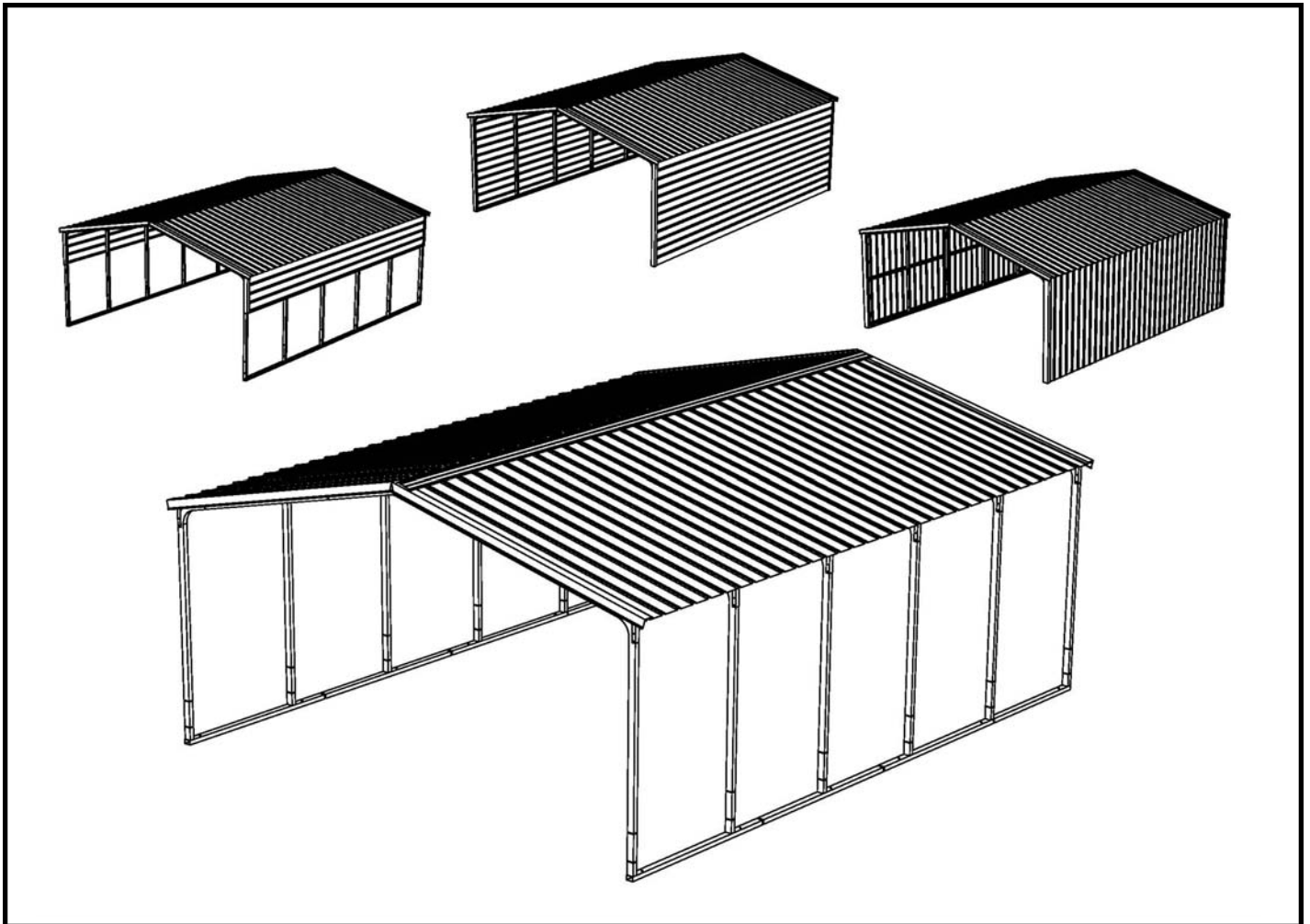




**ASSEMBLY INSTRUCTIONS  
FOR VERSATUBE VERTICALLY SHEETED 2"x3" & 2"x4" CARPORTS  
WIDTHS: 12', 16', 20', 24', 30', 36' & 40'  
4' & 5' ON CENTER FRAMES**



Our unique assembly process quickly transforms the individual pieces into a finished structure that will give you years of service. Great care has been taken to ensure complete satisfaction with your purchase. In the unlikely event that there are any missing or damaged parts or if you simply need technical assistance, please call our Toll Free Hot-line at 1-800-900-7222 and your questions will be addressed promptly. Thank you for choosing the VersaTube Building System.

**ZINST-CVM**

# SAFETY, HAZARD, AND MAINTENANCE INSTRUCTIONS

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## **CAUTION:**

Read the following safety warnings and all instructions in their entirety prior to installation. If you have questions or are missing any parts, contact Mid-South Metal Products, Inc. (DBA, VersaTube Building systems) customer service at 1-800-900-7222 before proceeding.

## **CAUTION:**

VersaTube Building Systems designs and manufactures framing products to meet minimum load requirements in most areas. It is the buyer's sole responsibility to determine the specific building code requirements applicable in the city and/or county of the state in which this product is being erected, and to ensure the product is installed with sufficient materials and in such a manner as to comply with the codes.

