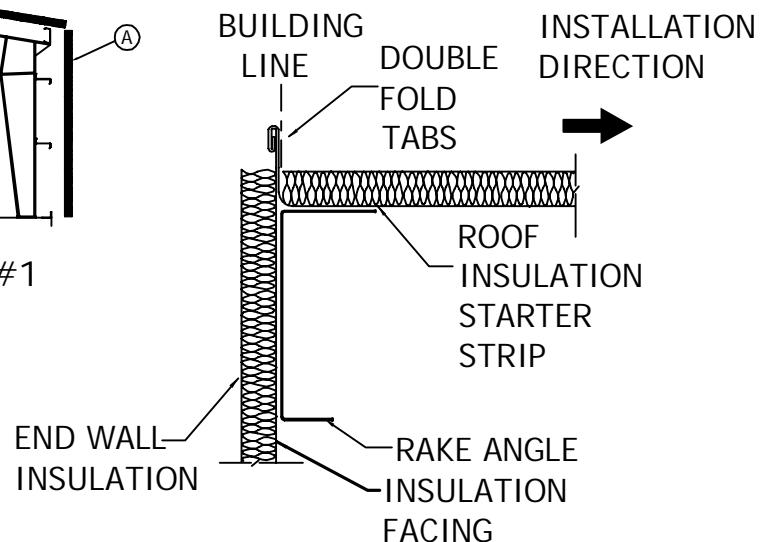
ATTACH (D) TO PURLIN,
LAP (C) OVER (D) AND
GLUE, MAKE SURE (D)
DOES NOT EXTEND PAST
TOP FLANGE OF PURLIN.



INSULATION METHOD #2

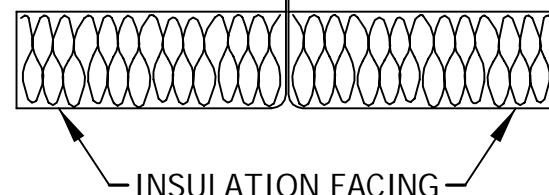


WALL BASE DETAIL

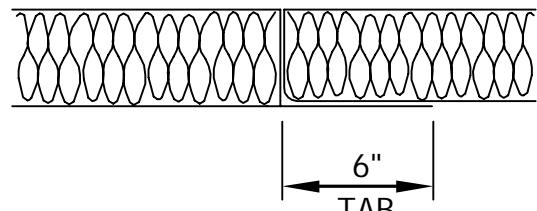


STARTING ROOF INSULATION

DOUBLE FOLD TABS
3" TAB EACH SIDE
STAPLE 18" O.C.
MAXIMUM

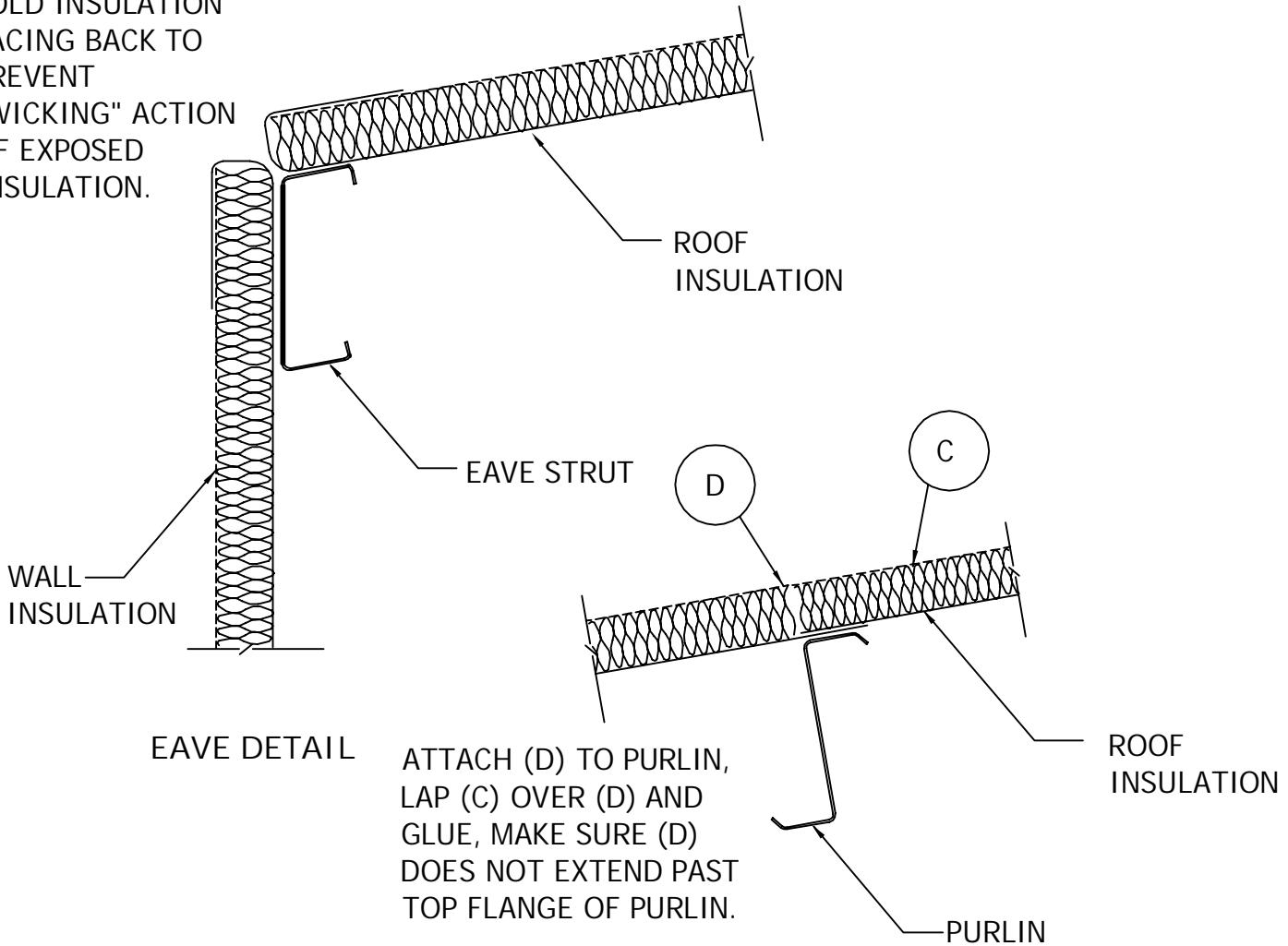


**INSULATION SIDE TAB DETAIL
(ROOF AND WALL APPLICATIONS)**



**INSULATION SIDE LAP DETAIL
(OPTIONAL)**

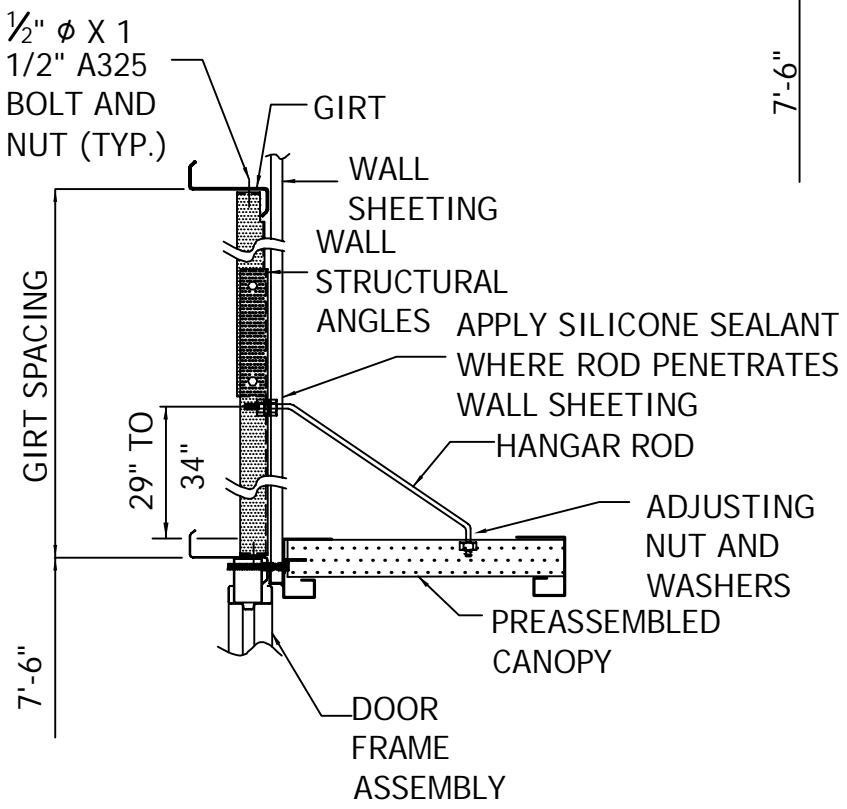
FOLD INSULATION
FACING BACK TO
PREVENT
"WICKING" ACTION
OF EXPOSED
INSULATION.



INSULATION LAP DETAIL

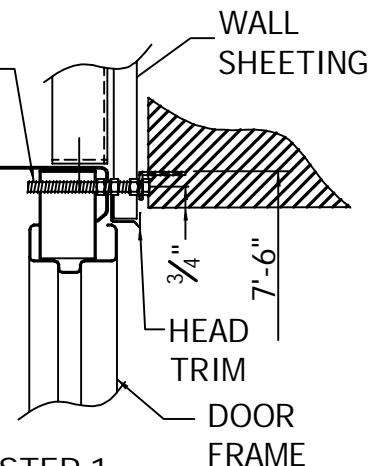
GENERAL NOTES:

1. Wall insulation (A) is shipped in maximum roll lengths and is to be field cut to exact lengths before installing. Wall insulation should extend from top of eave member to 1" below floor elevation. Do not cut long and trim at bottom of wall panels. Glue at eave member and base angle, pull facing tight and hold in place until wall panel is attached (See Wall Base Detail).
2. Roof insulation (B) is shipped as one roll for each length or for two or more lengths to be field cut from a single roll, depending on building width. Pull insulation simultaneously from each side of the building until facing is snug. Allow insulation to expand to its full thickness. Fold insulation facing back to prevent "WICKING" action of exposed insulation, similar to wall base detail. Glue to top of eave member and trim excess insulation.
3. Roof insulation (C) and (D) are shipped as one roll for each length. Install in a similar manner to insulation (B). Use same procedure for end walls as for side walls.



$\frac{1}{2}'' \phi \times 3''$ BOLT
W/ (3) NUTS

7'-6"



STEP 1

Mount attaching angle at 7'-6" above floor. Locate over door and attach w/ (2) BOLTS- $\frac{1}{2}'' \phi \times 3''$ AND (3) NUTS as shown.

STEP 2

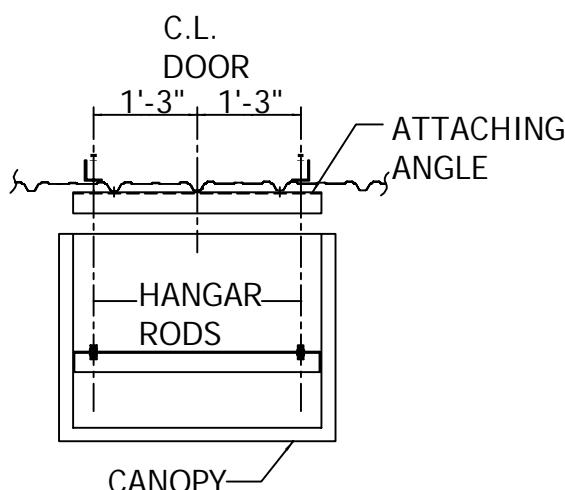
Locate wall structural angles between girts. Field drill $\frac{1}{16}$ " hole top and bottom into girts and bolt into place.

STEP 3

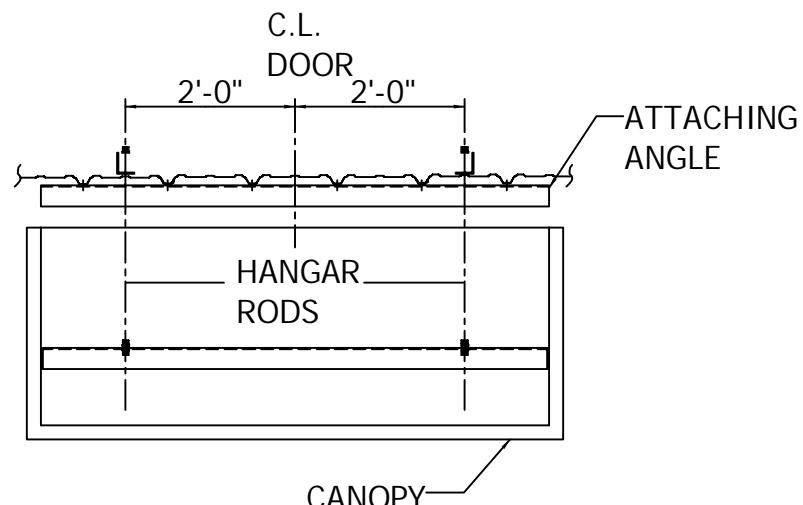
Drill (2) holes through wall sheet at 29" - 34" above top of canopy as shown and install hangar rods w/ (2) NUTS.

STEP 4

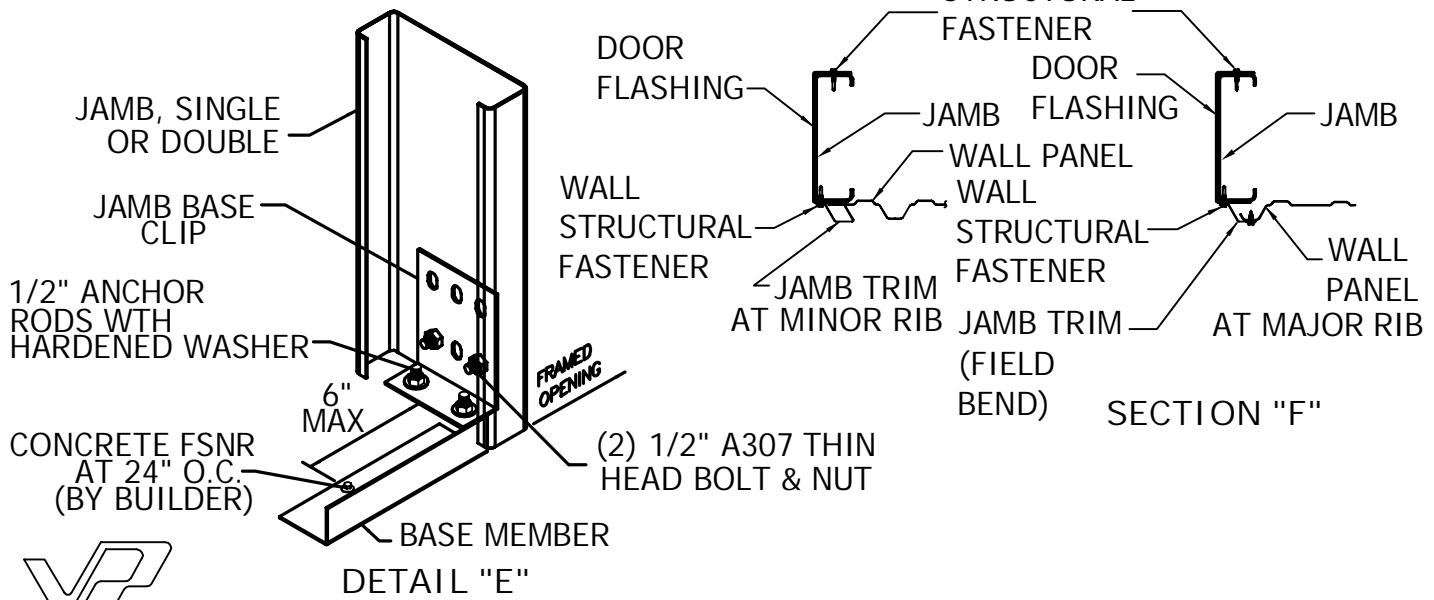
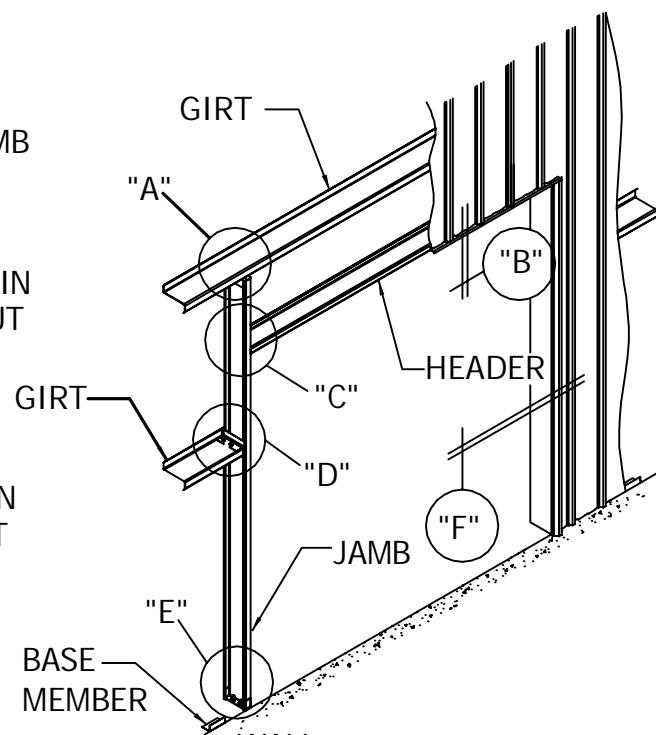
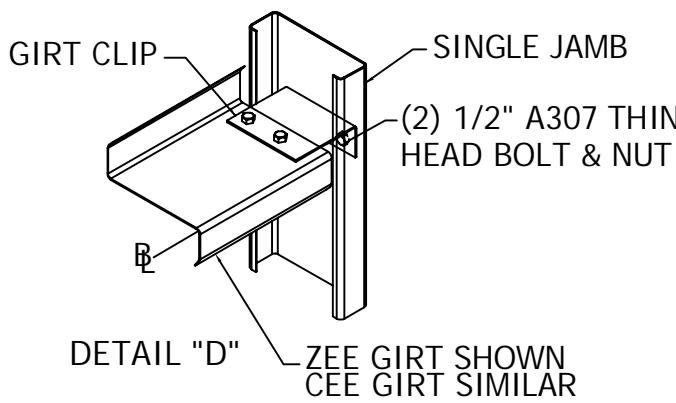
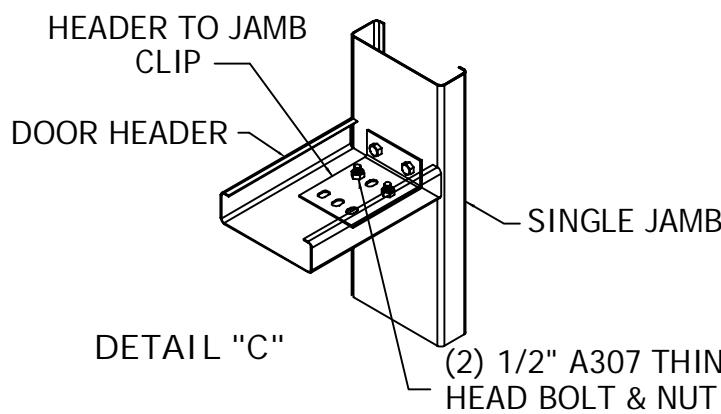
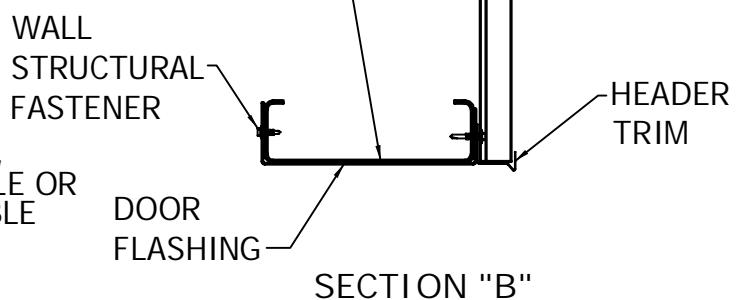
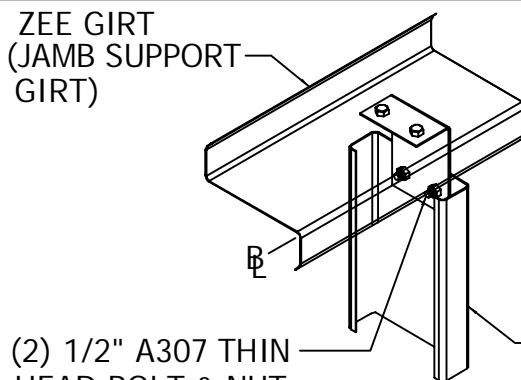
Bolt canopy to attaching angle and hangar rods as shown.

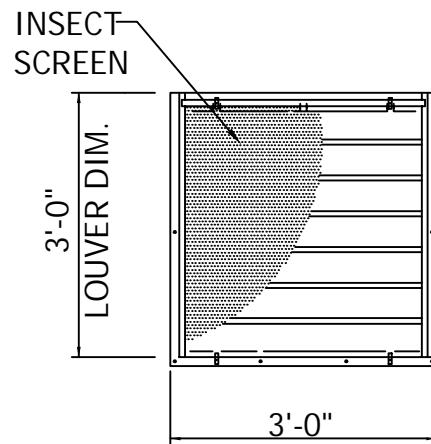
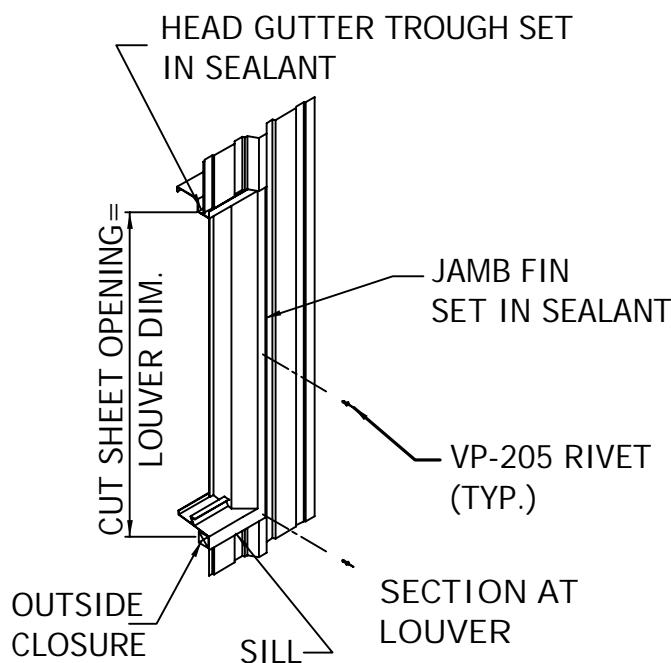


3070 DOOR CANOPY



6070 DOOR CANOPY

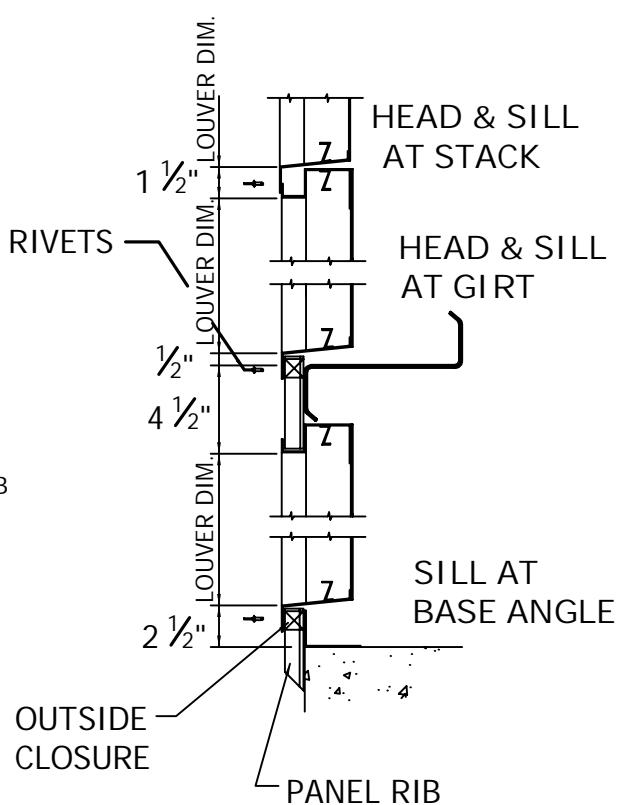
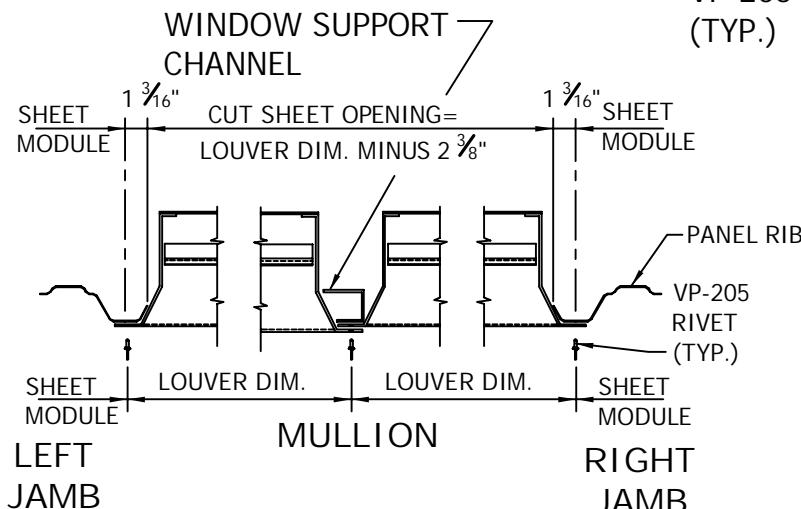


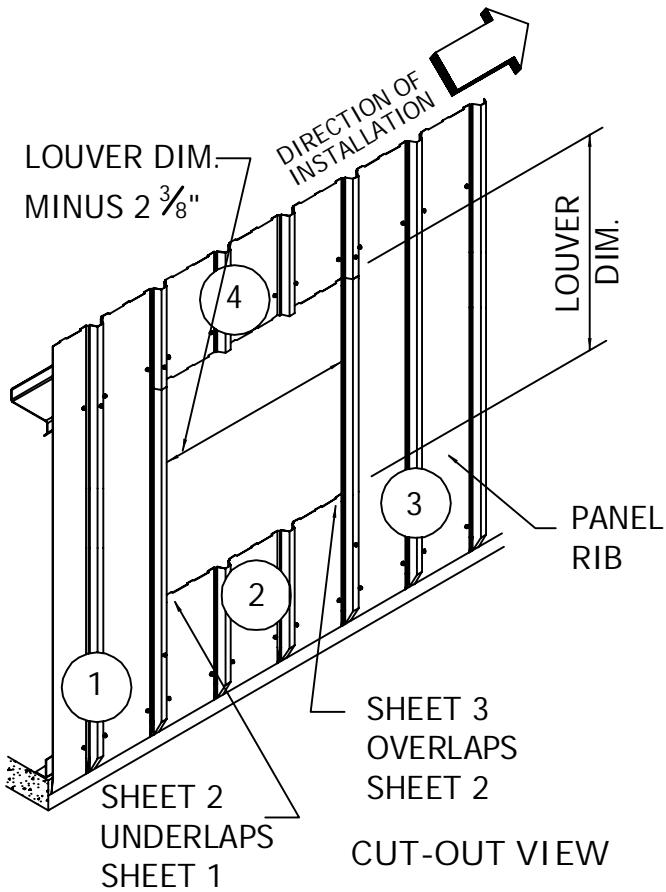


3030 FIXED LOUVER
AND
3030 OPERABLE LOUVER

GENERAL PROCEDURES

1. Installation procedures shown are for louvers installed on the 3'-0" panel rib module.
2. Mulling of louvers requires the use of a window support channel at each mullion.
3. Stacking of louvers requires the relocation of screen clips where the sill overlaps the head gutter.





