



**SPECTRUM
SYSTEMS LTD.**

SS150

STANDING SEAM ROOFING DETAILS

TABLE OF CONTENTS

Introduction	Page 1
General Notes	Page 2
Hem Lengths	Page 3
Panel Profiles	Page 4
Panel End	Page 5
Plywood Deck Detail	Page 6
Eave Detail	Page 7
Eave <i>W/I</i> Gutter Detail	Page 8
Sidewall Flashing Detail	Page 9
Hip / Ridge Detail	Page 10
High Side Ridge Detail	Page 11
Valley Detail	Page 12
Valley Detail	Page 13
Headwall Detail	Page 14
Start / End Gable Detail	Page 15
Roof / Fascia Transition Detail	Page 16
Roof Transition	Page 17
Vent Pipe Flashing Detail	Page 18
Expansion Joint Detail	Page 19

INTRODUCTION

The details contained in the following pages are guidelines as to how materials can be installed. We believe all information presented is accurate, but it is not intended to cover all instances, building requirements, designs, changes, or revisions for each project since conditions will vary from one project to another and may be unique for each application.

The details shown are proven methods of construction. However, it must be noted that weather-tightness is the responsibility of the installer. The installer can virtually assure weathertightness through the use of these details, good materials and workmanship, the use of the right type(s) of sealant(s), and the sealing and caulking of all joints adequately.

It is the responsibility of the designer, roofing contractor and installer to ensure that the following details are adapted to meet particular building requirements and to assure adequate weathertightness.

Spectrum Systems will not take responsibility for any and all claims arising from a lack of weather-tightness as a result of following these suggested typical detail drawings. The designer and installer must be aware of and allow for expansion/ contraction of roof panels when designing and/or installing panels and flashings.

Likewise, ensuring adequacy of anchoring framing materials to walls, structures, subgirts and cees/zees, shall be determined by the designer.

The installer shall be familiar with all erection instructions before starting work. Before beginning erection of the panels, the installer shall examine the substrate to ensure that all supporting members are straight, level, plumb, and true in accordance with minimum tolerances. Report any variations and potential problems to the general contractor or architect. **Do not start** work until all unsatisfactory conditions have been corrected.

The roofing/fascia/soffit system shall be installed plumb, straight, and true to adjacent work. Horizontal panel lap joints are not acceptable. Metal closures shall be caulked around their entire perimeter.

Roof clips shall allow for thermal movement and shall be installed at each panel joint. Longitude spacing of roof clips shall be as specified for design loads. No perforations shall be made in roofing/fascia/soffit by fasteners, except as shown in these drawings. To control thermal expansion in one direction, the panel must be

fixed either at the top of the panel or at the bottom of the panel. An eave bend down detail will fix the panel at the eave. Therefore, the ridge should be allowed to slide in such cases. Never fix both ends of the panel. Always use a sliding ridge with a fixed eave and always use a fixed ridge with a sliding eave.

All flashings, closures, and accessories shall be specified as indicated, and as necessary to provide weathertight installation. Installation procedures, which are not indicated, shall be in accordance with the panel manufacturer's printed instructions and details. Flashings and trim shall be installed true and in alignment with any exposed fasteners equally spaced for the best appearance.

Sealant for joints and flashing endlaps shall be non-drying, non-toxic, non-shrinking and shall have a serviceable temperature of -50 to 212°F.

Sealant shall be field-applied on dry, clean surfaces. To ensure weather-tightness, the sealant shall be installed where indicated without skips or voids.

The installer may utilize details provided and procedures recommended for installation of materials. Some field cutting and fitting of panels and flashings is expected of the installer and minor field corrections of materials is a part of normal erection work. Workmanship is common to the industry standards and installation shall be performed by an experienced metal craftsman. Oil canning in the flat area of the pans is common to the industry and shall not be cause for product rejection.

GENERAL NOTES

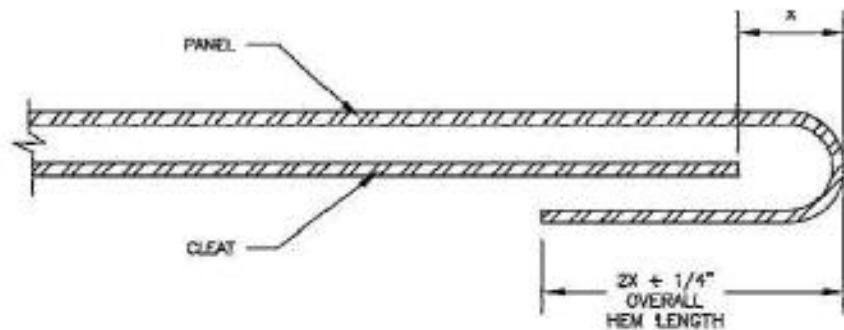
1. Before releasing materials for fabrication, it is recommended that panel lengths, quantities, profiles and dimensions of flashings or flat sheet quantities should be verified through field measurements.
2. Before beginning installation, carefully inspect the substrate /roof deck. Do not begin installation of the metal roof system if the substrate (trusses, joists, subgirts/furring strips, plywood deck, steel deck, insulation) is uneven, not uniform or symmetrical, out of plumb, or in otherwise unsatisfactory condition, as such conditions can cause oil canning of panels. It is the responsibility of the installer to correct or demand remedy of unsatisfactory substrate conditions prior to installation of metal roof system.
3. It is recommended that if the roof deck is unacceptable, the roofing contractor has the authority to reject this deck prior to installation of metal roof system. Once installation of the metal roof system has begun, the contractor forfeits the ability to reject the metal roofing system based on substandard deck. Oil canning is not a cause for rejection.
4. Due to inconsistencies such as those noted above, the industry has accepted a certain amount of waviness or oil canning evident in the flat area of the rib/seam panels. This is more evident on longer length panels, particularly when sunlight hits them at certain times of the day. This shall not be construed as a product defect and shall not be cause for product refusal.
5. Panel crates must be lifted at bundle block locations. Do not lift material with ropes or wires. Do not lift panels greater than 25'-0" long without a spreader bar. Do not lift panels from ends while flat. Do not lift panels on edge.
6. Installation of metal panels must be started so that the sheets are held true, plumb, and straight. Note that all panel width dimensions are nominal. During panel installation, it is recommended that periodic checks/measurements be taken to ensure that the panels are not gaining or losing width.
7. During the panel installation, do not use undue pressure to interlock panel. Do not force or push panels together. To reduce wavy, oil canning panel appearance and to increase the aesthetics of an installation, a camber or outward bowing may be forced into flat area of the panel as the fastener and/or clip is installed. However, care must be taken to prevent "fish mouthing" at panel ends.
8. Ensure that acid residue from cleanup of stucco in the adjacent panel areas is not washed down directly over the panels. This could mar the finish/coating.
9. Avoid damage or scratching of the exterior surface caused by walking, use of improper tools, improper storage, etc.
10. Flashings must lap a minimum of 6". Treat flashing end laps similar to a panel detail utilizing two rows of sealant tape with stitch screws 4" o.c. maximum. Lap flashings shingle style to allow for water flow.
11. Quality long-life non curing butyl sealants work best as a gasket sandwiched between two pieces of metal. Always use tape sealant or butyl between roof components where there will be movement. These types of sealants do not cure. Therefore they permit movement while still providing a seal. Polyurethane sealants are recommended when voids must be filled and there is no movement.
12. If the material is not to be used immediately, it should be stored in a dry place where exposure to moisture is minimal. Moisture (from rain, condensation, etc.) trapped between pieces of material may cause water stains or white rust, which detract from its appearance. To avoid staining or white rust, store the material in a well ventilated dry area. Break the steel strapping bands used for shipment and store the stacks of material with a canvas or waterproof paper cover. Do not use plastic, which can cause sweating or condensation. Keep the material off the ground in an inclined position with an insulator such as wood. It is the responsibility of the contractor to insure that all materials are properly stored at the jobsite.

HEM LENGTHS

A standing seam roof panel experiences changes in panel length with changes in panel temperature. One end of the panel is fixed to the substrate while the other end is free to move. The panel end that is free to move requires a hem that engages a cleat that is fixed to the substrate. The hem and cleat permit the panel end to move along the plane of the roof while holding the panel flat.

The thermal movement also requires proper design of the hem and cleat. The length of the hem needed at the end of a panel will vary with the temperature range that the panel experiences and the length of the panel. Unless a more exact analysis of the temperature during installation compared to the anticipated temperature range is conducted, use the following equation and the Thermal Movement Table. When installing panels, be sure to leave room at the end of the panel that will experience movement for the "starting gap" which is the required air space (X) between the panel and cleat. Be sure that the hem is not tight against the cleat (unless the panels are being installed in the coldest temperatures the panel will experience). Also be sure that the lower edge of the hem will not contact any flashings when the panels contract.

