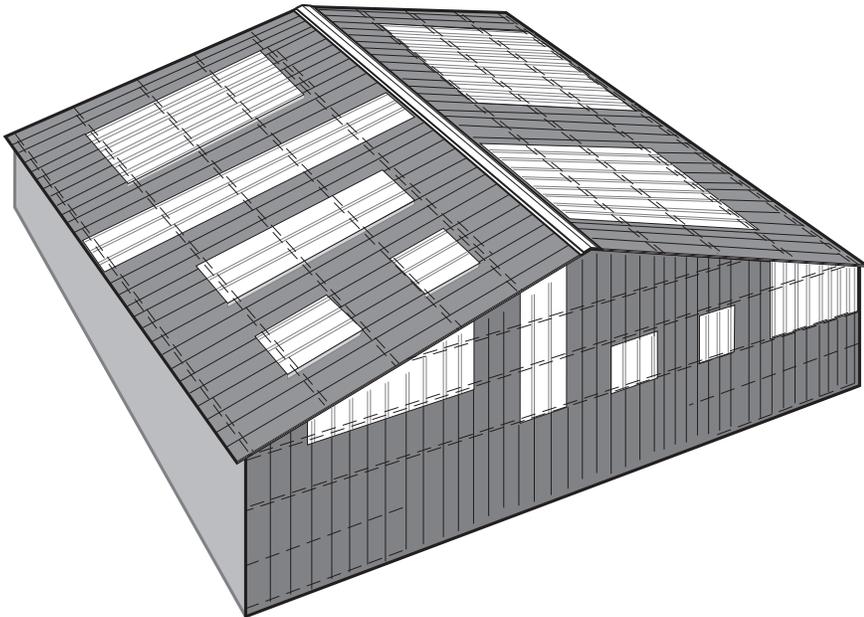




# UNITREX<sup>®</sup>

Premium Corrugated Polycarbonate Panels



# INSTALLATION GUIDE



# Contents

Prior to actual installation study the Unitrex Installation Guide carefully. Make sure all the instructions are understood and all required materials, accessories and tools are available.

A.	Introduction	2
B.	Unitrex Product Availability	2-3
C.	Transportation, Handling & Storage	4
D.	Chemical Resistance and Fire Hazard Comments	4
E.	Profile Matching	5
F.	Sawing, Cutting & Drilling	5
G.	Installation Safety Measures	6
H.	Panel Orientation	6
I.	General Information for Installation	6
J.	Maximum Recommended Loads	7
K.	Installation Comments	8
L.	Fastening & Sealing	8
M.	Side & End Lap Installation	13
N.	Design Details for Installation of Unitrex Flashing Accessories	14
O.	Options for Installation	15
P.	Important Installation Comments	18



## **Manufactured by Palram exclusively for H&F Manufacturing.**

Palram Industries, Ltd. is a thermoplastics manufacturing leader, specializing in the production of polycarbonate and PVC sheet in flat, multi-wall and corrugated configurations.

H&F Manufacturing Corp. has been a valued Palram customer and a distributor of many of Palram's products since 1973. H&F has tremendous experience and expertise in the industrial, commercial, and residential cladding applications markets, and provides customer and market feedback to Palram to assist in new product development and application usage.

Unitrex™ is produced by Palram exclusively for H&F Manufacturing according to H&F's exacting standards and specifications.

## A. Introduction

Unitrex light-transmitting panels are made of high quality clear or translucent corrugated polycarbonate and are designed to match the profiles of major types of metal roofing and siding panels. Unitrex is designed for single or multi-panel skylights or side lights in roofs and walls of metal-clad structures.

### Various Unitrex Skylight and Side Light Arrangements\*

- I** Single panel, single span
- II** Single panel run
- III** Multi-panel run

\* Can also be used for walls and roofs of an entire building.

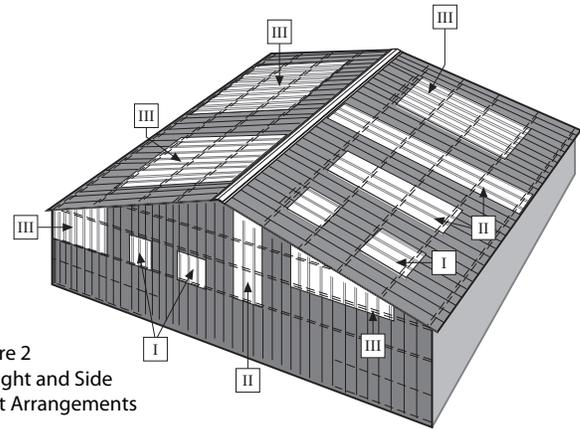


Figure 2  
Skylight and Side  
Light Arrangements

## B. Unitrex Product Availability

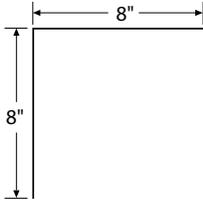
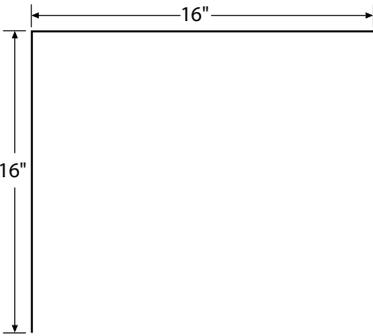
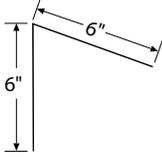
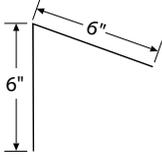
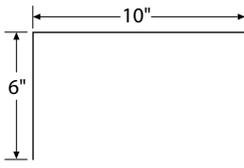
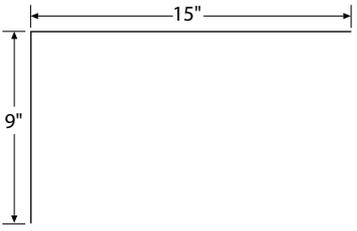
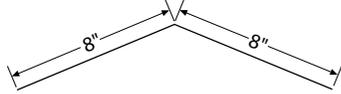
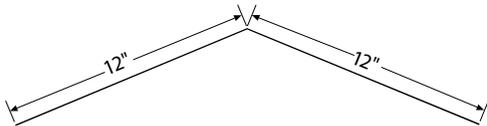
Stock Profiles <i>(Typically readily available)</i>	Basic Dimensions and Profile Illustrations
<b>Unitrex Ultra R</b> <i>(1.5 mm thickness)</i>	
<b>Unitrex Ultra 9</b> <i>(1.5 mm thickness)</i>	
<b>Unitrex AM 4.2"</b> <i>(1.5 mm thickness)</i>	
<b>Unitrex 2.67"</b> <i>(1.5 mm thickness)</i>	

Specialty Profiles* <i>(Min's &amp; Lead Time Required)</i>	Basic Dimensions and Profile Illustrations
<b>Unitrex 7.2"</b> <i>(1.5 mm thickness)</i>	
<b>Unitrex 7.2"</b> <i>(1.5 mm thickness)</i>	

\* Note: Specialty profiles are typically not in stock, but can be produced provided minimum order requirements, lead time, and pricing considerations are met.

## B. Product Availability (continued)

The flashing shown below are manufactured by H&F Manufacturing Corp. Non-standard leg lengths and angles available upon request.

Unitrex 4.2 and 2.67 Flashings		Unitrex Ultra R and 7.2 Flashings	
<p><b>Corner Trim</b> Thickness: 1/16" Legs: 8" x 8" Length: 8' 0" Angle: 90°</p> 		<p><b>Corner Trim</b> Thickness: 1/16" Legs: 16" x 16" Length: 8' 0" Angle: 90°</p> 	
<p><b>Eave Trim</b> Thickness: 1/16" Legs: 6" x 6" Length: 8' 0" Angle: 70°</p> 		<p><b>Eave Trim</b> Thickness: 1/16" Legs: 6" x 6" Length: 8' 0" Angle: 70°</p> 	
<p><b>Gable Trim</b> Thickness: 1/16" Legs: 6" x 10" Length: 8' 0" Angle: 90°</p> 		<p><b>Gable Trim</b> Thickness: 1/16" Legs: 9" x 15" Length: 8' 0" Angle: 90°</p> 	
<p><b>Ridge Trim</b> Thickness: 1/16" Legs: 8" x 8" Length: 8' 0" Angle: 135°</p> 		<p><b>Ridge Trim</b> Thickness: 1/16" Legs: 12" x 12" Length: 8' 0" Angle: 135°</p> 	

## C. Transportation, Handling & Storage

1. Transport and store Unitrex panels horizontally on flat, sturdy pallets, equal to or longer than the longest panels. Short panels should be stacked on top of longer ones. The panels should be secured and fastened to the pallet during transportation (Fig. 4).