STEP 1

Install wall sheet 1 in sequence shown. Install insulation as noted in general procedures if required.

STEP 2

Install sheet 2 by underlapping sheet 1.

STEP 3

Install sheet 3 in the normal manner.

STEP 4

Cut opening in insulation.

STEP 5

Install louver over sheet 3 with jamb fins placed to overlap ribs of adjacent sheets 1 & 3. (DO NOT UNDERLAP LOUVER JAMBS.) Set Jambs in sealant.

STEP 6

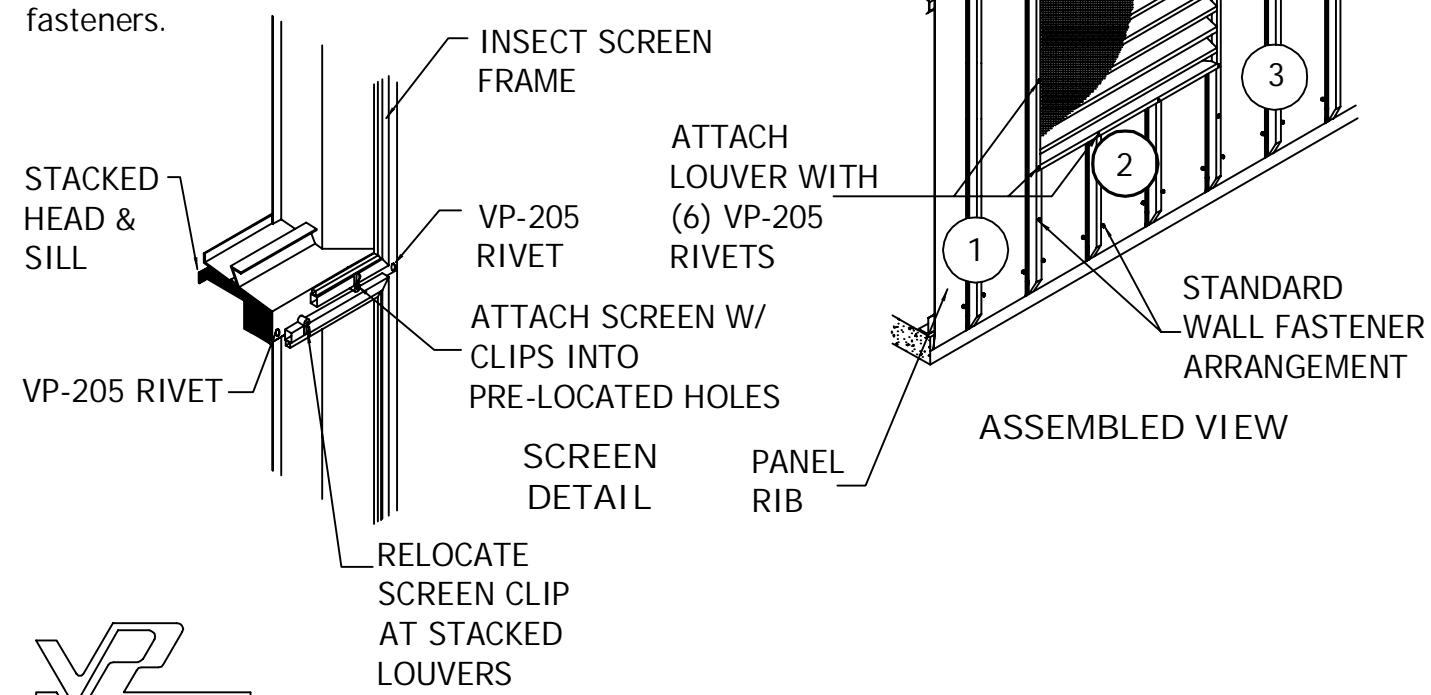
Install sheet 4 above louver. Lap sheet 4 over jamb fins at louver head and into bottom of head gutter trough. Sheet 4 to be installed with lap ribs overlapping the side ribs of sheets 1 and 3. Set head in sealant.

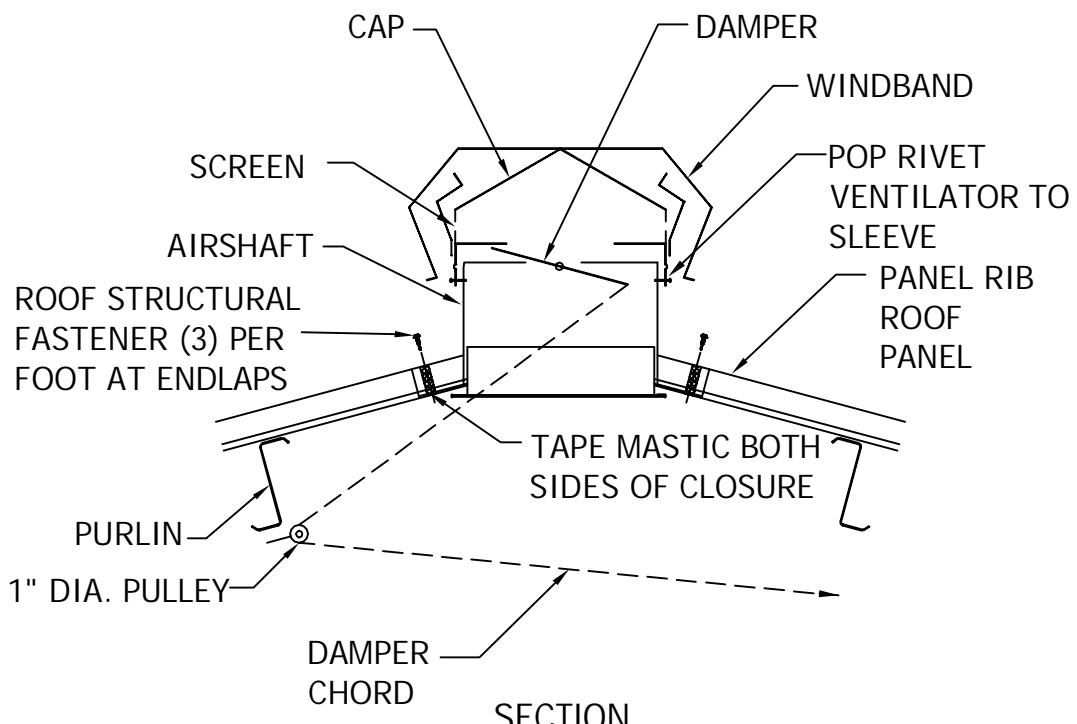
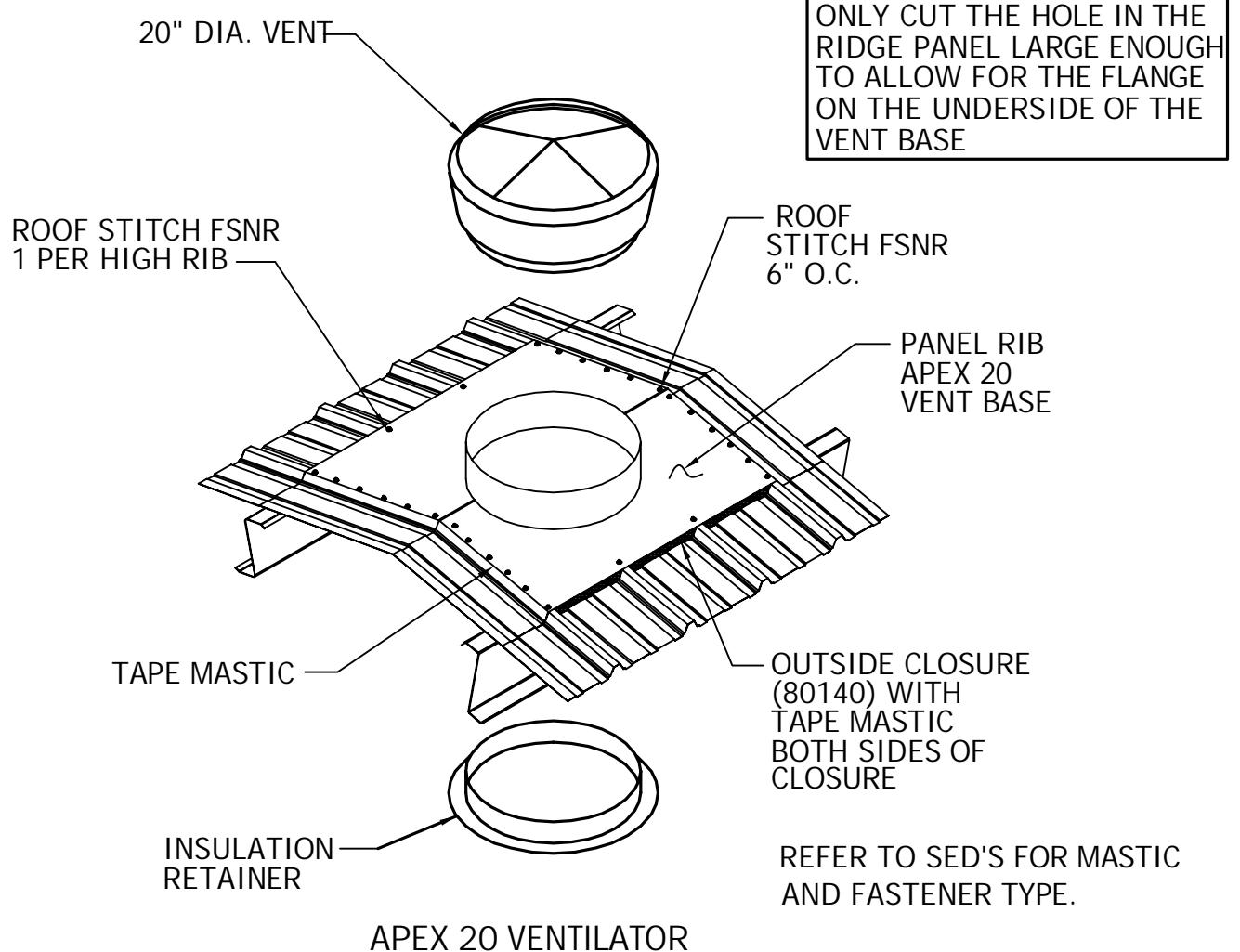
STEP 7

Attach louver with (6) VP-205 Rivets. (2) Rivets each jamb and 2 Rivets at sill. Complete attachment of wall sheets to girts and side laps with standard wall fasteners.

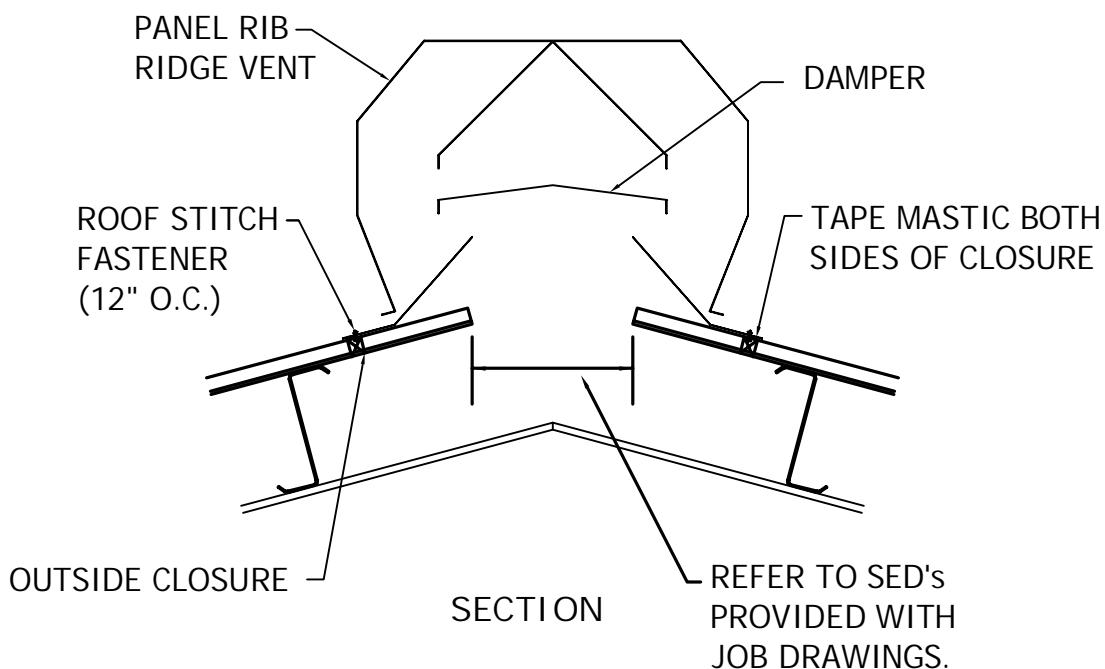
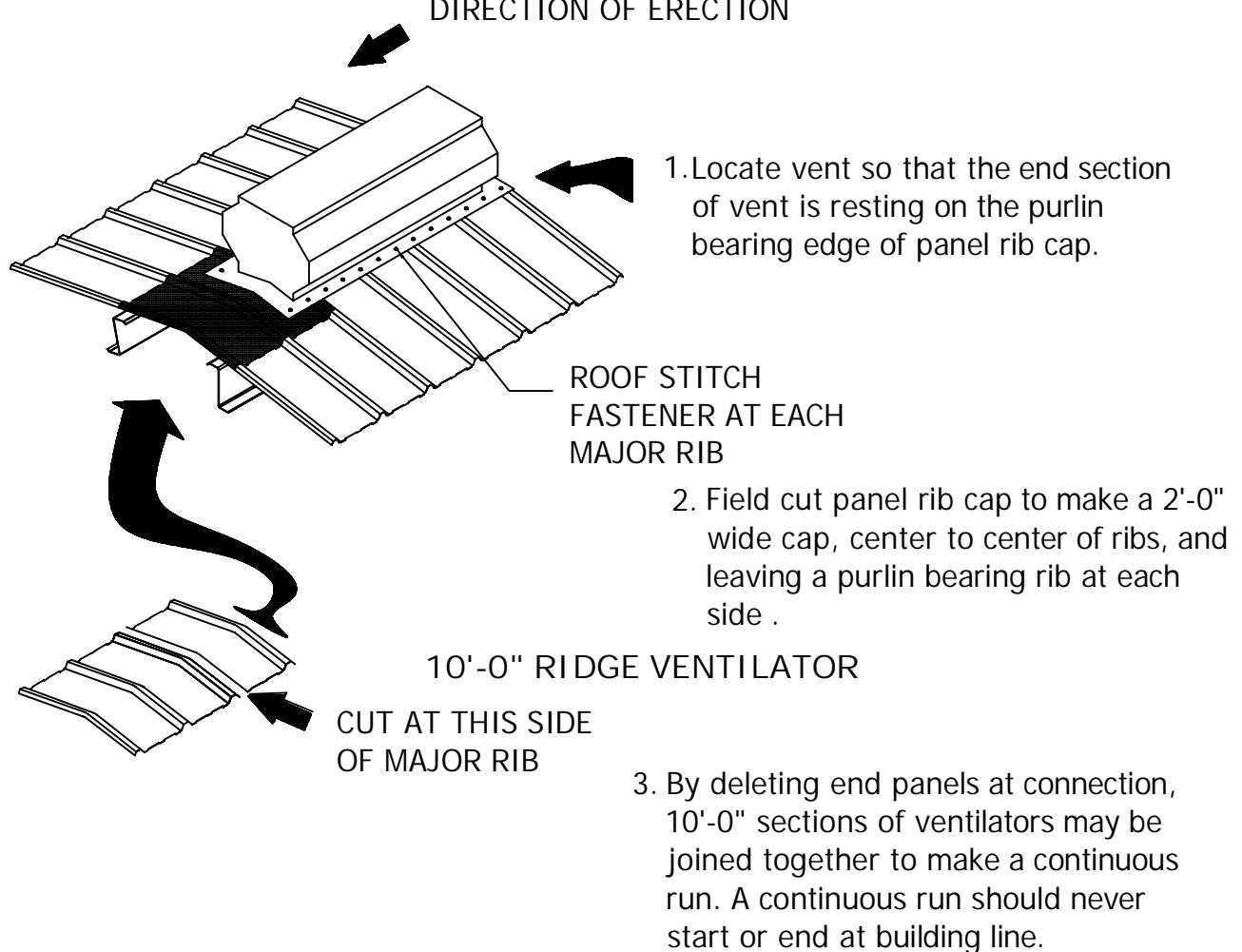
STEP 8

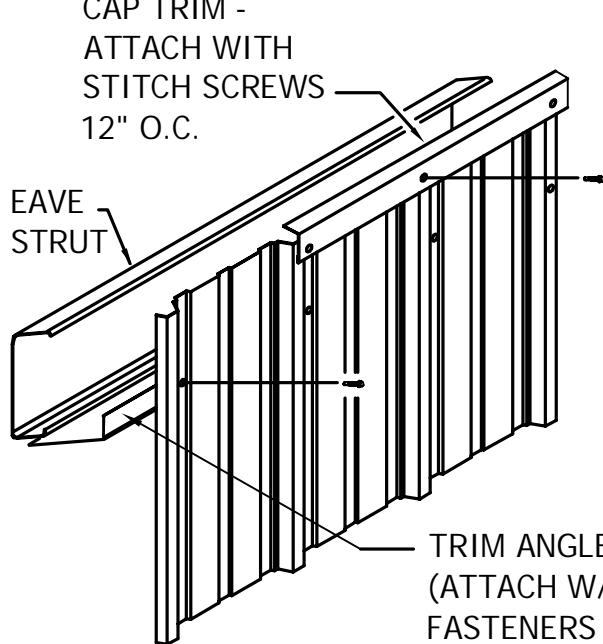
Attach insect screen to outside of louver using clips provided. Locate dogging clip for operable louver as require and fasten with standard wall fasteners.



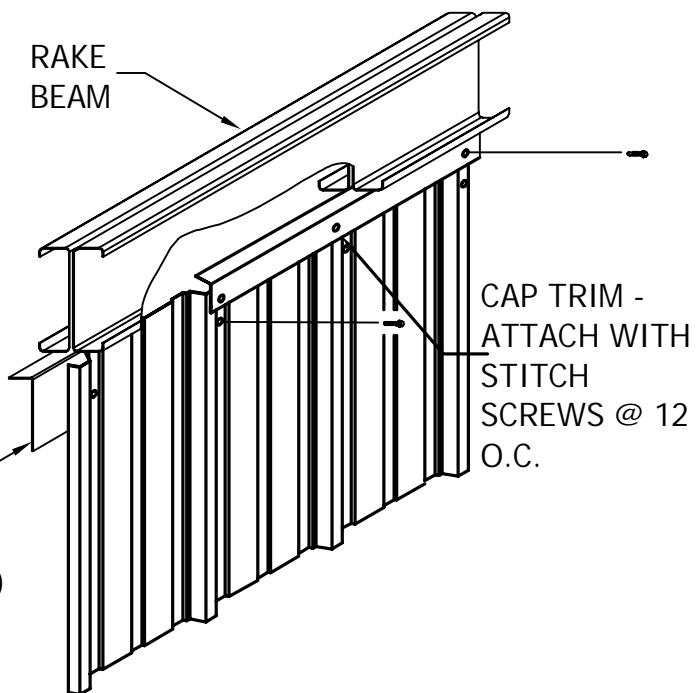


NOTE: DETAILED INSTALLATION INSTRUCTIONS ARE
PACKAGED WITH EACH VENTILATOR.



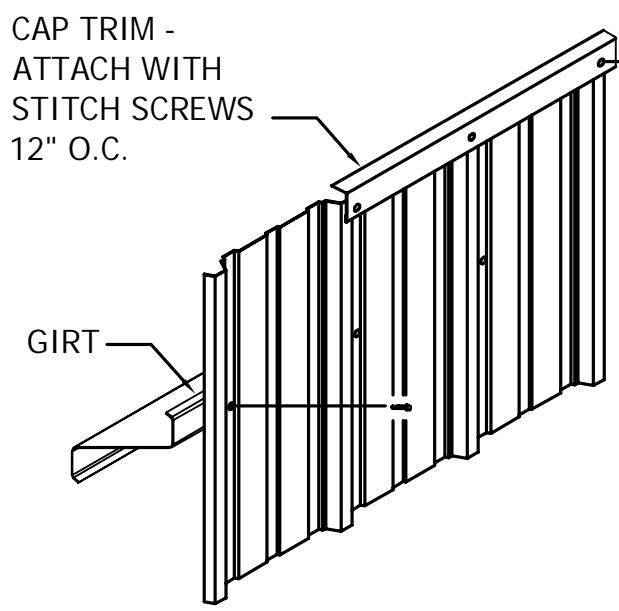


FULL HEIGHT LINER
@ SIDEWALL



NOTES:

1. Liner attaches to face of girts w/wall structural fasteners at 12" o.c.
2. Field cut liner panel, if required, to follow slope of rake beam.



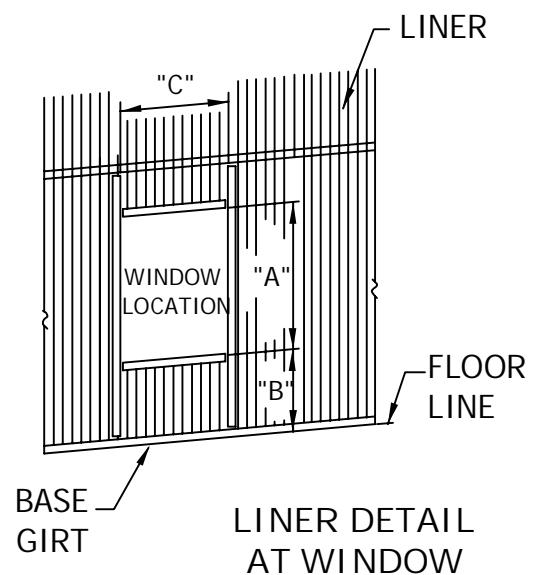
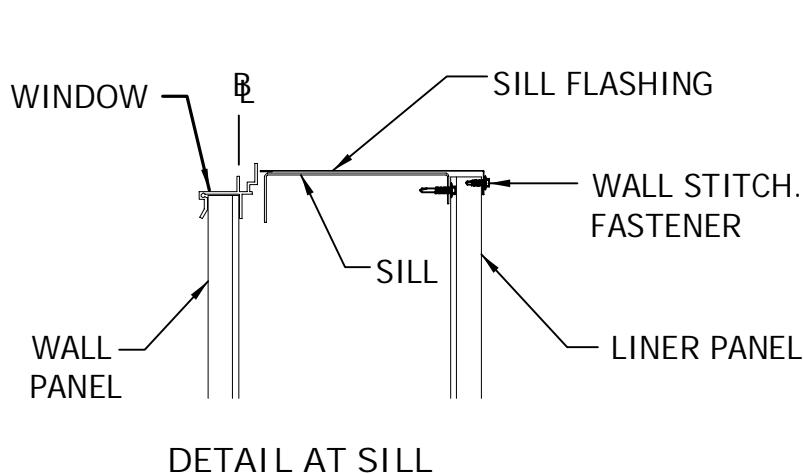
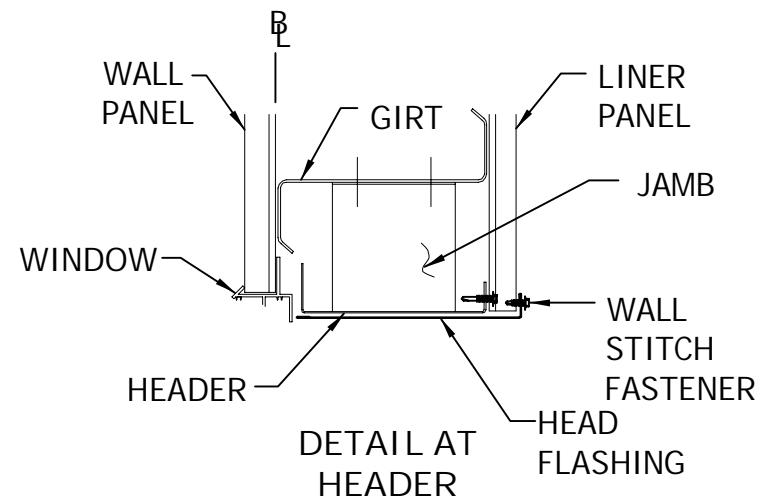
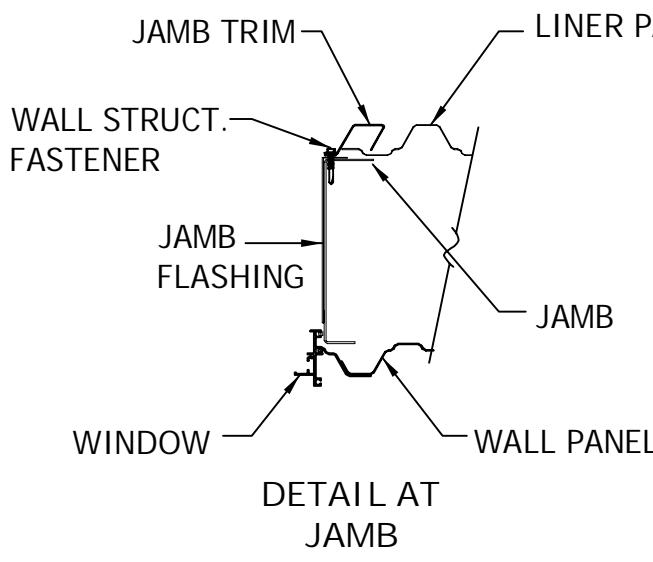
NOTES:

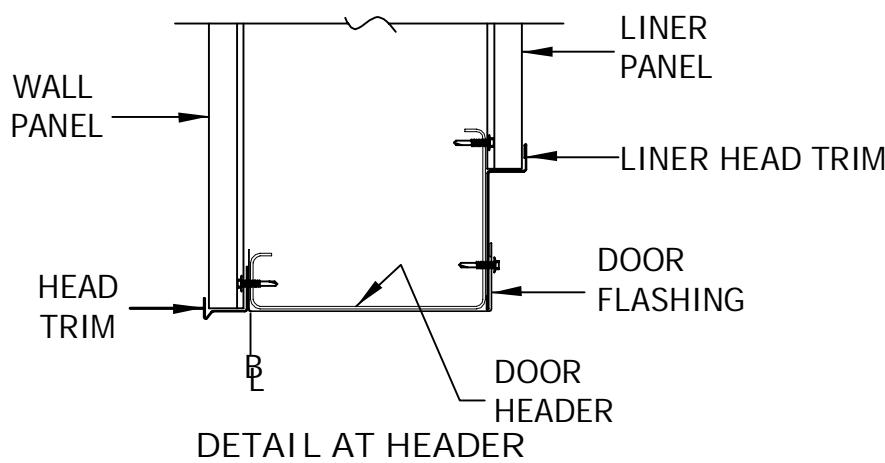
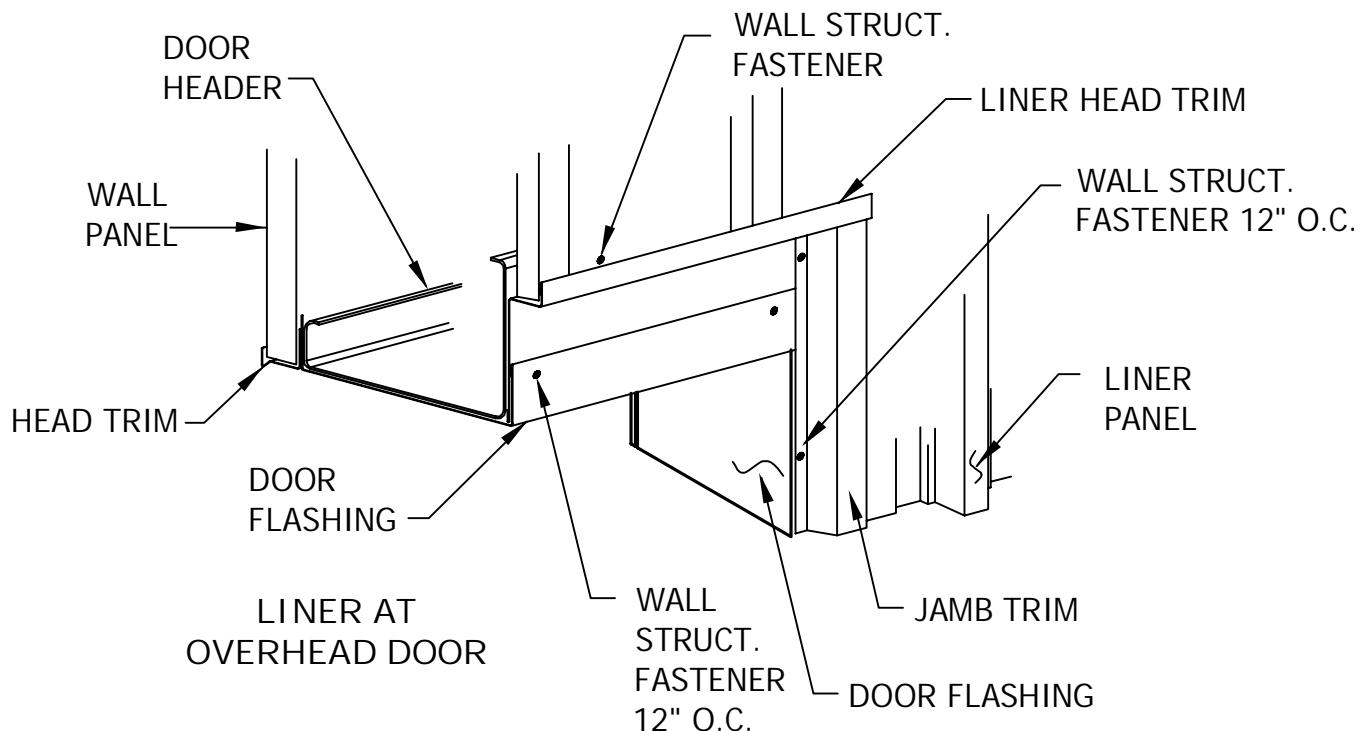
1. Liner attaches to face of girts w/wall structural fasteners @ 12" o.c.

WINDOW OPENING SIZES

WINDOW SIZE	DIM. "A"	DIM. "B"	DIM. "C"
2060	72"	12"	21 1/4"
3030	36"	48"	33 1/4"
3040	48"	36"	33 1/4"
6030	36"	48"	69 1/4"
6040	48"	36"	69 1/4"

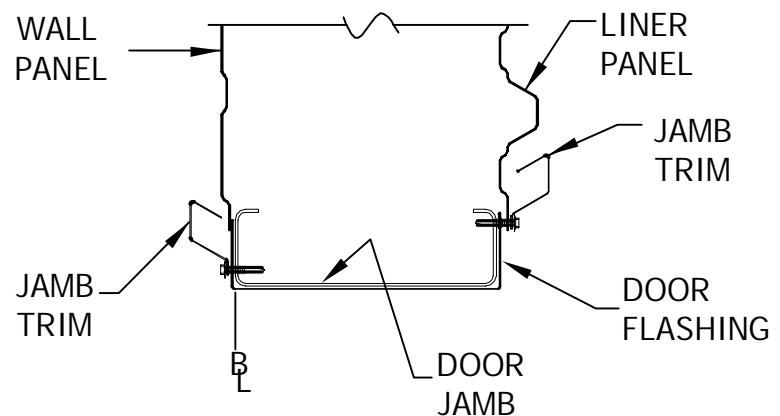
* DIM. A & C ARE INSIDE CLEAR FRAMING DIMENSIONS. (DIM. B IS FROM FLOOR LINE TO TOP OF SILL).



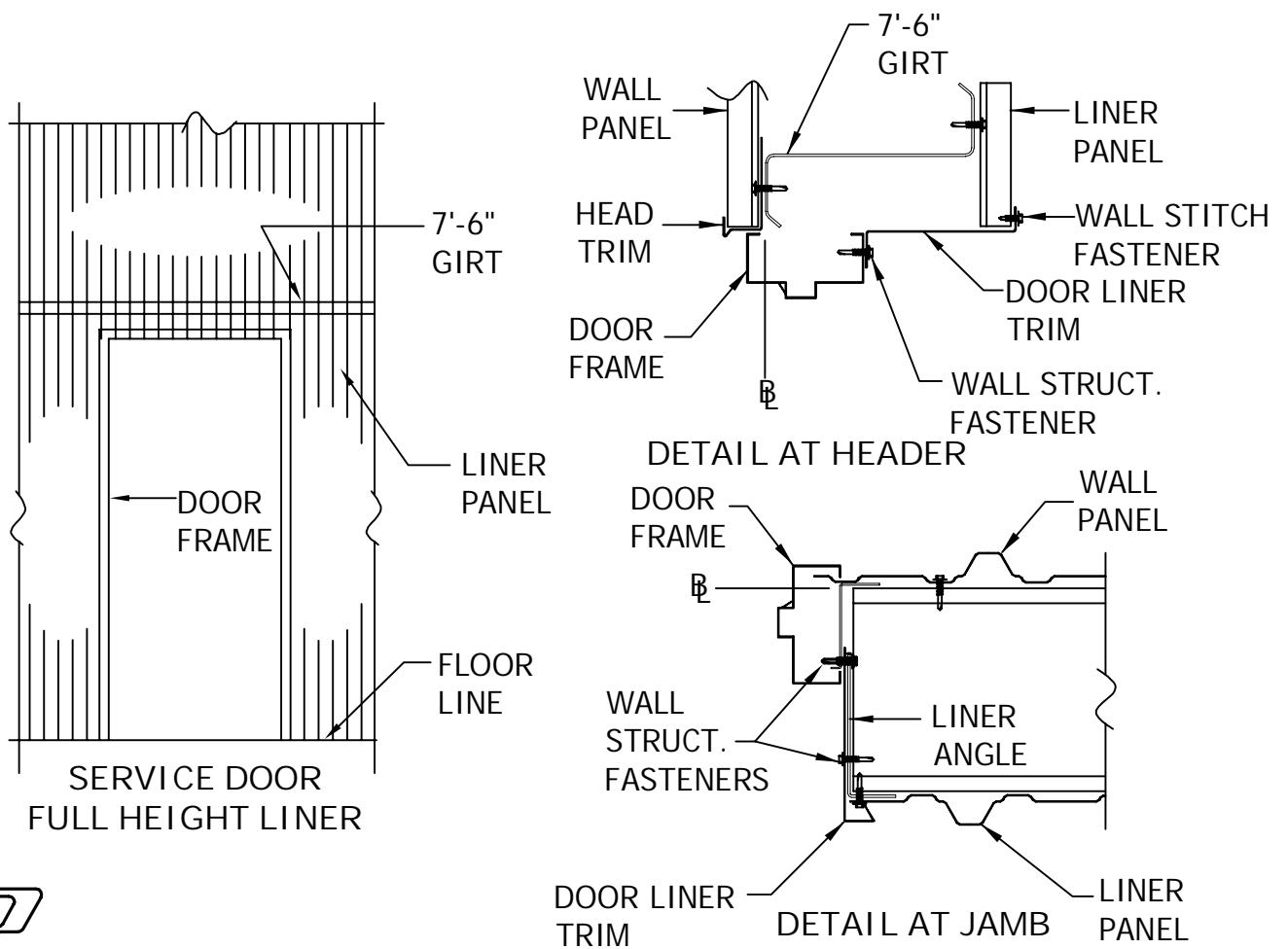
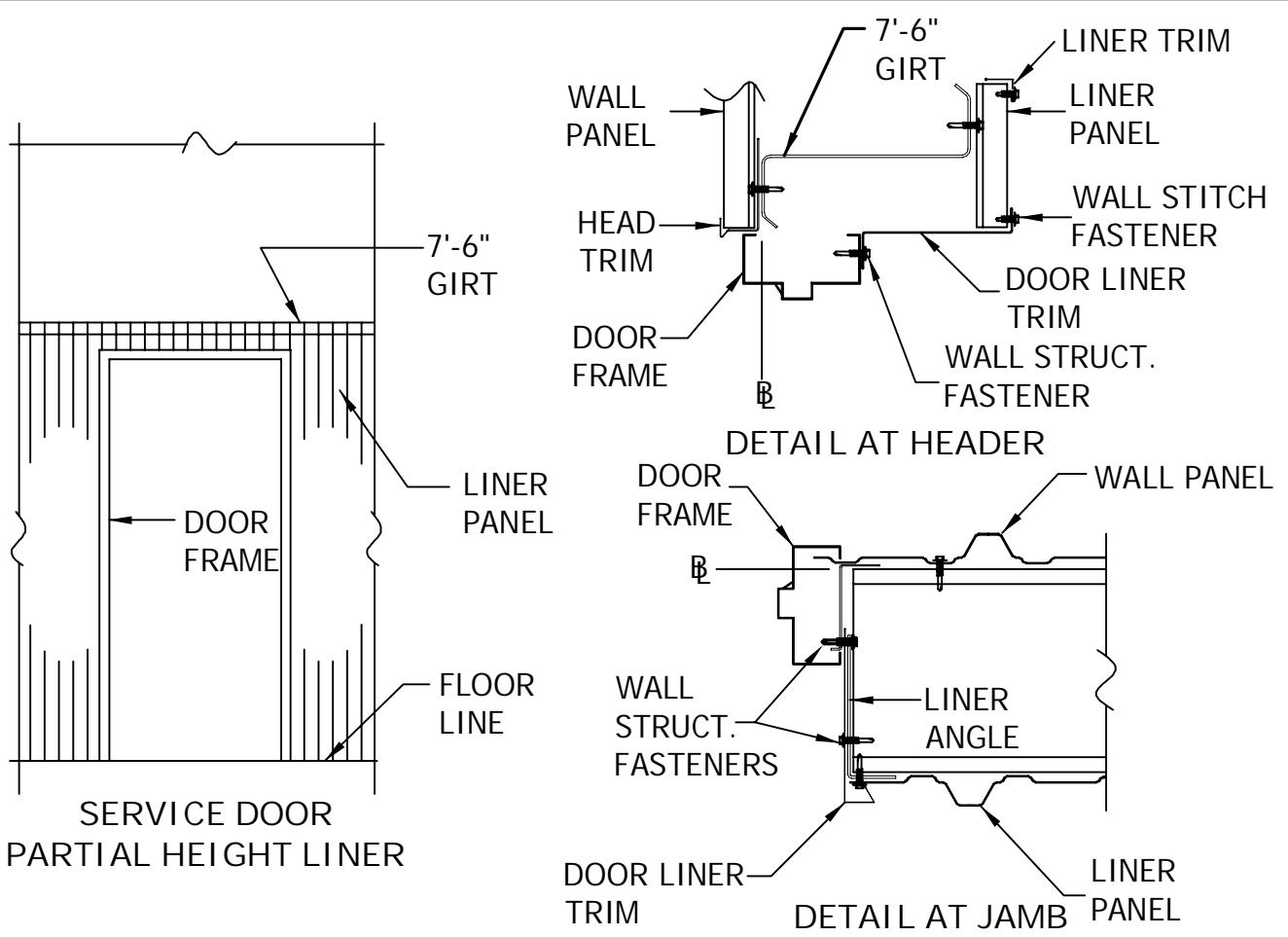


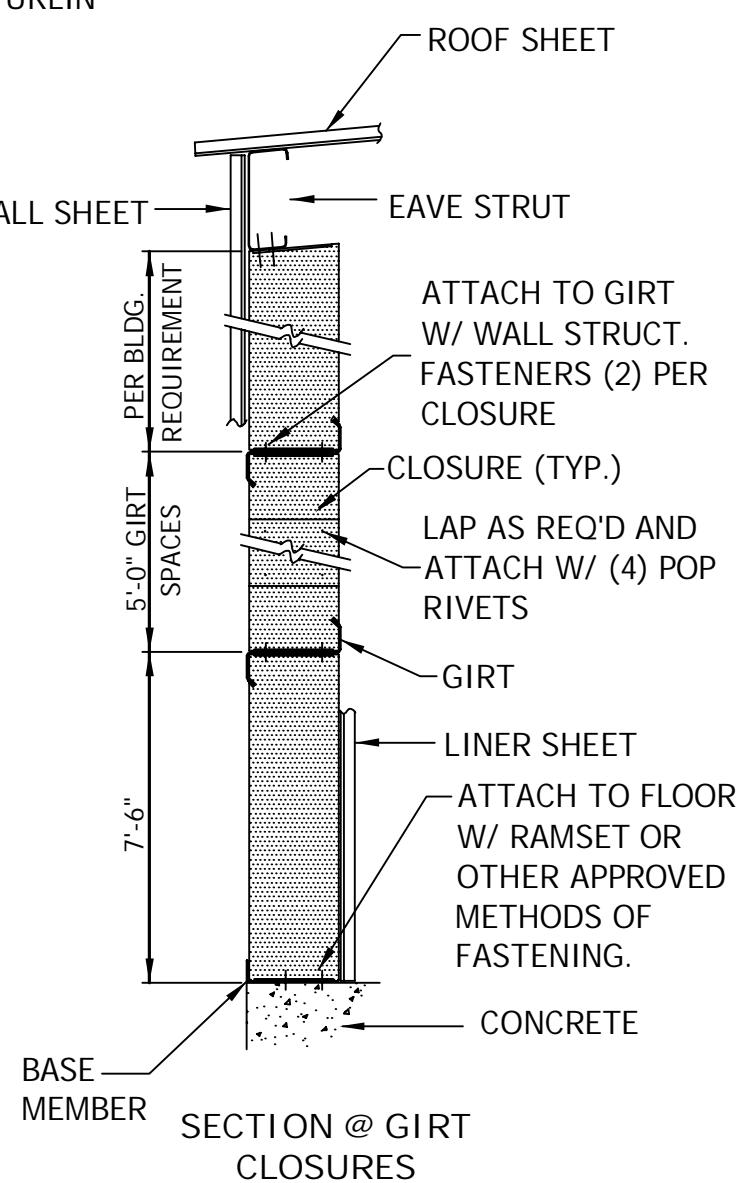
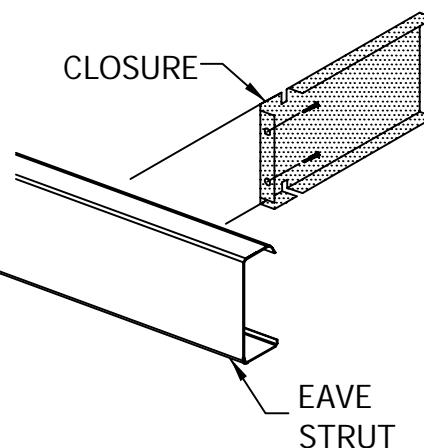
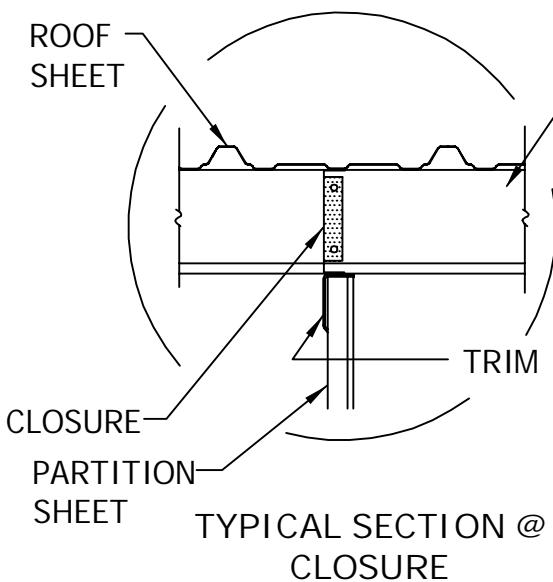
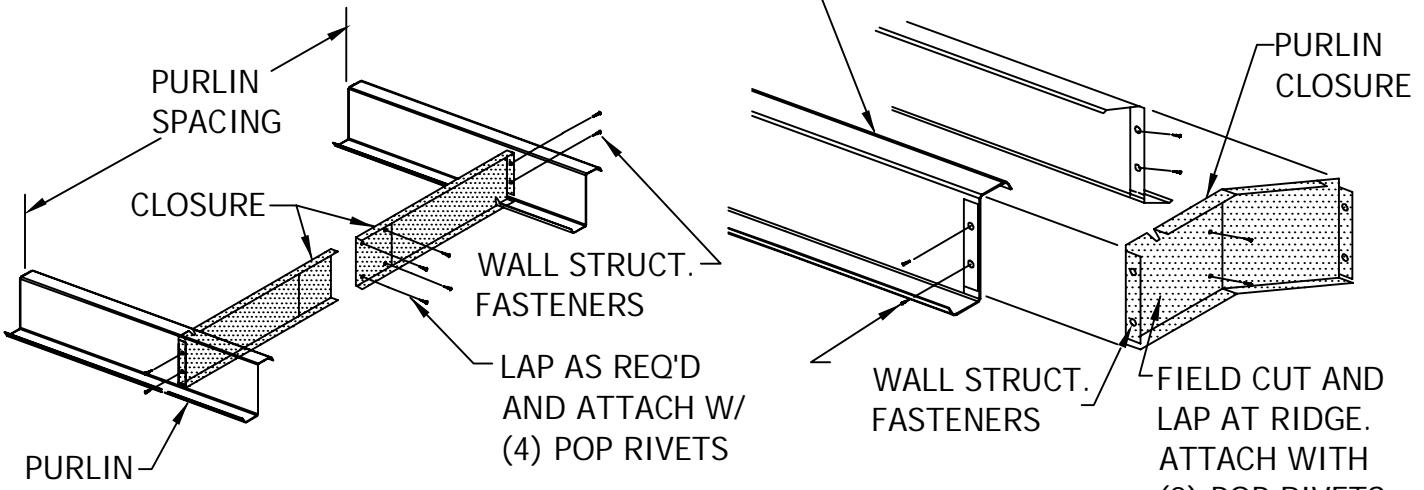
NOTES:

1. Liner attaches to inside face of girts w/wall structural fasteners.
2. All overhead door flashing & trim attaches to framing w/wall structural fasteners 12" O.C.

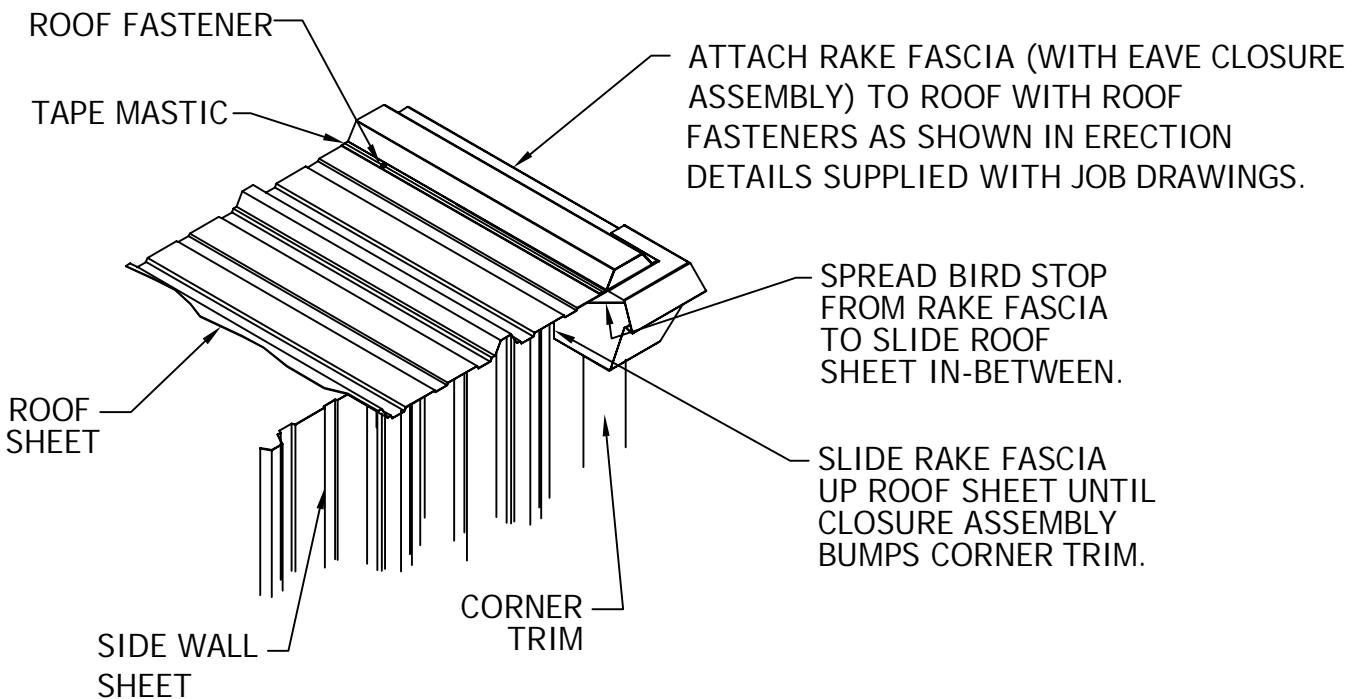


DETAIL AT JAMB





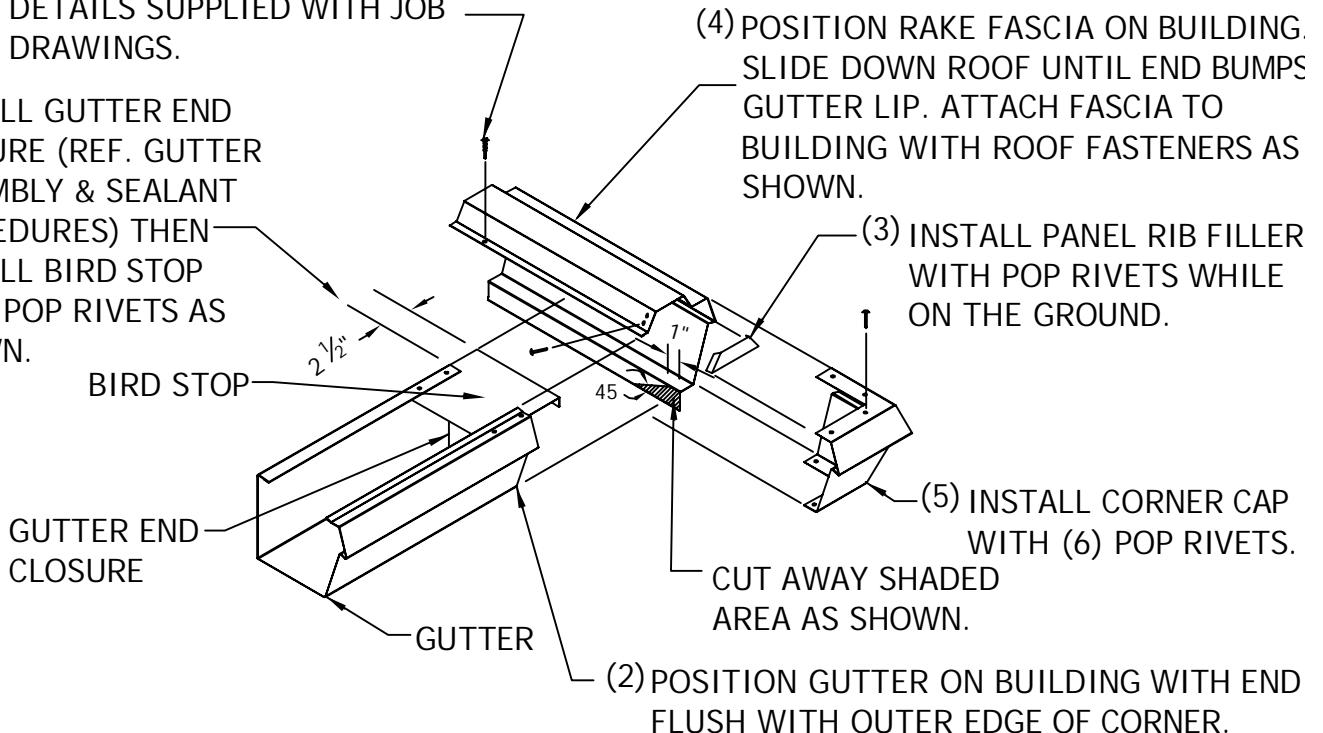
CLOSURE DETAIL @ EAVE



RAKE FASCIA EAVE CLOSURE ASSEMBLY
(WITHOUT EAVE GUTTER)

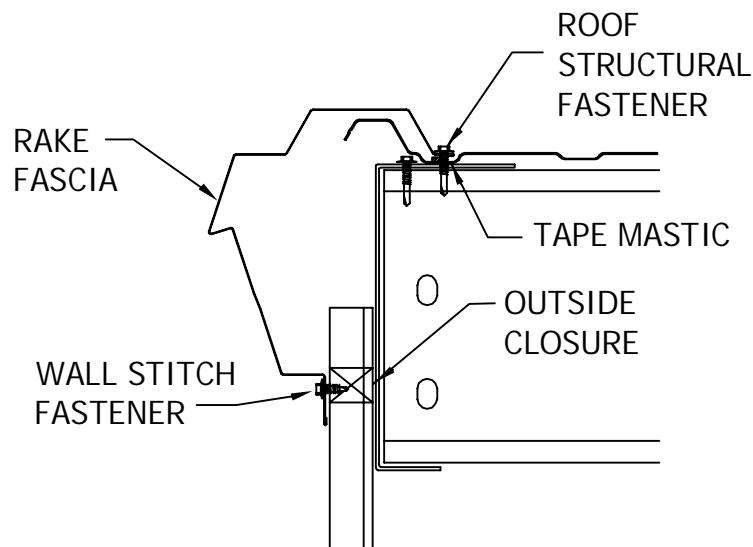
ROOF FASTENERS TO BE
INSTALLED PER ERECTION
DETAILS SUPPLIED WITH JOB
DRAWINGS.

