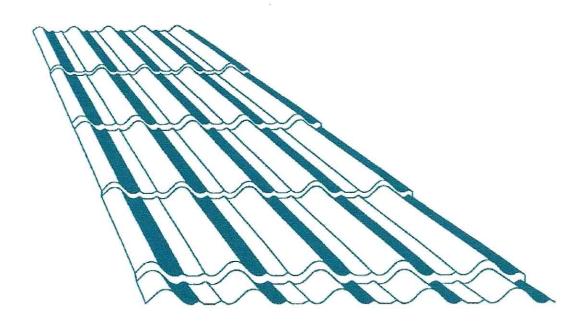
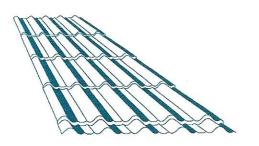
# PERMATILE INSTALLATION MANUAL



### PERMATILE ROOFING

A Division of Advanced Aluminum 2941 Parkway Street – Lakeland, FL 33811 Phone: (863) 648-5787 - Fax: (863) 648-4749 www.permatileroofing.com – email: Permatile@msn.com



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### INSTALLATION INSTRUCTIONS

### STEP #1- UNDERLAYMENT AND ROOF PREPARATIONS:

#### NEW CONSTRUCTION ON PLYWOOD DECKING

Determine if each roof section is square by running a string line from corner to corner of eave edge. Corrections to the roof should be made at this point to alleviate any potential problems during the panel laying process. PermaTile Roofing requires a minimum of 30 lb. roofing felt to protect against moisture due to condensation over all roofing surfaces. It is recommended that Valleys have a 36" wide self adhesive underlayment sheet down the center as additional protection. The recommended minimum pitch for PermaTile is 2:12. If there are any areas in which the pitch is less than 2:12, the whole roof area should be covered with a self adhesive peal and stick underlayment such as Polystick T/U Plus.

#### PERMATILE OVER EXISTING SHINGLE ROOF

Permatile can be installed directly over a single layer of existing asphalt shingles. A complete inspection of existing roof deck, in particular valley and eave areas, should be done prior to installing the metal panels. At least 3 rows of shingles should be removed from eave edge and valley areas in order to check for water damage. Replace any damaged plywood as needed and cover with felt. To ensure against water intrusion problems in the valley areas, we suggest that you run 1 sheet of 36" wide *Polystick TU Plus* (or similar product) down the center of valley. Care should be taken to avoid dragging panels across the abrasive roof surface as this could damage the underside paint coating. To alleviate this problem, the use of a thin underlayment such as *PolyProtector UDL* can be used over shingles prior to panel installation. If any area of the roof is less than 2:12 the shingles should be removed and covered with peal and stick underlayment or other suitable roof covering. As always, local building code requirements should be followed.

#### **STEP #2- EAVE TRIM:**

Eave trim has a 2 ½" outside face with an angled break that corresponds to the pitch needed. The eave trim should be attached prior to installation of the roof panels. They should be installed in a straight line, on top of the underlayment, and cover the top edge of the fascia board. As each piece is installed, the ends should be overlapped a minimum of 3" and fastened as per local building codes. Large headed screws should not be used to attach, as they would prevent the panel from laying flat on eave edge. Drip edge is not intended to be used on gable ends of house since Gable Trim covers this area. (see Standard Drip Edge Detail page)

#### **STEP #3- W VALLEY TRIM:**

W Valley is a trim piece that is used to protect the valley area from water intrusion. The valley trim has an inverted V shape in the middle of the pan which acts as a water stop. This shape helps to eliminate water from flowing under opposing panel and diverts water down the valley. Valley trim must be installed prior to laying any roof panels. It is recommended that an ice and water shield material, such as Polystick TU Plus, be applied in valley areas prior to installing valley trim. The first valley pan should be installed at eave edge overhanging several inches. Overhanging edge of valley should be cut as per field requirements to ensure proper water flow from roof. Install each additional valley trim by overlapping a minimum of 6", working toward the ridge. A small bead of caulk should be used between the overlaps. Secure valley pans with 1" #10 Woodtite screws every 2' to 3' along highest point of both sides of valley pan. When cutting panels for installation into valley, there should be approximately a to 2" gap from center of water diverter. This will allow ample space for water flow. Take caution when installing screws for the panels near the valley to ensure they do not penetrate through valley pan underneath. (see W-Valley Detail page)

### **STEP #4- PERMATILE ROOFING PANEL:**

Permatile is a long run panel with 28" width coverage and is manufactured in custom lengths to the inch from 2' to 32'. The panels are installed vertically from the eave edge up to the ridge. The panel's actual width is 32" and overlaps the next panel by approx. 4". This gives a total coverage width of 28". Panels are installed from right to left on each roof face (looking up at ridge from eave). In some cases the panels can be laid in the opposite direction, but correct lapping must be maintained (see Screw Fastening Detail page). Care should be taken when handling panels and should be supported or carried on edge to avoid bowing the panel. Mishandling the panel can elongate the tile steps and will affect the tight fit of the steps along lap edge.