Figure 3

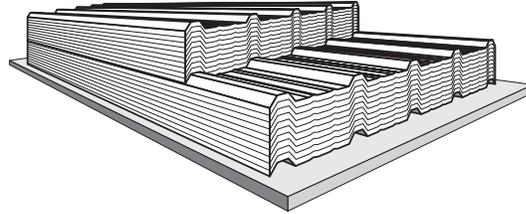


Figure 4

### Storage of Panels

2. Store Unitrex panels in a cool and shaded place, out of direct sunlight. Avoid covering the stack of panels with dark or heat-absorbing materials or objects, to prevent solar heat buildup (Fig 3).
3. When necessary to store panels outdoors, cover the stack with a white opaque polyethylene sheet, corrugated cardboard or other materials that do not absorb or conduct heat. Be sure that the entire stack is covered.
4. Unitrex panels are tough, requiring no special care. However, we recommend some cautionary steps:
  - Avoid stepping on the panel, driving over the panel, or folding the panel when handling and installing.
  - Avoid dragging the panel on the ground, scraping it against the structural elements, or any other sharp or rough objects, to prevent the panel from getting scratched.

## D. Chemical Resistance and Fire Hazard Comments

1. Unitrex panels are resistant to a variety of chemicals and exhibit limited resistance to a second group of chemicals. A third group of chemicals may attack and damage the panel. Degree & severity of damage depends upon chemical type and duration of exposure.

Please consult H&F Manufacturing for the most up to date listing of incompatible and compatible chemicals.

2. Unitrex panels will melt at approximately 400°F, generating vent openings for smoke release in the event of fire. Standard operating temperature range for polycarbonate is -40°F to 212°F.

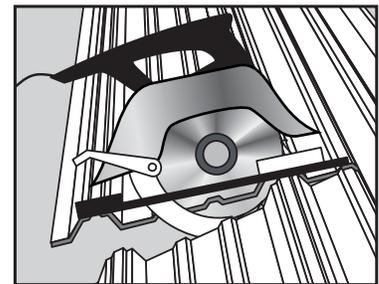
## E. Profile Matching

1. Unitrex Ultra R profile will not fit closely over or under the older R-Panel, produced with one central minor corrugation.
2. Unitrex profiles were designed to closely match commonly used metal profiles. Slight detail differences such as corrugation height, slant, wave distance etc. will hinder exact matching of such a panel with a Unitrex profile. This may lead to insufficient sealing, water leakage and forced installation, putting undue stresses on the Unitrex panel while trying to adapt it to an "almost similar" metal profile. **Undue stress may lead to premature failure and void any and all warranties.**
3. A careful comparison will disclose whether a standard Unitrex panel matches your metal profile. Contact your H&F Manufacturing representative for detailed comparison information.
4. **Custom Polycarbonate profiles have become easier than ever to produce using MetalMatch™ Technology from H&F and Palram.** To determine if a custom polycarbonate profile can be produced, simply submit a detailed dimensional drawing of the profile, or an actual sample to H&F Manufacturing. Contact your H&F Manufacturing representative for more info.

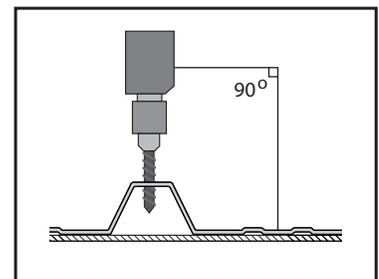


## F. Sawing, Cutting & Drilling

1. Unitrex panels can be cut or sawed by manual or power tools. A bench/table circular saw is best for straight long cuts. For better results cut a few panels together. Portable circular saws are suitable for on-site straight cuts. A jigsaw is used for cutting a limited length of irregular or curved lines. Hand tools such as handsaw, metal shears or hand-held cutting knives can be used for localized, limited work.
2. **Sawing** is done with plywood saw blade, installed in reverse direction, with small teeth, or special blades for plastics, spinning at high speeds, with a slow feed rate. Panels should be clamped during sawing, to avoid vibrations. Avoid intersecting cuts. Drill a hole at intersection point, then cut the panel up to the hole (Fig. 5).
3. **Drilling** is done using a power drill, with regular high-speed steel bits intended for metal, rotating at about 1,000 RPM. Better results with Unitrex are achieved using bits ground to shallower tip angle than for metal. Clamp the drilled panel down to avoid vibrations or movement during operation (Fig. 6).
4. Keep the cut area clean. Blow away saw and drill dust with compressed air.



Sawing the panels  
Figure 5



Drilling the panels  
Figure 6

## G. Installation Safety Measures

1. Use ladders, crawling boards and other safety equipment required for safe installation. Use all safety measures required according to local safety regulations (Fig 7.).
2. Always use appropriate scaffolding to service panels. Scaffolding should provide proper worker safety and ensure proper placement and distribution of weight to avoid damage to panels.

**Do not walk on panels for fear of falling and other severe bodily harm.**

3. Never leave Unitrex panels unattended on the roof until all the required fasteners have been appropriately installed or the panels secured to the supporting structure.
4. Always follow local and/or national building and OSHA safety codes.

## H. Panel Orientation

1. Unitrex's exterior surface is UV resistant, indicated by labeled strips on protected side. **Install the panel with the labeled side out.** The protected side is up when panel edges are both pointing down.
2. Installation Direction: For multi-panel runs, begin installation of Unitrex on the side away from wind and rain direction (Fig. 8).

## I. General Information for Installation

### 1. Roof Pitch:

Unitrex performs best when installed at pitch rates of 10 percent (1-1/4":12" slope or 5.7°) or more. A minimum slope of more than 5% is recommended when installing Unitrex.

2. **Load Rating and Maximum Recommended Distance** (Typical profile variations are considered the same):  
The depicted distances refer to a single panel, single-span installation on surrounding supportive compatible metal cladding.

- 2.1 **Load Rating Values:** Unitrex panels load rating will vary according to the arrangement of panel(s) and existing or designed spans, as mentioned above.



**Warning! Do not step directly on panels between the purlins! Use scaffolds, ladders, or crawl boards.**

Figure 7

### WARNING!

Fatal falls and serious injuries may result from inadequate guarding and fall protection for work around skylights and roof and floor openings.

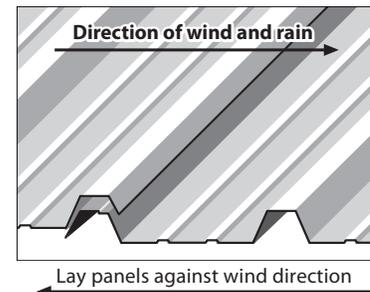


Figure 8

## J. Maximum Recommended Loads

Panel	Wind/ Snow Load (psf)	Suggested Spacing Between Supports (in.)		
		Roof, Mid Span	Roof, End Span	Vertical Wall
		10% Slope Minimum		
<b>Unitrex 2.67"</b> <i>1.5 mm Thickness</i>	15	53"	40"	58"
	25	44"	33"	48"
	40	38"	29"	42"
	60	33"	25"	36"
<b>Unitrex 4.2"</b> <i>1.5 mm Thickness</i>	15	60"	45"	66"
	25	51"	38"	56"
	40	43"	32"	47"
	60	37"	28"	41"
<b>Unitrex Ultra R</b> <i>1.5 mm Thickness</i>	15	60"	45"	66"
	25	60"	45"	66"
	40	53"	40"	58"
	60	46"	35"	51"
<b>Unitrex 7.2"</b> <i>1.5 mm Thickness</i>	15	60"	45"	66"
	25	60"	45"	66"
	40	60"	45"	66"
	60	60"	45"	66"
<b>Unitrex Ultra 9</b> <i>1.5 mm Thickness</i>	15	48"	36"	53"
	25	40"	30"	44"
	40	34"	26"	37"