THERMAL MOVEMENT TABLE

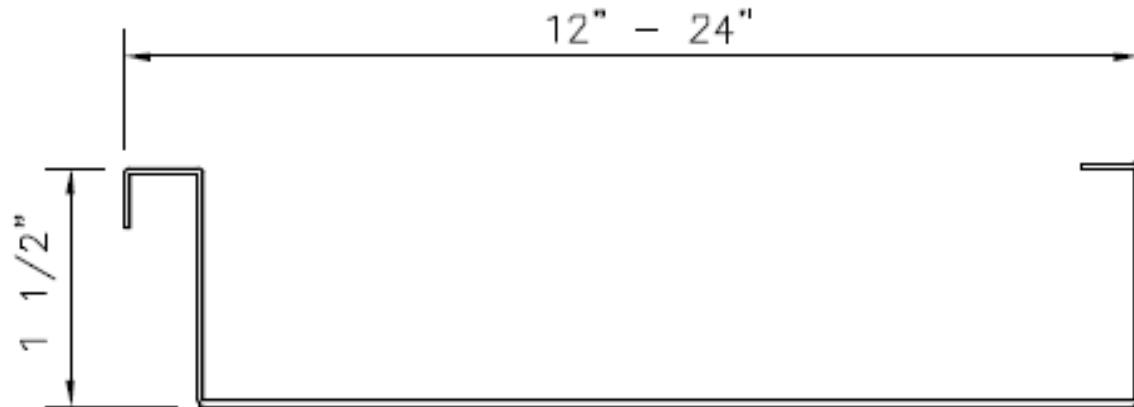


THERMAL MOVEMENT TABLE

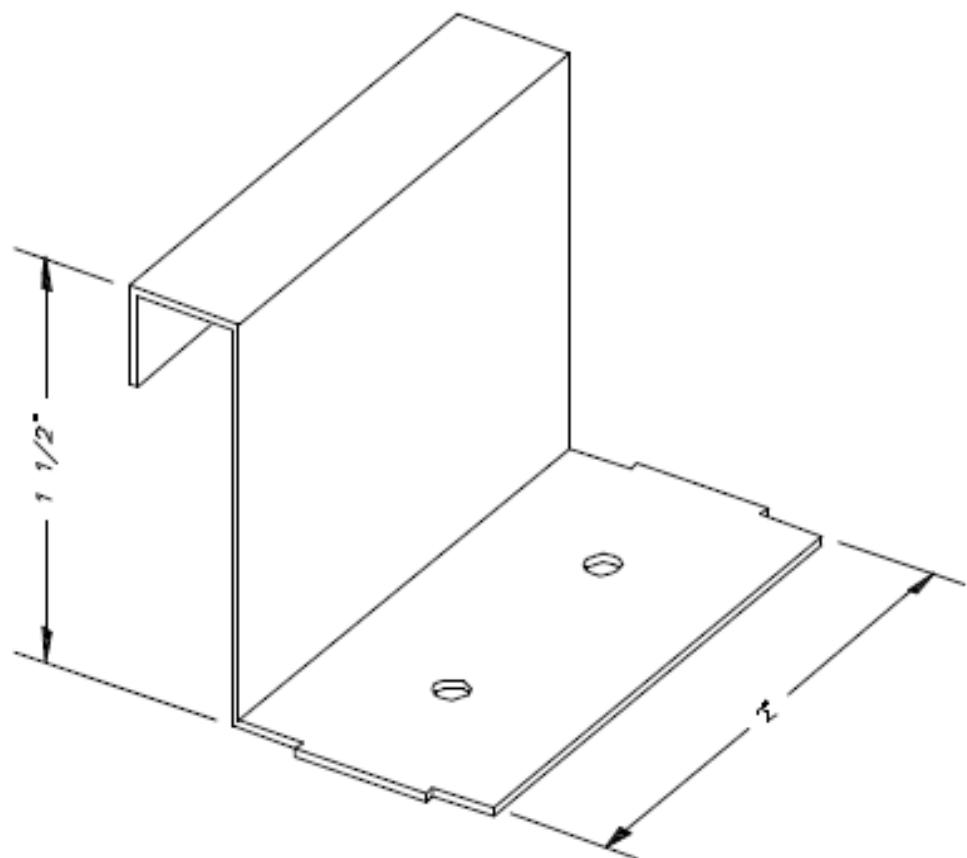
PANEL AND SUBSTRATE MATERIALS	PANEL LENGTH (FT.)			REQUIRED AIR SPACE (X)
	10'	50'	100'	
Steel on rigid insulation	1/8"	1/2"	7/8"	
Steel on wood	1/16"	3/8"	5/8"	
Steel on steel	1/16"	3/8"	5/8"	
Steel on concrete	1/16"	3/8"	1/2"	
Aluminum on rigid insulation	3/16"	7/8"	1 9/16"	
Aluminum on wood	3/16"	11/16"	1 3/8"	
Aluminum on steel	1/8"	5/8"	1 3/16"	
Aluminum on concrete	1/8"	5/8"	1 1/4"	

This table assumes a temperature change of 100°F for the panel and 50°F for the substrate.

PANEL PROFILE

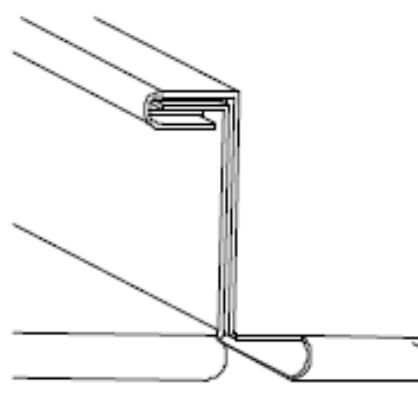
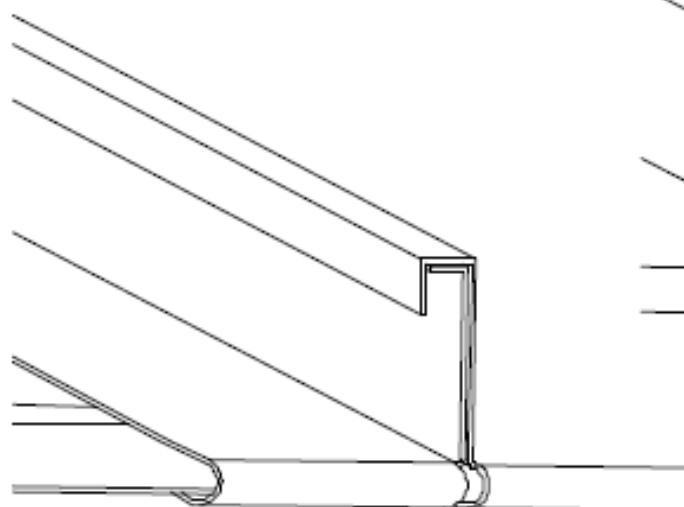
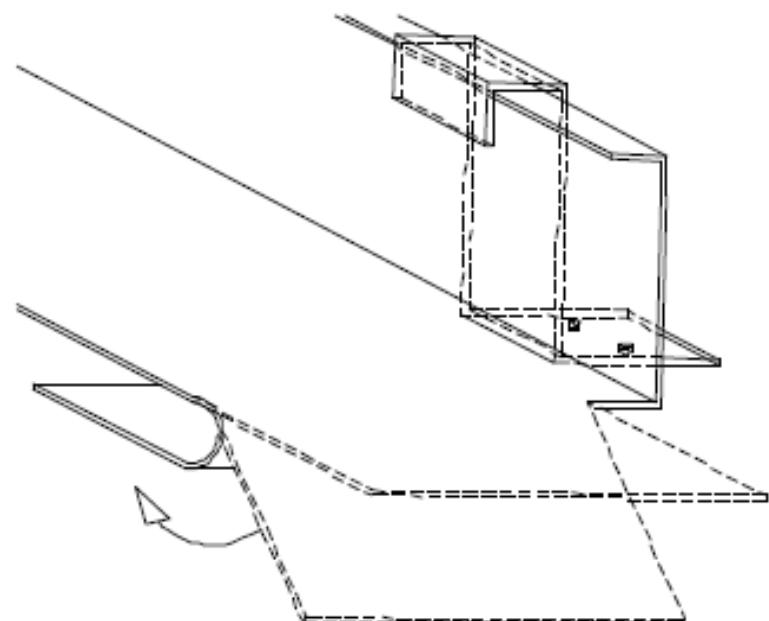
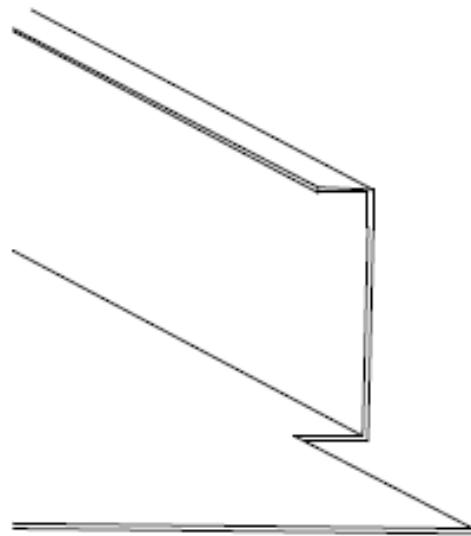