## **WARNING:**

Metal parts may get hot when exposed to high heat or direct sunlight. Avoid contact with skin and wear protective gloves and clothing to prevent the possibility of burns.

## **WARNING:**

Standing or walking on the structure could cause damage to the sheet metal panels. If you must walk on the roof, step within 1' of a major frame member. The structure must be properly braced to support human weight. Collapse of the structure may cause serious injury due to weight of components.

## **WARNING:**

Avoid installation on windy days as wind may create hazards during the installation process. Wind may blow material or cause partially installed components to collapse prior to being secured or fully installed. The weight of the components or structure may cause serious injury if it should collapse.

## **WARNING:**

Metal conducts electricity and electrical shock hazards exist since the structure is made of metal. During installation or storage, keep the structure and all components away from electrical sources. Make sure that your selected location is away from power lines, underground cables, and any other source of electrical power. Serious injury or even death may occur if contact is made with electrical current.

## **WARNING:**

In the event that your structure is fully enclosed, be sure to provide proper and adequate ventilation and egress and ingress. Hazardous, poisonous or noxious substances should not be stored in the structures absent proper ventilation. Follow all warnings and instructions of the manufacturer of any substance stored in your building. Also, proper ingress and egress should be provided to prevent persons or children from becoming trapped inside the structure.

## **WARNING:**

If metal panels are selected to cover all or a portion of your structure, be careful of the sharp edges which may cause cuts or lacerations. Wear protective work gloves and suitable clothing for protection and always take care when handling metal parts.

## **NOTE:**

The VersaTube Building System is an all domestically produced galvanized tubular steel framing system. Maintenance is required twice annually on particular areas of the framing system i.e. "weld seams" and "cut or raw ends". This maintenance is performed by applying any "Zinc coated" silver spray paint found at local mass merchant or paint store to these areas twice annually or every six (6) months.

## **NOTE:**

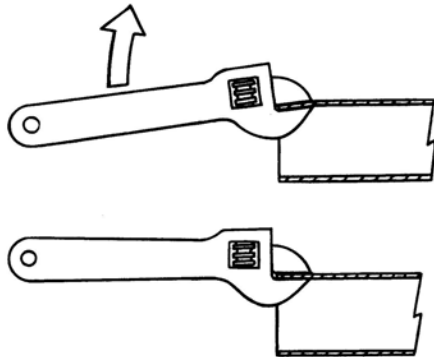
All sheet metal cladding applied to the VersaTube frame are attached with self drilling screws with a rubber washer. These screws produce small shavings when drilling through the cladding. If the shavings are allowed to sit on the sheet metal for an extended period, rust spots will form and promote deterioration. Metal shavings must be brushed after installation of the sheet metal. Claims reported against rust spots will not be honored by VersaTube Building Systems.

# ATTENTION:

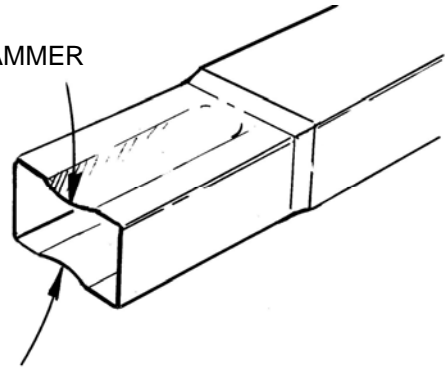
## IT IS IMPORTANT THAT YOU READ THE FOLLOWING NOTE BEFORE STARTING THE ASSEMBLY OF YOUR CARPORT

### NOTE:

If during the installation process you have difficulty fitting frame components together, use an adjustable wrench to open the end of the receiving tube as shown below. Close wrench down around bent portion of tube and bend wall outward. It may also be helpful to hit the center of the swage at the end of the tube to create more of a lead.



STRIKE WITH HAMMER



### What you'll need

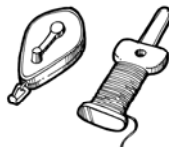
Torque Setting  
Cordless (14 or 18 volt)  
Or Electric Screw Gun  
With 5/16" Socket Drive



Safety Goggles  
Or glasses



Chalk Line and  
Mason Line or  
Nylon String



Level



2 Step Ladders



One must be able to comfortably reach the peak of the building 10' to 16' high depending on building width and height. An extension ladder can also be helpful when installing sheet metal.

Shovel or  
Post Hole  
Digger



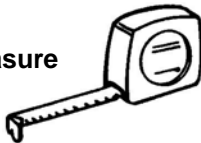
Work Gloves



Pencil/Marker  
And Felt Marker



Tape Measure



Hammer



Tin Snips



### Items you may need

Adjustable wrench



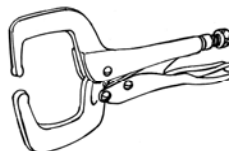
Masonry  
Drill Bit  
1/2" x 8"  
Drill depth



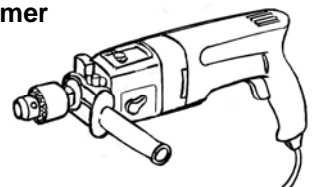
Wrench, 3/4" & 1/2"



Vise grip or other  
quick clamp



Hammer  
Drill



Motor Cycle or  
Ratchet Straps



(May be required to pull frame plumb.)