Snow Load <sup>4</sup> (psf)	Suggested Spacing Between Supports (in.)	
	Roof, Mid Span	Roof, End Span
	33% Slope Minimum	
15	56"	42"
25	46"	35"
40	40"	30"
60	35"	26"
15	60"	47"
25	54"	40"
40	45"	34"
60	39"	29"
15	60"	47"
25	60"	47"
40	56"	42"
60	48"	37"
15	60"	47"
25	60"	47"
40	60"	47"
60	60"	47"
15	50"	38"
25	42"	32"
40	36"	27"

### Notes:

1. All the data in the table above is based on theoretical calculations only.
2. The listed spans were calculated for 1.5mm thickness based on continuous beam model.
3. The dimensions depicted do not supersede the requirements of local construction codes.
4. While the minimum recommended slope for Unitrex products is 5%, a minimum slope of 10% is required to achieved the calculated loads listed in the left-hand table above. A minimum of 33% (4" in 12") was used to achieve the loads listed in the right-hand table above.
5. The maximum purlin spans are based on the panel's structural properties, according to maximum allowed deflection of 1/20 of the span.

## K. Installation Comments

- 1. Single Panel Run Installation:** The length (long side) outermost crests of a Unitrex panel should lap over matching adjacent crests on one side and be placed under the metal panel crests on the other side (Fig. 10).
- 2. Multi-Panel Run Installation:** The middle Unitrex panels should be installed with the regular under/over length overlap (the short crest edge on top of a longer one). The outermost crests of the Unitrex panel should lap over matching adjacent crests on one side and be placed under the metal panel crests on the other side. The same as a single panel run (Fig 11).

**Important!** Whenever the extreme side-laps of a Sky Light or Side Light side-laps are installed on top of the adjoining metal panels, the overlapping metal panel(s) above the opening should also be installed the same.

### Unitrex Sky Lights in roofing:



Single panel run

Figure 10



Multi panel run

Figure 11

## L. Fastening & Sealing

- 1. Following recommendations:** Use of recommended fasteners and washers, along with careful execution according to the installation instructions is essential for optimal product performance.

### 2. Palram-Recommended Washers & Fasteners:

**Metal structures:** Self-Drilling Tapping Screw

**Wood structures:** Tapping Screw

**Washer:** Palram metal washer with EPDM gasket (see figure 15a,15b)

**Stitch Screw:** Sharp point self tapping screw (see fig. 15c & 16a)

**Grommet:** Expanding rubber fastener (see fig. 15d & 16b)

#### Palram Metal Washers w/Concave EPDM Gasket



3/4" (19 mm)  
Washer/gasket  
Figure 15a



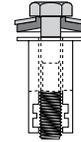
1" (25 mm)  
Washer/gasket  
Figure 15b

#### Stitch Screw



3/4" x 1" (19mm)  
(pre-drilling required)  
Figure 15c

#### Grommet Fastener



1/4" x 1" Grommet  
(pre-drilling required)  
Figure 15d

	Unitrex Ultra 9	Unitrex Ultra R	Unitrex 7.2	Unitrex 4.2	Unitrex 2.67
<b>Fastening at crown</b>	1/4" x 2" w/3/4" washer	1/4" x 3" w/1" washer	1/4" x 3" w/1" washer	1/4" x 2" w/3/4" washer	1/4" x 2" w/3/4" washer
<b>Fastening at valley</b>	1/4" x 1-1/2" w/1" washer	1/4" x 1-1/2" w/1" washer	N/A	N/A	N/A

#### Stitch Screw

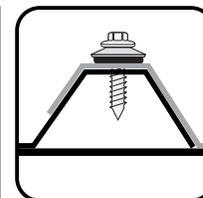


Figure 16a  
(used for PC to metal overlaps)

#### Grommet

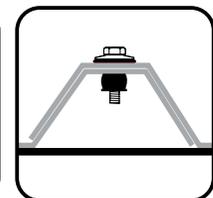
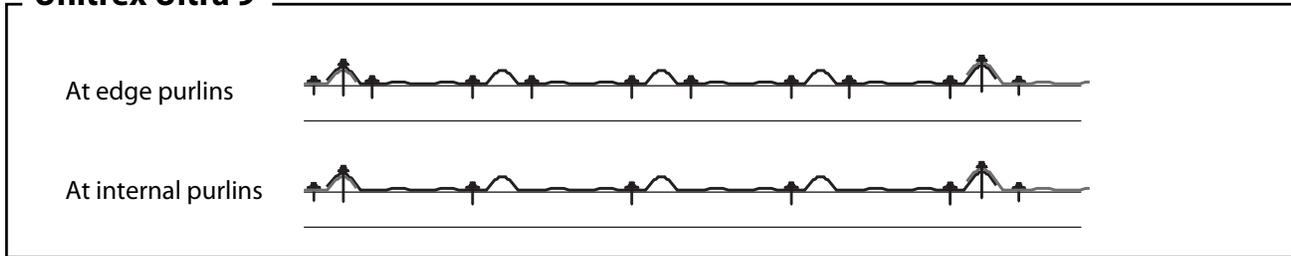


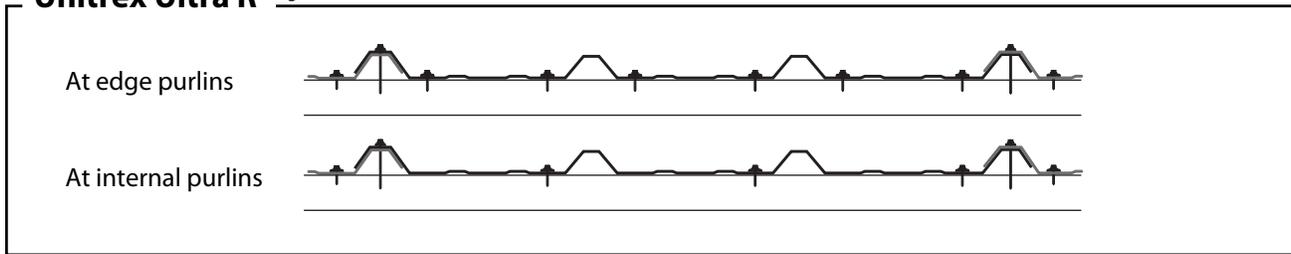
Figure 16b  
(used for PC to PC overlaps)