1.5" MECHANICAL SEAM

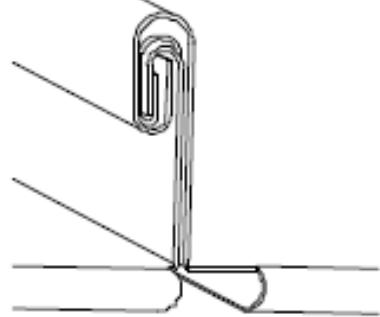


1.5" MECHANICAL CLIP

PANEL END

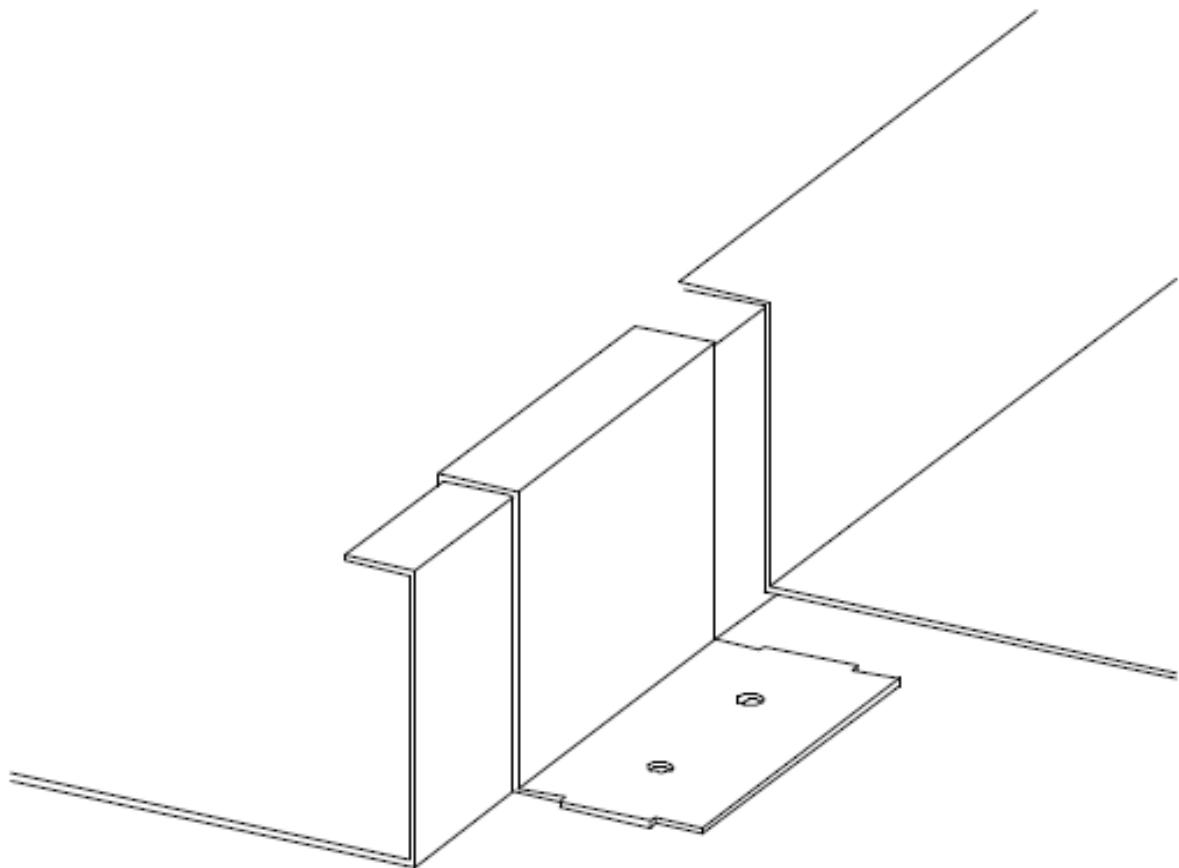


90° SEAM

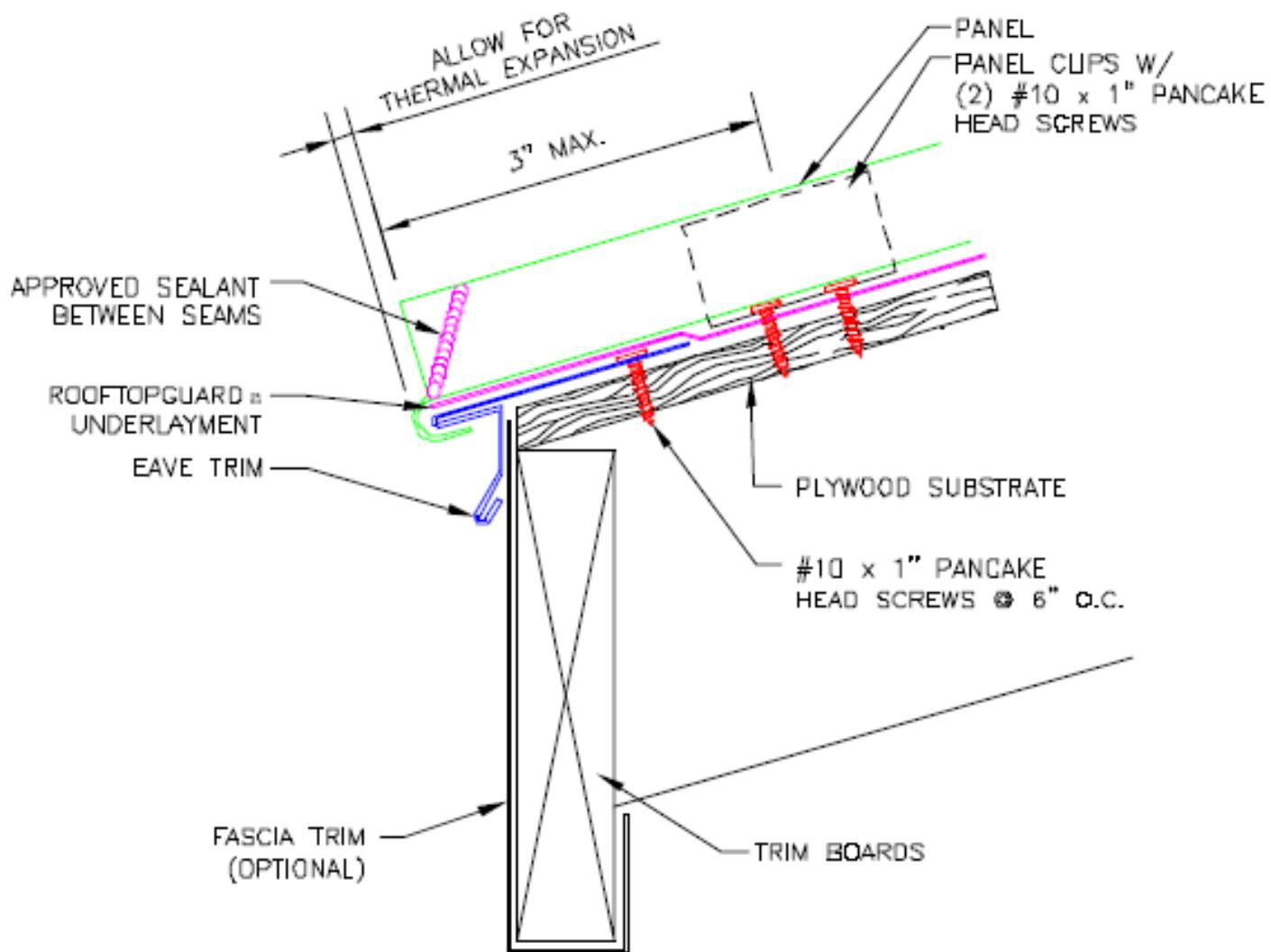


180° SEAM