## BASIC CARPORT PARTS LIST

**NOTE: ALL QUANTITIES ARE BASED ON A 20' LONG STRUCTURE. QUANTITIES WILL VARY WITH STRUCTURE SIZE**

### BASE RAILS FOR 4' ON CENTER FRAMES

8' STARTER BASE RAIL, 2" X 3" X 98 1/2" rail with 3 welded vertical pins, QTY. 2, part # 71-4783

8' BASE EXTENSION RAIL, 2" X 3" X 100 3/4" rail with 2 welded vertical pins, swaged 1 end. QTY. 2, part # 71-4782

4' BASE EXTENSION RAIL, 2" X 3" X 52 3/4" rail with 1 welded vertical pin, swaged one end. QTY. 2, part # 71-7020

NOTE: The length of the carport can be extended using 4' or 8' base extensions.

**(For 2x4 frames the starter base rail is 700-4783 and base extension is 700-4782)**

### BASE RAILS FOR 5' ON CENTER FRAMES

10' STARTER BASE RAIL, 2" X 3" X 122 1/2" rail with 3 welded vertical pins, QTY. 2 part #71-4713

10' BASE EXTENSION RAIL, 2" x 3" x 124 3/4" rail with 2 welded vertical pins, swaged 1 end. QTY. 2 part #71-4712

NOTE: The length of the carport can be extended using 5' or 10' base extensions.

**(For 2x4 frames the starter base rail is 700-4713 and base extension is 700-4712)**

**SIDE POST**, 2" X 3" tube with a bend at one end. QTY. 12 . for 4' on center frames and QTY 10 for 5' on center frames. Part # 71-5007 (7' eave height).

**(For 2x4 frames, 10' high 2x4x64", 12' high 2x4x88", 14' high 2x4x112", 16' high 2x4x136". The 2x4 frames use an eave corner 700-5000B)**

**PEAK**, 2" X 3" X 72" with one bend in the center. QTY. 6 Part # 71-6000

(2x4 frames, 700-6000B, peak with swaged ends)

**HEIGHT EXTENSIONS (optional)** Height extensions are 2" x 3" tubes with a swage at one end. They come in net height increments (the height from the end to the swage) of 1' to 5'. Part # HE-1, HE-2, HE-3, HE-4, HE-5.

### RAFTERS,

12' wide carport, 2" x 3" tube swaged both ends. Part # 71-2000, QTY. (10/12)

16' wide carport, 2" x 3" tube swaged both ends. Part # 71-3300, QTY. (10/12)

20' wide carport, 2" x 3" tube swaged both ends. Part # 71-8000, QTY. (10/12)

24' wide carport, 2" x 3" tube swaged both ends. Part # 71-8300, QTY. (10/12)

30' wide carport, 2" x 3" tube swaged both ends. Part # 71-8400, QTY. (10/12)

**(For 2x4 frames, 30' wide 2x4x 92 1/4", 36' wide 2x4x129 1/2", 40' wide 2x4x153 3/4".**

**8' or 10' HAT CHANNEL**, Used for roof purlins or eave side girts. QTY. 12' wide carports (12). 16' wide carports (16).

20' wide carports (16). 24' wide carports (20) 30' wide carports (24). 36' wide carports (28) 40' wide carports (28)

**4' or 5' HAT CHANNEL**, Used for roof purlins or eave side girts. 4' on center frames. QTY. 12' wide carports (6). 16' wide carports (8). 20' wide carports (8). 24' wide carports (10) 30' wide carports (12).

**BUTYL TAPE**, Part # 71-9401, 40'-50' per roll

**FOAM CLOSURES**, Grey foam strips contoured to the sheet metal panels, the closures go under the ridge cap trim. QTY. (14)

**FRAME SCREWS**, # 12 x 3/4" hex head, Self-Drilling screws. Come in 70 pack #71-9999 or 40 pack # 71-9999-A

**SCREWS FOR ROOF METAL**, #12 X 1" painted screws with rubber washers.

**VERSATUBE ANCHORS, REBAR ANCHOR**, used with concrete in post hole. #4 x 30" rebar with welded top plate.

Part # ANC-24 Use 1 per post. QTY. (10 or 12) For 2x4 frame carports concrete wedge anchors may be supplied 5/8" x 7" anchors. One per base rail hole.

**SHEET METAL PANELS**, for 12' wide carport 6'-5" panels. QTY. (14). For 20' wide carports 10'-6" panels QTY. (14).

For 24' wide carports 12'-7" panels. QTY. (14). For 30' wide carports 15'-9" QTY. (14). 36' wide 18'-10" QTY. (14). and 40' wide 20'-10" panels QTY. (14).

**GABLE TRIM**, for 12' wide carport 10' trim, QTY. (3). For 20' wide carport 10' trim, QTY. (5). For 24' wide carport 10' trim, QTY. (6). For 30' wide carport 10' trim, QTY. (7). For 36' wide carport 10' trim, QTY. (8). For 40' wide carport 10' trim, QTY. (9).