**3. Graphic depiction of Unitrex Fastener Positioning at Side-Laps, Supports & End-Laps:**

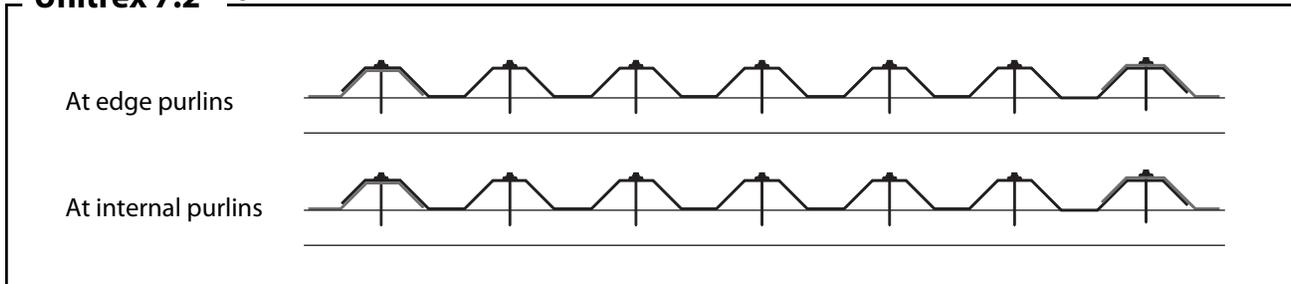
**Unitrex Ultra 9** Figure 14a



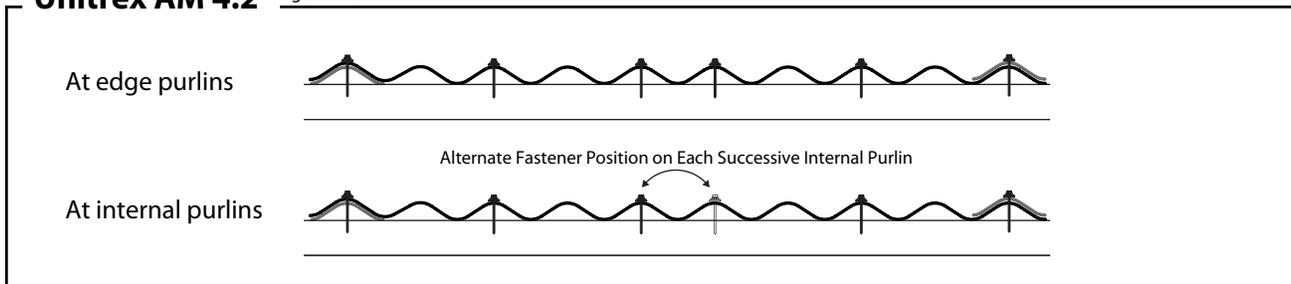
**Unitrex Ultra R** Figure 14b



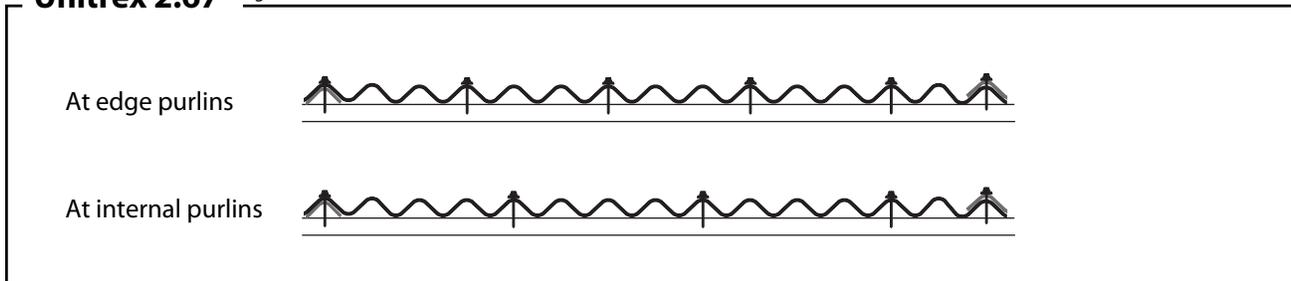
**Unitrex 7.2"** Figure 14c



**Unitrex AM 4.2"** Figure 14d



**Unitrex 2.67"** Figure 14e



#### 4. Palram Washer/Gasket Combinations:

- a. **Small Washer** - 3/4" (19mm) Special Bonded Washer/ Gasket (BWG)- conical metal washer (zinc-plated/ aluminum/ stainless steel), with bonded shaped EPDM gasket (see Figure 15a). As a general rule, 3/4" washers are installed on the corrugation crest fastening points.
- b. **Large Washer** - 1" (25mm) Special Combined Washer/ Gasket (CWG)- conical metal washer (zinc-plated/ aluminum/ stainless steel), with attached dome-shaped, contoured EPDM gasket (see Figure 15b). As a general rule, 1" washers are installed at the valley fastening points. 1" (25mm) washer/gasket combinations fasteners are especially recommended for panel lengths in excess of 12'. Additional oversize pre-drilling is also recommended in this case to accommodate additional expansion and contraction of the longer panels.

**IMPORTANT NOTE!** Palram Washer/Gaskets were chosen after comprehensive performance testing. The "umbrella" shaped gaskets seal the fastener holes & heads well without exerting excessive pressure on the Unitrex panel itself. Limited thermal expansion is possible and compatibility with polycarbonate assured. **Regular Washer/Gaskets Fasteners (e.g. Tek Screws) for metal panels are NOT RECOMMENDED for use with Unitrex as these types of washers apply excessive pressure, are inadequate for Unitrex sealing, and cause undue internal stresses in the panel. The stresses result in crazing, fractures, and eventual failure. Installations using such fasteners are strongly discouraged and are subject to nullification of warranty.**

#### 5. Installation & Fastening Tips:

- a. **Allow for expansion & contraction at fasteners:** For panels longer than 12', pre-drill panels at all fastening points with a 3/8" hole to allow for increased expansion and contraction due to longer length. For panels 12' in length or less, pre-drill a hole 1/16" larger than the diameter of the fastener shank. H&F Manufacturing recommends that Unitrex panels are not installed below 40°F or above 80°F. If Unitrex panels are to be installed outside the above-mentioned temperature range, consult your H&F representative for additional fastening requirements.
- b. **Drive fasteners perpendicular to Unitrex face.** Use an adjustable-torque power screwdriver to ensure against overtightening. Avoid distortion of washer/gasket and panel. (See fastener positioning details - Figure 17). **Never use an impact wrench/driver for fastening Unitrex.**
- c. Installation Direction: We recommend starting installation from the bottom up, on one side, and work to the left or right accordingly. **Never start working from both ends to the middle.** Always lap the top panel over the lower one.
- d. **Keep panel straight, flush and taut during installation.**
- e. Do not overtighten (see "Important Note" above and Figure 17)

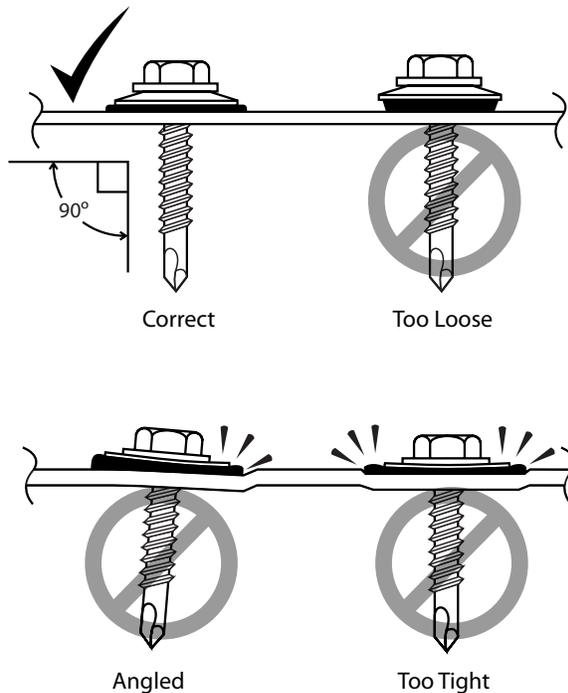


Figure 17

**f. Fastening Details:** While only Unitrex Ultra R panel is depicted, the same basic concepts apply to other profiles. (Schematic Figures 18, 19, 20a, and 20b)

- ① Unitrex panel
- ② Adjoining metal panel
- ③ Crest or valley fastener for polycarbonate panels sealing strip
- ④ Crest or valley fastener for metal
- ⑤ Side-lap stitching grommet
- ⑥ Side-lap stitching screw
- ⑦ Butyl-rubber or expanding polycarbonate panels sealing strip

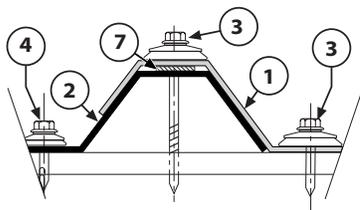


Figure 18  
Polycarbonate lapped over metal panel using crest fastener for PC.

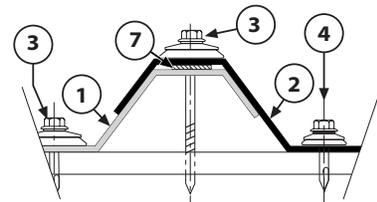


Figure 19  
Metal panel lapped over polycarbonate using crest fastener for PC.

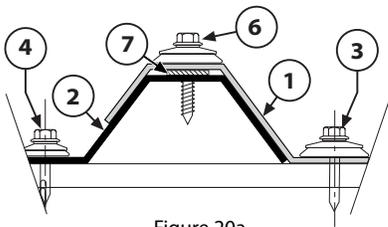


Figure 20a  
Polycarbonate lapped over metal panel using side-lap stitching screw.