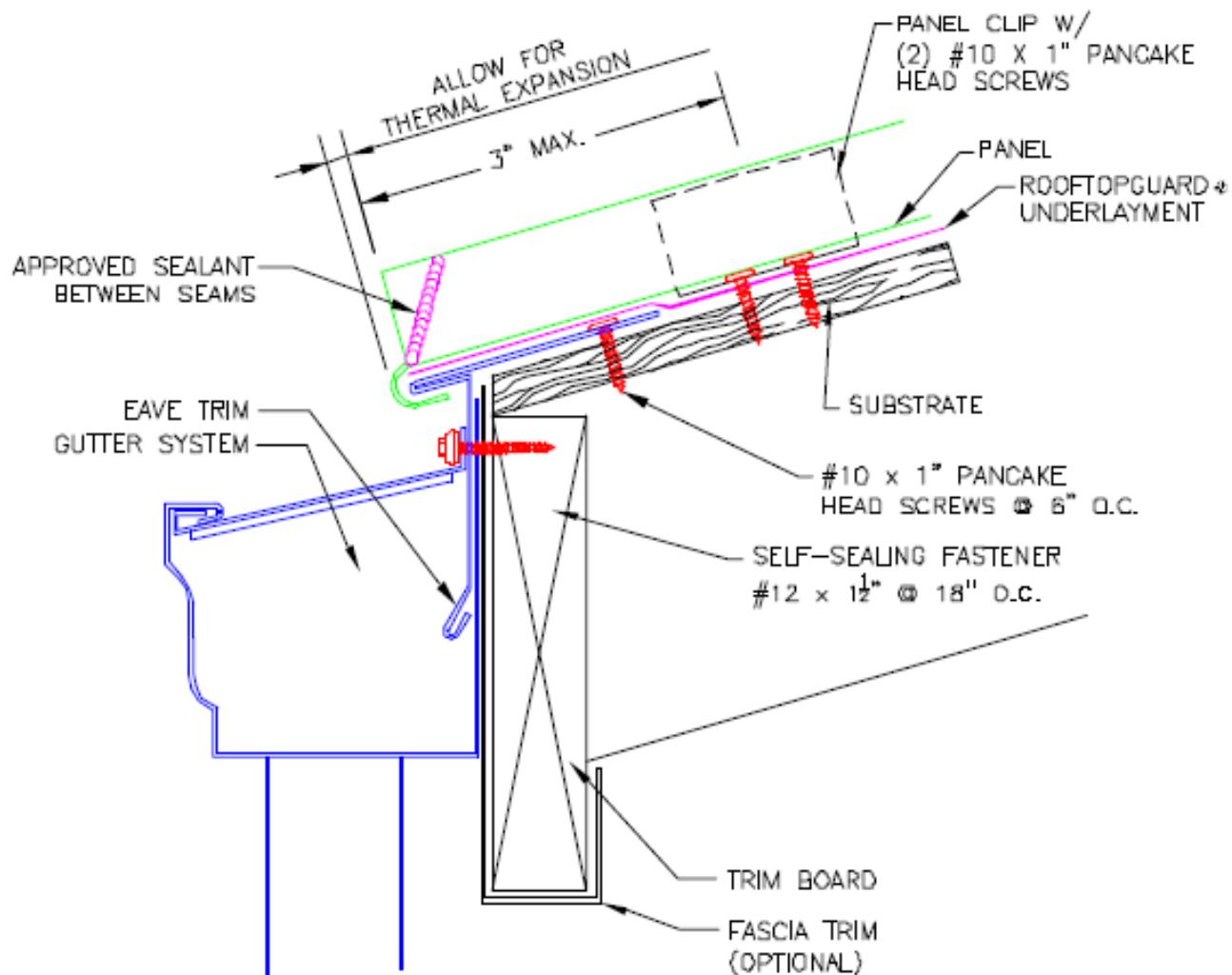
PLYWOOD DECK DETAIL



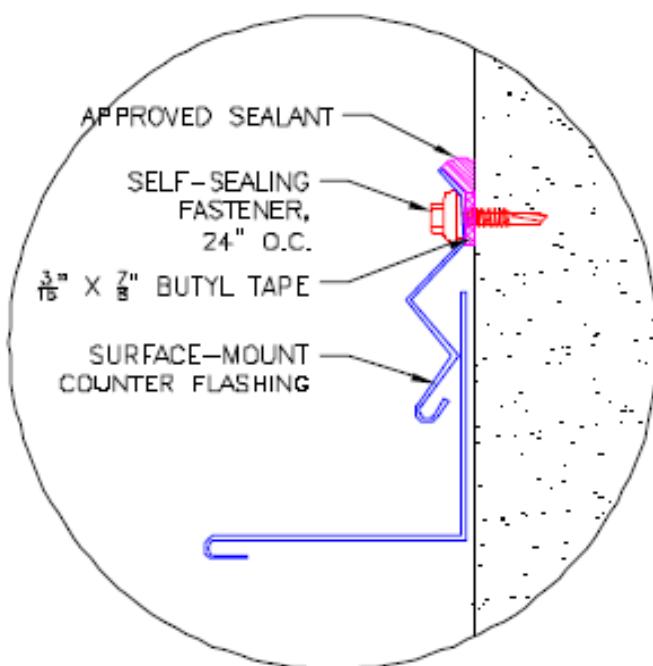
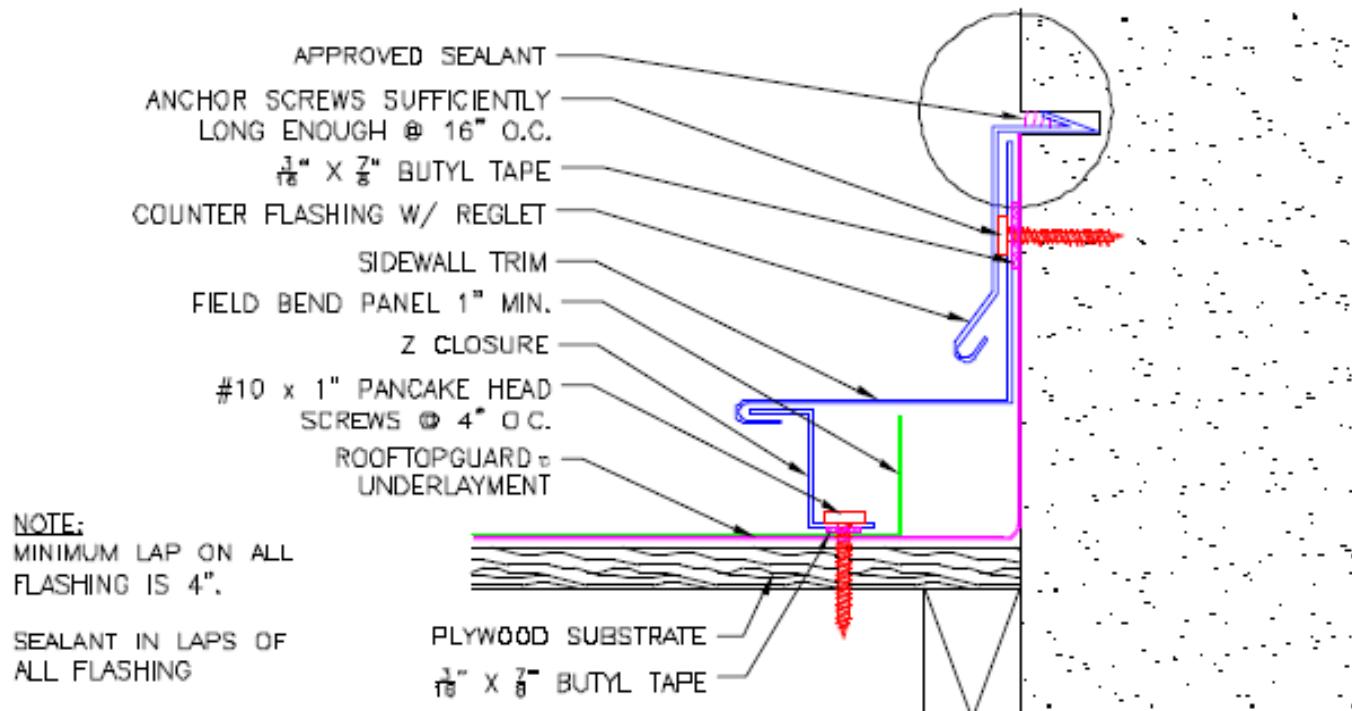
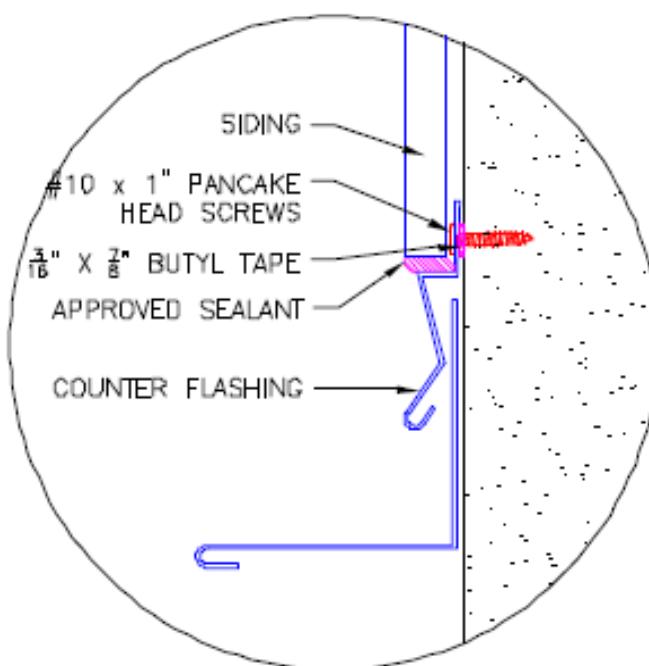
EAVE DETAIL