Permatile panels are designed to be installed from the right side of each roof section with additional panels under lapped or back fed working to the left. In order to maintain a straight panel edge, run a string line either at top or bottom of each roof face. This will ensure panel overhang will fit along entire eave edge as some fascias will vary in straightness.

Install the first sheet so it overhangs the eave edge approximately 1" to 2" which is the amount of the factory eave edge step. This helps to ensure proper water flow away from fascia edge. Each subsequent panel is installed to the left by lifting the left edge of the initial panel and sliding the right edge of the next under by one corrugation. Back laying panels will help to ensure the tile steps fit as tightly as possible.(see Permatile Screw Fastening Detail page) It is easier to allow gravity to help with holding panel in place than to keep forcing panel upward and tight with previous panel. Additional panels will slide down and tile steps should lock into place with previous panel.

When installing panels, each roof face should be checked to ensure that panels are tracking square. The best way to ensure this is to use minimal amount of screws to hold panels in place until roof face is done. If needed, several panels can be adjusted together as a group to make square. Permatile panels should also be evenly pulled from the side to ensure a tight lap is achieved with the next panel before screws are installed. (see straight run panel layout page)

Permatile *Inside Closures* are a polyethylene foam strip, formed to fit the exact shape of the underside of the panel. The coverage width of 28" is the same as the panel and has a self adhesive peel off backing. *Inside Closures* are recommended at the eave edge to reduce the chance of water blowback and pests. These should be installed 2" to 3" from bottom edge of panel during installation.

Each panel must be installed using the approved screw pattern. (see Permatile Screw Fastening Detail page) The eave edge screws should be installed on the top of every high rib approximately 3" from edge of panel. Screws in the field of the panel are required at the base of every tile step on the laps and center rib. The two free ribs that are located next to the outer lapped ribs require no screws except along eave and ridge line. The 2 ½" #10 Woodtite color matched screws are placed on the high ribs, approximately ¾" below where the tile step occurs. This placement allows the screw heads to be hidden in the shadow of the steps. Ridge line screws should be placed on every high rib approximately 4" from top edge of panel. These screws will be covered by the Ridge Cap trim when finished.

NOTE FOR HURRICANE ZONES: For areas with special wind speed restrictions, please refer to the "26g Permatile Panel Load Table Over Plywood" testing page for proper screw placement in each wind speed area.

Screws should be installed perpendicular to roofing panel. It is recommended that a screw gun with an adjustable clutch setting be used. Set the clutch so that it securely holds down the panel and the EPDM washer seats squarely on panel. Over tightening the screw will cause the EPDM rubber

washer to pan and protrude beyond screw. This can also dimple the panel and cause pooling of water around screw head.

When cutting or trimming Permatile panels we recommended use of large metal hand shears, power shears, or nibblers. Permatile Roofing carries a 7 ¼" 70 tooth carbide grade circular blade which can also be used. Metal abrasive discs should not be used under any circumstances.

**IMPORTANT NOTE:** It is important to clean raw metal shavings from all painted surfaces everyday. We recommended any metal cutting be done on ground to keep particles from roofing and trim. Metal on ground should also be protected from metal particles at all times. Raw metal shavings will oxidize and begin to rust on the Trinar® coating. Rust particles will fuse with the coating and cause permanent damage and is not covered by the warranty.

#### **STEP #5- GABLE TRIM:**

The Gable Trim is installed on gable ends of home. Install gable trim starting at eave edge working way toward ridge. First piece should be extended approximately  $1\frac{1}{2}$ " from edge of panel to allow for fold over finish. Fold over finish is accomplished by cutting breaks  $1\frac{1}{2}$ " back and folding flaps  $90^{\circ}$  down. This will give installation of gable a finished, clean look. Overlap each additional gable trim a minimum of 4" and apply a small bead of caulk at lap. Attach gable at top using  $2\frac{1}{2}$ " #10 Woodtite color matched screws every 14" O.C. along top of trim in a straight line. Vertical face of gable trim should be fastened to fascia with 1" Woodtite screws every 3' to 4' O.C. (see Standard Gable Trim Detail page) The use of an optional Gable Pan can also be incorporated into the Gable installation to increase protection. (see Gable Pan Detail page)

### STEP #6- 5 BREAK RIDGE / HIP CAP TRIM:

The 5 Break Ridge cap is a trim piece which covers the center of the ridge and hip areas. The coverage is approximately 8 1/4" from center break on each side. The cap is installed centered across the ridge line after panel installation has been completed. *Outside Closures* should be installed between the outer tabs of the ridge cap and Permatile panel. *Outside Closures* coverage is 28" in width and has an adhesive peel off backing on one side. The polyethylene foam *Outside Closures* are designed to match the top side contour of the Permatile panel. If a vented ridge is desired, a J-Channel trim and vented closure can be used. See "Optional Trim Section" for a drawing of this option.

Fasten the ridge cap by using 2 ½" #10 Woodtite screws on every other high rib. These screws will penetrate the ridge cap, closure, panel, and plywood decking. (see 5 Break Ridge Cap Detail page) Install consecutive ridge caps in a straight line overlapping minimum of 6". If ridge cap begins at a gable, cut each break back 1 ½" and fold down top flaps 90° to give a finished appearance. Ridge Caps that terminate into a hip should be angled cut and feathered together to create a clean, finished look. As always, good roofing practices and proper metalworking skills should be used to achieve a professional appearance.