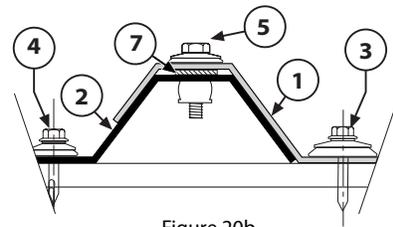


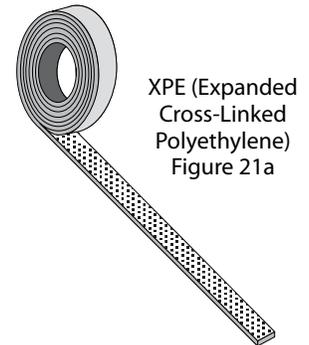
Figure 20b  
Polycarbonate lapped over metal panel using side-lap stitching grommet.

**h. Fasteners Positioning Comments:**

- Generally valley fasteners should be installed at the top & bottom edges, and at end-laps of Unitrex panels, as shown on Page 9, Section K, Figures 14a-14e.
- In multi-panel runs, the number of fasteners can be reduced at mid-purlins, unless conditions demand otherwise. The remaining fasteners should be evenly positioned adjoining the main corrugations of the specific panel.
- Stitching grommets should be distributed 12"-16" apart.

## 6. Sealing Unitrex:

- a. Self-Adhesive XPE Sealing Tape** (Expanded Cross-Linked Polyethylene): Resilient, closed cells, self adhesive foamed-polyethylene, in long strips, to be applied at sides & end-laps, on top of the overlapped area. Cross-section dimensions may vary according to specific requirements. A typical one is 3/4" (20.0 mm) width, 3/16" (5.0 mm) thickness and comes with pressure sensitive adhesive on one side, protected by silicone paper (Fig. 21a)



### Butyl-Rubber or Expanding Sealing Tape:

Elastomeric or Expanding Sealing Tape to be applied at side & end-laps, on top of the overlapped area. Do not use mastic tape.

**Install as follows:** (See Page 11, Figures 18-20a and Page 13, Figures 22-24)

Remove bottom protective paper strip progressively, as installation advances. Apply carefully by hand.

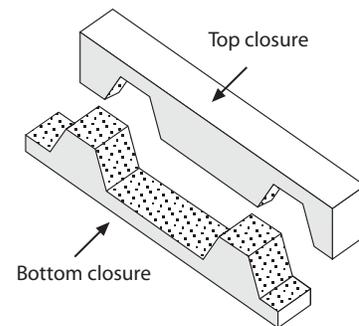
- **Single seal end-lap:** Apply along fasteners' center-line at the end-lap, following the profile shape.
- **Double seal end-lap:** Apply above and below fasteners' center-line at end-lap, following the profile shape.
- **Single seal side-lap:** Apply on top of center-line of side corrugations to be overlapped by metal or Unitrex.
- **With butyl-rubber strips only:** Remove top protective paper strip before laying the overlapping panel. Lay the edge of lapping panel and apply moderate hand pressure on the top panel along the side corrugation, to assure good fitting and/or even seal/bond.

## b. Top & Bottom Contoured End Closures:

Top or bottom matching closure strips close the clearance above or below the panel and its corrugations (Fig 21b).

### Install as follows:

Place the closure strip at the top or bottom edge fasteners' center-line, and insert the fasteners through said strip so it will be held firmly in place. A few dabs of silicone could hold the strip temporarily in place until the top panel is laid and screws are inserted. (Figures 26d, 30)



Top & Bottom End Closures  
(Unitrex Ultra R shown)  
Figure 21b

- **Location A:** Where Unitrex runs reach the top or bottom of roof or wall edges, or at the roof ridge, the space left between the panel's profile and the purlin, or girt, should be closed and sealed with a contoured foam, polyethylene (XPE) closure strip matching the panel profile.
- **Location B:** Where Unitrex runs reach a top trim, or at a ridge-cap, a top closure strip should be used at the top edge above the panel.

## c. Silicone Sealants:

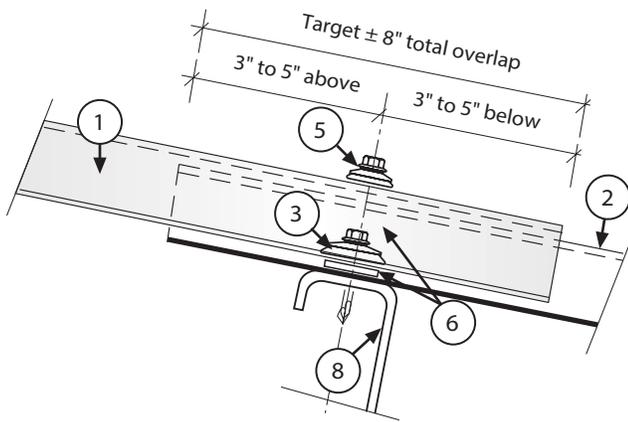
**Unapproved sealants, adhesives or bonding materials may be found ineffective and incompatible, and can chemically attack the panels, originate failure, and revoke any and all warranties.**

- The use of 100% silicone sealant is strongly recommended to ensure compatibility.
- Contact H&F Manufacturing for a complete list of tested and approved sealants, and other tested and approved sealing, bonding and adhesives materials that may be required. H&F Mfg. will not be liable for the end results when using these sealants in actual product applications. It is imperative that the manufacturer's instructions be thoroughly reviewed and followed. Each user of the product should make his own tests to determine the product's suitability for his own particular use including the suitability of environmental conditions for the product.
- Other silicone sealants or other sealing, bonding or adhesives materials should be submitted to H&F Manufacturing for evaluation and approval before use. Contact your H&F Manufacturing representative for assistance.

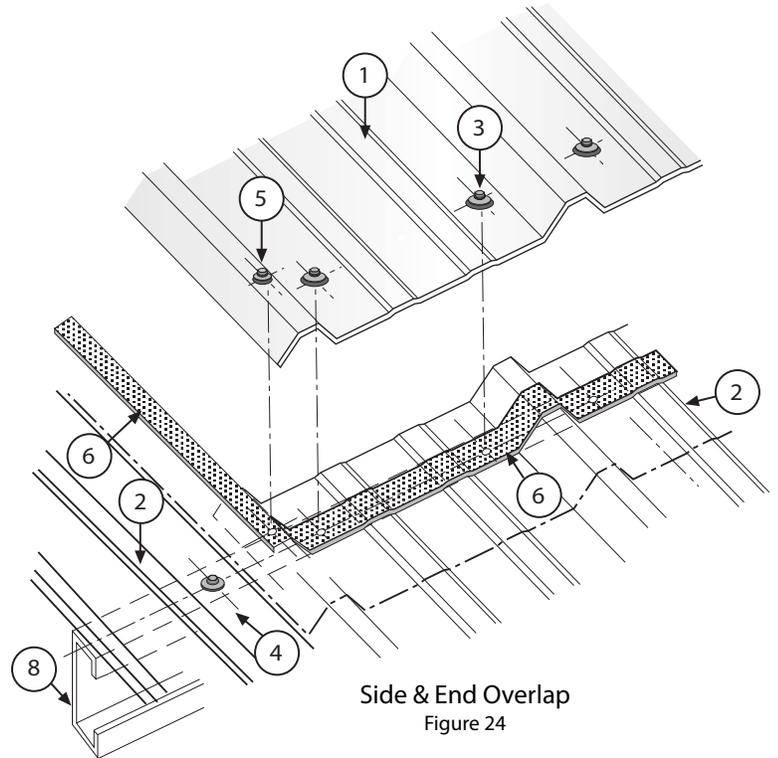
## M. Side & End Lap Installation

End lap of a Unitrex panel on another consecutive Unitrex or metal R-panel, should always be done over a supporting purlin. Each of the panels involved should overhang the purlin center-line by about 4" (3" min. and 5" max.), totaling an average overlap of 8" (Fig. 23). While only Unitrex Ultra R panel is depicted, the same basic concepts apply to other profiles.