(1) INSTALL GUTTER END
CLOSURE (REF. GUTTER
ASSEMBLY & SEALANT
PROCEDURES) THEN
INSTALL BIRD STOP
WITH POP RIVETS AS
SHOWN.

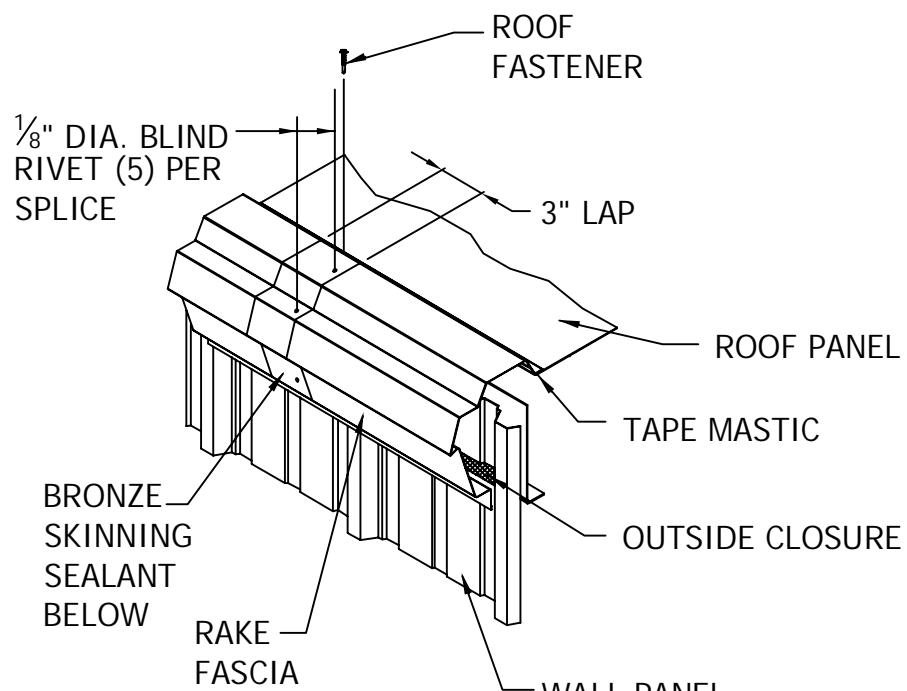


RAKE FASCIA EAVE CLOSURE ASSEMBLY
(WITH EAVE GUTTER)

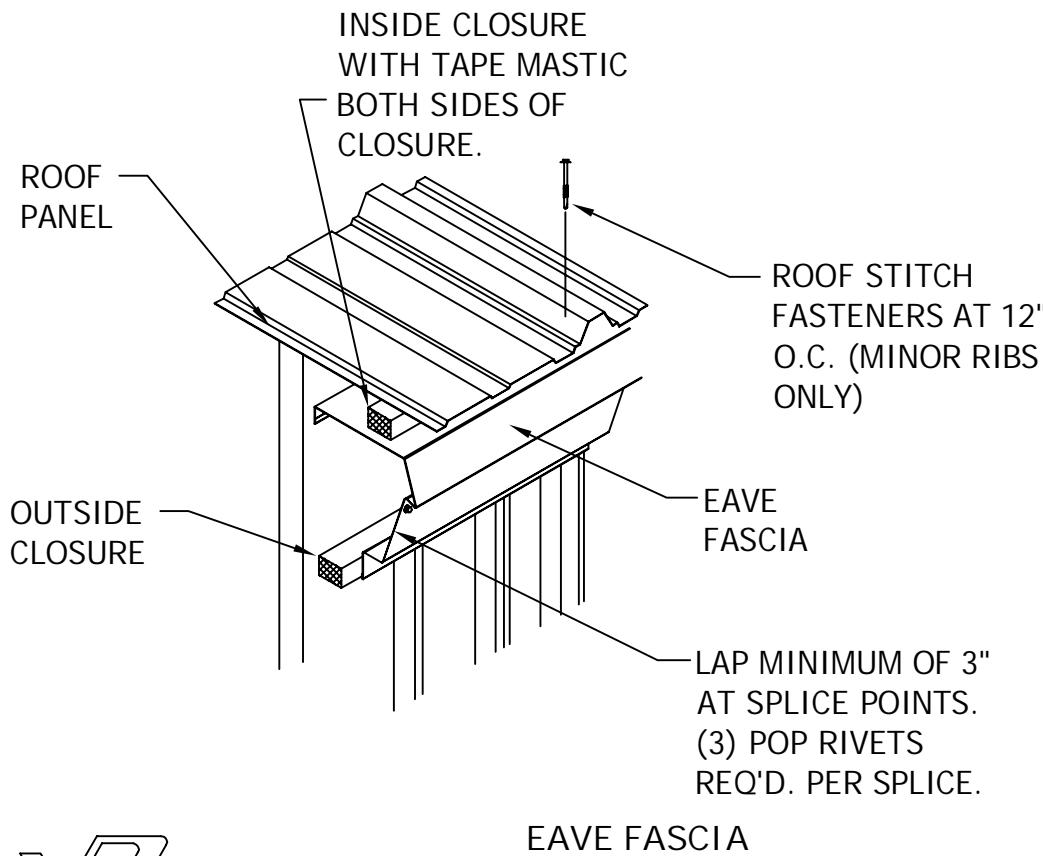
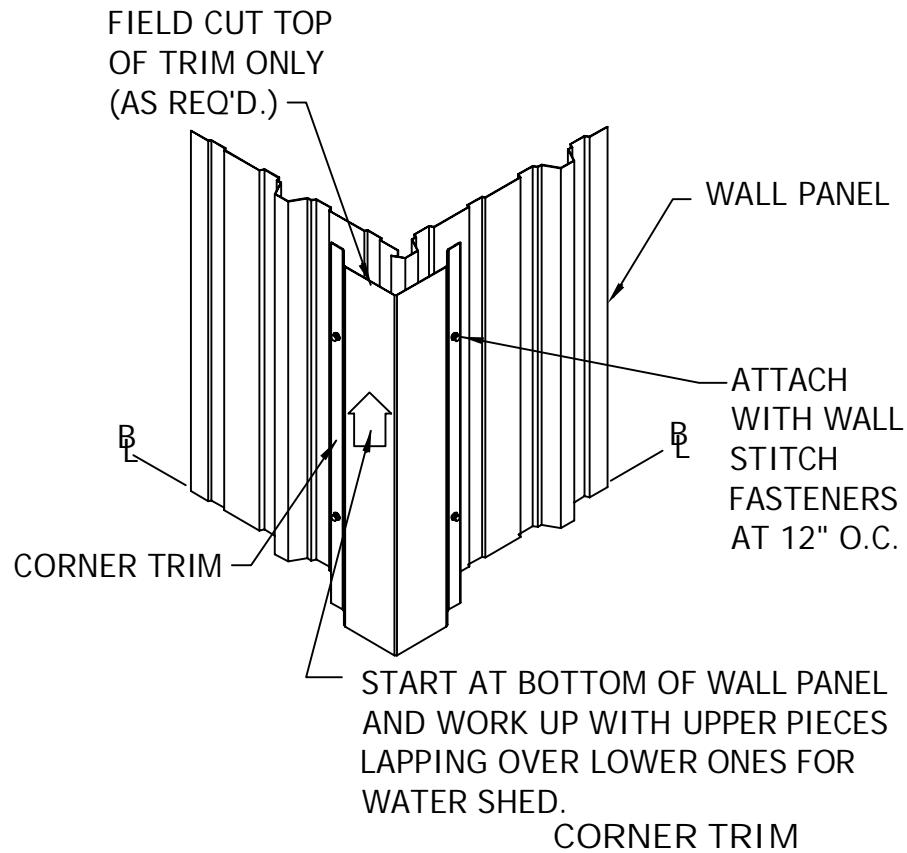
SEE ERECTION DRAWING
DETAILS FOR FASTENER
TYPE AND SPACING.



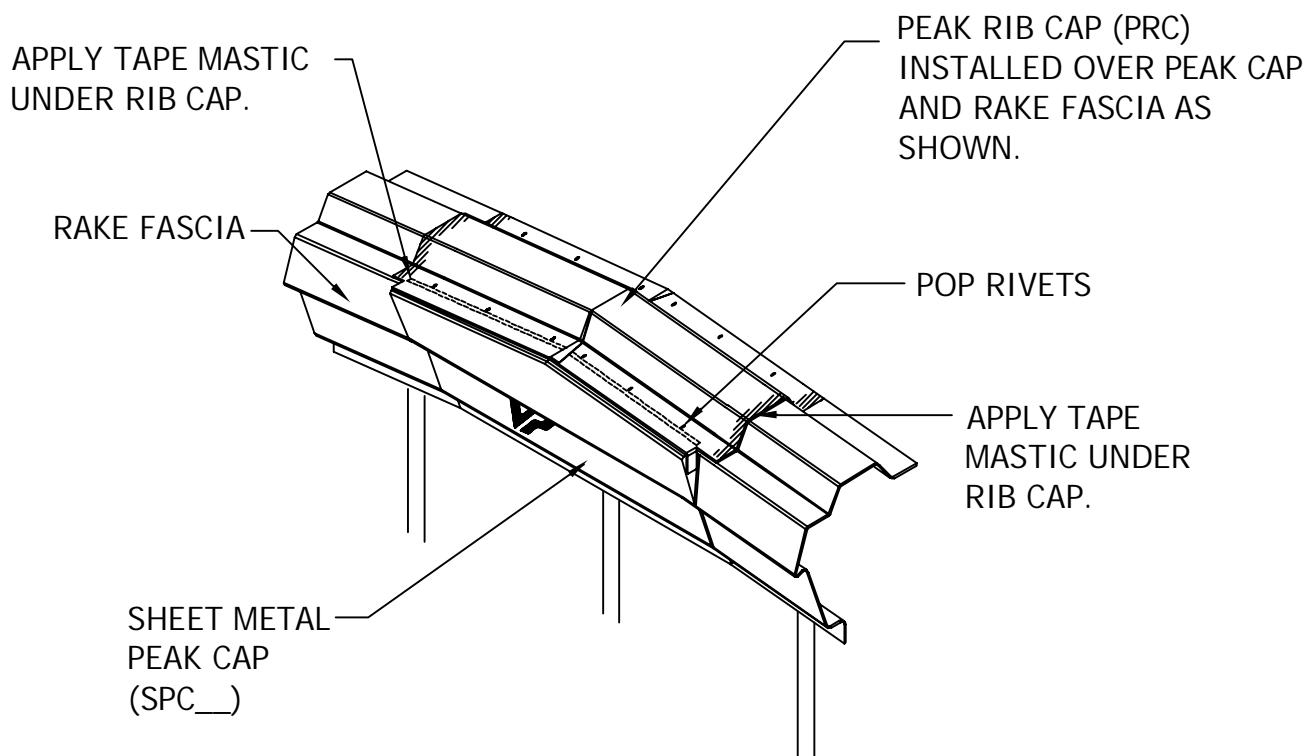
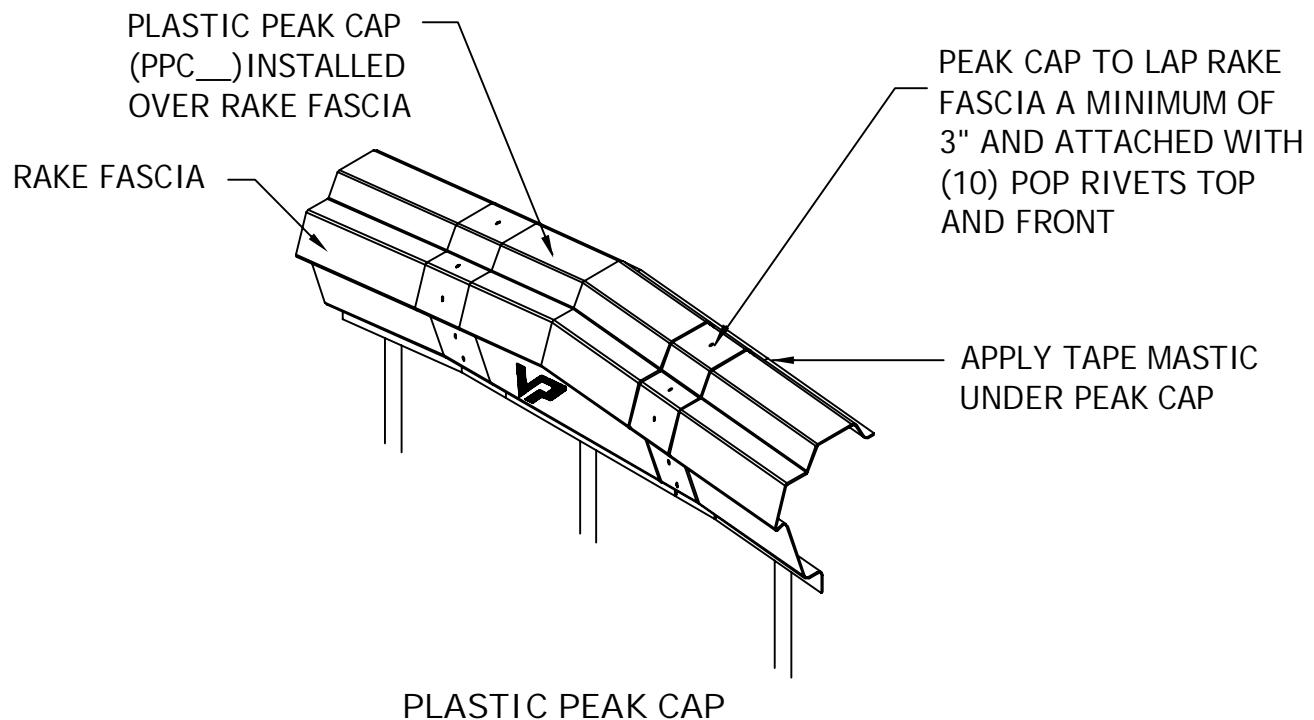
INSTALL FASCIA



FASCIA SPLICE



DETAILS SHOWN ARE FOR PANEL RIB ROOF ONLY



SHEET METAL PEAK CAP
WITH RAKE FASCIA RIB CAP

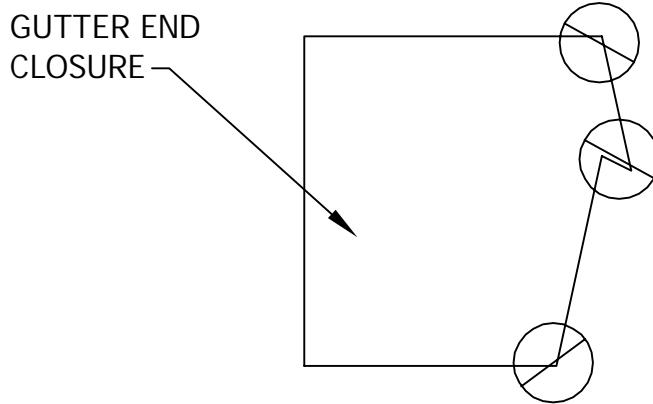


FIG. A: FIELD TRIM LOCATIONS

PROCEDURE:

1. Place gutter end closure in position as shown in FIG. B and check for proper nesting.
2. Trim as required $\frac{1}{16}$ " to $\frac{1}{8}$ " at locations shown in FIG. A to insure proper nesting.
3. Locate gutter end closure in place 1" from gutter end as shown in FIG. B.

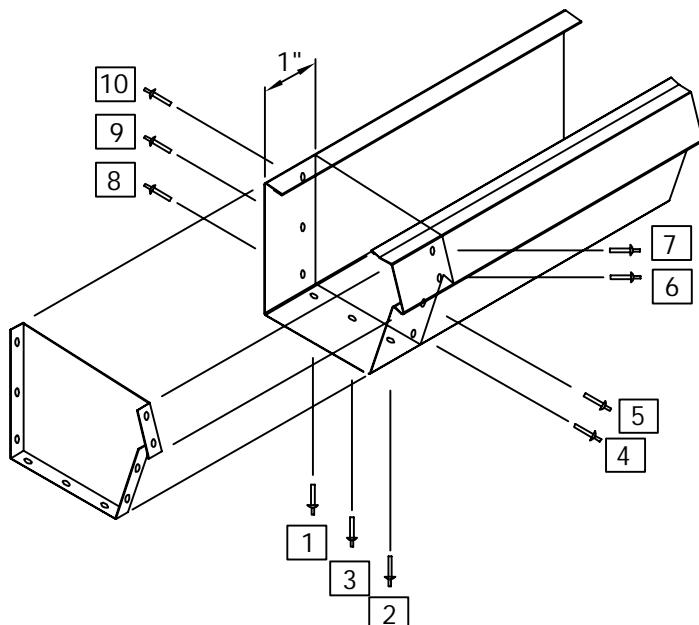


FIG. B: ASSEMBLY

4. Secure gutter end closure in place with standard $\frac{1}{8}$ " pop rivets. **IMPORTANT:** Fasten in sequence as shown in FIG. B.
5. Apply $\frac{1}{4}$ " fillet bead of recommended gun grade sealant inside gutter at joint connection. FIG. C.

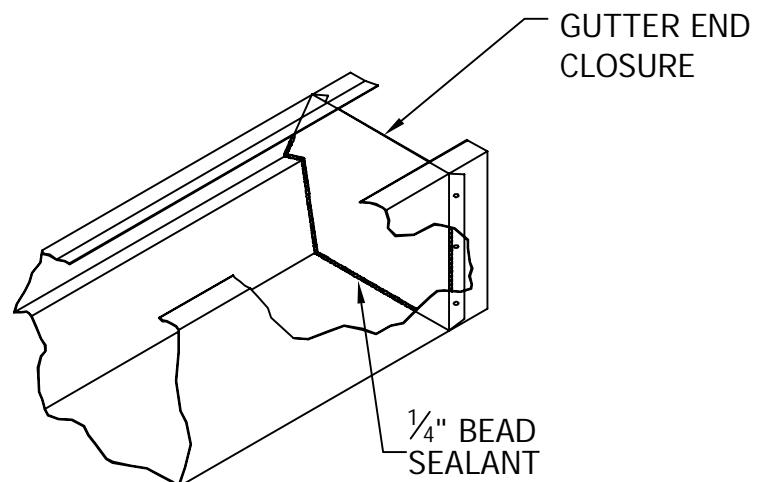
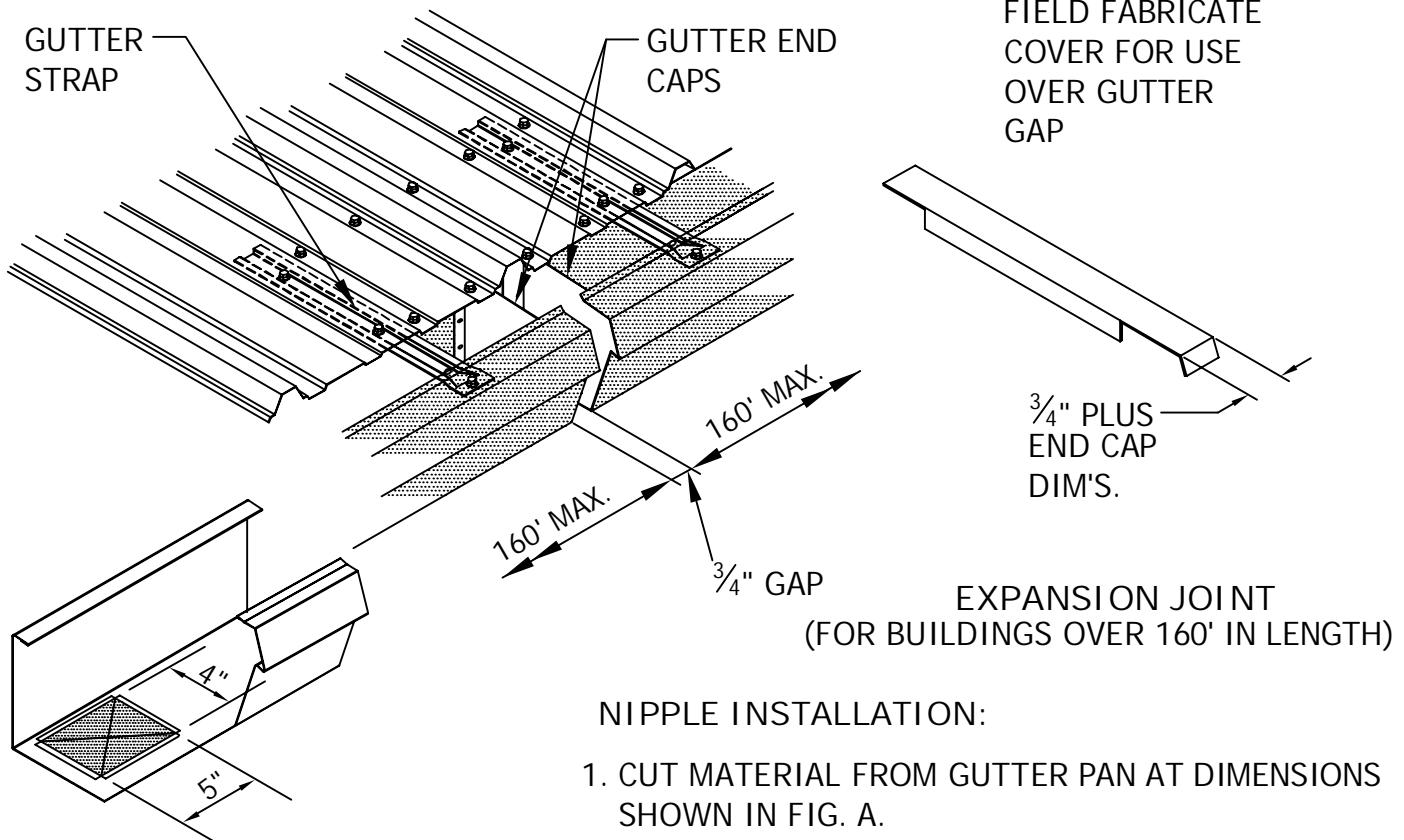


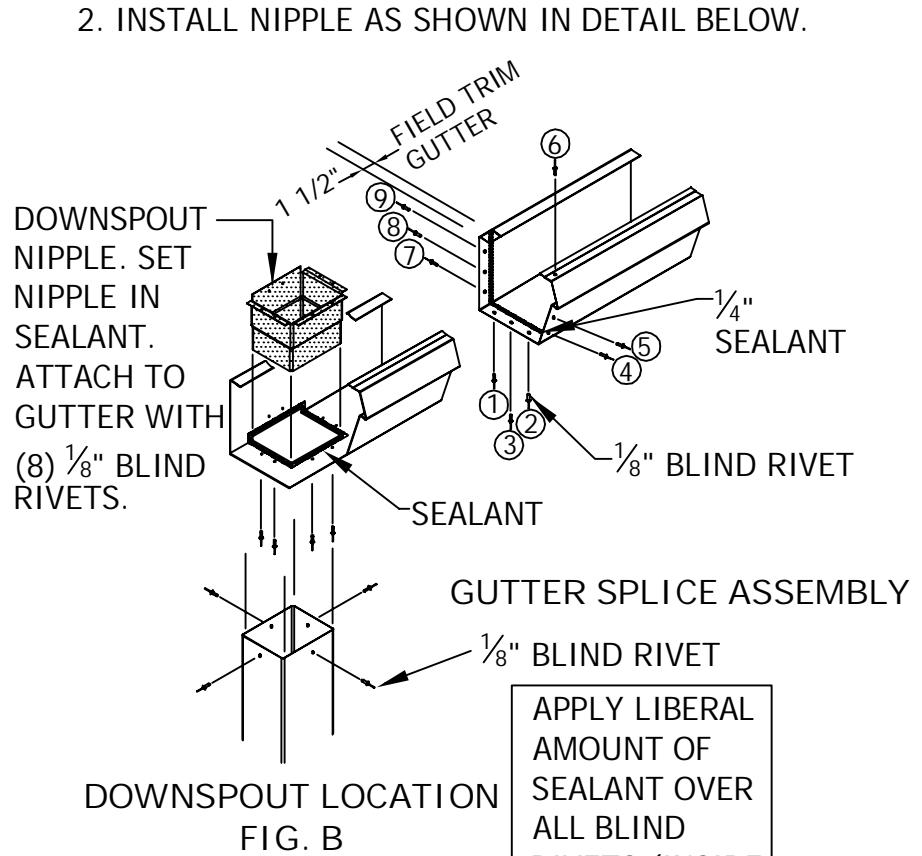
FIG. C: SEALANT APPLICATION

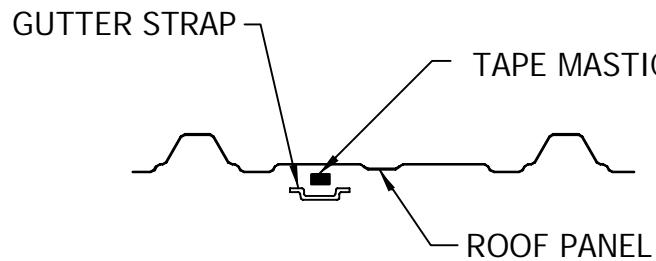


DOWNSPOUT LOCATION
FIG. A

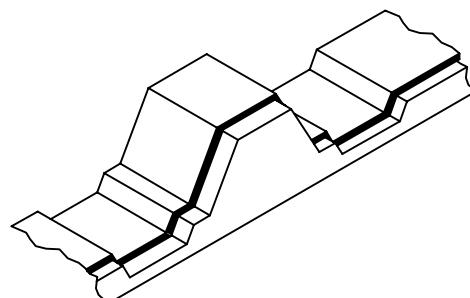
PROCEDURE: GUTTER ASSEMBLY

1. Field trim back flange of outside gutter section as shown in FIG. B. "GUTTER SPLICE ASSEMBLY"
2. Apply $\frac{1}{4}$ " bead of recommended gun grade sealant 1" from gutter edge as shown in FIG. B.
3. Place gutter sections together with $1\frac{1}{2}$ " Lap.
4. Secure gutter sections together standard $\frac{1}{8}$ " blind rivets.
IMPORTANT: FASTEN IN SEQUENCE AS SHOWN IN FIG. B.