**RIDGE CAP TRIM**, 10'-6" trim, QTY. (2)

**TRUSS BRACES: No truss braces on 12' wide carports.**

The truss brace consists of a 3 piece horizontal collar tie assembly with a vertical center support. See the part descriptions in the truss brace assembly portion of the these instructions. *Truss brace may be determined by your county's wind and snow load requirements.*

## SITE PREPARATION FOR CARPORTS

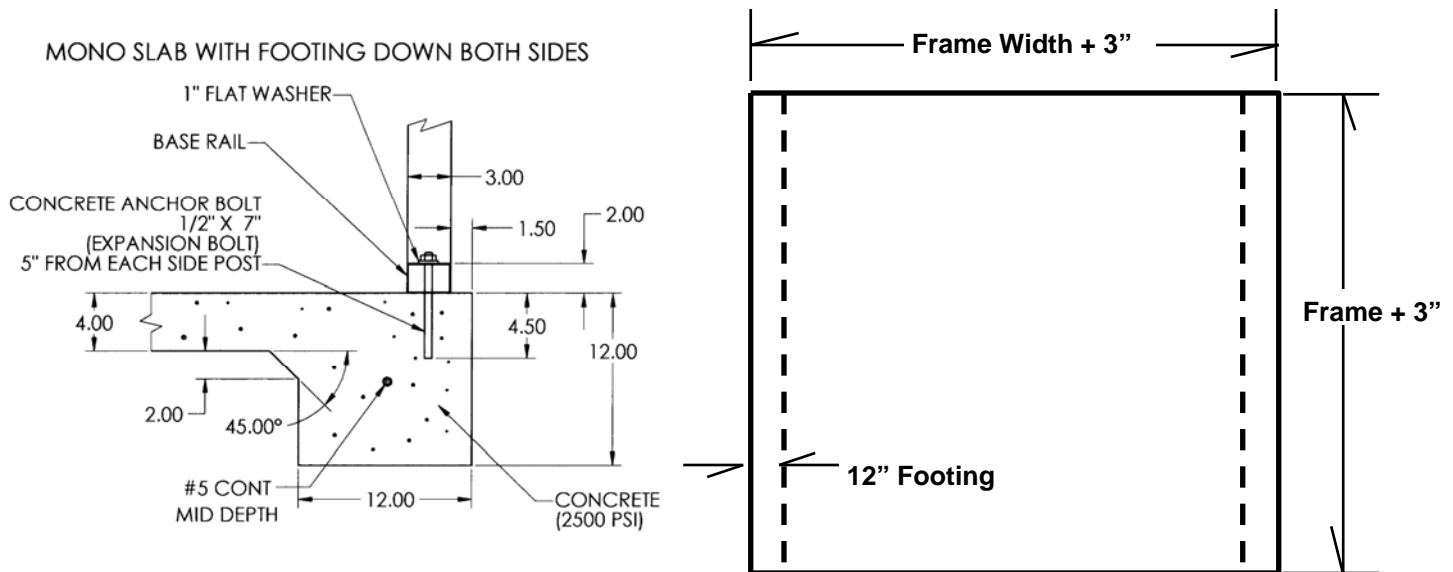
The VersaTube carport frame is designed to be placed on a foundation that is level side to side and sloped about 1/8" per foot front to back or back to front. That foundation can be: **prepared ground** (leveled and re-compacted), **a concrete footing**, or a **concrete mono slab with built-in footing**. It is important that you create one of these conditions prior to your carport or building installation. We recommend that you check with your local building official prior to starting your project to find out what is acceptable for foundations and anchoring in your county. If you extend the carport site about 3 or 4 feet on all sides, it will make it easier to position ladders for sheet metal installation.

### SLAB WITH FOOTING OR FOOTINGS ALONE

If you will be pouring a slab for your carport, the slab should be 4" thick and have a footing down both sides. The footing should be 12" x 12" with a 45° blend between the slab and the footing. The slab should have a front to back or back to front slope of about 1/8" per foot. One run of #5 rebar mid-depth is recommended in the footing. Check with your local building official for details and requirements in your county. Some counties require the footing to extend down below the frost line. The concrete should be 2500 to 3000 PSI. The 4" slab should have welded wire fabric (WWF 6/6/10/10) at mid depth for reinforcement or fiber reinforced concrete 3000 PSI.

The outside dimensions of the slab should be at least 3" larger than your frame dimensions. Example: if you have a 20' x 20' frame, the slab should be at least 20'-3" x 20'-3". This will allow the center of your anchor bolts to be 3" from the edge of the slab.

**FOOTINGS:** Footings alone should be 12" wide and 12" deep and can be positioned so the base rails are centered in the footing if you will be using wedge anchor bolts (not supplied) to anchor the base rails. The outside dimension of the footing will be the carport width plus 9". The basic carport 4' on center frame is 20'-2" long. Footings should be 3" longer than your frame. Footings should also slope 1/8" per foot front to back or back to front to allow water that might gather in horizontal ribs to flow over roof lap joints and off the roof.



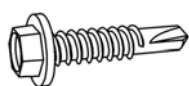
**On 2x4 frame carports footings will be 12" wide and extend at least 12" below grade. There will be a # 4 rebar two places, one toward the top and one 3" from the bottom of the footing.**

## ASSEMBLING AND POSITIONING THE BASE RAILS:

Layout the base rails on your slab or footing or prepared ground. The base rails should be 12', 16', 20', etc. apart (outside to outside) depending on the carport that you purchased. The length from the front to the back of the base rail assembly will be 1/2" longer than the frame length. The length of the basic base rail assembly will be 20'-2 1/2" from the end of the front base rail to the end of the back base rail or 20'-2" from the front of the vertical pin to the back of the back vertical pin.