### Fastener and Sealing Tape Locations



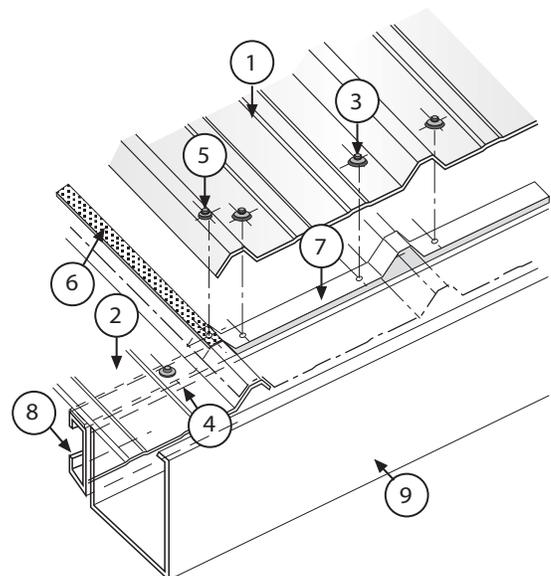
End-Lap Detail  
Figure 23



Side & End Overlap  
Figure 24

### Legend

- ① Unitrex Ultra R panel
- ② Metal R-panel
- ③ Unitrex valley fastener
- ④ Typical sheet-metal crest or valley fastener
- ⑤ Unitrex crest fastener
- ⑥ Sealing tape installed along side & end lap corrugations
- ⑦ Shaped inner closure (fits inner side of panel)
- ⑧ Supporting purlin
- ⑨ Option Drainage Gutter

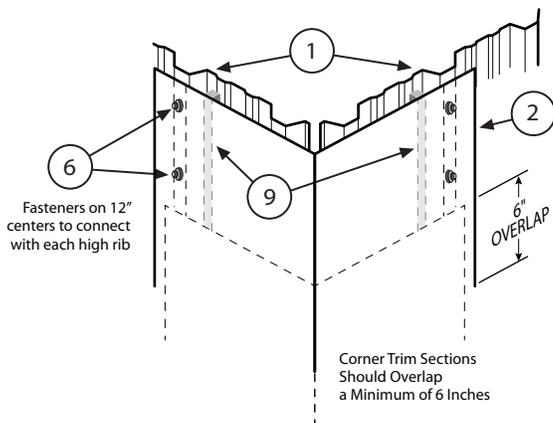


Bottom Edge Unitrex Installation  
with Profiled Closure Strip  
Figure 25

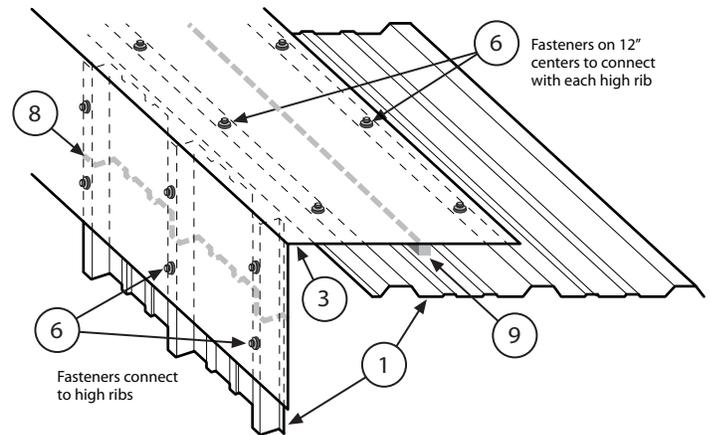
## N. Design Details for Installation of Unitrex Flashing Accessories

The details shown below apply to the most frequently encountered area of a building where a flashing is required to complete the area. Flashings of non-standard size and cross section can be furnished on special order. While only Unitrex Ultra R panel is depicted, the same basic concepts apply to other profiles.

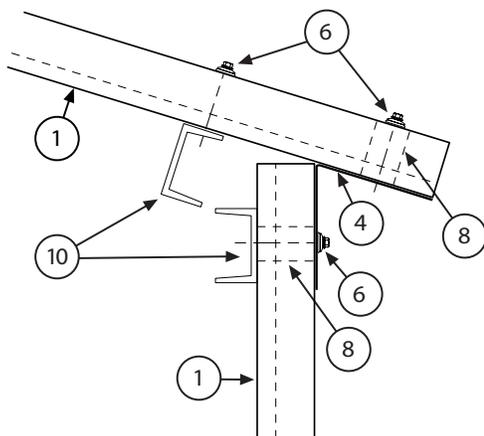
Typical Corner Trim Detail  
Figure 26a



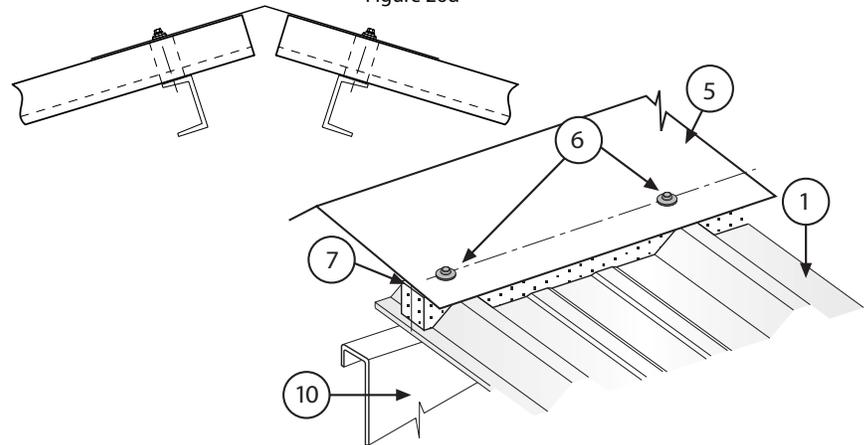
Typical Gable Trim Detail  
Figure 26b



Typical Eave Trim Detail  
Figure 26c



Typical Ridge Trim Detail  
Figure 26d



### Legend

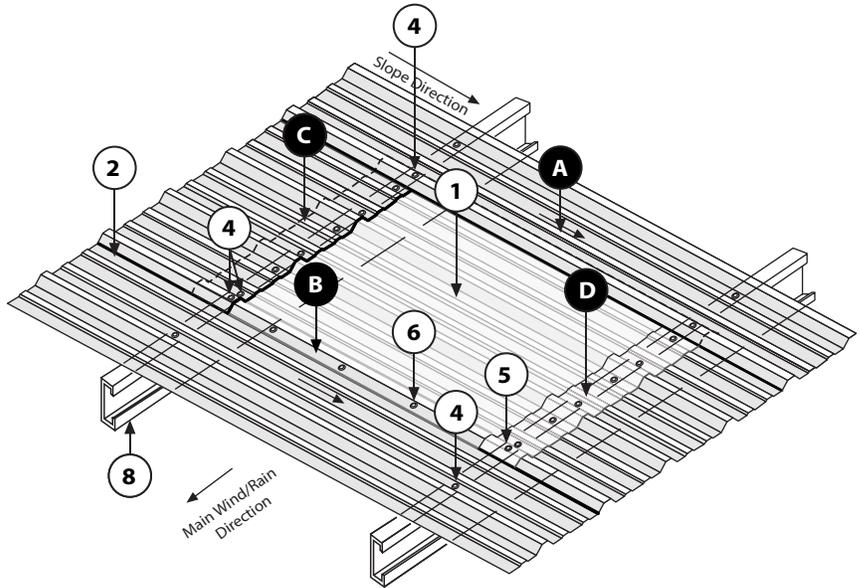
- ① Unitrex panel
- ② Unitrex corner trim
- ③ Unitrex gable trim
- ④ Universal eave trim
- ⑤ Unitrex ridge trim
- ⑥ Crest fastener or grommet (length suitable for high point of rib)
- ⑦ Shaped outer closure strip (fits outer side of panel)
- ⑧ Shaped inner closure (fits inner side of panel)
- ⑨ Vertical closure strip
- ⑩ Supporting purlin or girt

### Important notes about installation of Unitrex Ridge Caps and Flashings

1. Do not over tighten screws when installing. If ridge cap deforms, screws are too tight.
2. Use recommended fasteners as stated in the table in Section L, Fastening & Sealing (page 8).
3. When installing clear ridge caps on wood purlins, purlins should be painted with white acrylic-based paint prior to installation. This will help prevent overheating and possible charring of the purlins.