The Hip Cap is the same trim as Ridge Cap. Hip Cap should be installed starting at eave edge of hip working upward toward the ridge. Ends of Hip Caps should be extended past edge of roof so that a fold over finish can be achieved as recommended. Caps being added should be lapped over the top of previous cap by the recommended minimum overlap of 6" in a straight line. To minimize water penetration, it is recommended that a 6" self adhesive flashing tape be used on hip seam before installation of the Hip Cap. The hip tape should cover the cut edges of the Permatile roofing panels. Note that this product must be applied to a clean area and cannot be stretched during installation. Sealant tape must be formed to the contour of the panels, giving it a waterproof seal.

Hip Caps should be fastened down on both sides by using 2  $\frac{1}{2}$ " #10 Woodtite screws. Screws should be fastened minimum every other high rib. If location of install is in areas prone to high wind, it is recommended that a screw be fastened through every high rib. These screws will penetrate the Ridge/Hip cap, sealant tape, roofing panel, and substrate. (see 5 Break Hip Cap Detail page)

#### **STEP #7- SIDE WALL TRIM:**

Side Wall trim is a 90° L-shaped trim piece which is used where the side of a panel meets a vertical wall. The Sidewall Trim is installed along the base of the vertical wall and the sidewall's hemmed edge extends over the top of the Permatile panels. Based on type of wall surface, top vertical edge of Sidewall must be secured using standard building practices or local building code requirements. All roofing panels should be properly fastened prior to installation of Sidewall. Install 2  $\frac{1}{2}$ " #10 Woodtite screws a minimum of every other tile step the entire length of trim through high rib when possible. (see Standard Sidewall Trim Detail page)

Additional measures can be taken to further insure against water intrusion along wall edge. A tile flash tape such as Protecto Wrap® Flashing Tape may be applied along the edge of the panel and secured to the wall prior to installation of trim. The use of an optional sidewall pan can also be incorporated into the sidewall installation to increase protection. (see Sidewall Pan Detail page)

### STEP #8- END WALL TRIM:

End Wall is a pitch determined L-shaped trim piece used where the top end of a sloped panel meets a vertical wall. The End Wall's hemmed edge extends over the top of the Permatile panels. To ensure a watertight seal, *Outside Closures* should be used between the top of the roofing panels and hemmed edge of trim. Based on type of wall surface, top vertical edge of End Wall must be secured using standard building practices or local code requirements. All roofing panels should be properly fastened prior to installation of End Wall. Install 2 ½" #10 Woodtite screws a minimum of every other high rib to the entire length of trim.(see Standard End Wall Trim Detail page)

Additional measures can be taken to further insure against water intrusion along wall edge. A tile flash tape such as Protecto Wrap® Flashing Tape may be applied along the edge of the panel and secured to the wall prior to installation of trim.

#### **STEP #9- PIPE BOOTS:**

All pipe penetrations through roof should be sealed using a pipe flashing boot intended for metal roofing. Pipe flashing boots are made from EPDM rubber, which are flexible and resistant to ultraviolet rays. Permatile offers a closed top Decktite round boot with incremental size markings imprinted on the side, to achieve a snug fit. It has an aluminum ringed base which conforms to the Permatile panel shape.

To install Decktite, cut the correct hole size needed using size markings as a guide and slide boot over pipe. Apply clear silicone caulk to underside of boot and conform aluminum ring to shape of roof. Fasten down outer ring of Decktite with appropriate length Woodtite screws. Wipe any excess silicone from roofing panels immediately.

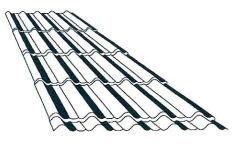
For pipe penetrations which can not be accessed directly from the top such as an electric service pole, a Retro Flasher must be used. A Retro Flasher is a split boot which can wrap around from the side and be sealed by snap rivets and sealing band. Similar to the above Decktite, the opening must be cut to size needed. Complete installation using the above Decktite instructions. Decktite and Retro Flashers can be painted with color matched paint to give roof a more finished look. Using a top quality outdoor paint along with a primer coat, will yield the best results.

### **STEP #10- TOUCH UP PAINT:**

Great care should be taken to avoid any damage to the painted coating during installation. Touch up paint is used only on minor scratches to the surface of roof, trim, or to cover accessories. It is recommended to use only a high quality outdoor color matched paint, available from a local paint store. The Trinar® paint coating process is applied under special conditions and cannot be used as a touch up paint. Care should be taken to only touch-up scratched areas. Wipe off any excess paint from undamaged areas as paint may fade differently. Paint any boots, pipes, or accessories as needed.

### STEP #11- CUSTOM TRIM:

Custom trim can be manufactured on request to suit your job needs. Contact your Permatile sales representative for more information.