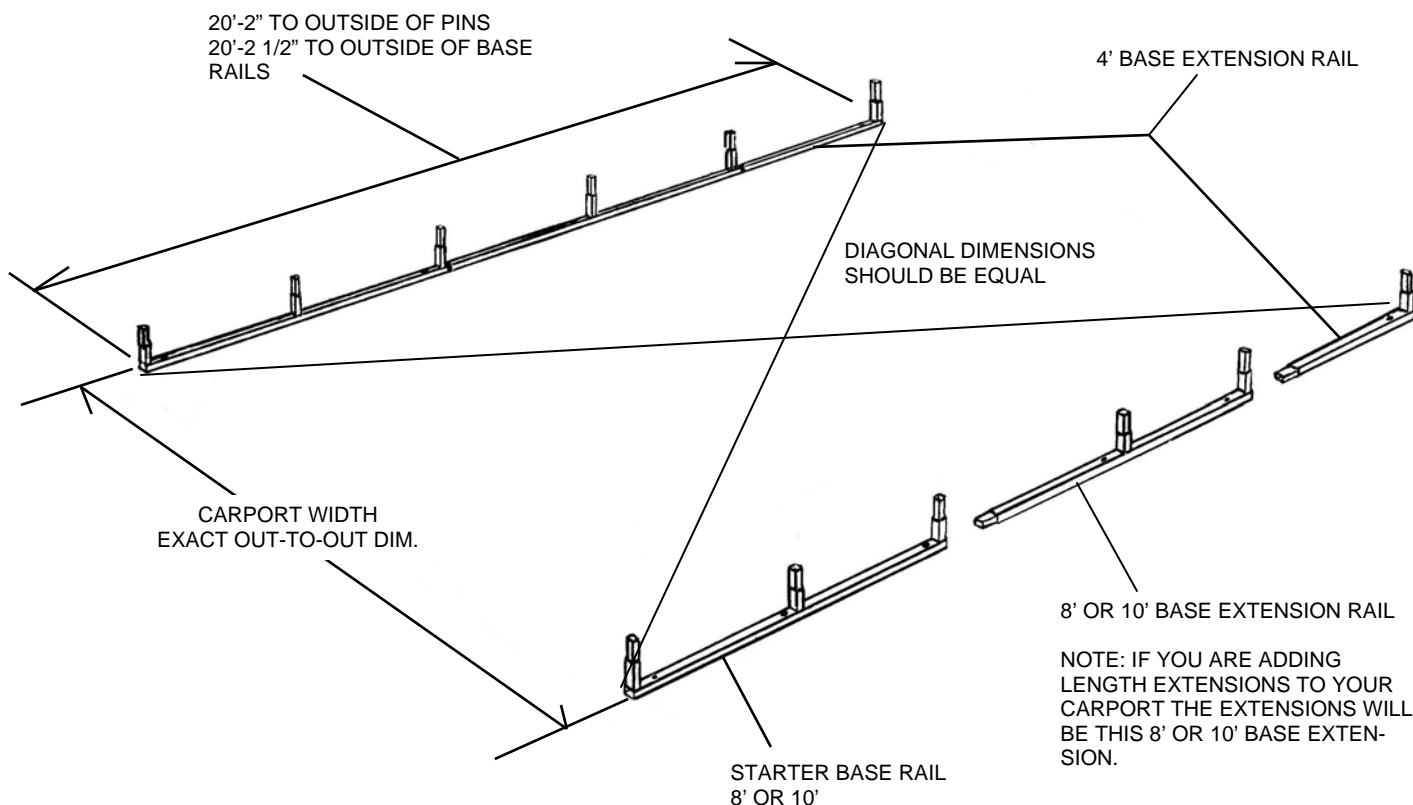
Join all the base rail components as shown. Check the overall length of the assembly, keep the swage joints even in length and fasten the swage joints with (2) #12 x 3/4" hex head, self drilling screws per joint on top of the base rail. Place the Left and Right base rail assemblies 12', 16', 20', etc. apart (outside to outside) and take a measurement across the diagonals of the frame to check it for square. Adjust the frame until the measurements are equal.

Note: If you will be extending the length of you carport, you will have additional base extensions ether 8' or 4' for 4' on center frames, 10' or 5' for 5' on center frames.



#12 HEX HEAD,  
SELF-DRILLING  
SCREW

NOTE: 5' ON CENTER BASE  
RAILS DO NOT HAVE AN  
EXTENSION AT THE END  
LIKE 4' ON CENTER  
FRAMES. USE A 10'  
STARTER RAIL AND A 10'  
BASE EXTENSION ONLY.