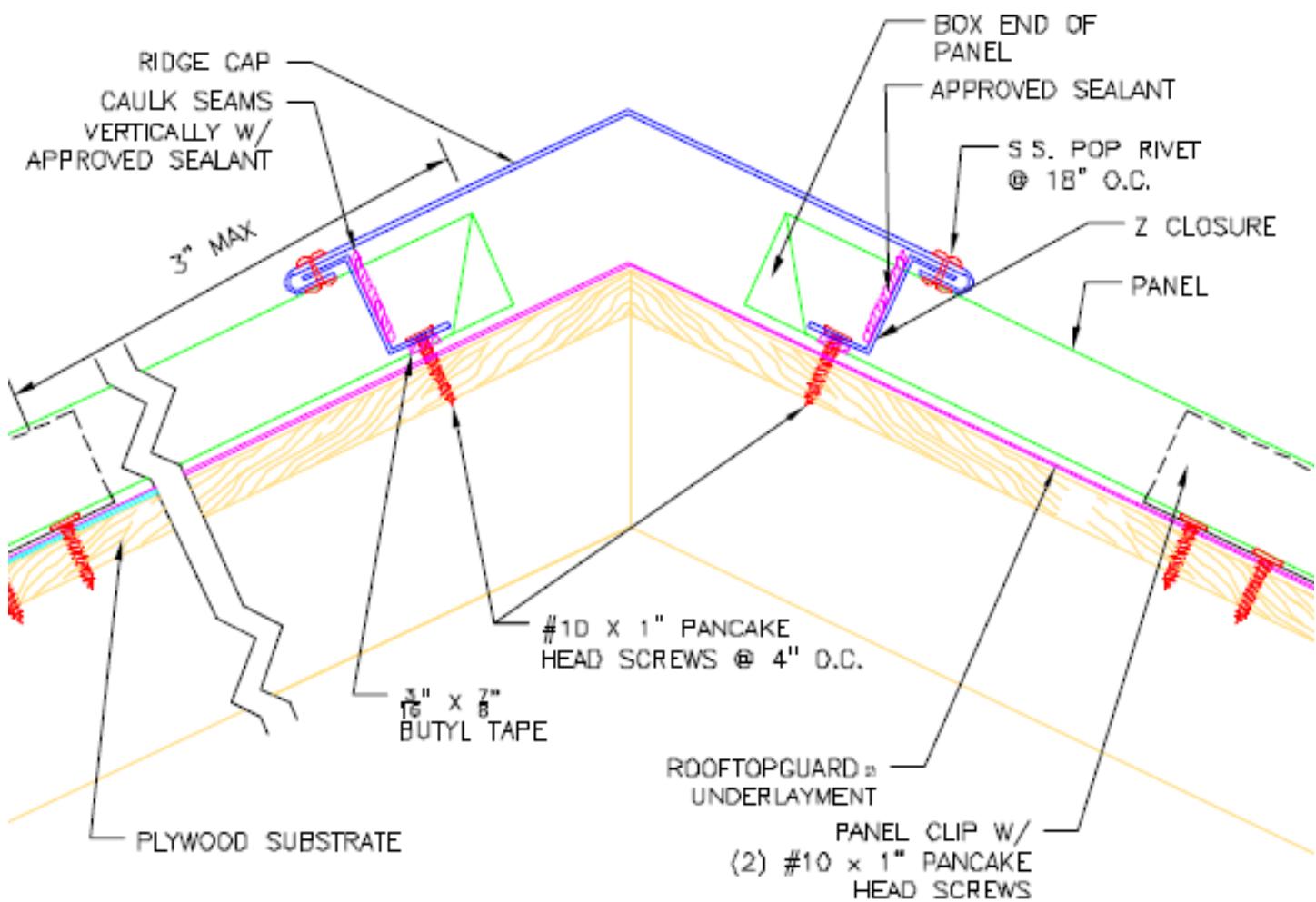
EAVE WITH GUTTER DETAIL



SIDEWALL FLASHING DETAIL

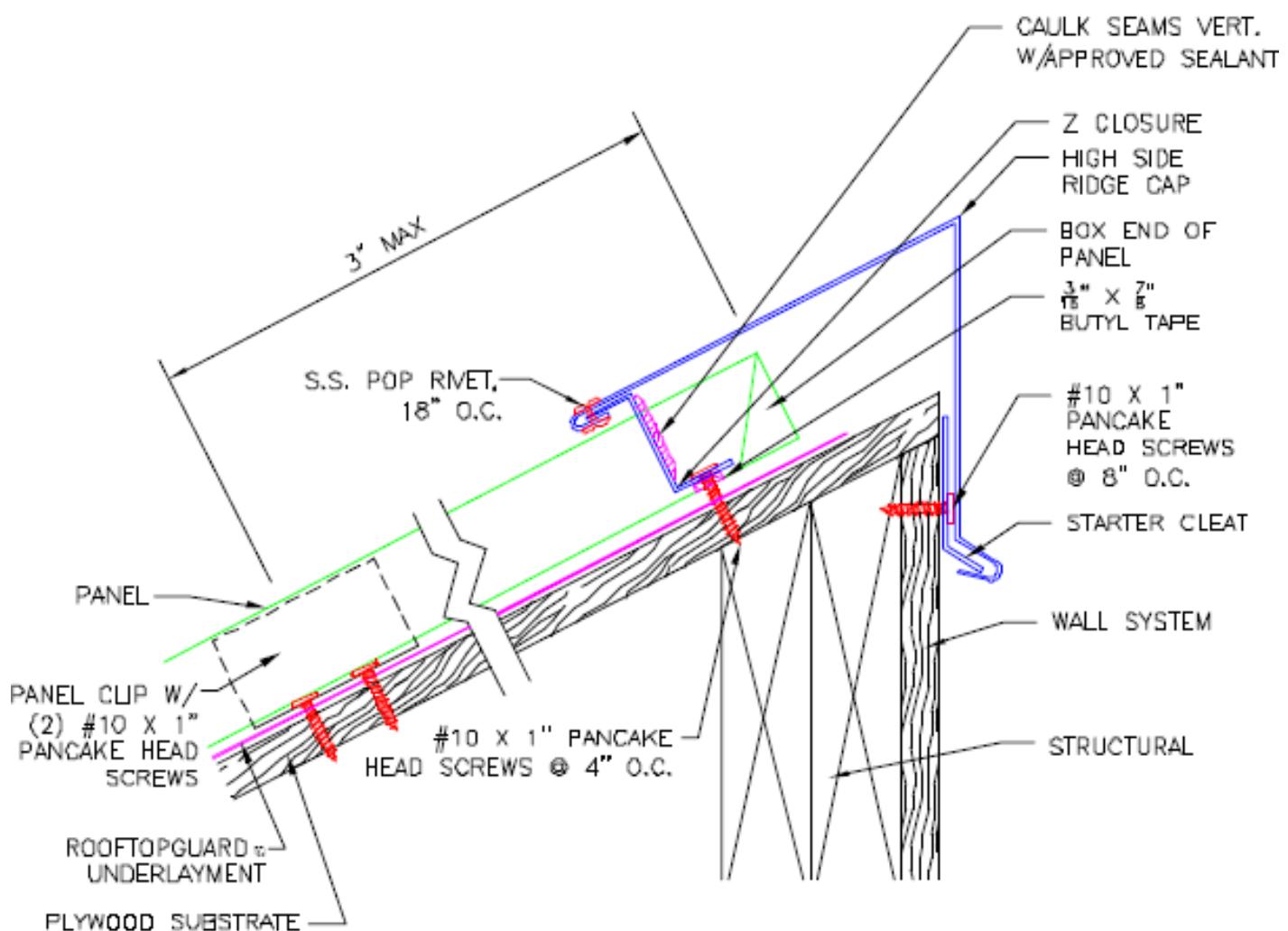

OPTION 2

OPTION 3

HIP / RIDGE DETAIL


NOTE

MIN. LAP ON ALL HIP AND RIDGE CAP IS 4".
APPROVED SEALANT IN ALL LAPS OF HIP AND RIDGE CAP.

HIGH-SIDE RIDGE DETAIL



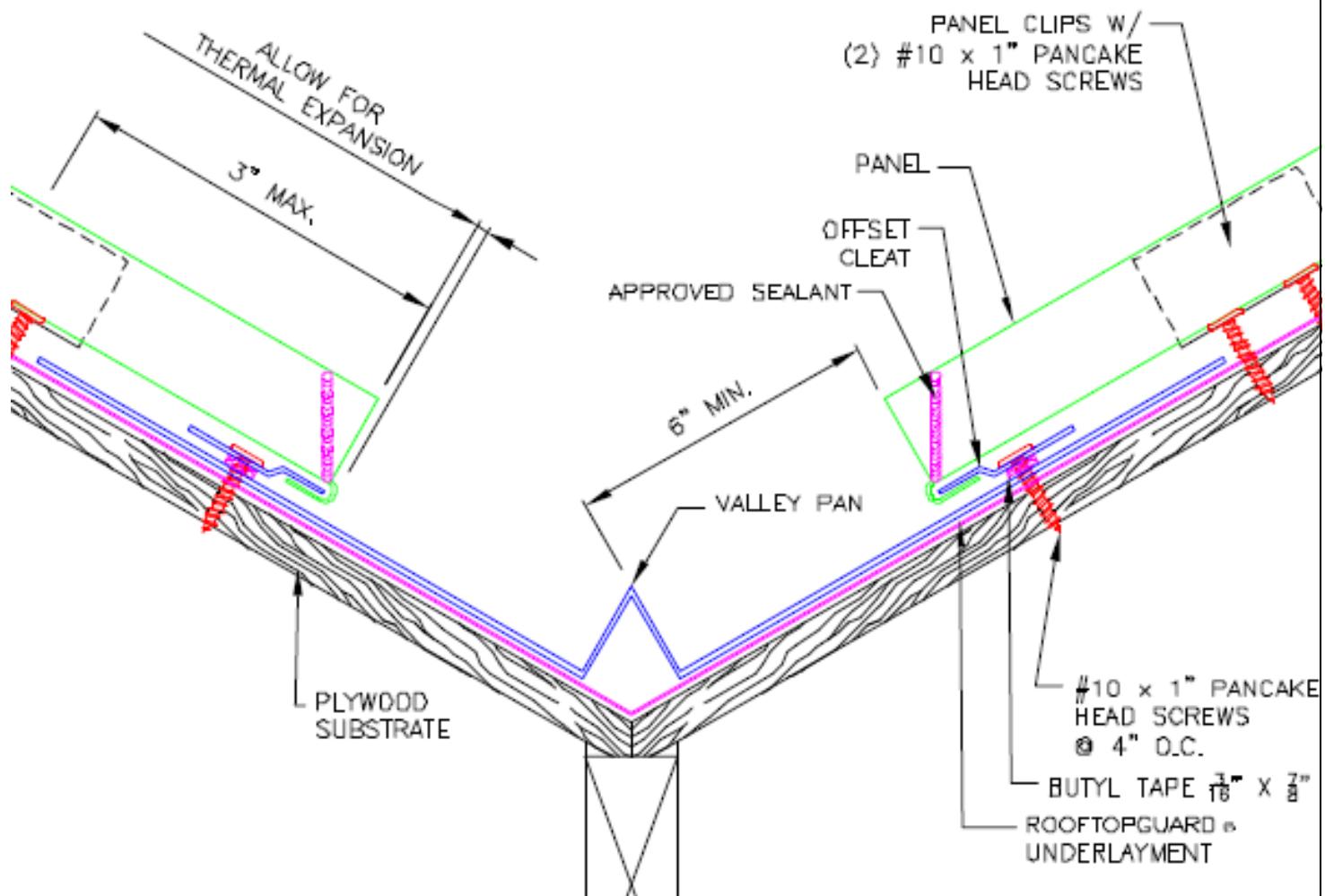
NOTE:

MIN. LAP ON HIGH SIDE RIDGE

CAP IS 4".

APPROVED SEALANT IN ALL LAPS
OF HIGH SIDE RIDGE CAP.

VALLEY DETAIL



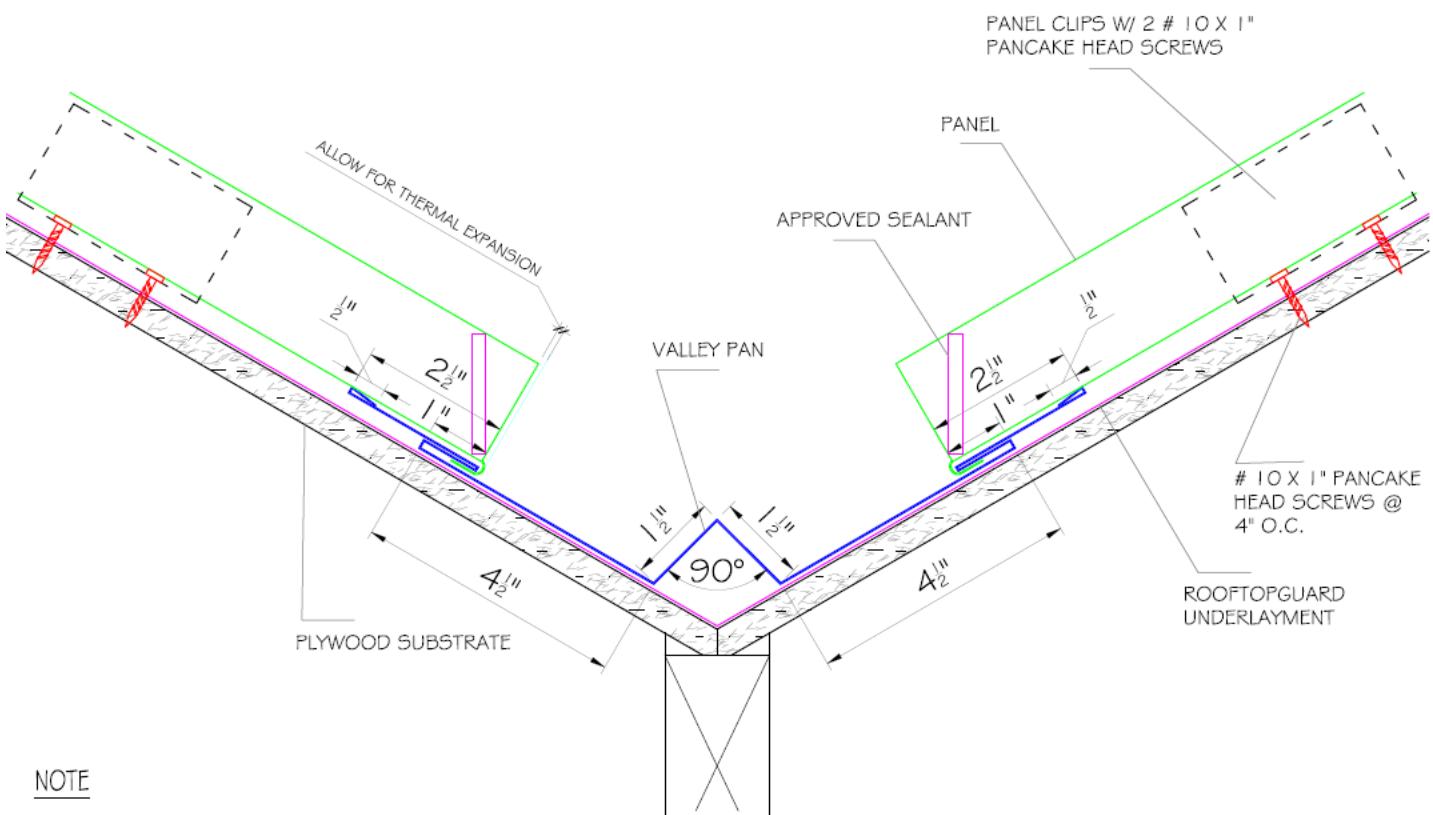
NOTE:

LAPS IN VALLEY ARE 12" MIN.

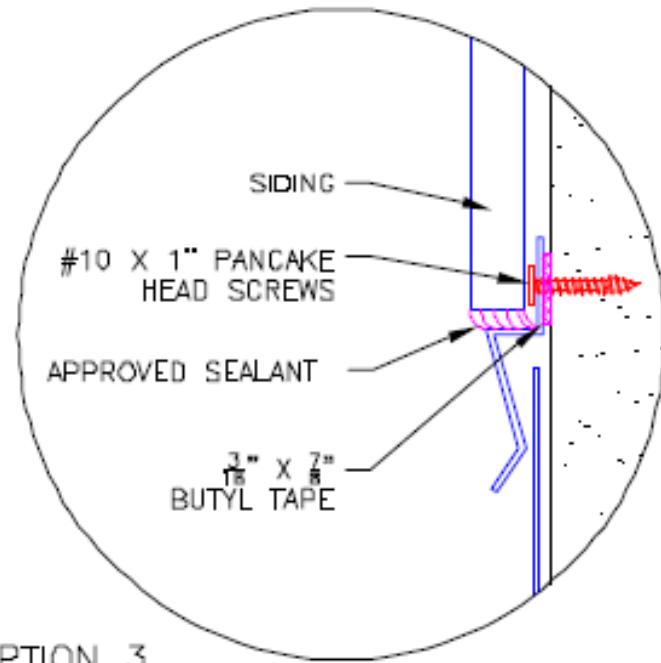
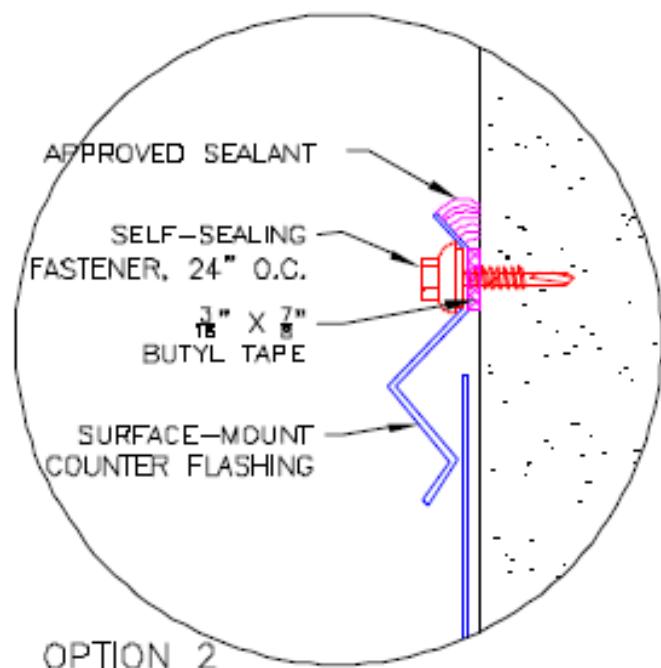
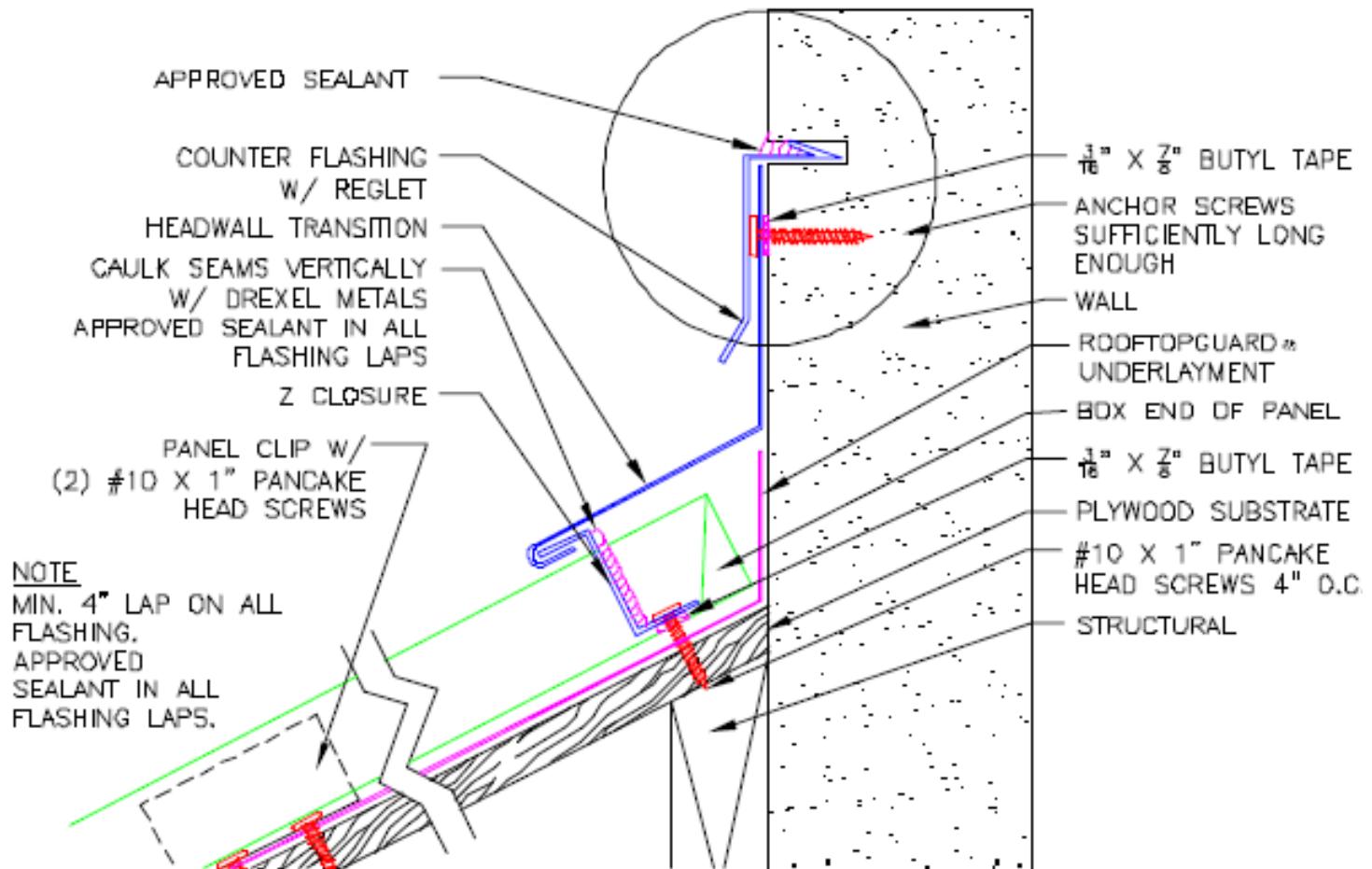
APPROVED SEALANT IN ALL LAPS VALLEY.

TWO ROWS OF SEALANT BETWEEN VALLEY LAPS. 4" UP FROM LAP.