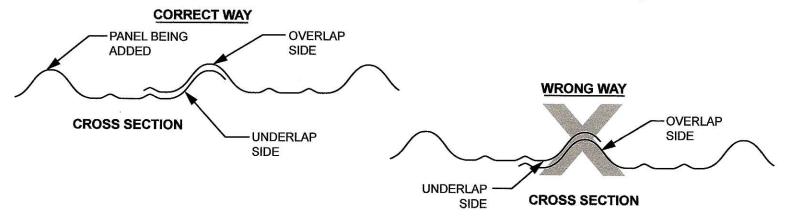


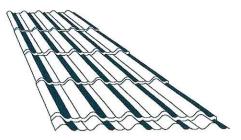
#### A Division of Advanced Aluminum

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#### For Best Results:

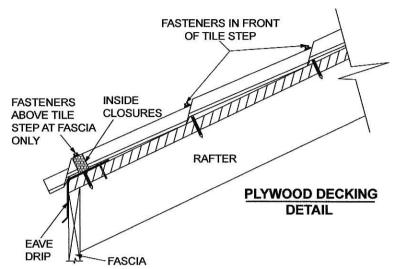
- Keep the roofing panels dry when closely stacked or keep the panels well ventilated if subjected to wet conditions.
- Care should be taken to avoid dragging Permatile panels which will cause scratching and scouring to the coated surface.
- Soft rubber soled shoes should be worn when walking on the roofing panels. To prevent possible damage to high rib area you should walk in the lower sections of the panels.
- Fasteners should be positioned in front of the steps for appearance and performance. For correct fastening pattern see Permatile Screw Fastening Detail sheet.
- Permatile panels are designed to be laid from right to left on the roof face to ensure a tight fit. In some cases
  the panels can be laid in the opposite direction, but correct lapping must be maintained. (see figures below)
- 6. When cutting or trimming Permatile panels, use of large metal hand shears, power shears or nibblers are preferred. Permatile Roofing carries a carbide tipped circular saw blade which can also be used. YOU MUST always remove metal shavings from roof surface immediately. Metal abrasive discs should NOT be used under any circumstances.
- 7. Care should be taken when installing the first few panels. Always align panels parallel with the fascia/gutter line or the ridge line. For best results a string line should be used. See *Permatile Straight Run Panel Layout* sheet for more information.
- 8. During handling of panels, be careful not to bend the panel at the steps (folds) which may cause poor fitting.
- All roofing and accessories should be installed in accordance with any local laws or requirements. As always, good tradeperson practices should be followed.
- Upon completion of each work day, ALWAYS sweep and clean roof and gutters free from cuttings and shavings.
- 11. **MINOR** scratches can be touched up with a high quality color matched paint only if necessary. Great care should be taken only to touch up the affected area as the paint will fade differently from the Trinar® coating.





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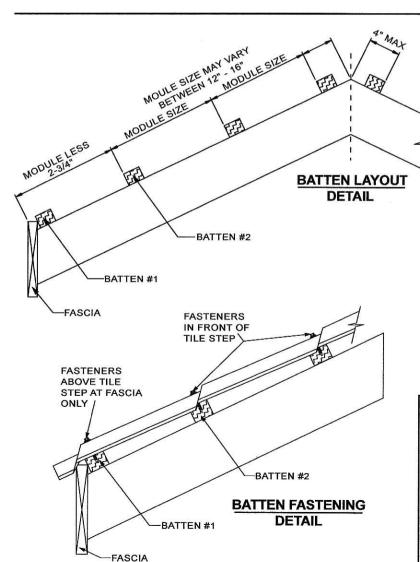
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#### LAYOUT FOR PLYWOOD DECKING

Permatile Roofing can be installed directly over plywood decking without any extra requirements. Perfect for re-roofing directly over existing asphalt shingles. NOTE: Minimum 30# felt underlayment required.

NOTE: THIS METHOD IS APPROVED FOR USE IN HVHZ WIND ZONE AREAS.