**NOTE: The base rail will measure (from outside of the first pin to outside of the last pin) 2" LONGER than the specified length. Example: A 20' Long carport will be 20'-2" Long.**

## ANCHORING CARPORT BASE RAILS:

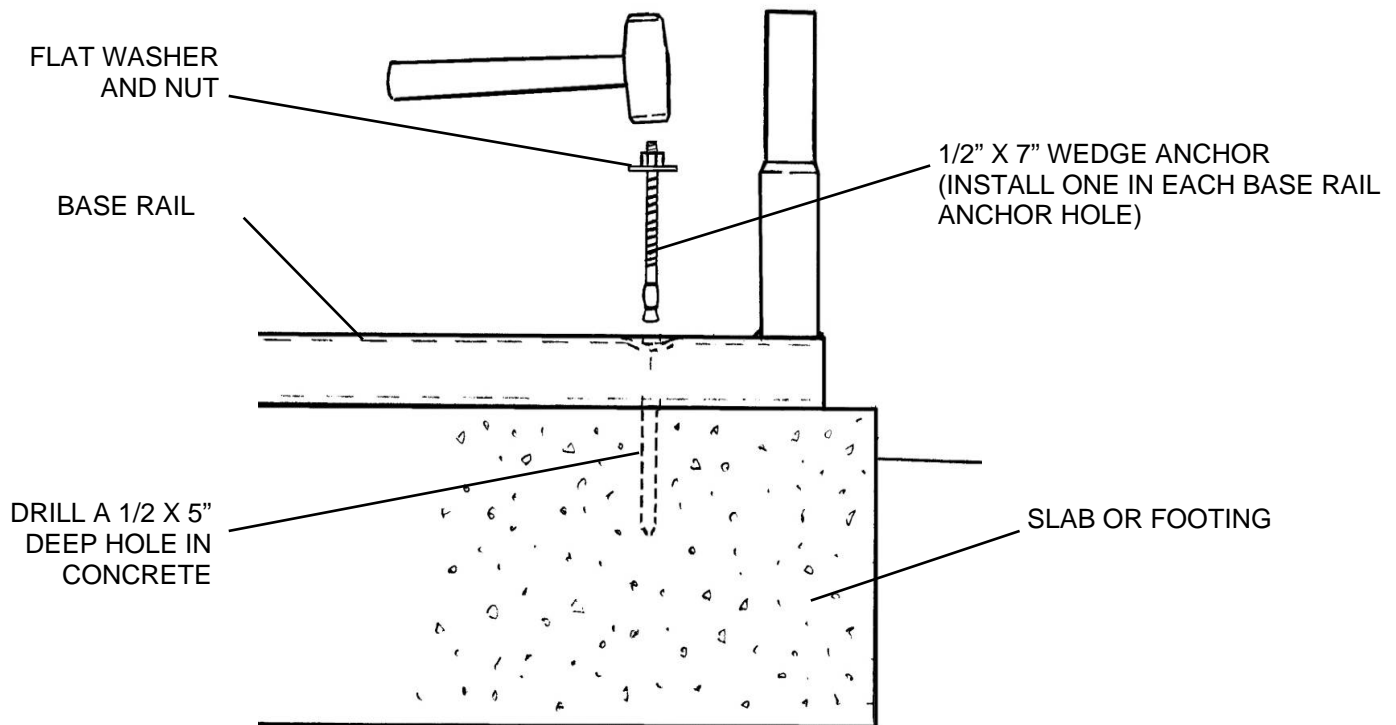
These instructions offer two anchoring methods: (1) To a concrete slab or concrete footings with concrete wedge anchor bolts. (2) To the ground with VersaTube Rebar Anchors and concrete in post holes.

### ANCHORING TO CONCRETE SLAB OR FOOTING WITH 1/2" X 7" WEDGE (EXPANSION) ANCHORS

After you have completed all measurements and have the base rails in place and squared, screw the joints together with 2 screws per joint on the top surface of the base rail. This will assure that the rails remain straight and do not vibrate apart when you drill the anchor holes in the concrete.

To drill the anchor holes, you will need a hammer drill and a 1/2" x 8" or 12" concrete drill bit. Hold the base rail in place with your foot, insert the drill bit through the anchor hole in the base rail and drill a hole 5" into the concrete. The base rail is 2" thick, so the total depth from the top of the base rail will be 7". Place a flat washer onto the anchor and screw on a hex nut until about 2 threads are exposed above the nut. Now, place the anchor in the hole and tap it down with a hammer until the nut and washer touch the top of the base rail. Use a 3/4" wrench to tighten the nut. Tighten the nut until it is snug. Do not crush the base rail tube.

**NOTE: If you have a 2" x 4" frame, the anchors will be 5/8" x 7".**



## ANCHORING TO GROUND WITH CONCRETE PIERS

### DIGGING HOLES FOR CONCRETE

Mark the locations of the rails and the anchor holes on the ground. Move the base rails to one side and dig holes at each anchor point for concrete. You may want to rent a gas-powered post hole digger with an 8" or 12" diameter auger for this job.

#### HOLE SIZE:

Counties with 70 or 80 mph Exposure C wind: Use a 12" diameter hole 14" deep or a 8" diameter hole 18" deep.

Counties with 90 mph Exposure C wind: Use a 12" diameter hole 18" deep or an 8" diameter hole 24" deep for 12' to 20' wide carports. For 24' and 30' wide carports, use a 12" diameter hole 21" deep or a 8" diameter hole 30" deep.