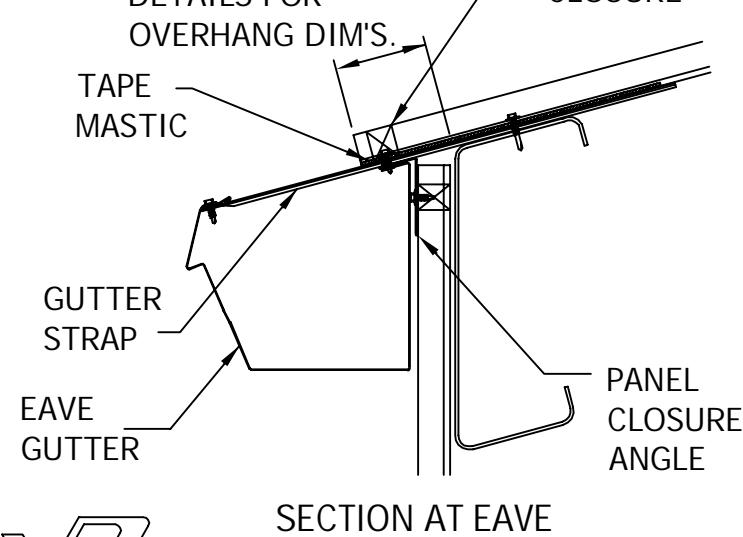
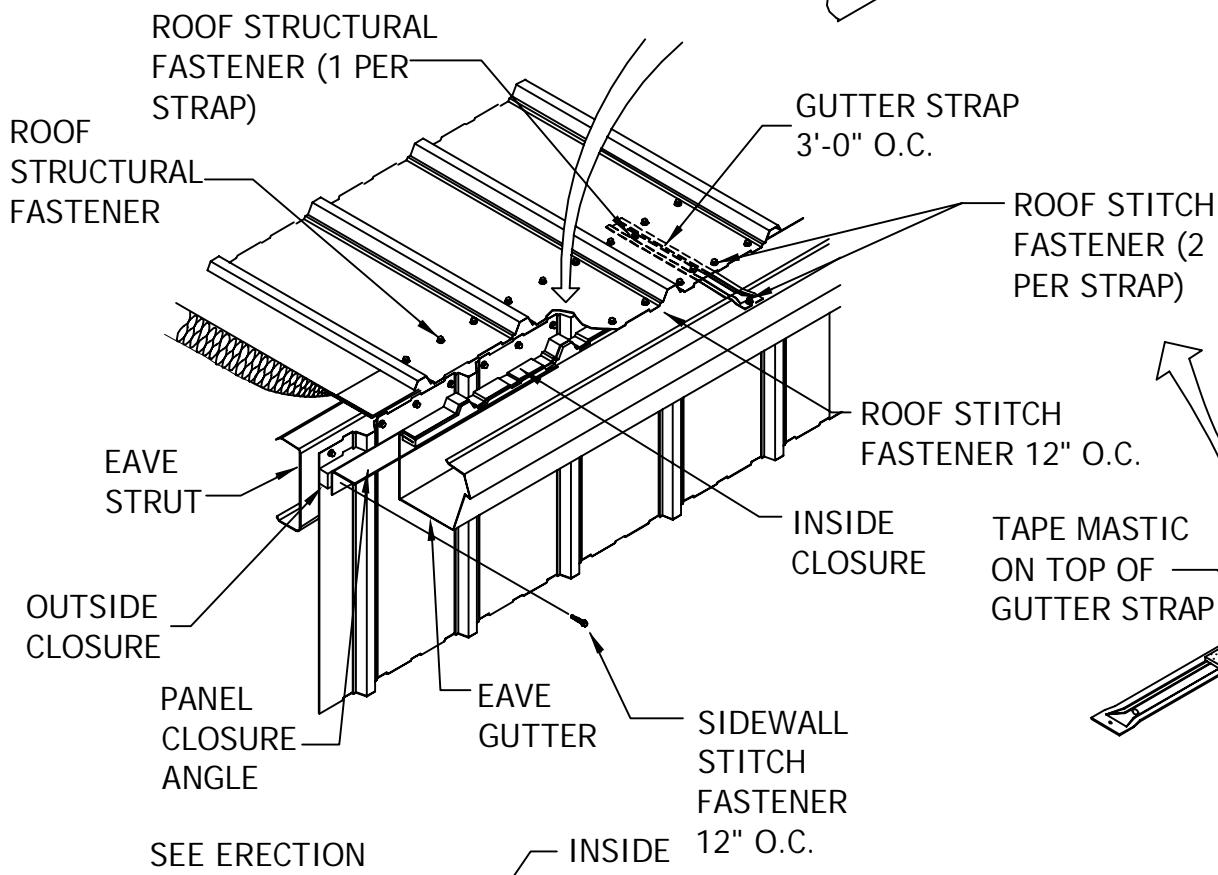




APPLY TAPE MASTIC
TO BOTH SIDES OF
CLOSURE.

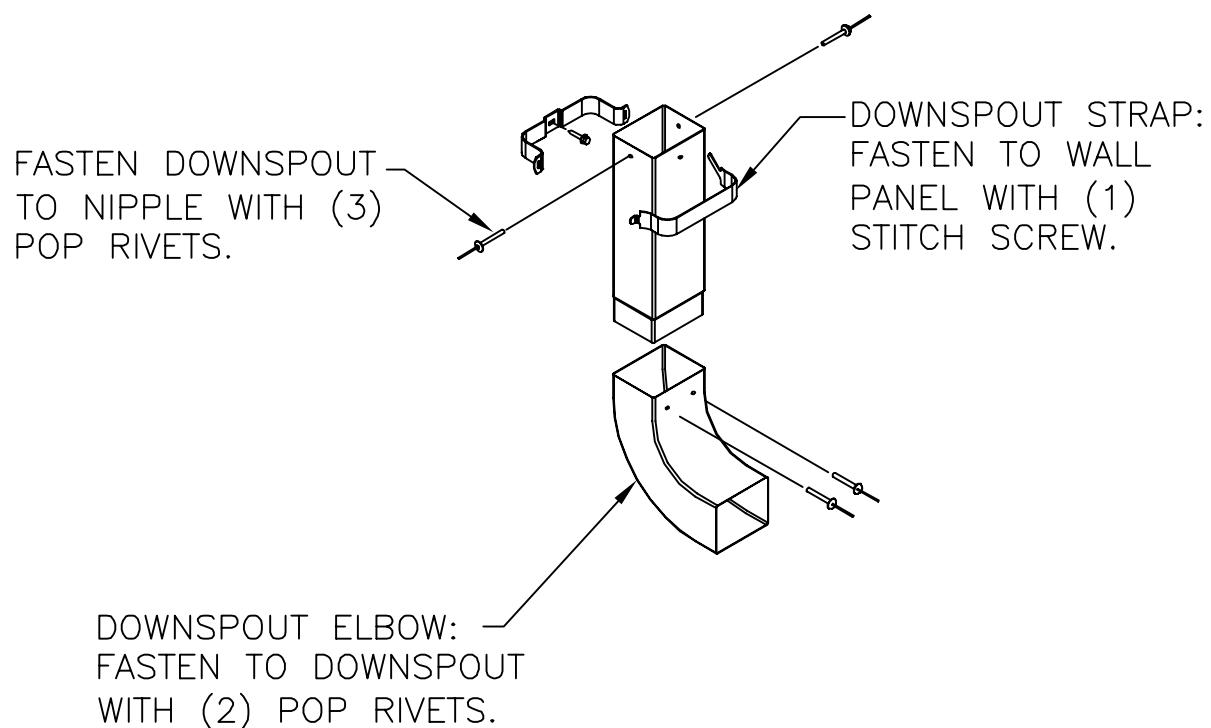
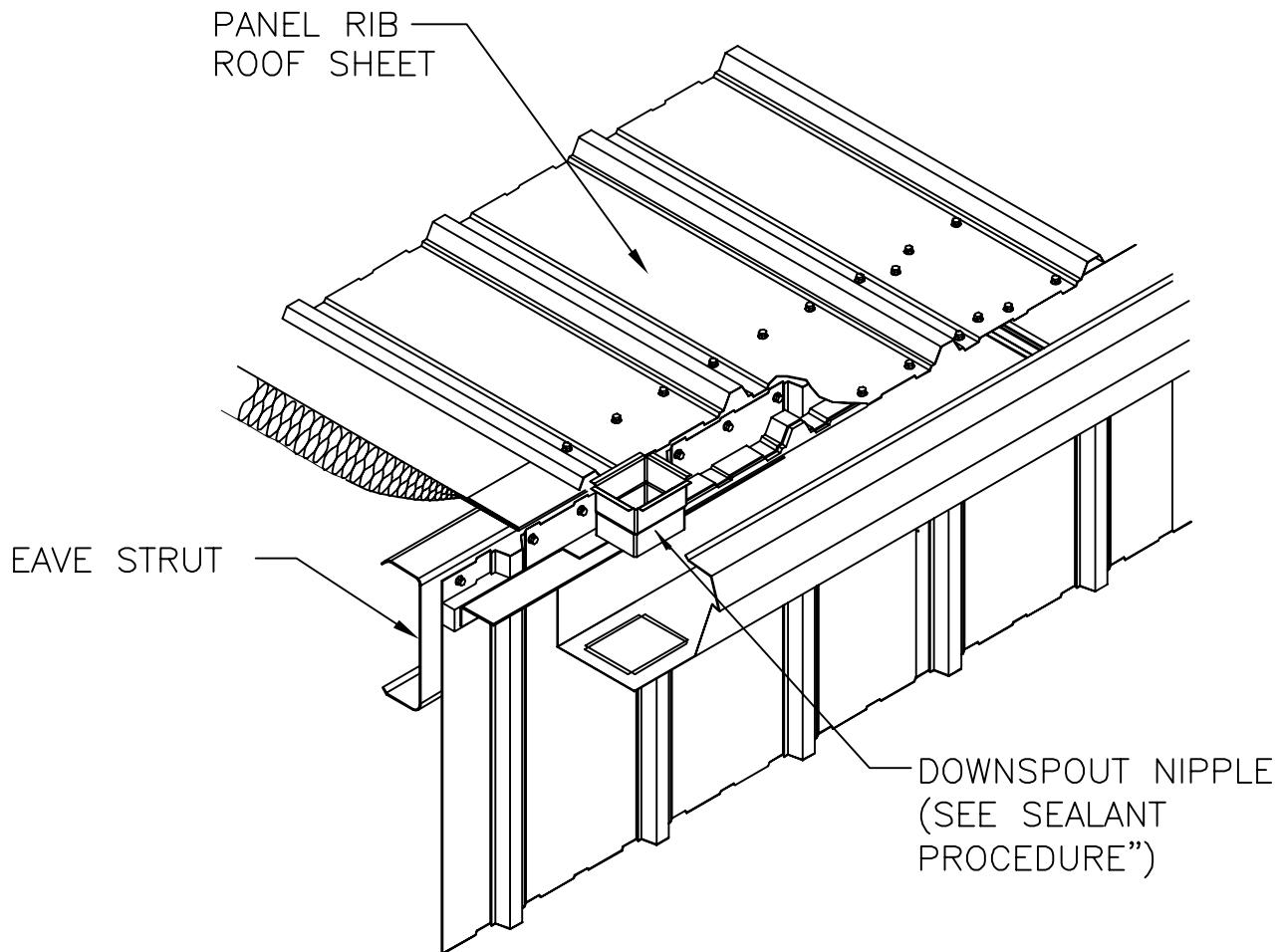


SECTION THRU GUTTER STRAP



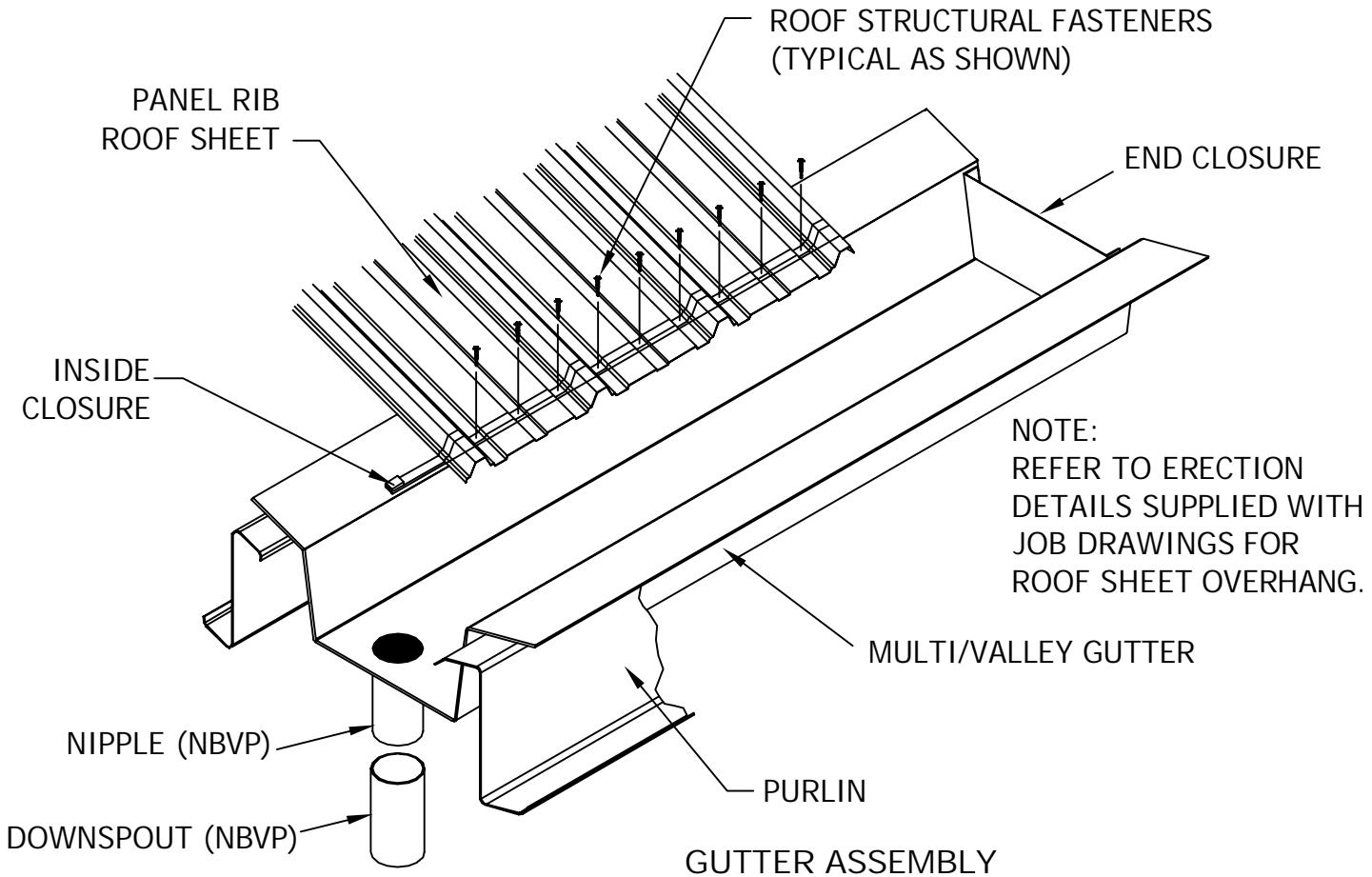
SECTION AT EAVE

1. Panel closure angle, outside closures, inside closures and tape mastic must be in place before eave gutter can be installed.
2. Gutter strap must have tape mastic applied to bottom side before installation.
3. Install gutter strap with one roof structural fastener into eave strut.
4. Hang gutter, position, then attach to roof panel.
5. Attach straps to gutter and roof panel edges.



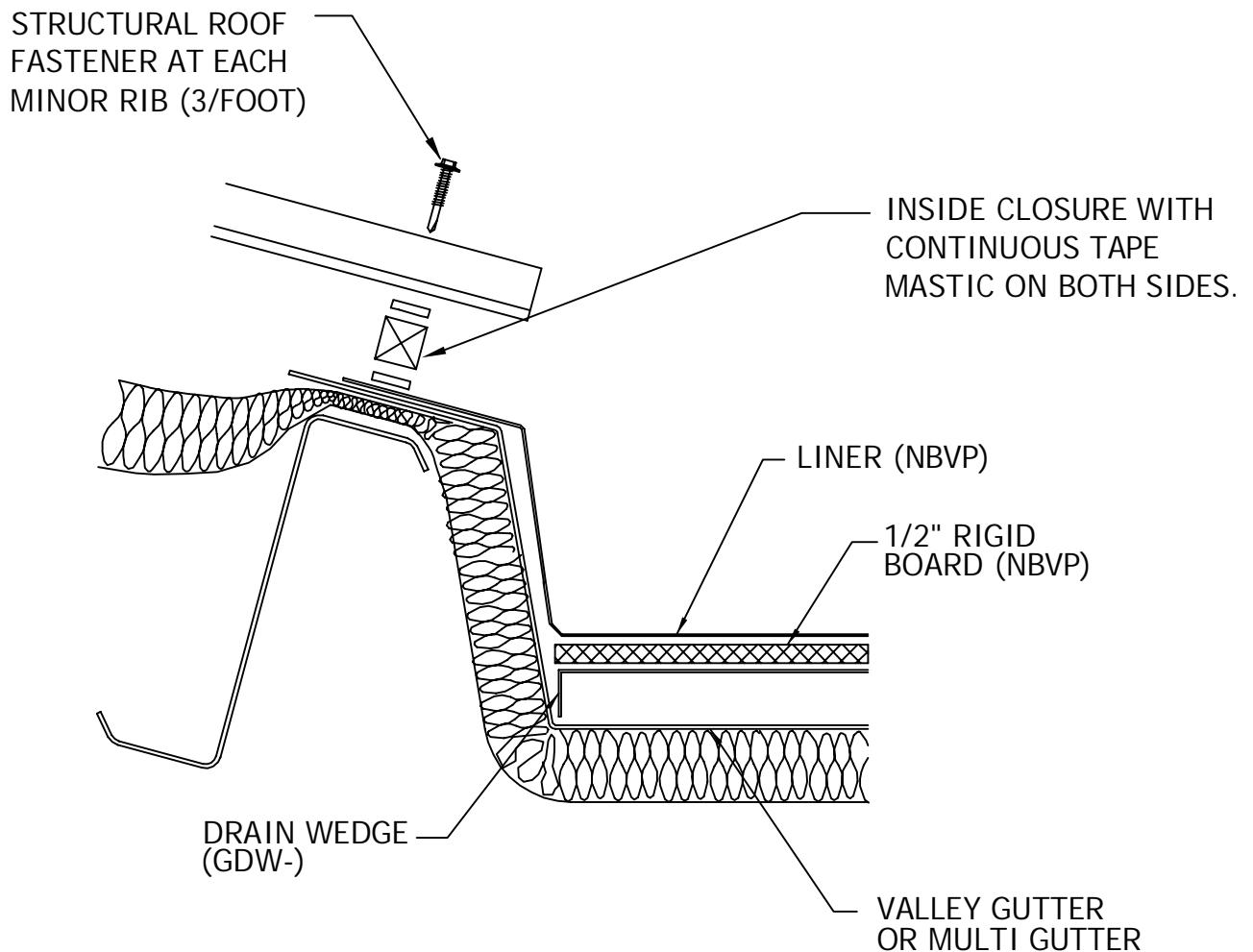
BUILDING TRIM INSTALLATION / VALLEY-GUTTER

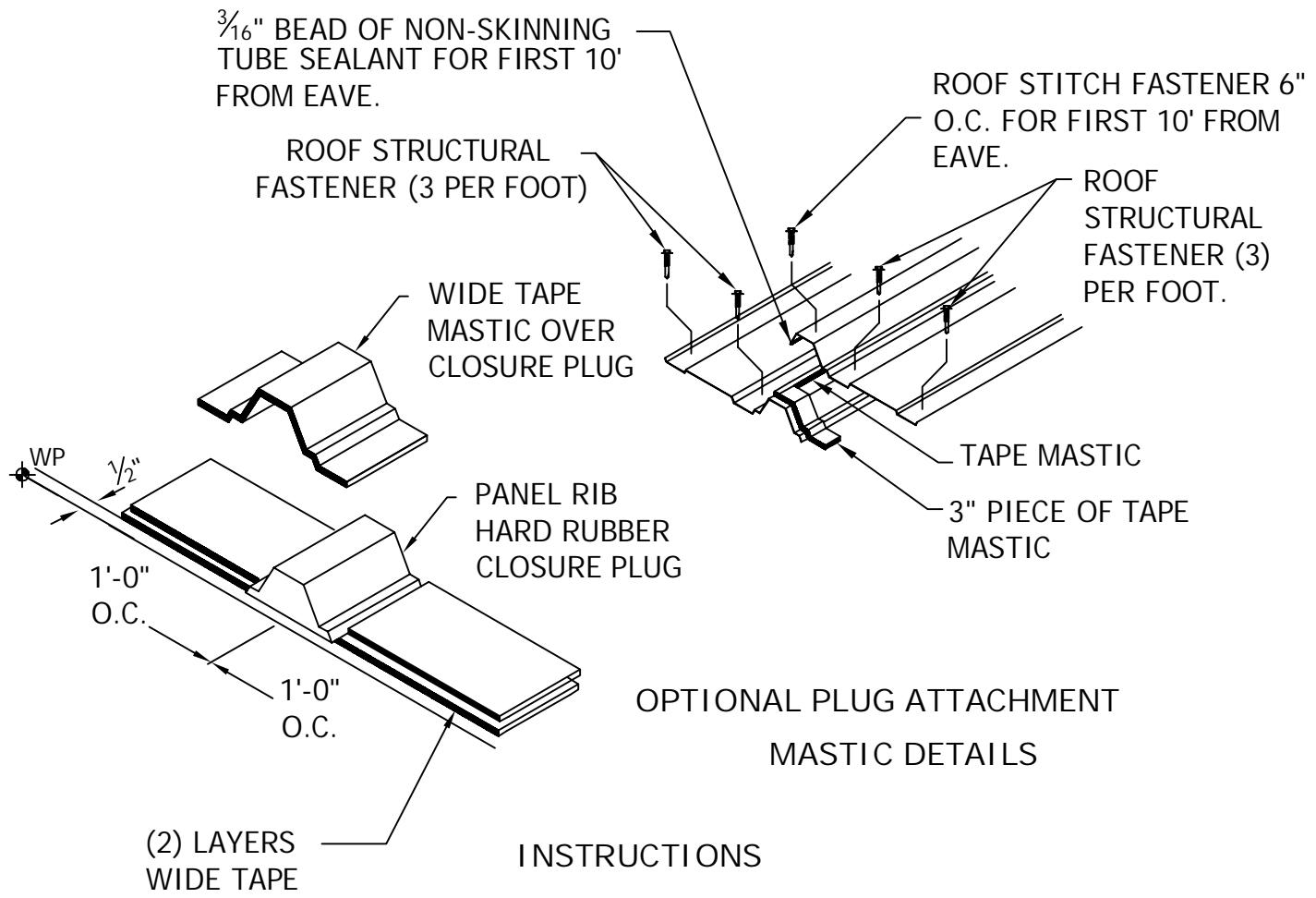
(VALLEY GUTTER SHOWN, MULTI GUTTER SIMILAR)



GUTTER ASSEMBLY

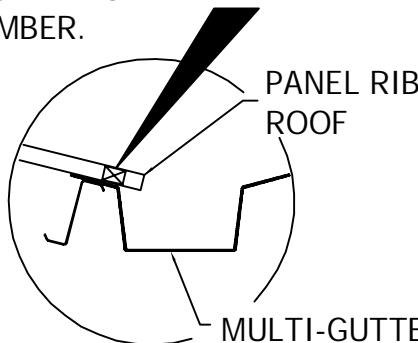
- Interior gutters and liners to be installed prior to the installation of the roof sheets.
- Interior gutters are to be installed level.
- Liners, rigid board and adhesives are NOT PROVIDED BY VP BUILDINGS. Refer to manufacturers instructions for installation procedures.
- Downspouts and downspout nipples are NOT PROVIDED BY VARCO PRUDEN. Welding of nipples to galvanized gutter is not recommended.
- Scratches and abrasions to the galvanized finish of the interior gutters should be touched up with cold galvanizing (N.B.V.P.).
- Install scuppers as required by local code. Scuppers are NOT PROVIDED BY VP BUILDINGS.
- Do not walk or stand in gutter.
- Details shown are VP BUILDINGS standards. Builder can specify tapered rigid board in lieu of drain wedges (RIGID BOARD NOT PROVIDED BY VP BUILDINGS)



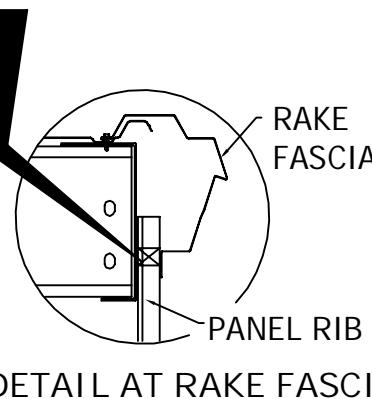


1. Refer to SED's for tape mastic sizes per location.
2. Apply (1) rows wide tape mastic 1/2" upslope from work point.
3. Install closure plug to align with panel rib major ribs.
4. Cut (1) 5" long piece of wide tape mastic and place over top of plug.
After installing sidelap mastic, install a 3" pigtail of
5. tape mastic from top of the rib down to mastic.
Apply $\frac{3}{16}$ " bead of non-skinning sealant to the wet side of the sidelap (UNDER THE ANTI-CAPILLARY BEAD) for the first 10' from the eave.
6. Install next panel and fasten sidelap with roof stitch fastener at 6" O.C. for first 10' from the eave.
7. Fasten eave end of panels with roof structural fastener in minor ribs (3 PER FOOT).
8. Use miter cut closure plugs at the valley condition between intersecting buildings. Install mastic as described above. Install fasteners in flat of panel at maximum 3" O.C.