## O. Options for Installation

1. **Single width, single span installation** (on 2 edge support purlins), integrated and surrounded by matching metal panels, overlapped on top, overlapping and supported on both sides and at the bottom. This dictates that the top metal panel is also installed with its edge corrugations overlapping at both sides, up to the roof edge or ridge.



Typical, Single Panel, Single Span Mid-Field Detail

Figure 28

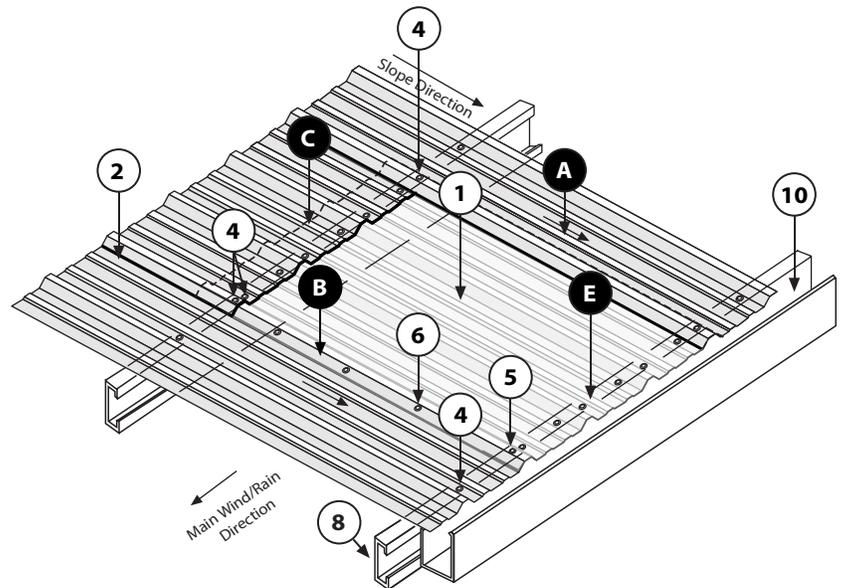
### LEGEND

#### Connections

- A** Right side-lap: metal R-panel overlaps Unitrex Ultra R panel
- B** Left side-lap: Unitrex Ultra R panel overlaps metal R-panel
- C** Top end-lap: top metal R-panel laps over top edge of Unitrex panel
- D** Bottom end-lap: bottom edge of Unitrex panel laps over top edge of metal R-panel
- E** Bottom edge detail: Unitrex panel at the bottom edge of a roof, with or without a gutter

#### Components

- ① Unitrex Ultra R panel
- ② Metal R-panel
- ③ Unitrex valley fastener
- ④ Typical sheet-metal crest or valley fastener
- ⑤ Unitrex crest (side-lap) fastener
- ⑥ Unitrex side-lap stitching screw
- ⑦ Foam closure (underside shape)
- ⑧ Supporting purlin
- ⑨ Main supporting truss / beam
- ⑩ Optional collecting gutter



Typical Bottom End Unitrex Detail (with or without gutter)

Figure 29

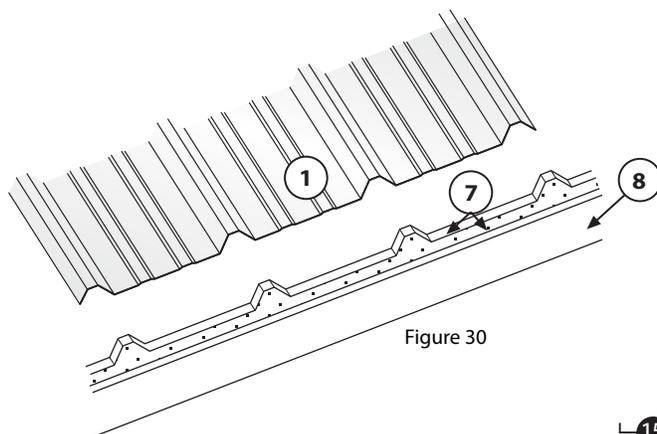


Figure 30

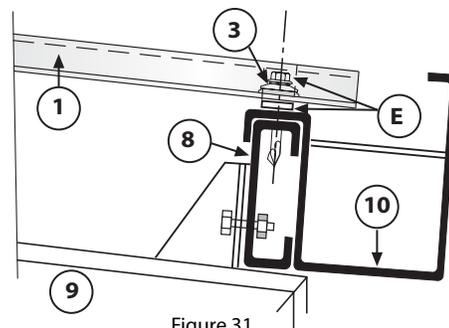
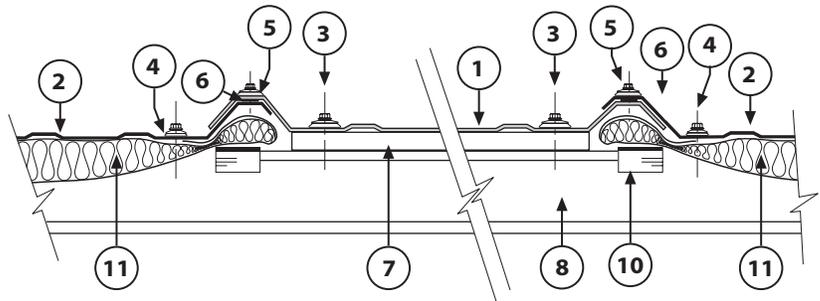


Figure 31

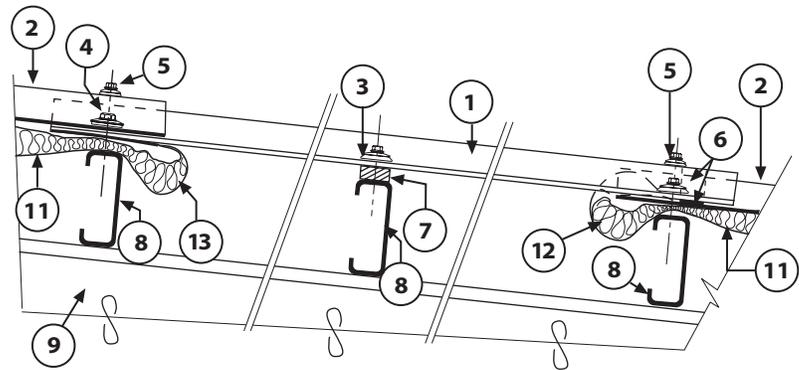
## 2. Installing Unitrex on glass fiber mats

When installing Unitrex on glass fiber mats insulated steel roof, be sure to use a suitable spacer along the purlins and avoid any contact between the vinyl finish of the mats and the Unitrex panels (fig. 32, 33).

- ① Unitrex Ultra R single / single-run / multi-run skylight panel, overlapping lengthwise on both sides
- ② Typical metal R-panel installed on all sides
- ③ Unitrex valley fastener
- ④ Typical sheet-metal crest or valley fastener
- ⑤ Unitrex crest (side-lap) fastener
- ⑥ Butyl- rubber sealing strip installed along width & length end corrugations at all overlap.
- ⑦ Height equalizing shim - wood or rigid plastic bar of suitable thickness compensating for the thickness of the insulation mat at the purlins
- ⑧ Supporting steel purlin
- ⑨ Main supporting structure
- ⑩ Galvanized sheet-metal strip for insulation mat support
- ⑪ Glassfiber or rockwool insulation mat underneath the steel roofing
- ⑫ End of insulation mat at the lower edge of the skylight with the mat edge tucked back and under metal to create a nice edge finish
- ⑬ Same as ⑫ but at the upper edge of the skylight, and at vertical edges.



Width Cross-Section Detail  
Figure 32

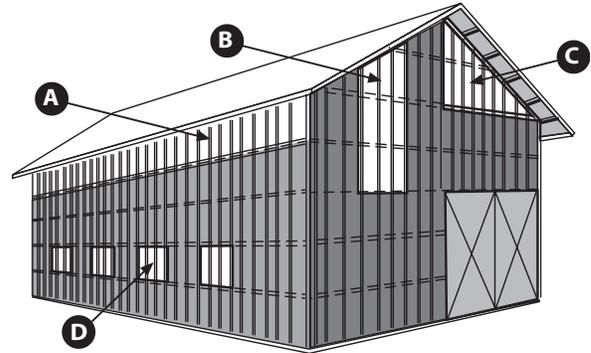


Length Section Detail  
Figure 33

**Caution:** The vinyl used on insulation may be incompatible with Unitrex. Insert a separative layer between the Unitrex sheet and the tucked-back vinyl-covered insulation to prevent potential outgassing damage to the Unitrex panel.