***For 2" x 4" frames, use 12" diameter holes x 36" deep.***

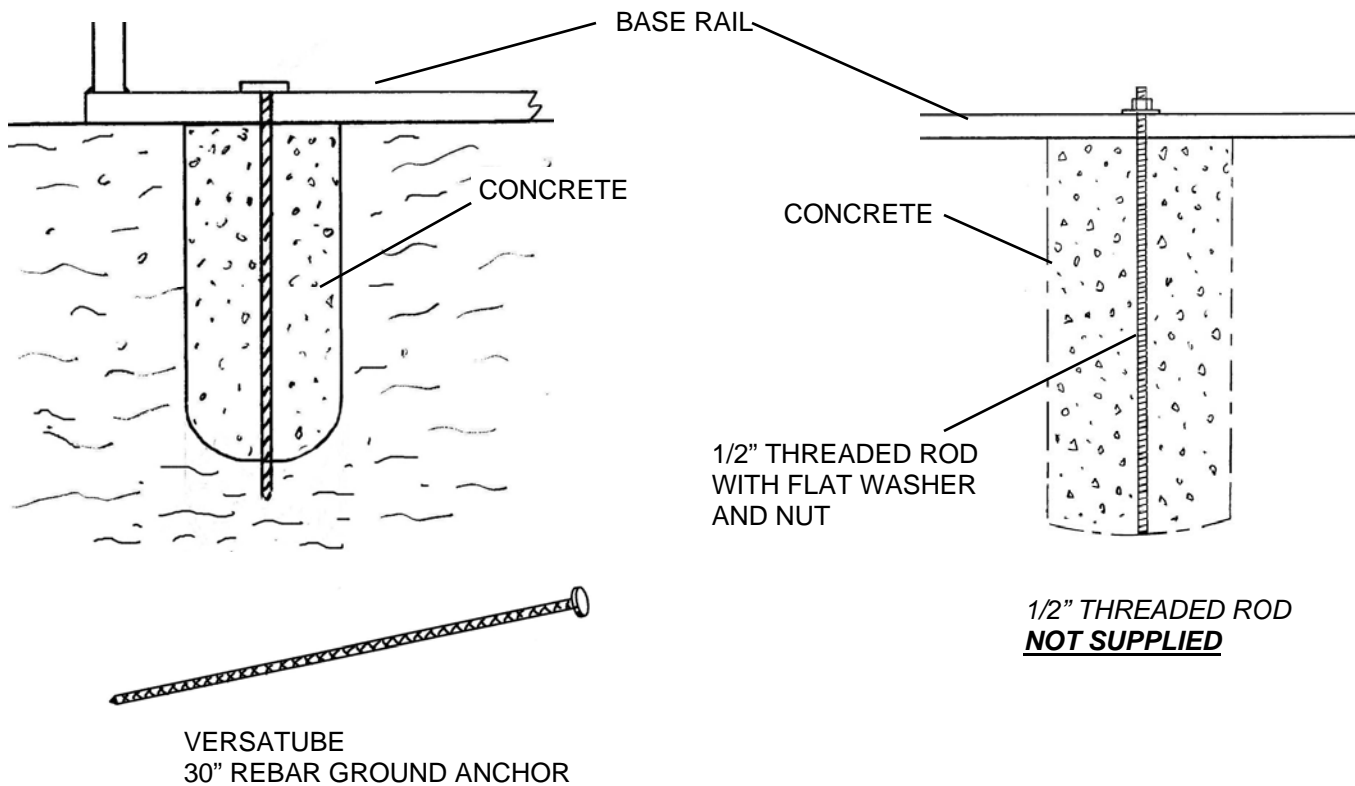
### ANCHORING

Move the base rails back into position over the holes. Re-measure to make sure the rails are in the proper location (see layout on page 6).

Now drop or drive a VersaTube 30" rebar ground anchor or a 1/2" x 36" threaded rod with a flat washer and nut at the top into each anchor hole. A 24" threaded rod could also be used (not supplied). Threaded rods are normally 3' long from your building center.

Mix up concrete and pour into holes up to ground level. You may want to rent a mixer for this job. Before the concrete sets, re-check all your dimensions to make sure the frame is square and has the proper width.

Let the concrete cure overnight before installing the Roof/Wall assemblies.



NOTE: If it is necessary to assemble and anchor the carport all in one work session, you can anchor the carport after it is complete. If you assemble the frame and install sheet metal before anchoring the base rails, it is important to have the site prepared and level. This will allow you to get the frame square and the sheet metal properly aligned with the frame.