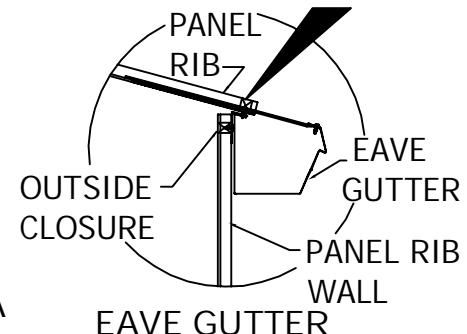
INSIDE CLOSURE WITH ROOF STRUCTURAL FASTENER AT EACH MINOR RIB AT EAVE MEMBER.



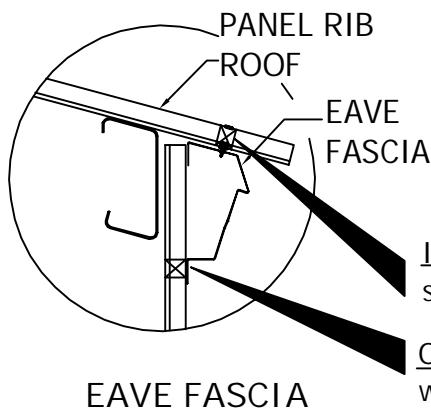
OUTSIDE CLOSURE ATTACHES WITH WALL STITCH FASTENERS AT MAJOR RIBS.



INSIDE CLOSURE INSTALL WITH ROOF STITCH FASTENER IN MINOR RIBS.

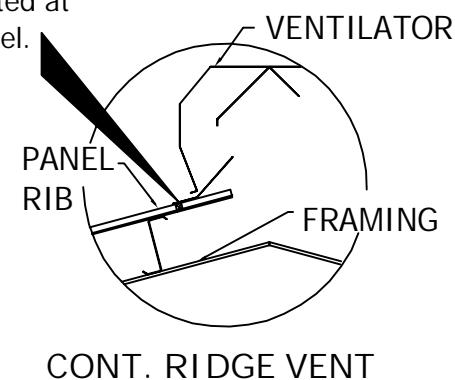


MULTI-GUTTER

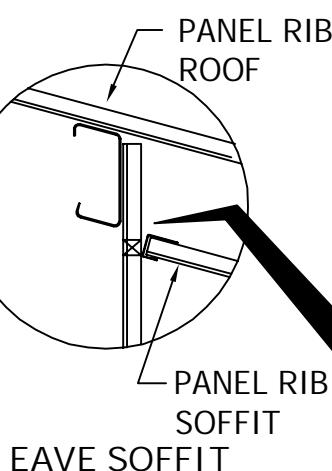


INSIDE CLOSURE at top use roof stitch fastener at 12" O.C.

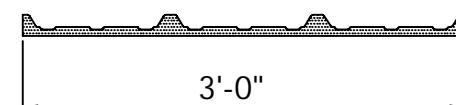
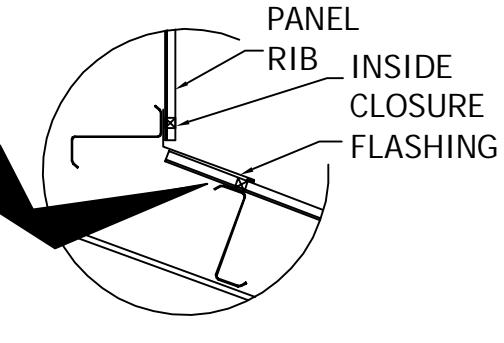
OUTSIDE CLOSURE at bottom attach with wall stitch fasteners at major ribs.



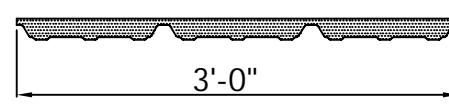
OUTSIDE CLOSURE use std. purlin fastener arrangement for attaching roof panel. Locate closure below fastener heads. Attach flashing and closure with roof stitch fasteners at major ribs of each roof panel.



OUTSIDE CLOSURE
Soffit trim attached with wall stitch fasteners located at each major rib of wall panel.



INSIDE CLOSURE



OUTSIDE CLOSURE

Design and recommended installation procedures
are subject to change at any time, due to continued
development work by Varco Pruden Buildings.

• • •

All panels formed from light gauge metal may
exhibit waviness, also known as "Oil-Canning,"
commonly occurring in, but not restricted to, flat
portions of a panel. This inherent characteristic
is not a defect of material or manufacturing and
is not cause for rejection.

• • •

For field installation questions, call your local VP
Service Center. The job number is included on all
building plans:

Arkansas:870-534-6030

California:.....559-651-5300

Missouri:.....816-238-7550

North Carolina:336-996-4801

Wisconsin:608-882-5000



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4003 Basic Panels and Accessories
Form: EG-902931 Issue Date: 2010
Revision: 4 Revised: 4/17

Test Reports – Panel Rib Roofing

1. Structural Capacity
2. Wind Uplift
3. Water Infiltration



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PANELS & TRIMS

VP-PANEL RIB ROOFS & LINER

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A. GENERAL

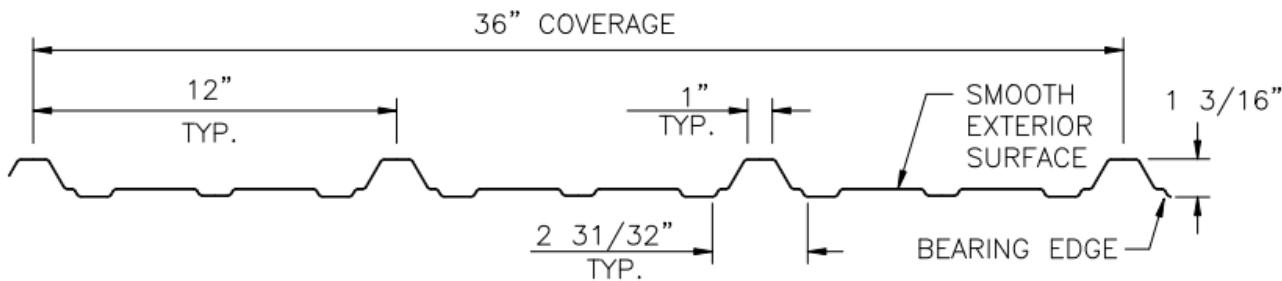
The intent of this section is to give a brief description of the Panel Rib (PR) roof and liner panel system and to outline policies and procedures applicable to the installation of the product.

B. AVAILABILITY

Panel Rib roof panels are manufactured by BlueScope Buildings North America. Refer to [MC-3-1-1](#) for Manufacturing Capabilities, including minimum and maximum panel lengths.

C. PRODUCT DESCRIPTION AND APPLICATION

C1. General / Materials



The Panel Rib roof panel has a blank width of 42 3/4" with a nominal coverage of 3'-0". The major ribs are 1 3/16" high at 12" on center with two minor ribs spaces between the major ribs. See fabrication drawing [PAN11](#) for specific dimensions of the panel. See drawing [P](#) for PR ridge panel and [PAN12](#) for Panel Rib liner panel. For roof panel assembly refer to [VP Basic Panel & Fastener Guide](#) on SharePoint.

The standard panel offering for Panel Rib roofs is 26 gage. 24 and 22 gage options are available. 28 gage is offered as a liner panel only. See [MS-05-01](#) for material requirements and specifications.

The Panel Rib roof system may not be used on slopes of less than 1/2:12 as limited by Code and due to weather-tightness concerns. The maximum "supported" roof slope is 4:12 (i.e., fully supported by VP Command automation and trim details). Steeper slopes are possible, however special parts and trim details will have to be developed manually outside the system.

C2. Panel Color and Finishes

See [VP Panel and Color Matrix](#) located within the Product Description SharePoint site for color and gage availability, or refer to VPCommand software for listing.

The 28 Gage Liner Panel is only offered with a SMP Cool Cotton White finish. The associated 26 Gage liner panel trim is provided with KXL Cool Cotton White finish.



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C3. Secondary Options

Panel Rib Roof Panels:

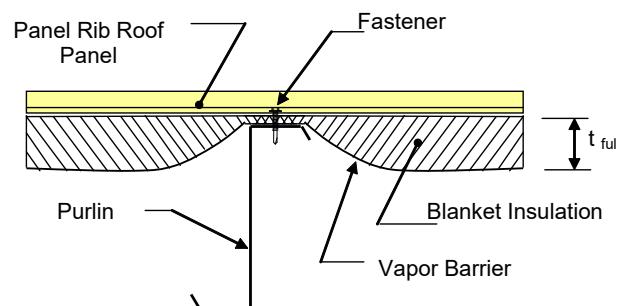
- may be installed over BBNA Z-Purlins
- may be installed with Thermal Liner Systems
- may not be installed over bar joists or Widebay Truss purlins

C4. Insulation Options

C4.1 Blanket Insulation

The maximum recommended blanket insulation thickness that can be applied between the panel and secondary using standard details and design is 6".

- For 4" or less of blanket insulation, #12-14 x 1-1/4" fastener are used.
- For greater than 4" of blanket #12-14 x 1-1/2" fasteners are used.



C4.2 Rigid Board / Thermal Blocks

The use of through-fastened Panel Rib roofs with rigid board or thermal blocks applied between the panel and secondary is not recommended. These systems require longer stand-off fasteners which tend to "rock" due to thermal expansion and contraction. This can cause screws to back out and/or break the seal between fastener head washer and panel causing leaks. Thus, are not warranted and not supported by standard details.

C5. Accessory Options

The following standard accessories are available from VP. Refer to VPCommand for categorized accessories.

- | | |
|-------------------|-----------------|
| • Apex Vent Kits | • Pipe Flashing |
| • Ridge Vent Kits | • Curbs |
| • Tuf Lite Kits | |



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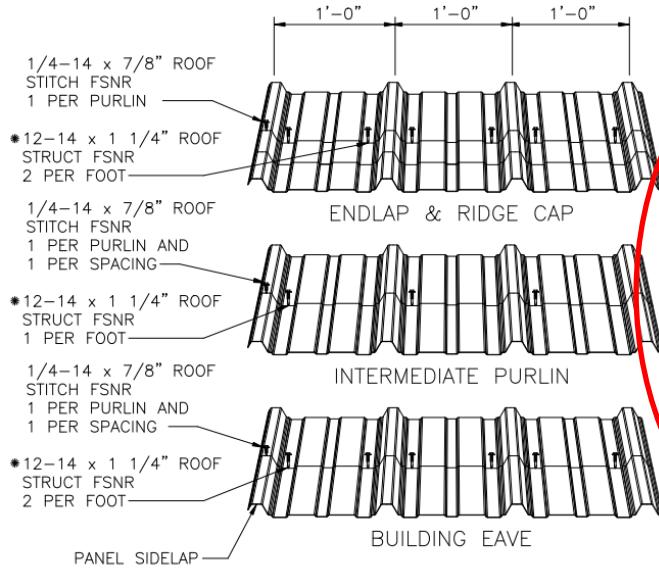
C6. Typical Details

★★ Details shown are for illustration purposes. Refer to current SED's and Erection Guides for complete details. ★★

C6.1 Fastener Patterns

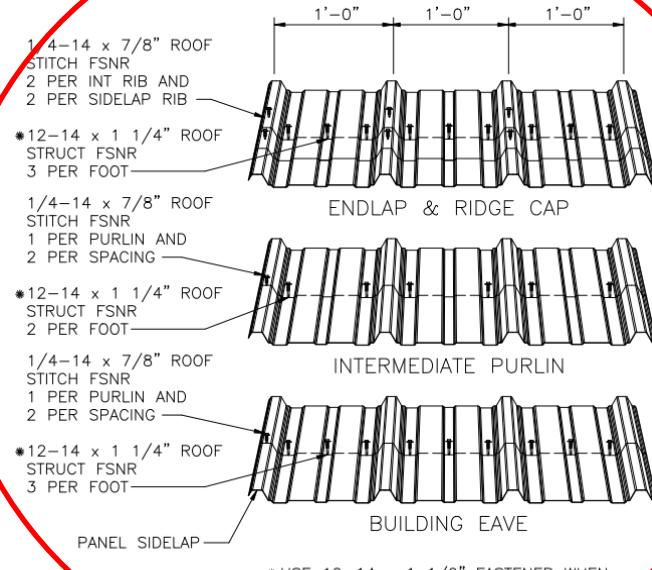
There are basically two fastener attachment patterns used with Panel Rib roofs which are shown below. The detail to the left is the standard default detail in VP Command and qualifies for an Underwriters' UL60 wind uplift rating. The detail to the right requires additional fasteners and qualifies for an UL90 wind uplift rating. See Section E3 for additional information on Underwriters' uplift ratings.

Standard & UL60 Rated



Reference SED [RC04B1](#)

UL 90 Rated



Reference SED [RC04B3](#)

Additional fasteners are required for **ICE DAMMING** when the ground snow load is greater than or equal to 20 psf. Typically, building low eave, roof curb, stepped roof and expansion joints and roof height change areas may require additional weather seals. Additional eave gutter supports may also be required.

See SED's [RC04B2](#) for standard details with Ice Damming and SED [RC04B4](#) for UL90 rated roofs.



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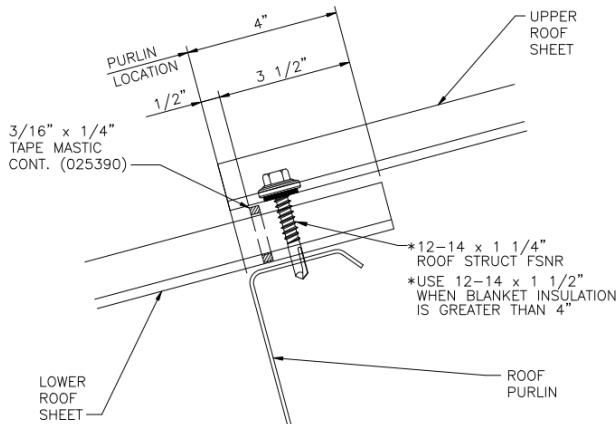
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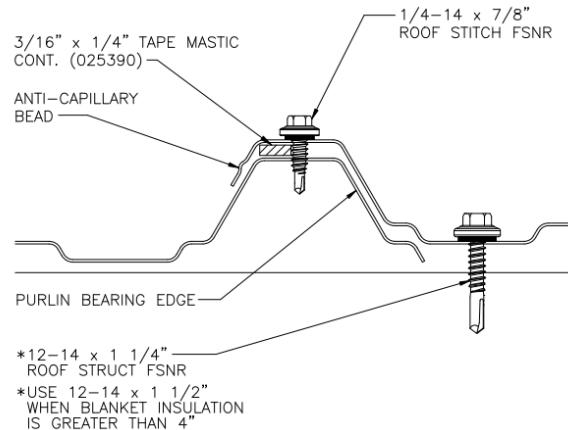
C6.2 Panel Rib Roof: Endlap and Sidelap (Standard)

Standard panel endlap details are accomplished by extending the lower panel 4" past the purlin web. The upper panels ends flush with the purlin web providing a 4" lap. Weather seals are made with 3/16" x 1/4" mastic.

Endlap (Ref. SED [RC02B1](#))



Sidelap (Ref. SED [RC03B1](#))

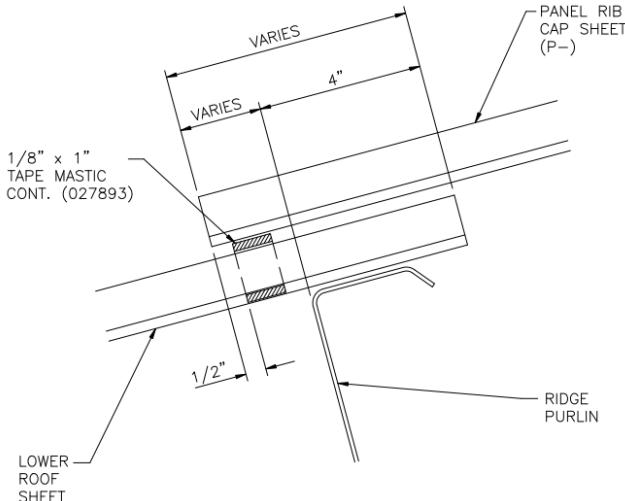


The above standard details have been tested for air infiltration and water penetration and are applicable to both Standard and UL90 fastener patterns. See section E4 for tabulated values.

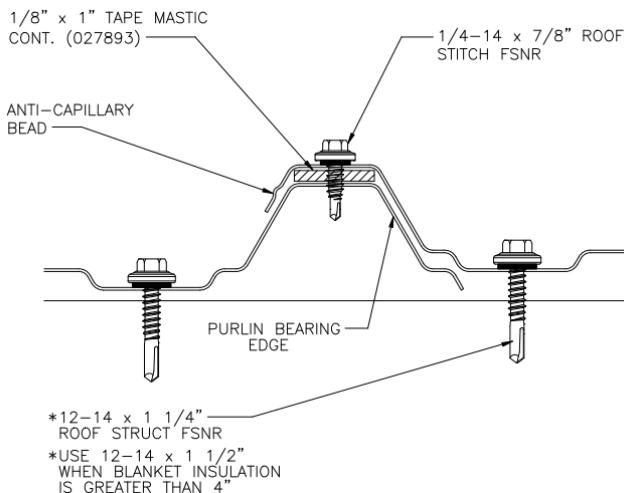
C6.3 Panel Rib Roof: Endlap and Sidelap (10 Yr. Weathertight Warranty)

When weathertight warranties are required, 1/8" x 1" tape mastic is required at sidelaps and endlaps per the details shown below. Additionally, UL90 / Ice Damming per SED [RC04B4](#) is required. See Panel Rib Weathertightness Inspection Checklist FMWA0216-VPB for additional information.

Endlap (Ref. SED [RCV369](#))



Sidelap (Ref. SED [RCV368](#))



The above standard details have been tested for air infiltration and water penetration. See section E4 for tabulated values.



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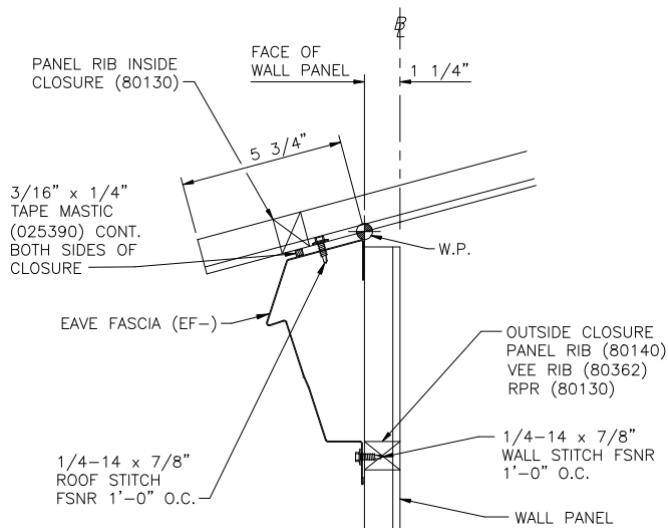
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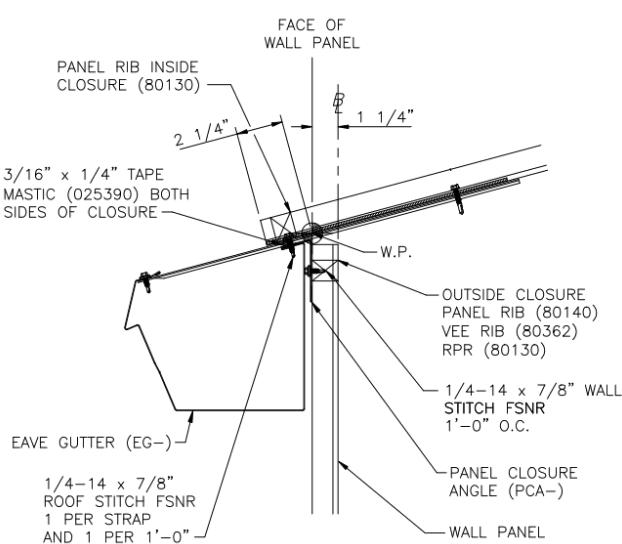
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C6.4 Typical Eave and Rake Conditions

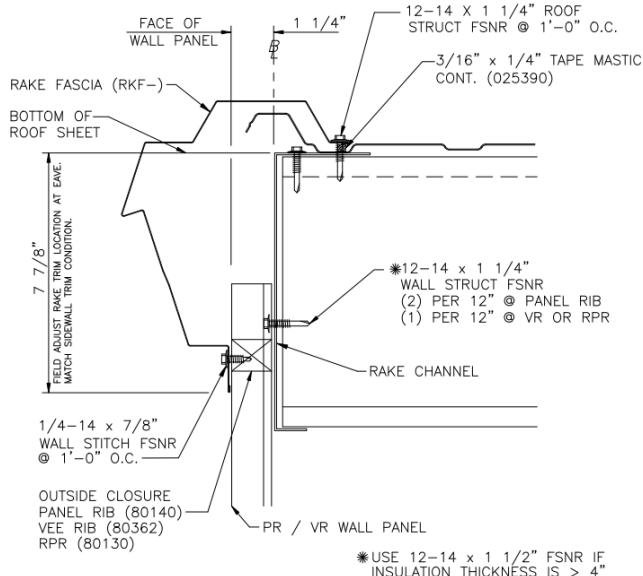
Eave Fascia



Eave Gutter



Rake





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D. DESIGN ENGINEERING GUIDELINES

Panel design properties, steel grade & thicknesses supported for Panel Rib roof panels are located in [DP25.1](#). See [DP10.1](#) for panel design procedures.

Panel Rib roof panels are through-fastened requiring direct attachments to the secondary supporting members which have been described in Section C6. See [DP4.1](#) Section C4.1 to learn more about the design of roof purlins with through-fastened panels.

E. RATINGS AND APPROVALS

This section covers ratings and approval and other applicable tests that may be needed to substantiate Building Code or Energy Code compliance and/or product design. See Section F for reference to test reports.

E1. Thermal Performance - See [VP U-Facts](#) and Climate Zone requirements

E2. Factory Mutual (FM) – Not available

E3. Underwriters' Laboratory (UL) – Roofs only

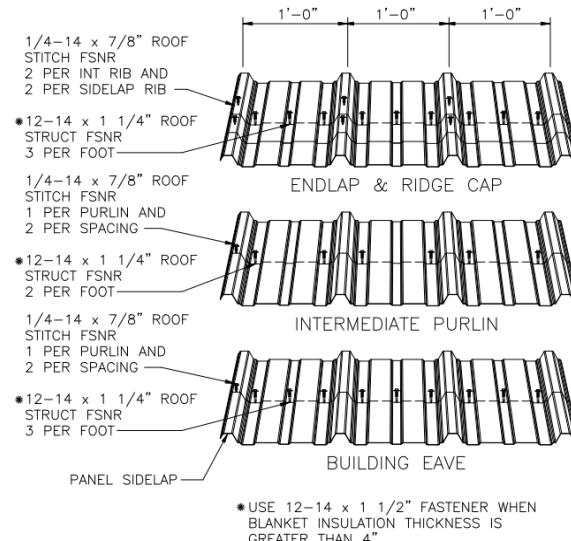
Significance and Use: May be used to meet IBC Section 1504.3.2 "Metal Panel Roof Systems" or as required by job specifications.

Test Procedure: UL 580 "Tests for Uplift Resistance of Roof Assemblies"

Results:

- **UL Class 60 Uplift Rating, Construction # 60:** Standard product, 5'-0" max. purlin. 6" max. blanket insulation before compression. Standard fastener pattern is used.
- **UL Class 60, 90 Uplift Rating, Construction # 64:** Standard product, 5'-0" max. purlin. 6" max. blanket insulation before compression.

Reference: UL listings TGKX [60](#), [64](#)



Roof FSNR Pattern (UL 90 rated)



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E4. Air Leakage and Water Penetration

E4.1 Air Leakage

Significance and Use: May be used to meet the "Continuous Air Barrier" requirements of IECC Section C402.4.1 and/or ASHRAE 90.1, Section C402.4.1.2.3 requiring a minimum air leakage of 0.04 cfm/ft² at 1.57 psf static pressure differential.

Test Procedure: ASTM E1680 "Test Method for Rate of Air Leakage Through Metal Roof Panels".

Standard Detail w/ 1/4" x 3/16" tape mastic

Air ^{3,4} Leakage Test Results	Static Pressure Differential	Air Infiltration Rate ^{1,2}	
	1.57 psf	0.0110 cfm / lf	0.0037 cfm / sf
	6.24 psf	0.0254 cfm / lf	0.0085 cfm / sf
	12.00 psf	0.0356 cfm / lf	0.0119 cfm / sf
	20.00 psf	0.0585 cfm / lf	0.0195 cfm / sf

Notes:

1. cfm/linear ft. = cubic feet per minute air leakage per foot length of seam
2. cfm/ ft.² = equivalent cubic feet per minute air leakage per square foot of panel surface.
3. Reference: ENCON Technology, Inc. test report C1974-2, dated 2/27/2015
4. Test were performed with 26 ga. Panels, standard fasteners, standard fastener patterns and 1/4" x 3/16" tape mastic on 5'-0" purlin spaces.