VALLEY DETAIL

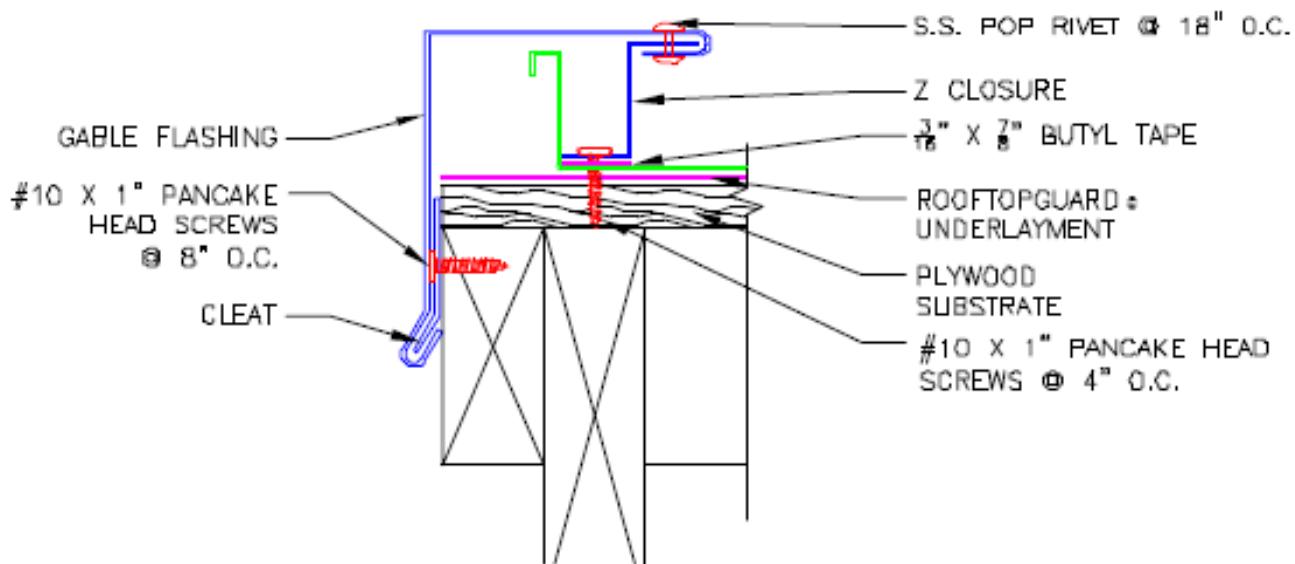


HEADWALL DETAIL

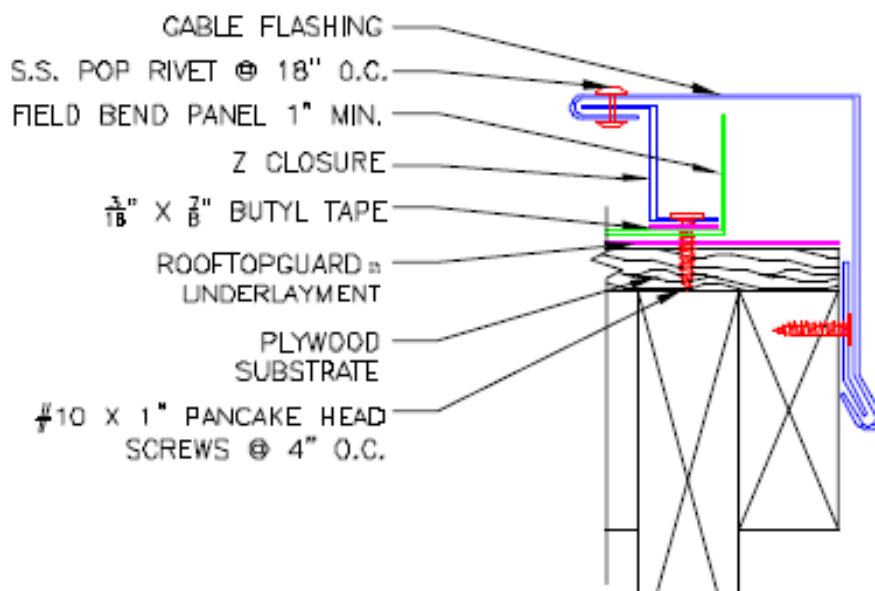


START / END GABLE DETAIL

START



END

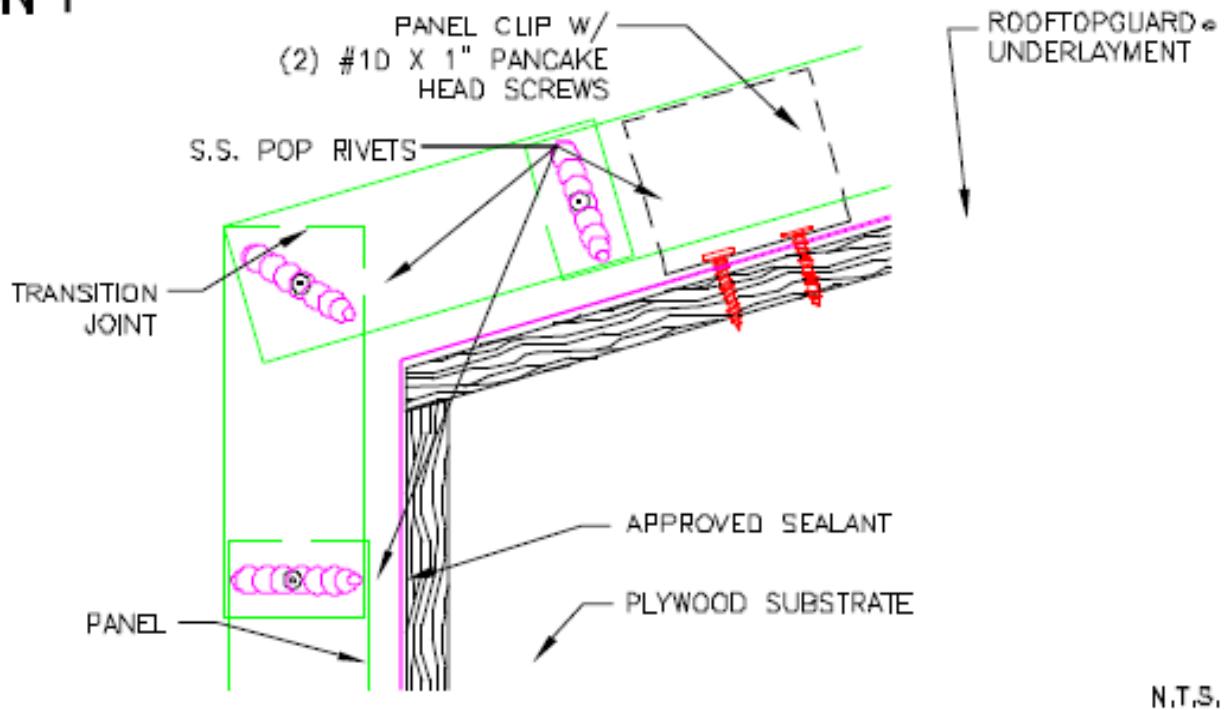


NOTE:

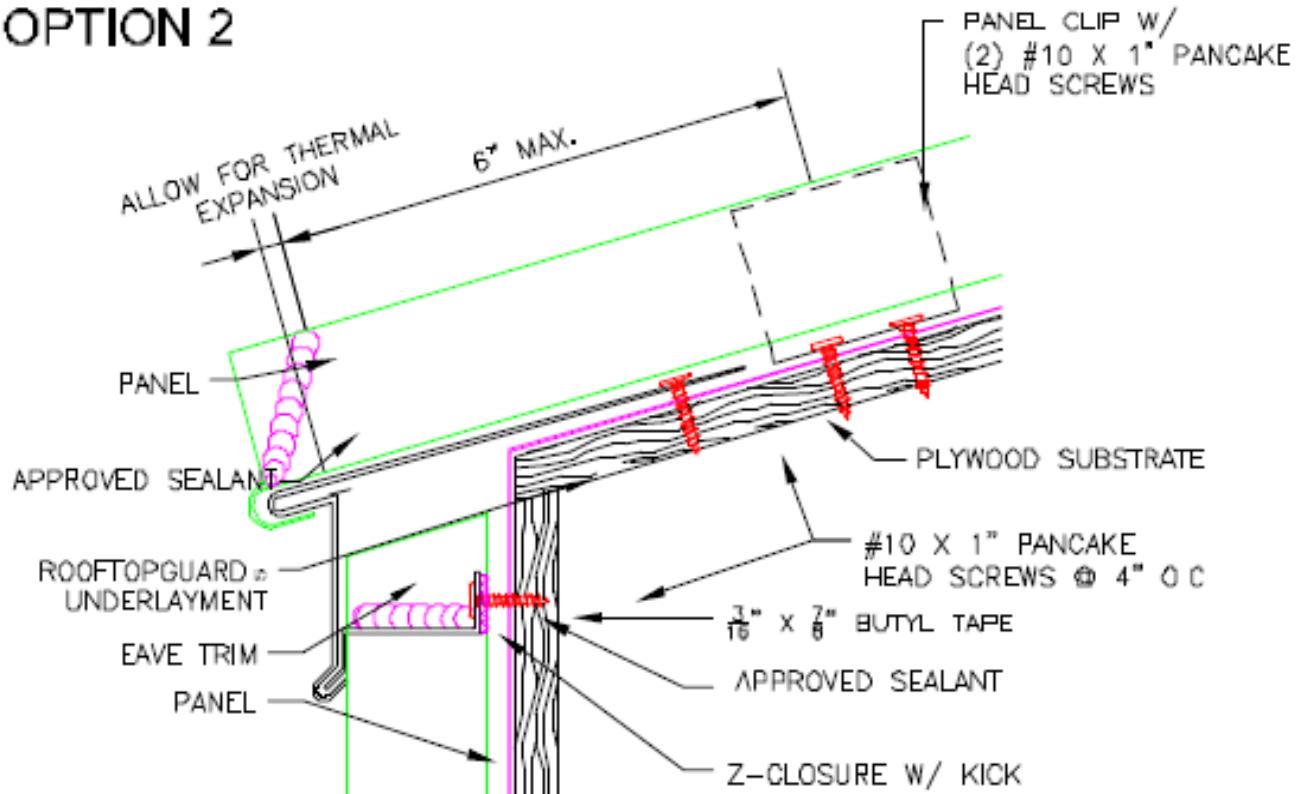
4" MIN. LAP ON ALL GABLE TRIM.
APPROVED SEALANT IN ALL LAPS OF GABLE TRIM.