#### LAYOUT FOR WOOD OR STEEL BATTENS

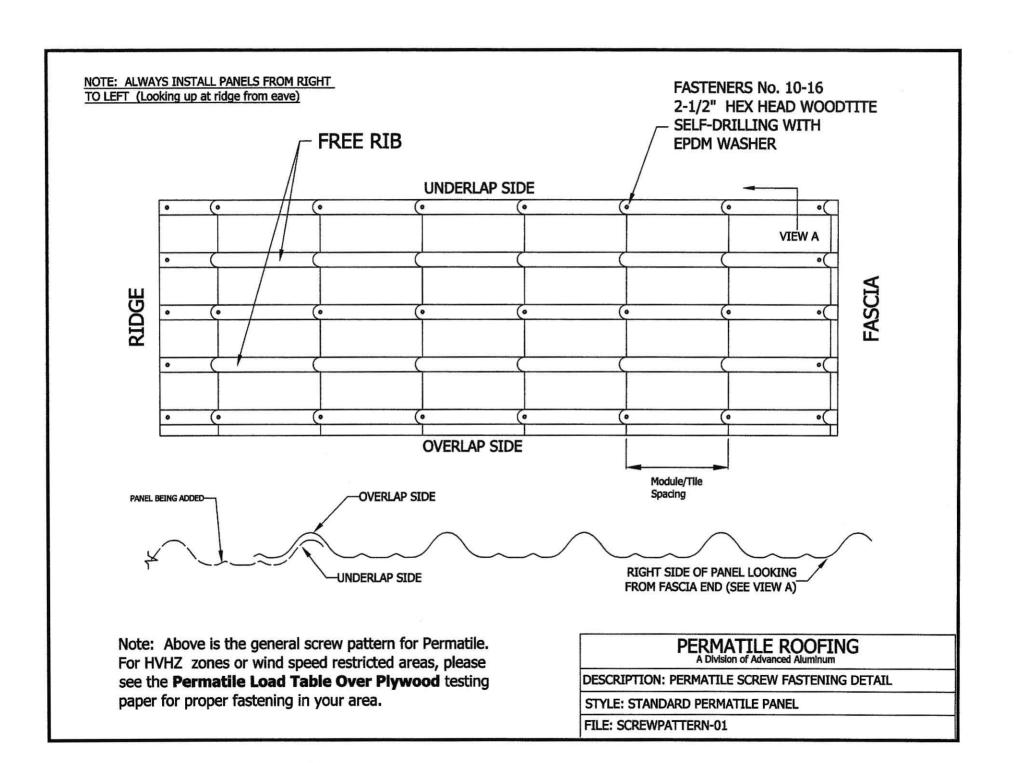
- Install #2 batten at a distance of the tile module size less 2-3/4" measured from the front face of the fasica.
- All subsequent battens are to be fixed to match the module (tile) size. Mininum wood batten 1" x 4".
- Batten #1 is fixed directly behind the fascia board and where possible, to be 3/8" higher than the other battens.
- An additional batten is required at the ridge of the roof if the distance of the last batten to the ridge exceeds 4"
- Battens to the valley in accordance with standard roofing practice.
- It is suggested to have production panel on site for proper batten spacing.

NOTE: SITE SPECIFIC ENGINEERING NEEDED FOR THIS METHOD IN FLORIDA.

THIS INSTALLATION METHOD NOT APPROVED FOR HVHZ ZONES.

#### **MATERIAL TECHNICAL DATA**

- 1. Material: 26 gauge (.019) galvanized G90
- Finish: AKZO NOBEL TRINAR<sup>®</sup> high performance coating which contains fluoropolymer resin (Kynar 500<sup>®</sup> or Hylar 5000<sup>®</sup>) and long lasting pigmentation.
- 3. Coverage: Width 28 inches.
- Length: Custom cut limited only by handling and transport. Recommended maximum length 30 feet.
- 5. Roof Pitch: Recommended minimum pitch 2:12
- Tile Size: 14" is standard but is variable to suit installation. Recommended size is between 12-14 inches.

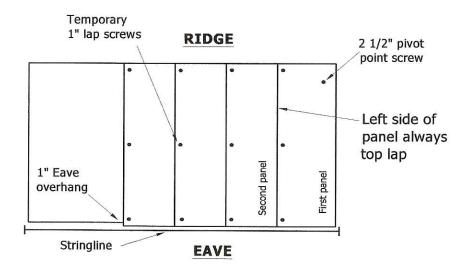




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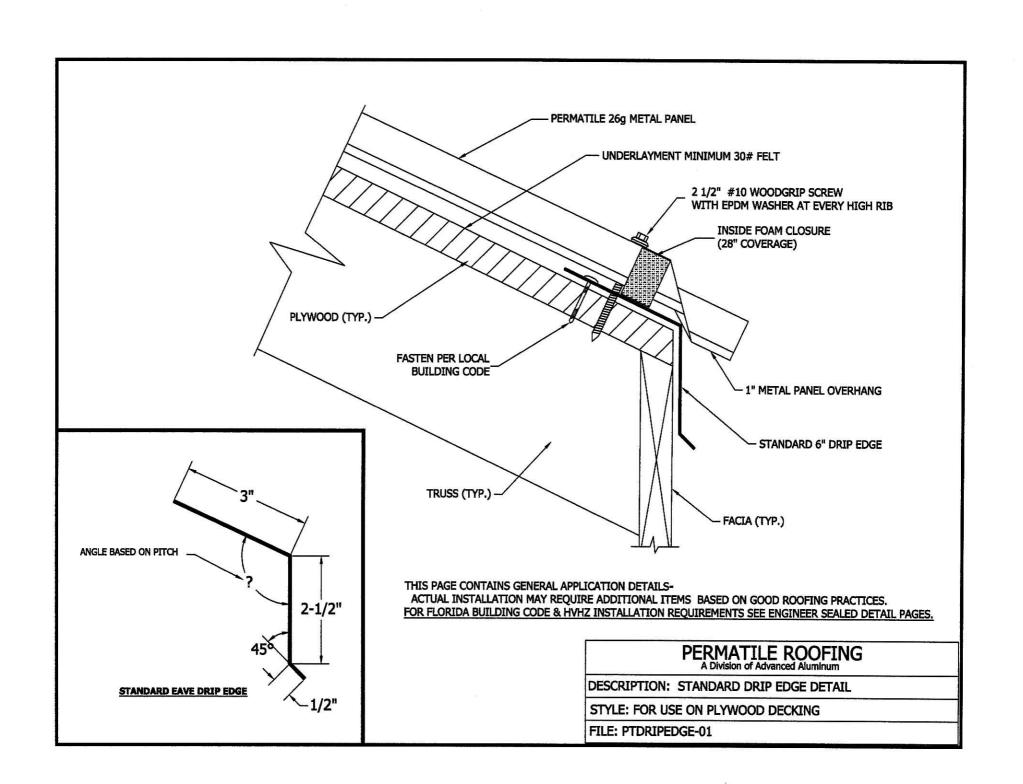
#### FIGURE A