Weathertight Warranty Detail w/ 1/8" x 1" tape mastic

Air ^{5,6} Leakage Test Results	Static Pressure Differential	Air Infiltration Rate ^{1,2}	
	1.57 psf	0.0059 cfm / lf	0.0020 cfm / sf
	6.24 psf	0.0135 cfm / lf	0.0045 cfm / sf
	12.00 psf	0.0270 cfm / lf	0.0090 cfm / sf
	20.00 psf	0.0508 cfm / lf	0.0169 cfm / sf

Notes:

5. Reference: ENCON Technology, Inc. test report C1974-1, dated 2/24/2015
6. Test were performed with 26 ga. Panels, standard fasteners, standard fastener patterns and 1/8" x 1" tape mastic on 5'-0" purlin spaces.



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E4.2 Water Penetration

Significance and Use: May be used to establish roof panel system weather resistance to wind driven rains.

Test Procedure: ASTM E1646 "Standard test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference".

Standard Detail w/ 1/4" x 3/16" tape mastic and Weathertight Warranty Detail w/ 1/8" x 1" tape mastic

Water ^{7, 8} Penetration Test Results	Static Pressure Differential	Water Spray Rate	Water Spray Duration	Water Infiltration
	6.24 psf	5 gallons / hr./ sf	15 min.	None
	12.00 psf	5 gallons / hr./ sf	15 min.	None
	20.00 psf	5 gallons / hr./ sf	15 min.	None

Notes:

7. Reference ENCON Technology, Inc. test reports C1974-1, dated 2/24/2015 and C1974-2, dated 2/27/2015. Results are the same.
8. Details used were the same as ones used for air infiltration. See notes 4 and 6 above.

E5. State of Florida

E5.1 Florida Product Approval No. [Current FPA](#)

12763-Rx (Rx = revision number "x" and varies with the code year)

Significance and Use: Required of products used or sold within the State of Florida. Applicable to Non-High Wind Hurricane Zones (non-HWHZ). – **No Special Details Required.**

E6. Miami-Dade County – Panel Rib Roof

E6.1 Miami-Dade Notice of Acceptance: [Current NOA](#)

Significance and Use: Required of products used or sold within the State of Florida and used in High Wind Hurricane Zones (HWHZ).

Test Procedure: 24 Ga. Panel Rib roof panels have been tested in accordance with ASTM E1592, FM 4471, TAS 100, TAS 201 and TAS 203 test procedures and reports may be referenced in Section F.

Caution – Large missile impact projectile speed does not meet 2014 FBC Risk Category IV requirements.

E6.2 Additional Detail Requirements

Panel Rib Roof Panel: 24 Ga. (0.022" base metal)

Purlin Spacing: Maximum 4'-0" o.c.

Mastic: 3/16" x 7/8" continuous mastic (part # [97637](#)) required at all sidelaps and endlaps.

Sidelap Fasteners: Maximum spacing 12" o.c. No change in fastener type. – The reduced fastener spacing was a result of large missile tests.

Structural Fastener: Use UL90 fastener pattern per SED [RC04B3](#) incorporating 12" sidelap fastener spacing noted above.



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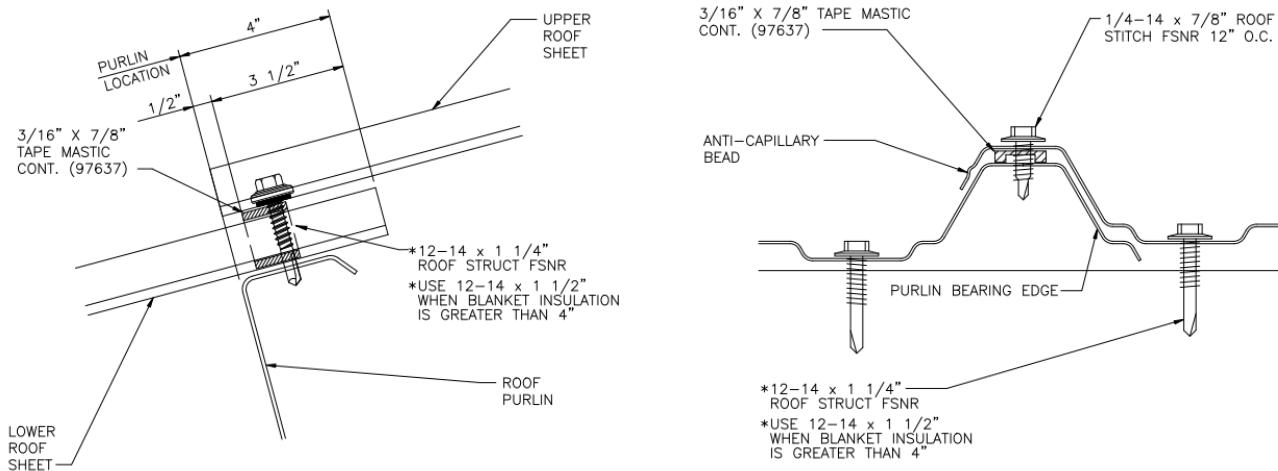
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Details: Use SED's [RC02B7](#) and [RC03B7](#) (see below)



E6.3 Additional Design Requirements

Design Loads: Load-span tables have been developed using strength properties found in NOA 14-0123.12 These is not supported in VISION.

Allowable Pressure/Suction Loads

Span	2-Span Continuous	3-Span Continuous	\geq 4-Span Continuous
2'-0"	129	146	141
2'-6"	103	117	113
3'-0"	86	98	94
3'-6"	74	84	81
4'-0"	59	73	69

Notes:

1. NOA 14-0123.12 Strength Properties:
Ma (at supports) = 1409.28 lb.-in.
Pa (interior reaction) = 323 lb.
EI (deflection) = 571,899.67 lb.-in.²
Ma (between supports) = 1127.42 lb.-in.
Pa (exterior reaction) = 117 lb.
L/240 panel deflection limits included.
2. Included Factors of Safety = 2.0

E7. Diaphragm Test

Test Procedure: ASTM E 455-76 "Standard Test Method for Static Load Testing of Framed Floor or Roof Diaphragm Constructions for Buildings."

Results: Tabulated in [DP 25.1](#).

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F. TEST REPORTS

Below are the approval, ratings and test report links for convenience. Normally, these are not required, however may be appropriate to establish compliance. Non-standard details may be necessary. See the referenced "Section" for additional guidance.

Link	Referenced Test Reports	Section
Air Leakage (Standard) Air Leakage (Weathertight Warranty)	Procedure: ASTM E1680 "Test Method for Rate of Air Leakage Through Metal Roof Panels". Reference: ENCON Technology, Inc. test reports C1974-1, dated 2/24/2015 and C1974-2, dated 2/27/2025	E4.1
Water Penetration (Standard) Water Penetration (Weathertight Warranty)	Procedure: ASTM E1646 "Standard test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference". Reference: ENCON Technology, Inc. test reports C1974-1, dated 2/24/2015 and C1974-2, dated 2/27/2025	E4.2
Miami-Dade NOA	Miami-Dade Notice of Acceptance	E6
• 6" Water Head-24Ga.	Procedure: FM 4471 "Susceptibility to Leakage" Reference: Farabaugh Engineering and Testing, Inc. test report T122-09, dated 2/11/2009	E6
• Suction Load-24Ga.	Procedure: ASTM E1592 "Standard Test Method for Structural Performance of Sheet Metal Roof and Siding by Uniform Static Air Pressure Difference". Reference: Farabaugh Engineering and Testing, Inc. test report T135-08, dated 2/28/2008	E6
• Wind Driven Rain-24Ga.	Procedure: TAS 100 "Test Procedure for Wind and Wind driven Rain of Discontinuous Roof Systems" Reference: Farabaugh Engineering and Testing, Inc. test report T140-08, dated 3/5/2008	E6
• Large Missile Impact - 24Ga.	Procedure: TAS 201 "Impact Test Procedure, Large Missile Impact" Reference: Farabaugh Engineering and Testing, Inc. test report T140-08, dated 3/5/2008	E6
• Cyclic Wind-24Ga.	Procedure: TAS 203 "Criteria for Testing Products Subject to Cyclic Wind Pressure Loading" Reference: Farabaugh Engineering and Testing, Inc. test report T141-08, dated 12/31/2008	E6

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& Date**13(7/25)****Document and Revision History**

REV. #	DATE	NAME	DESCRIPTION
0	07/06/2011	Alpa Patel	New
1	07/28/2011	Skip Hyder	Clarified trim color will be Cool Cotton White with 28 ga Liner Panel SMP Interior White panels.
2	10/18/2011	Alpa Patel	Revised Color Matrix link to Supply Chain Color Chart
3	7/13/2012	Bob Hodges	Added ICE DAMMING Section C6.6. Updated Sections E3 & E4 to 2010 FBC.
4	Sep2012	Skip Hyder	Added conditional application for thermal blocks (C4.2) and rigid board (C4.3). Removed references to ICC Report No. ER-4879
5	March2013	Bob Hodges	Added #12-14 x 1 7/8" wall fastener for use with blanket insulation greater than 4"
6	October2013	Randy Ramskugler	Revised Section C4.1 and C4.2. Eliminated reference to insulation > 6".
7	June2014	Bob Hodges	New PR Roof NOA 14-0123-12, expires 3-7-19
8	May2015	Bob Hodges	Separated PR roof and wall product descriptions. General update for consistency with current product. Added information on 10 yr. weathertight warranties. Added new air infiltration and water penetration data and details. Included test report links.
9	10/01/2015	Al Harrold	Added note in regard to FL-HVHZ NOA Risk Category IV restriction.
10	03/05/2018	R. Benton	Updated State of Florida and Miami-Dade product approvals
11	01/18/2019	J. Hoover	Removed Tuflite UL90 reference from section E3 on page 6.
11a	01/06/2020	R. Benton	Changed links for getting the current Florida Product Approval and the Miami Dade NOA – now the links open an instruction page containing a link to the appropriate website and instructions to find the desired listing.
12	11/18/2021	R. Turpin	Minor Edits and Fixed Links
13	7/15/2025	B. Geither	Revise DekTite naming to Pipe Flashing

Test Reports – Panel Rib Siding

1. Structural Capacity
2. Water Infiltration

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A. GENERAL

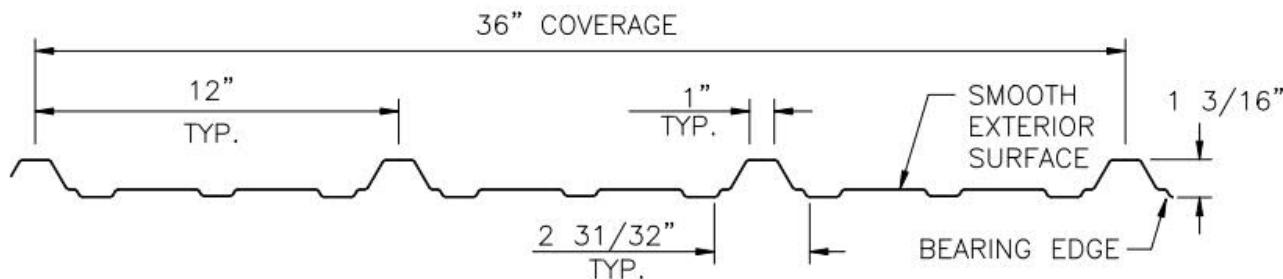
The intent of this section is to give a brief description of the Panel Rib (PR) wall and liner panel system and to outline policies and procedures applicable to the application of the product.

B. AVAILABILITY

Panel Rib wall panels are manufactured by BlueScope Buildings North America. Refer to [MC-3-1-1](#) for Manufacturing Capabilities, including minimum and maximum panel lengths.

C. PRODUCT DESCRIPTION AND APPLICATION

C1. General / Materials



The Panel Rib wall panel has a blank width of 42 3/4" with a nominal coverage of 3'-0". The major ribs are 1 3/16" high at 12" on center with two minor ribs spaces between the major ribs. See fabrication drawing [PAN11](#) for specific dimensions of the panel. See drawing [PAN12](#) for Panel Rib liner panel. For wall panel assembly refer to [VP Basic Panel & Fastener Guide](#) on SharePoint.

The standard panel offering for Panel Rib walls is 26 gage. 24 and 22 gage options are available. 28 gage is offered as a liner panel only. See [MS-05-01](#) for material requirements and specifications.

C2. Panel Color and Finishes

See [VP Panel and Color Matrix](#) located within the Product Description SharePoint site for color and gage availability, or refer to VPCommand software for listing.

The 28 Gage Liner Panel is only offered with a SMP Cool Cotton White finish. The associated 26 Gage liner panel trims are provided with KXL Cool Cotton White finish.

C3. Secondary Options

Panels may be installed over:

- Std. Z Girts or C-Girts
- *Stanchions*



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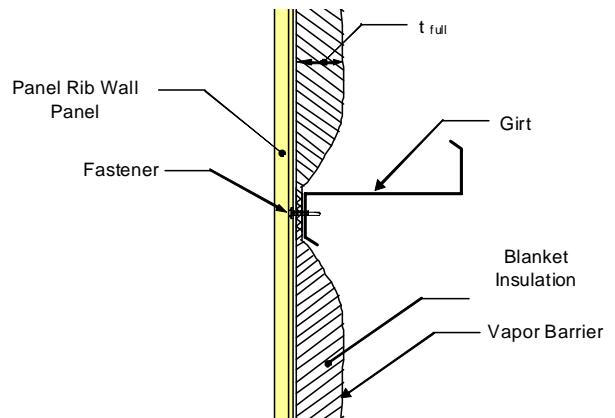
3 (11/21)

C4. Insulation Options

C4.1 Blanket Insulation

The maximum recommended blanket insulation thickness that can be applied between the panel and secondary using standard details and design is 6".

- For 4" or less of blanket insulation, #12-14 x 1-1/4" fastener are used.
- For greater than 4" of blanket #17/12-14 x 1-7/8" (standoff type) fasteners are used. See exceptions identified in Section C6.1 & C6.2.



C4.2 Rigid Board

Rigid board under Panel Rib walls is allowed, however special design and details are required.

- Appropriate type and length fasteners are required ([097586](#), [097587](#), [097588](#), [097589](#)).
- Panels must be pre-drilled to insure proper fastener installation. Indicate on details.
- See Design Procedure [4.1](#), Section C4.5(c) for guidance on girt bracing.

C5. Accessory Options

The following standard accessories are available from VP. Refer to VPCommand for categorized accessories.

- | | |
|----------------------|----------------------------|
| • Louvers | • Windows |
| • Walk Door Canopies | • Walk Door PA / KD Series |
| • Wall Lite | |



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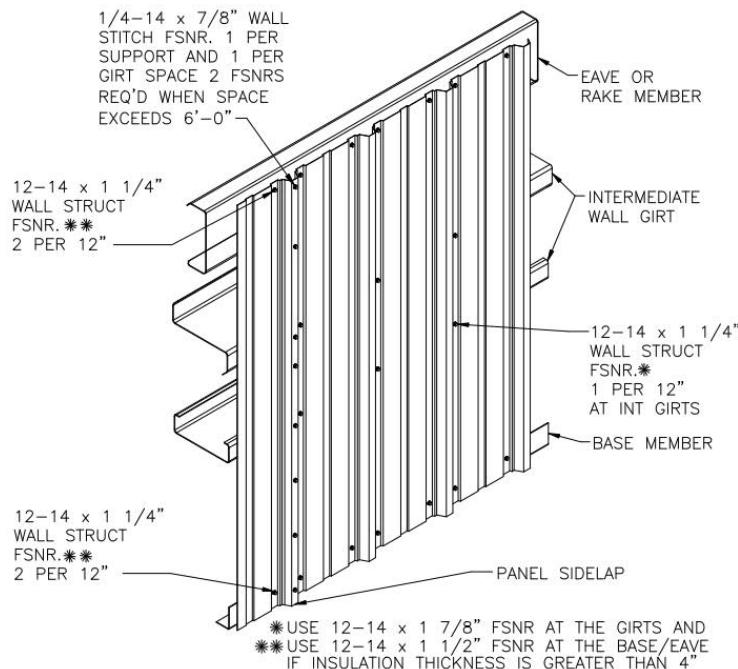
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C6. Typical Details

★★ Details shown are for illustration purposes. Refer to current SED's and Erection Guides for complete details. ★★

C6.1 Panel Attachments



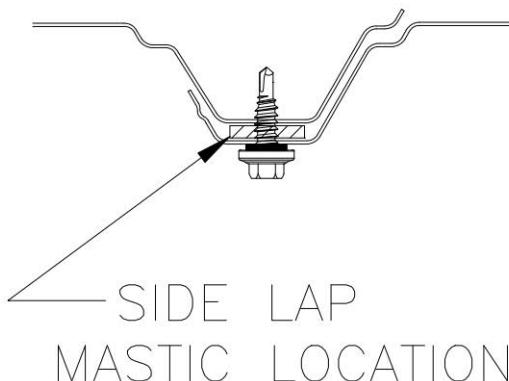
- See Section E4 for air infiltration and water penetration rated assemblies.
- See Section E6 for Miami-Dade approvals.

Wall panel-to-secondary attachments are made with #12-14 x 1-1/4" wall structural fasteners through each secondary member, 1'-0" o.c. in each rib.

For blanket insulation greater than 4", panel-to-girt connections use #17/12-14 x 1-7/8" "standoff" type structural fasteners. See Section C6.2 for base detail exceptions and Overhead Door, Walk Door Framing and Window details for similar exceptions.

Sidelaps utilize 1/4 - 14 x 7/8" stitch fasteners with spaces as shown above.

1/8" x 1" tape mastic ([027893](#)) is required on Air & Water Rated Assemblies for the panel sidelaps. Standard details have been tested for air infiltration and water penetration. See Section E for test results.





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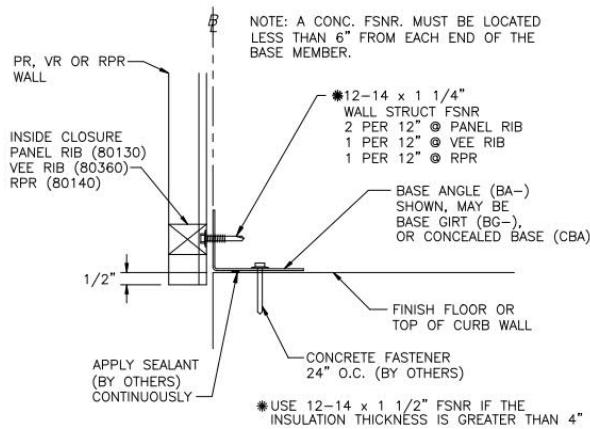
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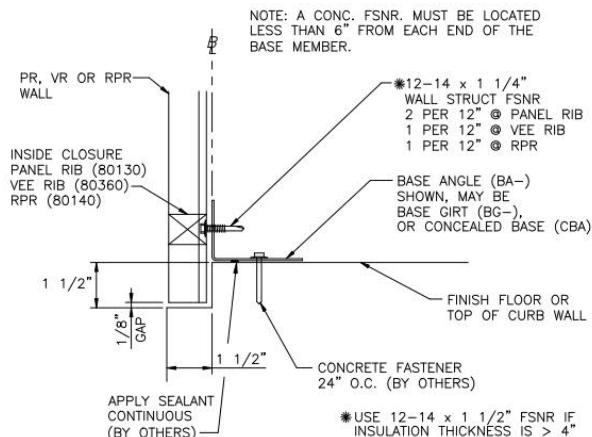
C6.2 Base Details

Several panel base details are available. A few have been shown below.

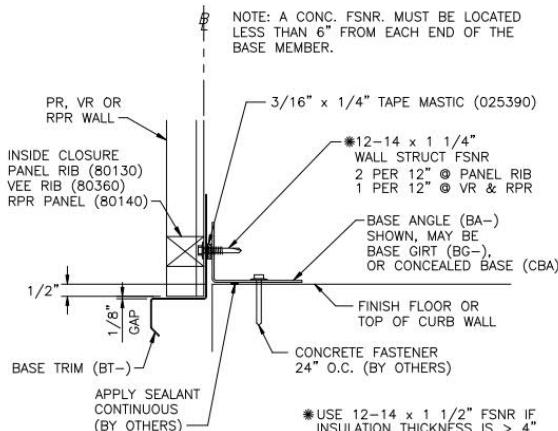
Square Cut*



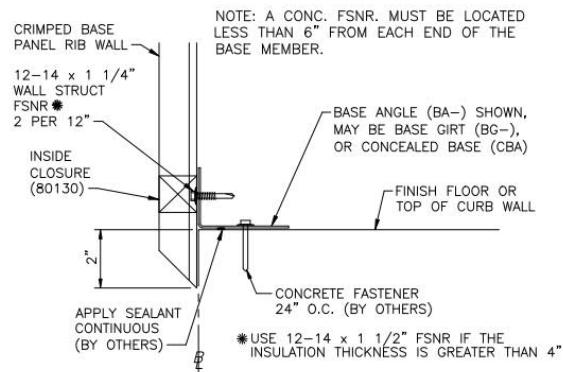
Notched Concrete



Square Cut w/ Base Trim

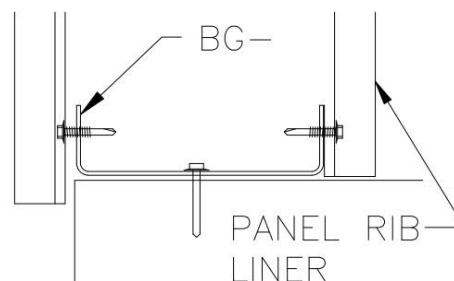
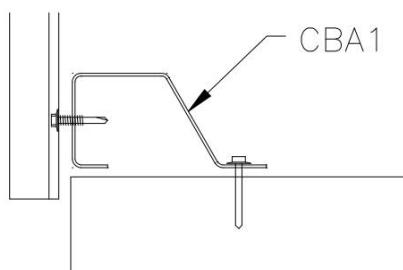


Crimped Base*



* Base details use #12-14 x 1-1/2" in lieu #17/12-14 x 1-7/8" standoff fasteners when blanket insulation thickness is greater than 4". Crimped base is not an option for 28 Ga. PR liner.

The above details have been shown with a "Base Angle" support condition at the base. Other options are available as shown below. Square cut with base trim shown, others similar.





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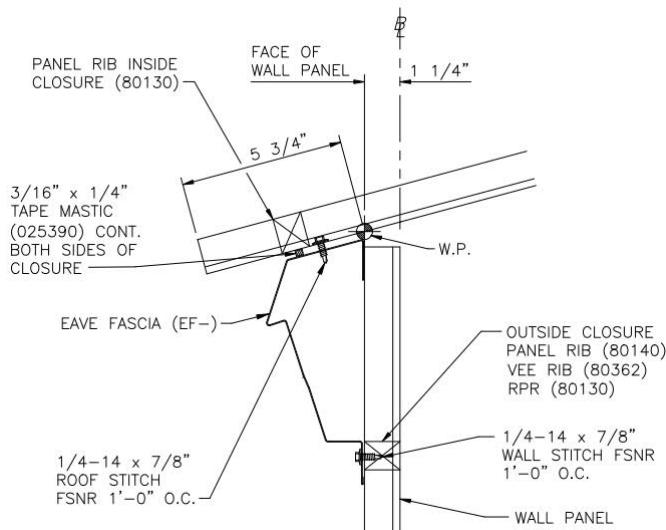
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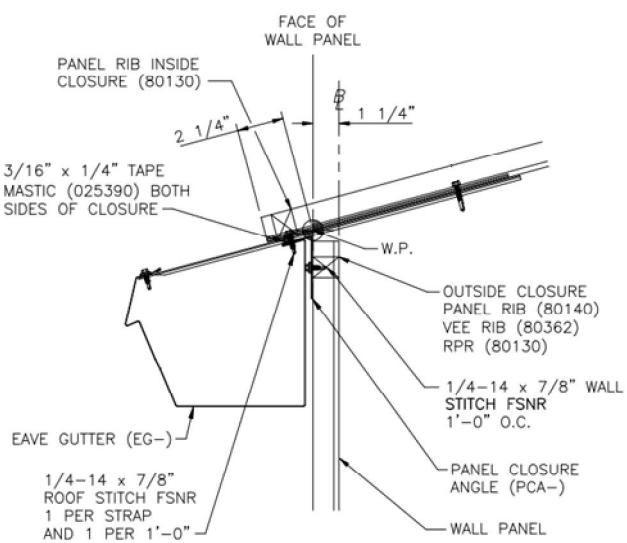
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C6.3 Rake / Eave Conditions

PR w/ Eave Fascia

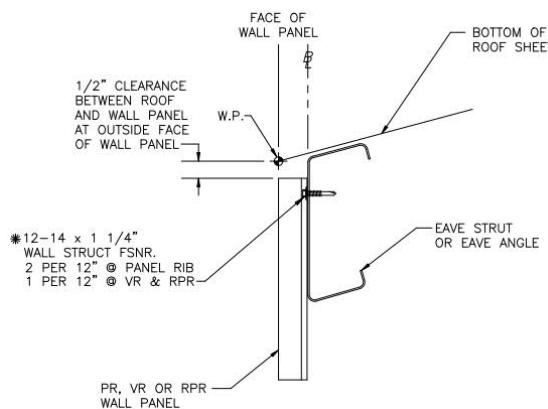


PR w/ Eave Gutter

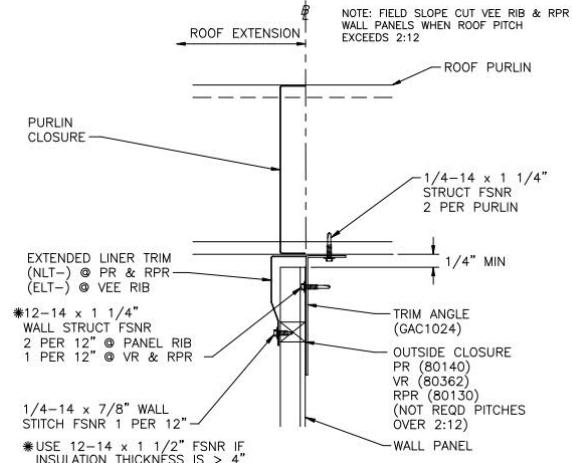


Note: Eave conditions with Panel Rib roof shown. See applicable SED's for other roof systems.