**5. Installing Unitrex Side Lights on Exterior Walls:**

When installing, fastening and sealing side lights, follow the same general procedures for roof installation as described on the preceding pages. Certain installation methods are specific to siding installation, like the framed Side Light.



Typical Side Light Applications

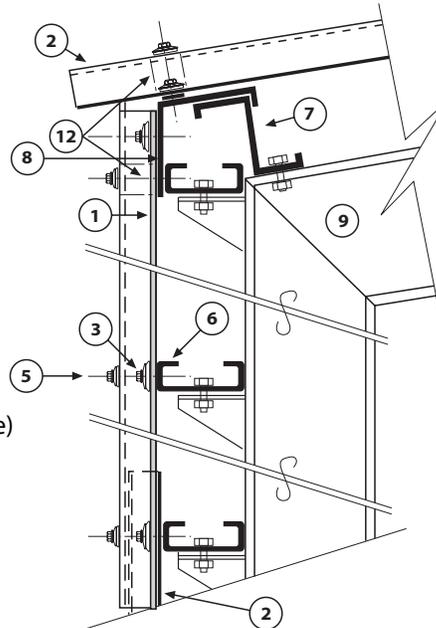
Figure 34

**Typical Side Light Applications (Fig. 34):**

- A** Multi-panel, single-span
- B** Single-panel, multi-span
- C** Multi-panel, multi-span
- D** Single-panel, single-span

**Integrated Side Light Details**

- ① Unitrex Ultra R side light panel
- ② Metal panel
- ③ Unitrex valley fastener
- ④ Sheet-metal fastener
- ⑤ Unitrex crest fastener
- ⑥ Wall girt
- ⑦ Roof-edge Z purlin
- ⑧ Eave-strut
- ⑨ Main supporting frame
- ⑩ Structural corner profile
- ⑪ Sheet-metal corner trim
- ⑫ Shaped foam closure (underside shape)

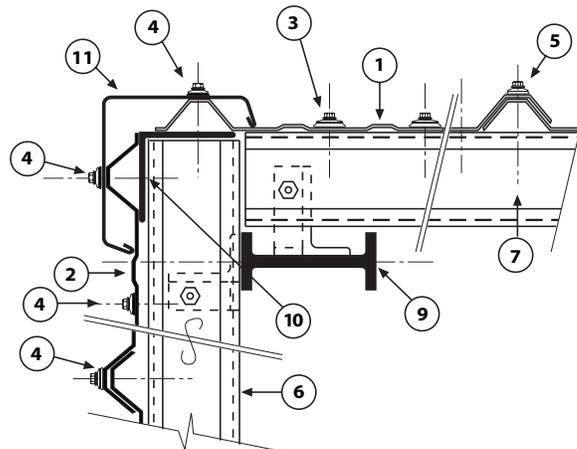


Side Light Fastening  
Vertical Cross-Section  
Detail: Multi-Panel Run Option

Figure 37

Side Light Corner Fastening  
Horizontal Cross-Section  
Detail: Multi-Panel Run Option

Figure 38



## P. Important Installation Comments

- 1. Avoid overtightening the fasteners.** Allow gaskets to squeeze slightly until full contact with panel. Overtightening induces undue internal stresses, leading to premature failure.  
**Regular Washer/ Gaskets (Tek Screws) for metal panels apply excessive pressure, are inadequate for Unitrex sealing, and cause undue internal stresses in the panel. The stresses result in crazing, fractures, and eventual failure.**
- 2. Never use** soft PVC (vinyl) washer/gaskets. Soft PVC is totally incompatible to polycarbonate and will harm the panel.
- 3. Never apply** paints, shading compounds, paint thinners or any material that may chemically attack Unitrex, without first verifying compatibility to the panel by contacting Palram Americas or H&F Manufacturing.
- 4. Always work safely.** Follow safety recommendations in the Installation Instructions.
- 5. Maximum span:** Net spans should not exceed 5' to avoid thermal expansion buckling. In areas where there are significant snow loads, spans should not exceed 3'. Follow recommendations on page 7.
- 6. Fastening:** Always use recommended fasteners for securing Unitrex. Never install Unitrex by nailing.
- 7. Isolating Unitrex from harm:** When placing Unitrex on asphalt shingles, soft PVC or vinyl, or other incompatible materials, use an isolating barrier, metal or wooden strips, EPDM rubber patch etc., between the panel and a doubtful material.
- 8. End-Lap Support:** Unitrex/metal or Unitrex/Unitrex panel end-lap should always be fully supported, to avoid deflection at that area. This also applies to ridge-cap/Unitrex end-lap.
- 9. Silicone Sealant:** 100% silicone sealant (*see page 12, section 6c*). Refer to H&F Manufacturing for other approved sealing or bonding materials should they be required. **Unapproved sealing or bonding material may be incompatible, damage the panels, cause failure and void warranty.**
- 10. Butyl-Rubber Seals:** Side-laps and End-laps of any Unitrex profile should be treated with butyl-rubber or expanding tape, placed between the overlapping panels at all edges.
- 11. Shaped Foam Closures:** Expanded foam polyethylene (XPE) closure strips are used to seal the space between the upper or lower Unitrex profile to edge purlins or ridge caps. Matching XPE top & bottom strips are available for each major Unitrex profile. The strip is held in place by the screws fixing the panel to the purlin. (see figures 26d and 30).
- 12. When installing clear Unitrex,** it is recommended to paint wood purlins using white acrylic paint, or to cover with aluminum tape, in order to prevent over-heating and/or charring of the purlins.
- 13. Cleaning:** Most normal dirt & dust accumulation is washed off by periodic rains. Regular hosing of the panels with clean lukewarm water is sufficient in dry areas.

In polluted, oily environments, mild household detergent may be used, assisted by a soft rag or soft-bristled brush. **Never use aggressive or abrasive cleaning agents or glass window cleaners.** They may scratch or chemically attack the panel. Large areas-could be washed by high-pressure water-jet, optionally, in conjunction with diluted detergent. Dry with soft cotton rags to avoid spotting.

- 14. Repair:** Minor damages to the panel may be repaired. Small punctures can be stopped by dabs of approved silicone sealant. Larger tears may be patched by pieces of matching panel, bonded & sealed on top of the tear with compatible structural silicone.
- 15. Study and Preparation:** Prior to actual installation study the Unitrex Installation Guide carefully. Make sure all the instructions are understood and all required materials, accessories and tools are available.
- 16. Information:** Please contact H&F Manufacturing or its distributor regarding any applications, requests and inquiries you may have before starting installation.
- 17. Accessories Information & Supply:**  
H&F Manufacturing will assist, advise and supply, upon request, various additional accessories that may be required for appropriate installation, such as butyl-rubber or expanding sealing tape, special fasteners and washer/gaskets, etc.





Inasmuch as Palram Americas and H&F Manufacturing has no control over the use to which others may put the product, they do not guarantee that the same results as those described herein will be obtained. Each user of the product should make his own tests to determine the product's suitability for his own particular use including the suitability of environmental conditions for the product. Statements concerning possible or suggested uses of the products described herein are not to be construed as constituting a license under any Palram Americas patent covering such use or as recommendations for use of such products in the infringement of any patent. Palram Americas, H&F Manufacturing and their distributors and dealers cannot be held responsible for any losses incurred through incorrect installation of the product. In accordance with our company policy of continual product development you are advised to check with your local Palram Americas supplier to ensure that you have obtained the most up to date information.

**Palram Americas** reserves the right to change product specifications and/or information contained in this brochure without notice.

*Unitrex is made in*  
**USA**  
*and Israel*



*Manufactured exclusively for:*  
**H&F Manufacturing Corp.**  
171 Railroad Drive, Ivyland, PA 18974  
1-800-474-2732  
Web Site: [www.hfmfgcorp.com](http://www.hfmfgcorp.com)



*Manufactured exclusively  
for H&F Manufacturing by  
Palram, a thermoplastic  
manufacturing leader.*

Web Site: [www.PalramAmericas.com](http://www.PalramAmericas.com)