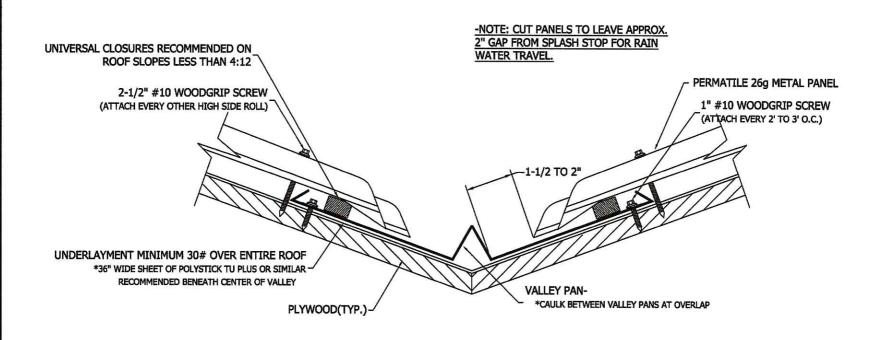


### STRAIGHT RUN PANEL LAYOUT

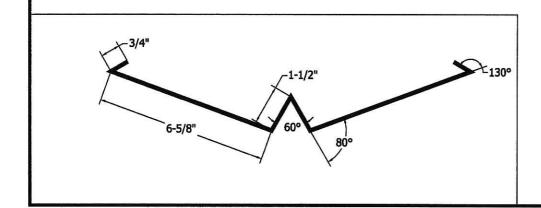
## ALWAYS LAY PANELS FROM RIGHT TO LEFT (Looking up at ridge from eave)

- 1. Place 1<sup>st</sup> sheet in position on right side of roof section. Fasten with a 2 ½" screw in lower pan. This acts as a pivot point for straightening. (See figure a)
- 2. Run a string line either at the top or bottom to ensure a straight line is maintained. Eave straightness is crucial since this will be visible when job is finished. At least one inch of roof panel (amount of end cut) should be hanging over drip edge.
- 3. Place the second sheet into position making sure to lap it under (back lay) the previous panel to ensure tight fitting. Place 4-5 sheets into position by placing a small 1" screw in top, center and bottom lap join. These 1" screws will be later removed and refastened with 2 ½" screws. Line up the 4-5 sheet group with eave. Once you have a straight line, place a few 2 ½" screws through the laps into substrate to keep sheets in place. Do the next 4-5 sheets ect.
- 4. Once finished laying panels, complete installation of screws as per screw pattern sheet.





ACTUAL INSTALLATION MAY REQUIRE ADDITIONAL ITEMS BASED ON GOOD ROOFING PRACTICES, FOR FLORIDA BUILDING CODE & HVHZ INSTALLATION REQUIREMENTS SEE ENGINEER SEALED DETAIL PAGES.

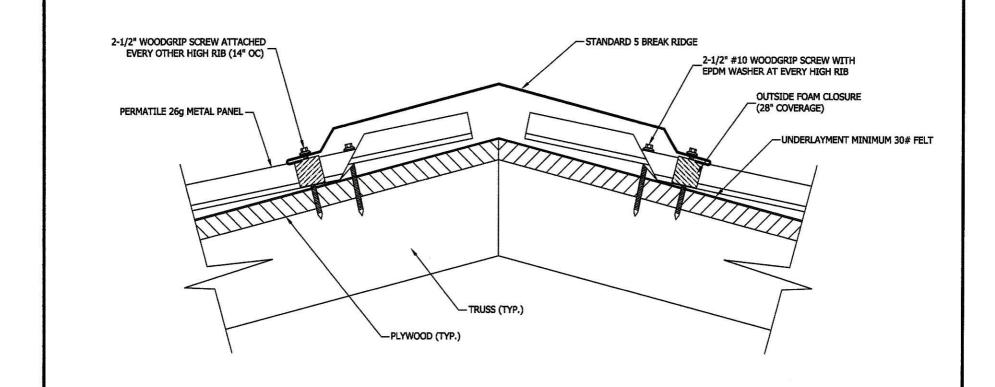


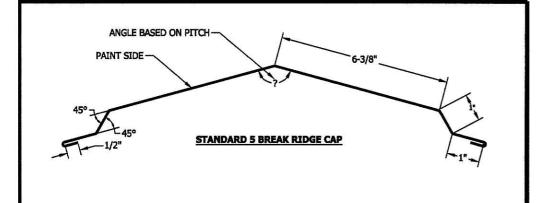
# PERMATILE ROOFING A Division of Advanced Aluminum

DESCRIPTION: W-VALLEY DETAIL

STYLE: FOR USE ON PLYWOOD DECKING

FILE: PTVALLEY-01





ACTUAL INSTALLATION MAY REQUIRE ADDITIONAL ITEMS BASED ON GOOD ROOFING PRACTICES.