PR Wall at Eave



PR Wall at Rake Extension (w/o Soffit)





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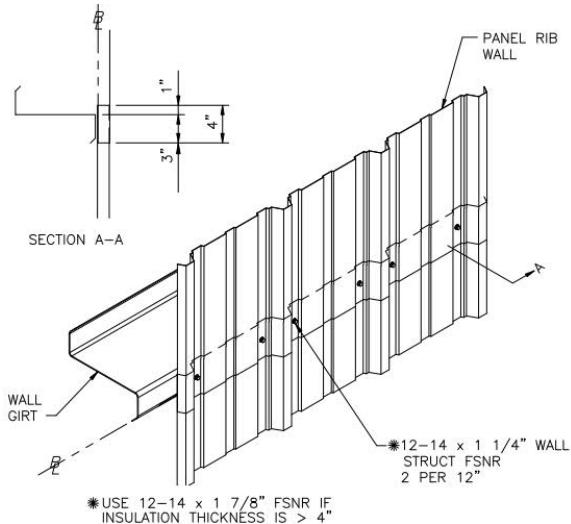
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C6.4 Endlap Details

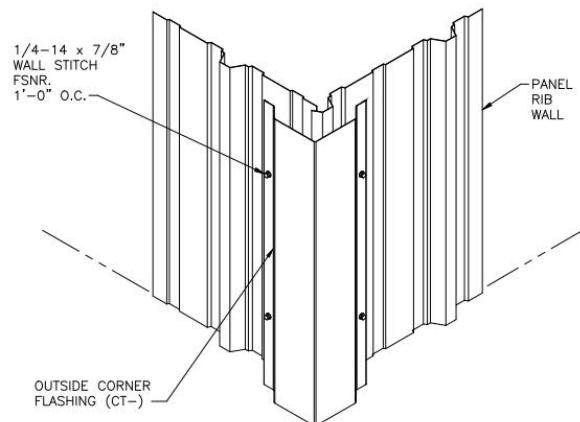
If the maximum available panel lengths are exceeded, 4" endlaps are provided.

Note- If standoff fasteners are required, predrilling of the panel is required.

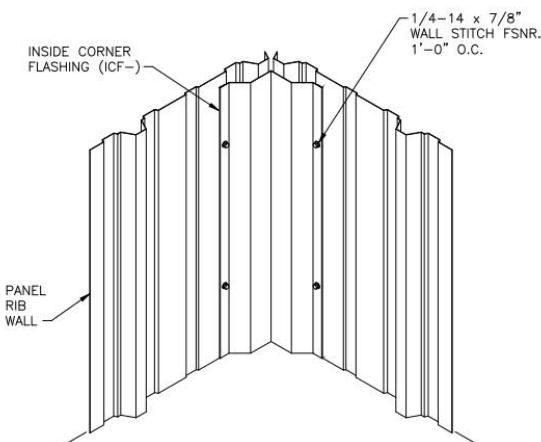


C6.5 Corner Details

Outside Corner



Inside Corner



D. DESIGN ENGINEERING GUIDELINES

Panel properties, steel grade & thicknesses supported for Panel Rib wall panels are located in [DP25.1](#). See [DP10.1](#) for panel design procedures.

Panel Rib wall panels are through-fastened requiring direct attachments to the secondary supporting members which have been described in Section C6. See [DP4.1](#) Section C4.1 to learn more about the design of wall girts with through-fastened panels.

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E. RATINGS, APPROVALS and TESTING

This section covers ratings, approval and other applicable tests that may be needed to substantiate Building or Energy Code compliance and/or product design. See Section F for referenced test reports.

E1. Thermal Performance – See [VP U-Facts](#) and Climate Zone requirements

E2. Factory Mutual (FM) – Not available

E3. Underwriters' Laboratory (UL) – Not available, roofs only

E4. Air Leakage and Water Penetration (Walls)

E4.1 Air Leakage

Significance and Use: May be used to meet the “continuous air barrier” requirements of IECC Section C402.4.1 and/or ASHRAE 90.1, Section C402.4.1.2.3 requiring a minimum air leakage of 0.04 cfm/ft² at 1.57 psf static pressure differential.

Test Procedure: ASTM E283 “Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences Across Specimen.

Detail w/ 1/8" x 1" tape mastic

Air 3,4 Leakage Test Results	Static Pressure Differential	Air Infiltration Rate ^{1,2}	
	1.57 psf	0.0071 cfm / lf	0.0024 cfm / sf
	6.24 psf	0.0152 cfm / lf	0.0051 cfm / sf
	12.00 psf	0.0341 cfm / lf	0.0114 cfm / sf

Notes:

1. cfm/linear ft. = cubic feet per minute air leakage per foot length of seam
2. cfm/ ft.² = equivalent cubic feet per minute air leakage per square foot of panel surface.
3. Reference: ENCON Technology, Inc. test report C1974-2, dated 2/27/2015
4. Test were performed with 26 ga. panels, standard fasteners, standard fastener patterns and 1/8" x 1" tape mastic on 7'-6" girt spaces.



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E4.2 Water Penetration

Significance and Use: May be used to meet the “weather-resistant exterior wall envelope” requirements of IBC Section 1403.2 requiring no water leakage at 6.24 psf static pressure differential.

Test Procedure: ASTM E331 “Standard test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference”

Detail w/ 1/8" x 1" tape mastic

Water ^{7,8} Penetration Test Results	Static Pressure Differential	Water Spray Rate	Water Spray Duration	Water Infiltration
	6.24 psf	5 gallons / hr./ sf	15 min.	None
	12.00 psf	5 gallons / hr./ sf	15 min.	None

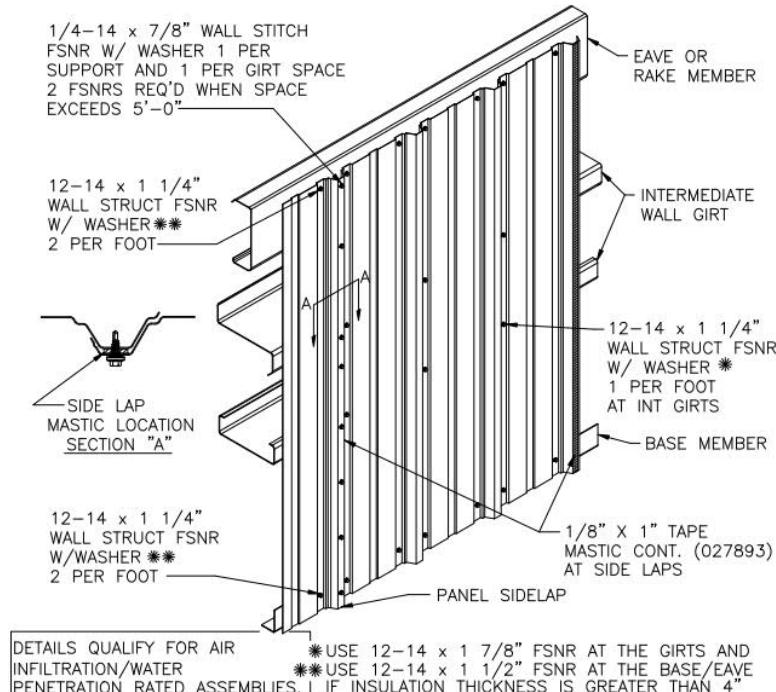
Notes:

7. Reference: ENCON Technology, Inc. test report C1974-2, dated 2/27/2015
8. Details used were the same as ones used for air infiltration. See note 4 above.

E4.3 Special Detail Requirements

Tape Mastic: Add 1/8" x 1" tape mastic to all sidelaps and endlaps.

Details: Use SED [WC04G3](#) (see below) instead of [WC04G1](#)





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E5. State of Florida

E5.1 Florida Product Approval No. [Current FPA](#)

12762-Rx (Rx = revision number "x" and varies with the code year)

Significance and Use: Required of products used or sold within the State of Florida. Applicable to Non-High Wind Hurricane Zones (non-HWHZ). – **No Special Details Required.**

E6. Miami-Dade County - Panel Rib Wall

E6.1 Miami-Dade Notice of Acceptance: [Current NOA](#)

Significance and Use: Required of products used or sold within the State of Florida and used in High Wind Hurricane Zones (HWHZ). May also be used with the Florida Wind-Borne Debris regions along the Gulf panhandle or otherwise required by Specification.

Test Procedure: 24 Ga. Panel Rib wall panels have been tested in accordance with TAS 100, TAS 201 and TAS 203 test procedures and reports may be referenced in Section F.

Caution – Large missile impact projectile speed does not meet 2014 FBC Risk Category IV requirements.

E6.2 Special Detail Requirements

Panel Rib Wall Panel: 24 Ga. (0.022" base metal)

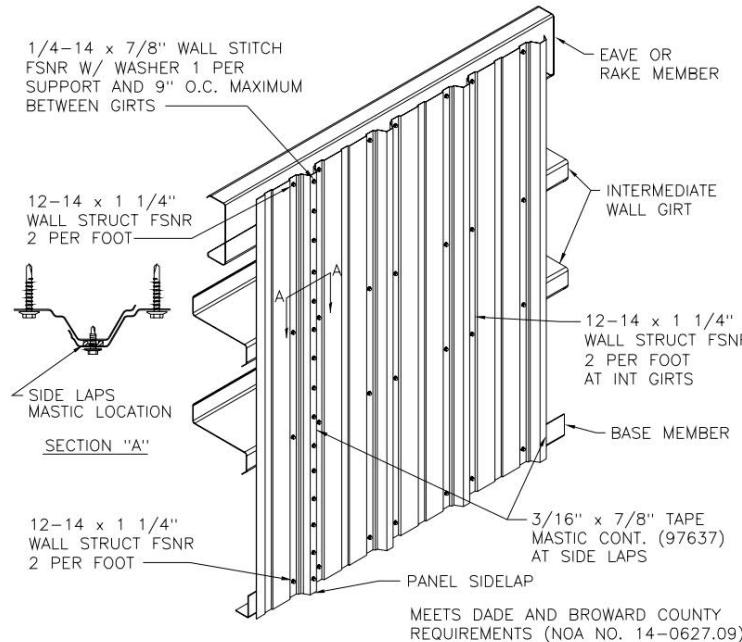
Girt Spacing: Maximum 4'-0" o.c.

Mastic: 3/16" x 7/8" continuous mastic (part # [97637](#)) required at all sidelaps and endlaps.

Sidelap Fasteners: Maximum spacing 9" o.c. No change in fastener type. - The reduced fastener spacing was a result of large missile tests.

Structural Fastener: Use (2) 12-14 fasteners, each side of rib as shown below.

Details: Use [WC04G6](#) (see below) instead of [WC04G1](#)





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E6.3 Special Design Requirements

Design Loads: Allowable loads have been obtained from NOA 14-0627.09 and have been reproduced below. These are not supported in VISION.

“..Using the panel’s maximum bending moment value of 200 ft.-lbs., the maximum design load is 50 psf for the following maximum spans as follows:

- a. Minimum simple span: 3.26'
- b. Maximum two equal continuous spans: 3.26'
- c. Maximum three equal continuous spans: 3.65'
- d. Maximum four equal continuous spans: 3.52'

The L/240 deflection limit does not control in the above maximum spans for the maximum 50 psf wind load...”

In order to provide a more usable table, an allowable load-span table was developed using the maximum bending moment of 200 ft.-lbs. and equivalent EI's which were used to limit deflection to L/240. The table below will produce 50 psf allowable loads at the span noted above.

Allowable Suction Loads

Span	2-Span Continuous		3-Span Continuous		≥ 4-Span Continuous	
	Load	L/240	Load	L/240	Load	L/240
2'-0"	154	217	175	304	169	273
2'-6"	124	111	140	156	135	140
3'-0"	103	64	117	90	113	81
3'-6"	88	40	100	57	96	51
4'-0"	77	27	88	38	84	34

E7. Diaphragm Test

Test Procedure: ASTM E 455-76 “Standard Test Method for Static Load Testing of Framed Floor or Roof Diaphragm Constructions for Buildings.”

Results: Tabulated in [DP 25.1](#).

F. TEST REPORTS

Below are the approval, ratings and test report links for convenience. Normally, these are not required, however may be appropriate to establish compliance. Non-standard details may be necessary. See the referenced “Section” for additional guidance.



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Link	Referenced Test Reports	Section
Air Leakage-26Ga.	<p>Procedure: ASTM E283 "Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences Across Specimen."</p> <p>Reference: ENCON Technology, Inc. test reports C1975-3, dated 2/24/2015 (w/ 1/8" x 1" tape mastic)</p> <p>Reference: ENCON Technology, Inc. test reports C1975-4, dated 3/10/2015 (w/ 3/16" x 1/4" tape mastic)</p>	E4.1
Water Penetration-26Ga.	<p>Procedure: ASTM E331 "Standard test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference".</p> <p>Reference: ENCON Technology, Inc. test reports C1975-3, dated 2/24/2015 (w/ 1/8" x 1" tape mastic)</p> <p>Reference: ENCON Technology, Inc. test reports C1975-4, dated 3/10/2015 (w/ 3/16" x 1/4" tape mastic)</p>	E4.2
Miami-Dade NOA	Miami-Dade Notice of Acceptance	E6
• Large Missile Impact - 24Ga.	<p>Procedure: TAS 201 "Impact Test Procedure, Large Missile Impact"</p> <p>Reference: Farabaugh Engineering and Testing, Inc. test report T141-08, dated 3/6/2008</p>	E6
• Air Infiltration, Water Spray & Static Air Pressure -24Ga.	<p>Procedure: TAS 202 "Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components Using Static Air Pressure"</p> <p>Reference: Farabaugh Engineering and Testing, Inc. test report T198-08, dated 6/5/2008</p>	E6
• Cyclic Wind-24Ga.	<p>Procedure: TAS 203 "Criteria for Testing Products Subject to Cyclic Wind Pressure Loading"</p> <p>Reference: Farabaugh Engineering and Testing, Inc. test report T141-08, dated 3/6/2008</p>	E6

Document and Revision History

REV. #	DATE	NAME	DESCRIPTION
New	May2015	Bob Hodges	Separated PR roof and wall product descriptions. General update for consistency with current product. Added new air infiltration and water penetration data and details. Included test report links. For earlier revision history, see PT-VP-PRW
1	10/01/2015	Al Harrold	Added note in regard to FL-HVHZ NOA Risk Category IV restriction.
2	03/05/2018	R. Benton	Updated State of Florida and Miami-Dade product approvals
2a	11/05/2019	R. Peck	Correct detail callout for Section E6.2 from WC05G6 to WC04G6
2b	01/06/2020	R. Benton	Changed links for getting the current Florida Product Approval and the Miami Dade NOA – now the links open an instruction page containing a link to the appropriate website and instructions to find the desired listing.
3	11/18/2021	R. Turpin	Minor Edits and Fixed Links

07410 – Preformed Metal Roofing and Siding
Submittal Package 01

Hilo WWTP, PH 1
Job No. WW-4705R

Sample Warranty



Varco Pruden Buildings, a division of BlueScope Buildings North America, Inc. ("Varco Pruden Buildings" or "VP"), warrants to the Owner that the Products supplied by Varco Pruden Buildings to Buyer pursuant to the related purchase order(s) will be free from defects in material or workmanship for a period of five (5) years from the Shipment Date (the "Warranty Period"). During the Warranty Period, Varco Pruden Buildings will, at its option, i) repair or replace the defective Products one time, or ii) refund the price of the defective Products.

Project/ Owner: _____

Builder: _____ Bldr. # _____

Building: _____
(Street) (City) (State) (Zip Code)

Requested Ship Date: _____ Project Number: _____

Definitions

"Accessories" are goods provided by Varco Pruden Buildings' but not manufactured by Varco Pruden Buildings'. Except as specified in the Additional Warranties, the manufacturer shall be solely responsible for warranty coverage of all Accessories.

"Building" means any building or building system, including roof systems, that is erected using the Materials.

"Buyer" means, as applicable, any person or entity (or any other person or entity making a claim through such person or entity) that purchases the Materials (either as materials or as an erected structure), such as the Owner and/or the Builder identified herein.

"Claim" means any assertion by Buyer of defective material or workmanship or the occurrence of another warranted condition that gives rise to an obligation of Varco Pruden Buildings' and/or Builder.

"Covered Claim" means any Claim that: i) Varco Pruden Buildings', in its sole discretion, determines is covered by the Warranties, or ii) a court of competent jurisdiction has determined is covered by the Warranties.

This form must be completed prior to execution

"Endorsements" means any ancillary warranties agreed to in writing by both parties.

"Materials" means, collectively, Products and Accessories.

"Products" are goods manufactured by Varco Pruden Buildings'.

"Shipment Date" means the date the Products are shipped, as reflected in the shipping manifest. Phased projects will have multiple Shipment Dates.

"Warranties" means this Warranty, the Additional Warranties and all Endorsements.

"Warranty" means this standard warranty.

ADDITIONAL WARRANTIES

A. PrisMax SL/TRU™

VP warrants, for a period of twenty (20) years from the Shipment Date, that PrisMax SL™ skylight systems will remain weathertight. VP warrants that the lenses will perform as indicated below, as determined under ASTM D1003 - "Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics."

Lens Type	10 Year VT Loss	Hail Resistant
100% Impact Modified Prismatic Acrylic (CL1 & CL3)	< 3% VT Loss	None
ClearArmour™ Prismatic Polycarbonate (FM Approved)	< 7% VT Loss	5 year
HVHZ Rated Smooth Polycarbonate (FBC Approved)	< 7% VT Loss	None

B. Insulated panels:

VP warrants to the Owner, for a period of two (2) years from the Shipment Date, that the Metl-Span panel supplied by VP to Buyer pursuant to the related purchase order(s) will be free from defects in material or workmanship. During this period, VP will, at its option, i) repair or replace the defective Metl-Span panels one time, or ii) refund the price of the defective brand name panels.

C. Painted wall and/or roof panels:

VP warrants, for a period of twenty-five (25) years from the Shipment Date, that the standard paint finish in standard colors applied to factory finished walls or roof panels and trim will not:

- Crack, check, blister, peel, flake or chip (lose adhesion);
- Chalk in excess of ASTM D4214 No. 8 rating; or,
- Fade (change color) more than 5 color difference units per ASTM D2244.

The warranty applicable to custom finishes and custom colors, if any, is as specified in the Special Color Endorsement.

D. Galvalume® wall and/or roof panels:

VP warrants, for a period of twenty-five (25) years from the Shipment Date, that wall and roof panels made of acrylic-coated Galvalume sheet steel will not rupture, structurally fail or suffer perforation due to normal atmospheric corrosion. Furthermore, the panel will not exhibit an accumulation of red rust greater than $\frac{1}{2}$ " at any one point on coated surfaces for a period of twenty-five (25) years. This does not apply to any accumulation of red rust that occurs at breaks or discontinuities in the surface, such as field cut edges, and does not apply to metal penetration, cut or shear, made any time after the Product is shipped.

The following terms and conditions apply to all Warranties, including the Additional Warranties:

1. Varco Pruden Buildings' obligations under the Warranties do not extend to damage or failure of the Materials caused, partially or wholly, by:
 - a. Improper storage, handling, workmanship, erection, installation, maintenance or repair;
 - b. Defects arising out of damage occurring during shipping or unloading;
 - c. Unusual or aggressive atmospheres, either internal or external to the building, such as marine environments or those contaminated with harmful fumes, chemicals, ash, cement dust or radiation;
 - d. Accumulation of water, snow or ice;
 - e. Condensation;
 - f. Significant differences in insulation behind the coated metal panel;
 - g. Failure to store or install Materials in a way that allows for adequate circulation;
 - h. Failure to remove construction debris, metal filings, or other accumulations of foreign substances or materials from the surface of the Materials;
 - i. Abrasions or scratches of coatings;
 - j. Sustained exposure to animals or animal waste;
 - k. Contact with, or exposure to runoff from, lead or copper or other dissimilar metals, wet insulation, or pressure-treated, wet or green lumber;
 - l. Failure to maintain the Building and/or Materials in accordance with the maintenance manual provided by Varco Pruden Buildings';
 - m. Negative building air pressure;
 - n. Any loads applied to the Building that were not included as part of the original design conditions;
 - o. Any paints or coatings applied after installation unless furnished or specifically recommended in writing by Varco Pruden Buildings' and applied in accordance with Varco Pruden Buildings' recommendations; or,
 - p. Acts of God or any other circumstances or occurrences beyond Varco Pruden Buildings' control.
 - q. Defects or deterioration in the primer or finish coat of paint that may be caused by weather conditions. Shop primer is a temporary rust inhibitor for shipping purposes only.
 - r. Slope of the roof, or any sections of the roof flatter than 1/4":12".
 - s. Presence of damp insulation and/or other corrosive material in contact with or in close proximity to the panel.
 - t. In the event of deterioration to panels caused directly or indirectly by panel contact with fasteners and sealants. Responsibility for selection of suitable long-lasting fasteners and sealants to be used with galvanized or Galvalume steel roofing and siding panels, or in rainwater applications, rests solely with the Buyer. Varco Pruden Buildings' will have information available to the Buyer to aid in selection of suitable products. However, the information will not constitute a warranty of performance under any conditions.
 - u. Builder's obligations under the Warranties are limited to the same extent as Varco Pruden Buildings' unless Builder's acts or omissions caused the failure.
 2. Neither Varco Pruden Buildings' nor Builders obligations specified in the Warranties apply to:
 - a. Materials installed within 1,000 feet of a saltwater environment or subject to constant spraying of salt or fresh water;
 - b. The point(s) and adjacent areas where Accessories are attached to Products;
 - c. Edge corrosion;
 - d. Accessories;
 - e. All items not provided by Varco Pruden Buildings';
 - f. Used Materials;
 - g. Products used for repairs or replacement, except to the extent of the remainder of the warranty for the repaired or replaced Products;
 - h. Any installed Materials located outside of the Contiguous United States, Alaska, Canada and Mexico;
 - i. The alteration of the surface appearance of any rough textured surface due to accumulation of dirt or other foreign substances;
 - j. Any Building that has been moved from its original location; and,
 - k. Corrective actions not under the control or direction of Varco Pruden Buildings'.
 - l. Any product installed or erected within a corrosive environment (see corrosive environment checklist).
 3. Neither Varco Pruden Buildings' nor Builder warrants the Materials or Building to meet local, municipal, or state ordinances, codes, laws or regulations.
 4. The obligations of Builder and/or Varco Pruden Buildings' under the Warranties arise only if Owner notifies Varco Pruden Buildings' in writing of a
- Claim within thirty (30) days after the condition giving rise to the Claim is first called to the attention of the Owner and not later than the expiration of the applicable warranty period. Upon Varco Pruden Buildings' receipt of written notice and the signed warranty document, Varco Pruden Buildings' may inspect the defective Materials to determine if the Claim is a Covered Claim. Failure of Varco Pruden Buildings' to receive timely notice of a Claim relieves Varco Pruden Buildings' and/or Builder of its obligations under the Warranties in relation to the Claim or any other future claims arising out of or related to such Claim. Owner will reimburse Varco Pruden Buildings' and Builder for all investigation costs incurred for Claims not covered by the Warranties and failure to do so will release Varco Pruden Buildings' and Builder from all obligations under this Warranty. Unless otherwise stated in an Endorsement, Varco Pruden Buildings' has no liability for, and Builder is solely responsible for and indemnifies Varco Pruden Buildings' against, all costs of any Covered Claim if the Covered Claim relates to or arises from Builder's acts or omissions.
5. The Warranties extend only to the Builder and Owner and may not be assigned or transferred without written consent of Varco Pruden Buildings'.
 6. Owner has the sole responsibility to perform routine inspections and maintenance of the Materials and/or Building on a regular basis and failure to do so releases Varco Pruden Buildings' and Builder from all obligations under the Warranties. All repairs, replacements, modifications and work performed on the Building must be performed by the Builder or other contractor qualified to work on Varco Pruden Buildings' Products and any Claim related to or arising out of work done by any other contractor is excluded from coverage by the Warranties.
 7. Except where such disclaimers and exclusions are specifically prohibited by applicable law:
 - a. The foregoing sections set forth the only guarantees or warranties applicable to the Materials and the **warranties are given expressly and in lieu of all other warranties, express or implied, of merchantability or fitness for a particular purpose and all warranties which exceed or differ from these warranties are disclaimed by VARCO PRUDEN BUILDINGS' and Builder**. Buyer agrees that oral statements about the Materials made by Varco Pruden Buildings' representatives, or statements contained Varco Pruden Buildings' or others' general advertising, pamphlets, brochures, or other printed matter, do not constitute warranties and that acquisition of the Materials was not made in reliance upon them; and,
 - b. **Buyer's sole and exclusive remedy against Varco Pruden Buildings' and Builder is limited to the actual cost, excluding labor and equipment unless expressly included in an Endorsement, of the remedies set forth in the Warranties and no other remedy (including but not limited to the recovery of liquidated, direct, incidental, special, indirect, or consequential damages for lost profits, lost sales, injury to person or property, or any other loss) will be available to the Buyer or any other persons or entities, whether by direct action, for contribution or indemnity or otherwise, regardless of whether any defect was discoverable or latent at the time of delivery of the Materials.** This exclusive remedy will not be deemed to have failed its essential purpose if Varco Pruden Buildings' and/or Builder is willing and able to carry out the terms of the Warranties set forth herein. **Unless otherwise stated in an Endorsement, if Varco Pruden Buildings' and/or Builder fails to fulfill its obligations under the Warranties, the entire liability will not exceed the amount paid to Varco Pruden Buildings' or one replacement for the defective Materials.**
 8. The terms and conditions of this Warranty apply during the Warranty Period and apply to all Endorsements for the terms of such Endorsements as if fully reproduced therein. However, neither Varco Pruden Buildings' nor Builder is required to perform any obligations of any warranty or guarantee unless and until Varco Pruden Buildings' and Builder have been paid in full and in a timely manner for all Materials and services for the transaction to which the Warranties apply.
 9. The construction, interpretation and performance of the Warranties are governed by the laws of the State of Missouri without regard to its choice of law principles. The United Nation Convention on Contracts for the International Sale of Goods does not apply. Each party waives its rights to a jury trial of any claim or cause of action based upon or arising out of the Warranties. All parties agree to submit to the exclusive personal jurisdiction and venue of the State and/or Federal Courts located in Jackson County, Missouri for the resolution of all disputes and hereby waive the claim or defense that such courts constitute an inconvenient forum.
 10. This Warranty must be executed by the Owner and the Builder and returned to Varco Pruden Buildings' prior to any claim being made hereunder. Failure to return this Warranty within 120 days of the Shipment Date indicates that the Owner has accepted the Materials "as-is where-is" and accepts all product responsibilities.

Read and accepted:

Owner
 Name
 Signature
 Date

Builder
 Name
 Signature
 Date

Varco Pruden Buildings
 Name
 Signature