ROOF / FASCIA TRANSITION

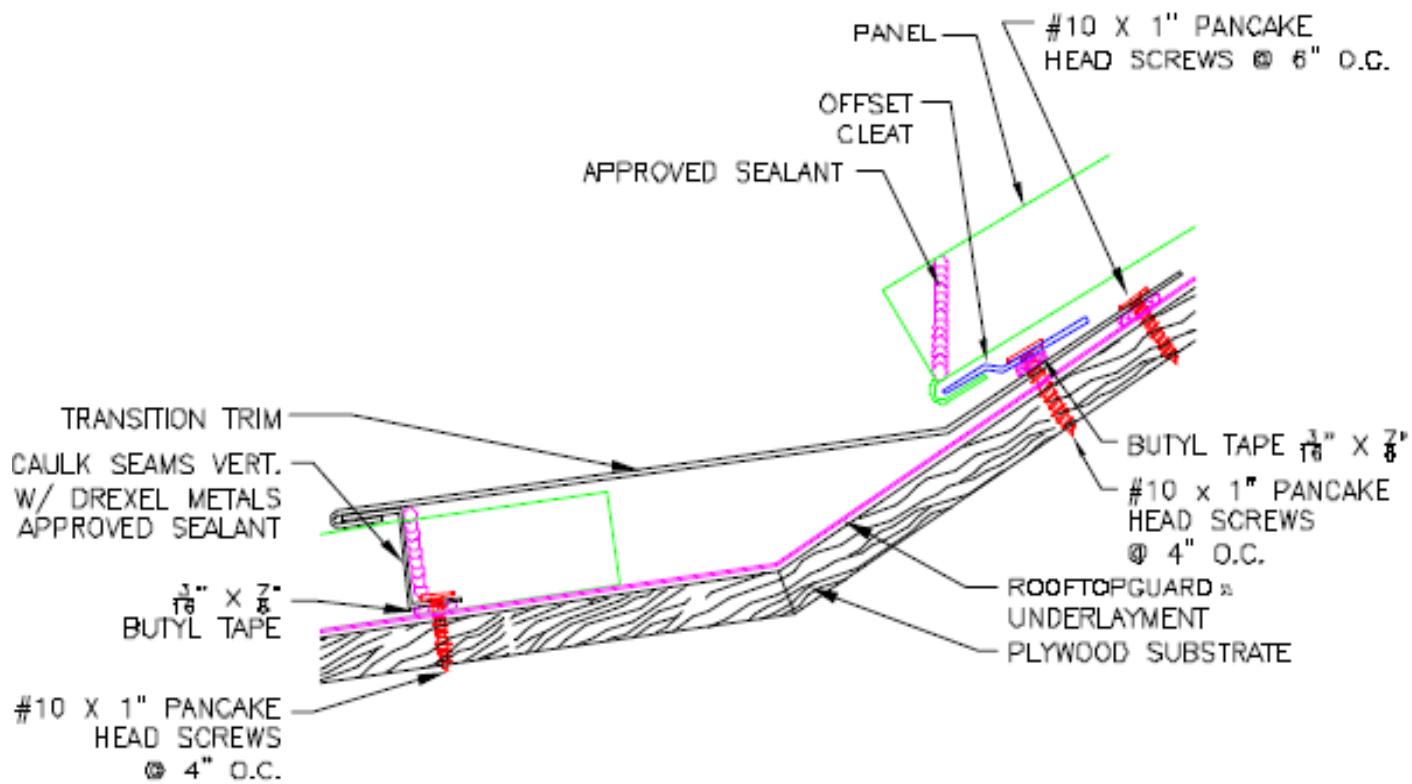
OPTION 1



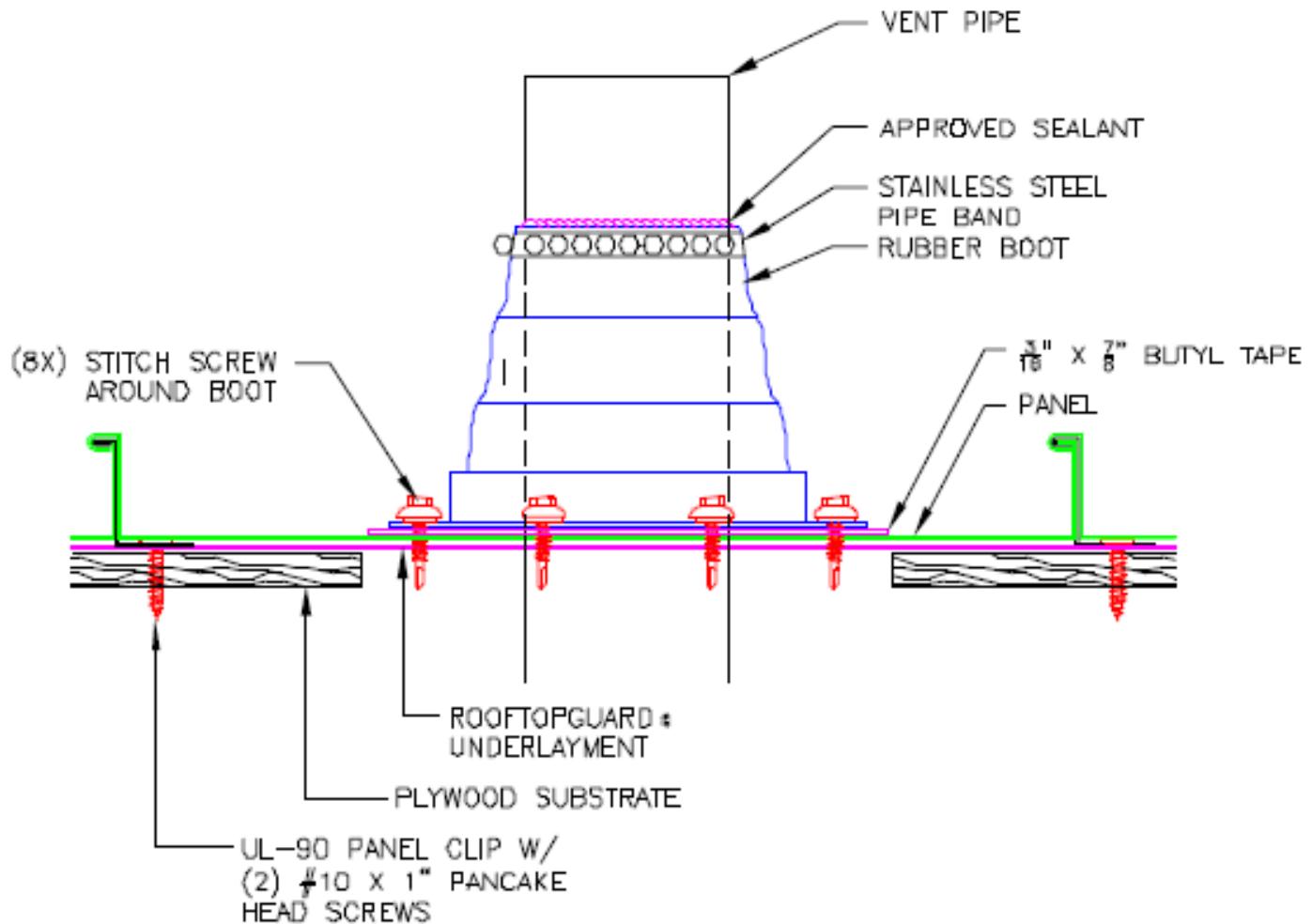
OPTION 2



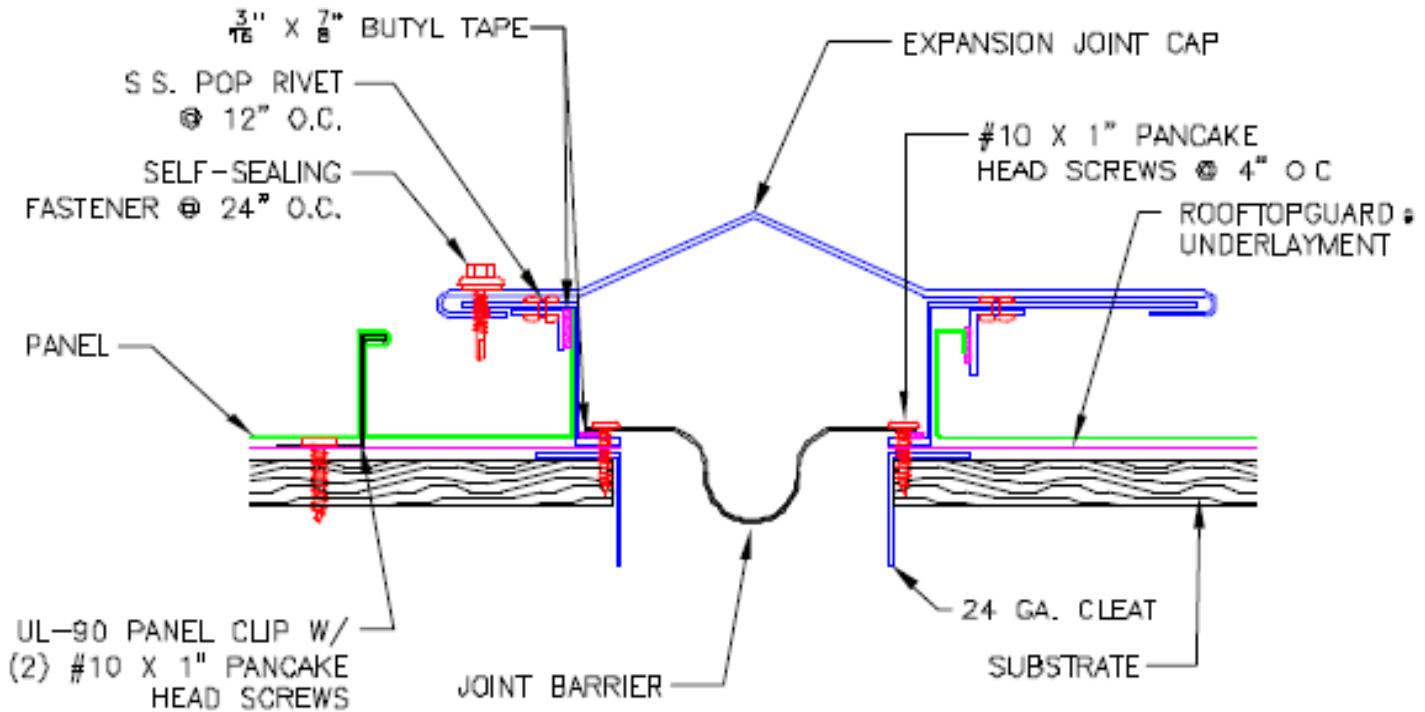
ROOF TRANSITION



VENT PIPE FLASHING DETAIL



EXPANSION JOINT DETAIL



NOTE:

4" MIN LAP ON EXPANSION
JOINT CAP.
APPROVED SEALANT IN ALL
EXPANSION JOINT CAP LAPS.