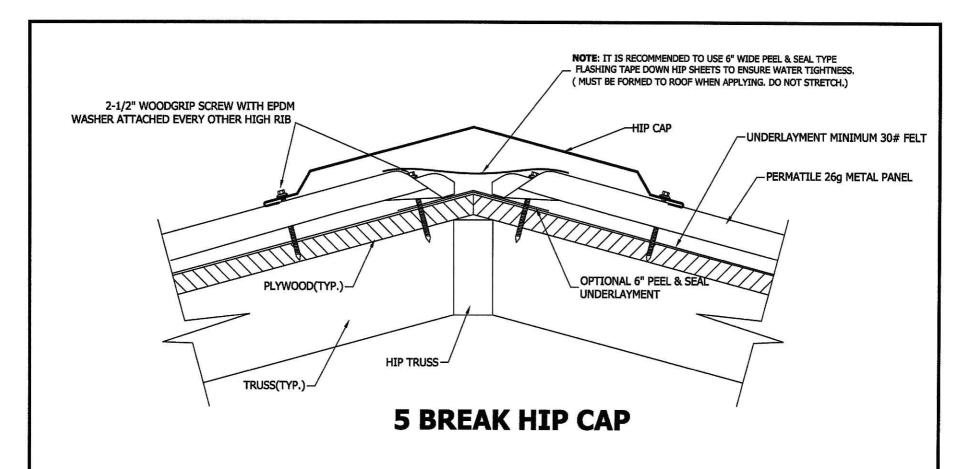
FOR FLORIDA BUILDING CODE & HVHZ INSTALLATION REQUIREMENTS SEE ENGINEER SEALED DETAIL PAGES.

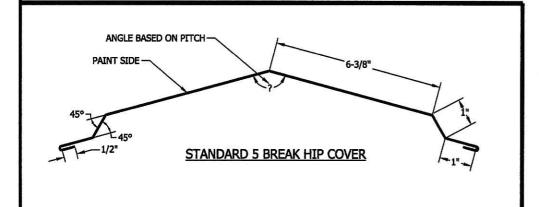
# PERMATILE ROOFING A Division of Advanced Aluminum

DESCRIPTION: 5 BREAK RIDGE CAP DETAIL- NON VENTED

STYLE: FOR USE ON PLYWOOD DECKING

FILE: PT5BRKRIDGE-01





ACTUAL INSTALLATION MAY REQUIRE ADDITIONAL ITEMS BASED ON GOOD ROOFING PRACTICES.

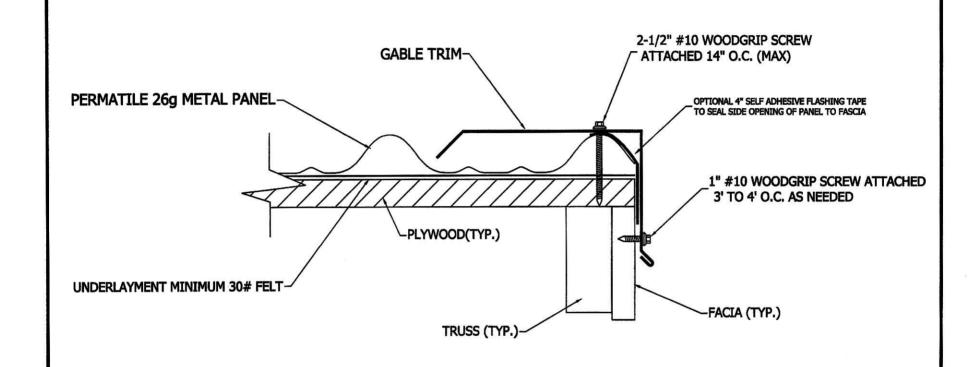
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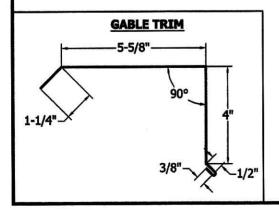
# PERMATILE ROOFING A Division of Advanced Aluminum

DESCRIPTION: 5 BREAK HIP COVER DETAIL

STYLE: FOR USE ON PLYWOOD DECKING

FILE: PT5BRKHIP-01





ACTUAL INSTALLATION MAY REQUIRE ADDITIONAL ITEMS BASED ON GOOD ROOFING PRACTICES.

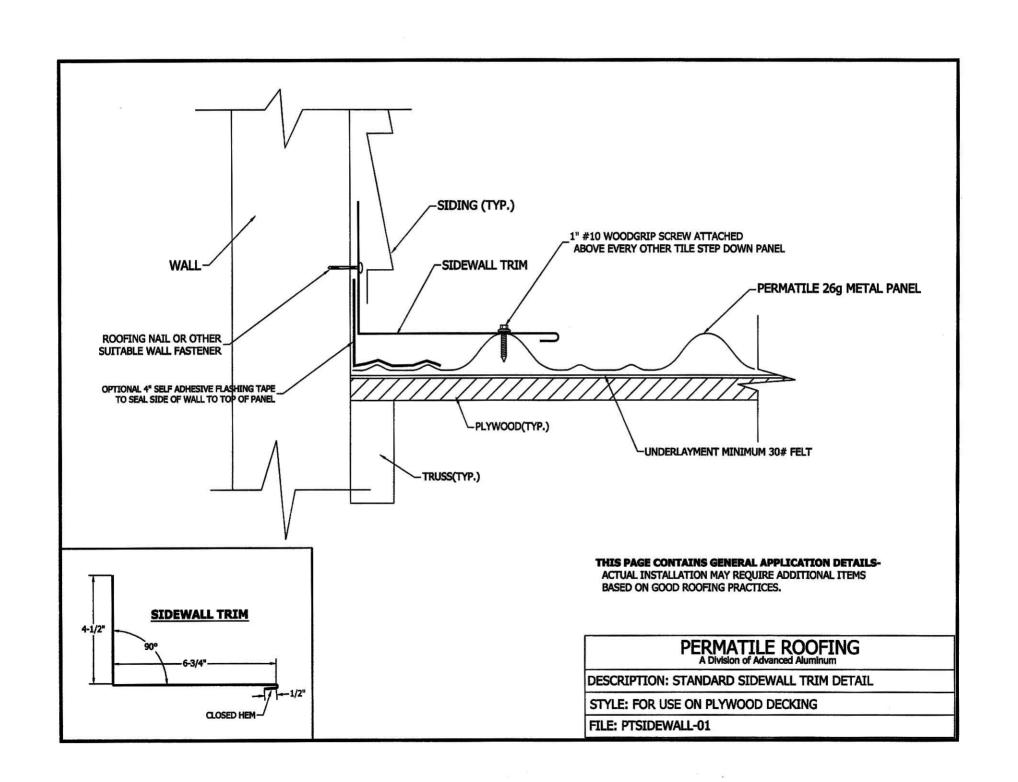
FOR FLORIDA BUILDING CODE & HVHZ INSTALLATION REQUIREMENTS SEE ENGINEER SEALED DETAIL PAGES.

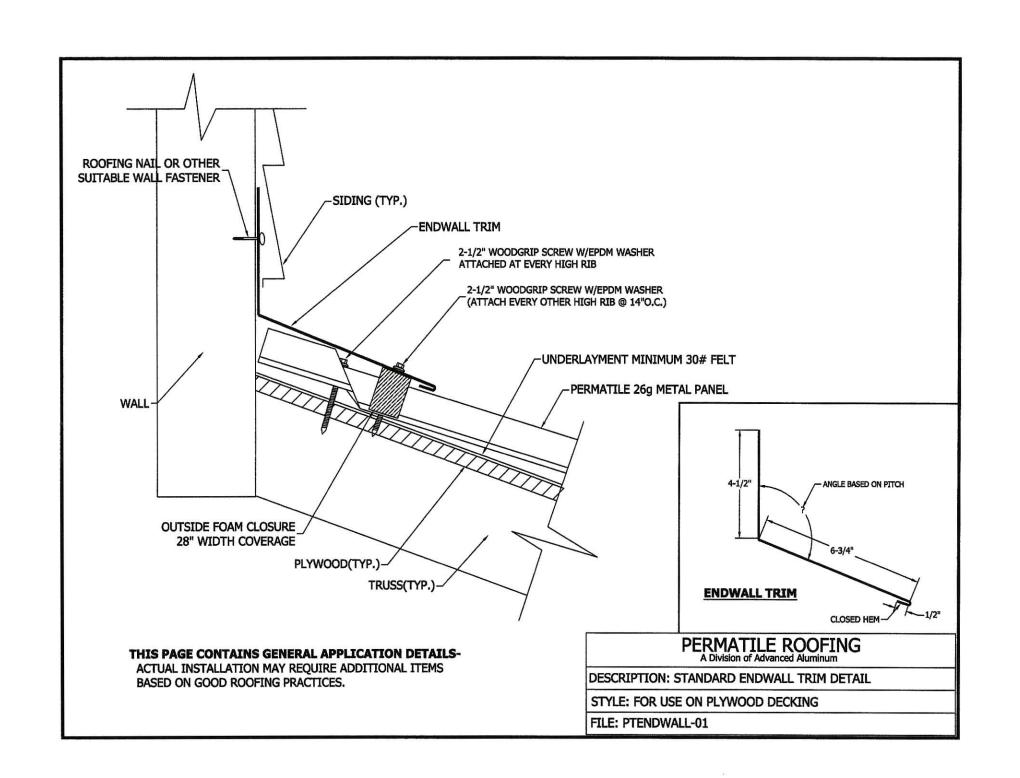
# PERMATILE ROOFING A Division of Advanced Aluminum

DESCRIPTION: STANDARD GABLE TRIM DETAIL

STYLE: FOR USE ON PLYWOOD DECKING

FILE: PTGABLE-01





# **OPTIONAL TRIM SECTION**

CUSTOM TRIM AVAILABLE ON REQUEST