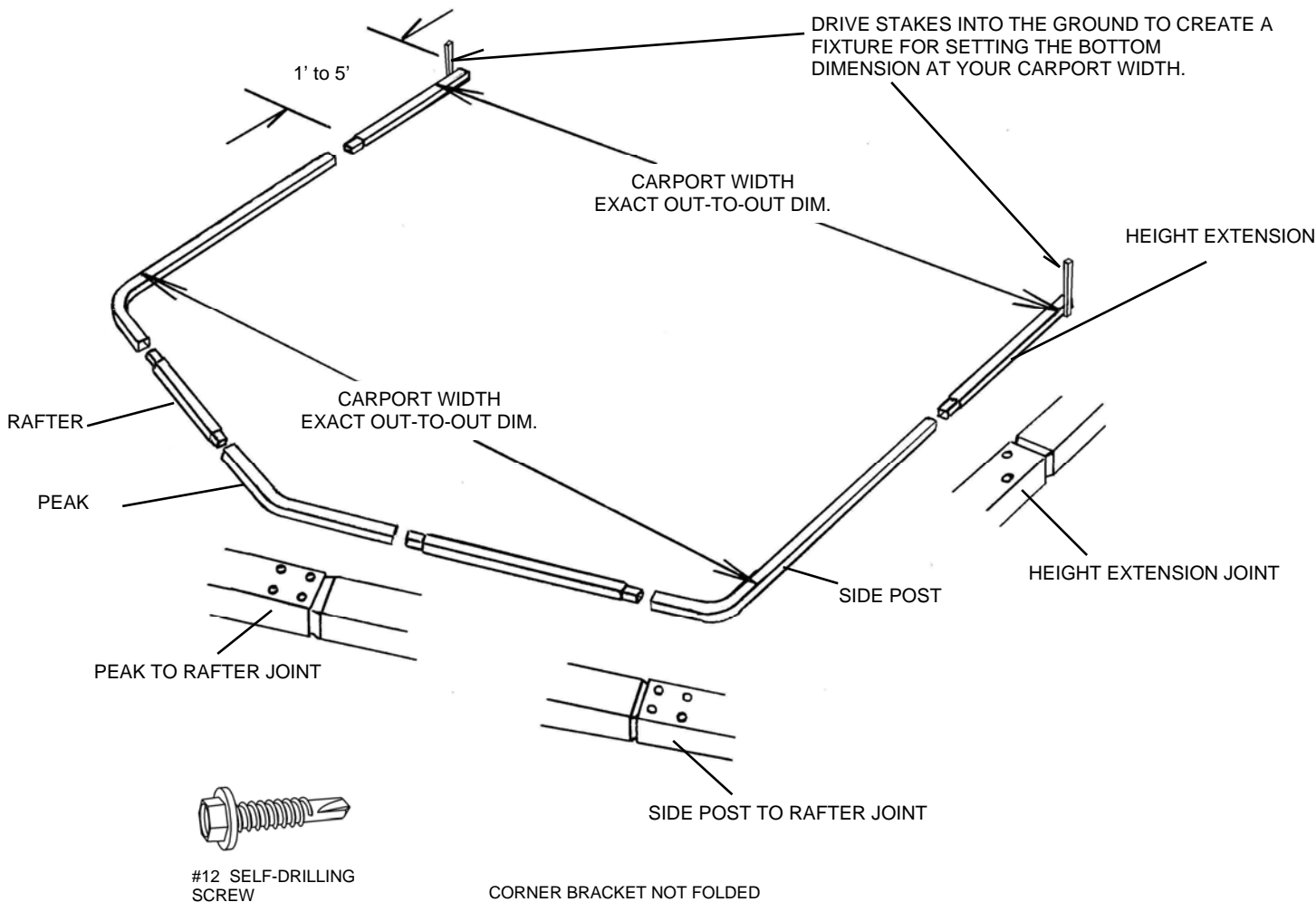
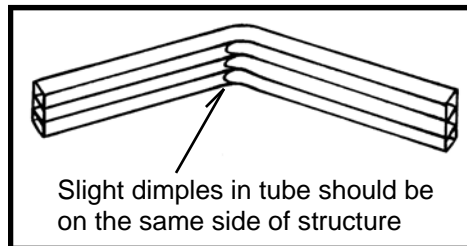
## ROOF/WALL FRAME ASSEMBLY (See page 13 for 2" x 4" frames)

On the ground, assemble (1) peak, (2) rafters, (2) side posts, and (2) height extensions if required.

Before you fasten the joints with screws take a measurement across the top and bottom of the assembly as shown. This outside measurement is the outside size of your building. (12', 16', 20', 24', or 30') Try to keep the joint spacing on both sides of the assembly equal. **It is very helpful to drive stakes into the ground at the width of the building and use them to set the dimension at the bottom of the assembly. You should set the bottom dimension before you adjust and set the top dimension.**

Now, fasten the joints with #12 X 3/4" self-drilling screws. 4 screws in the peak to rafter and side post to rafter joints and 2 screws in the height extension joints. See details below.

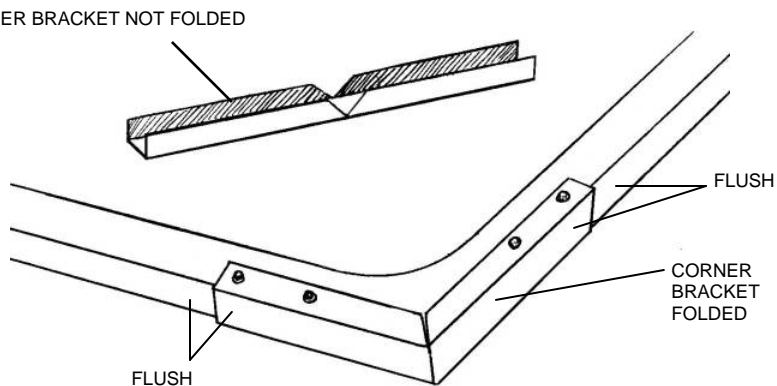
NOTE: You can use the first assembly as a template to assemble the remaining Roof/Wall Frames.



### INSTALLATION OF CORNER BRACKETS

Corner brackets must be installed on all side post corners (eave corners).

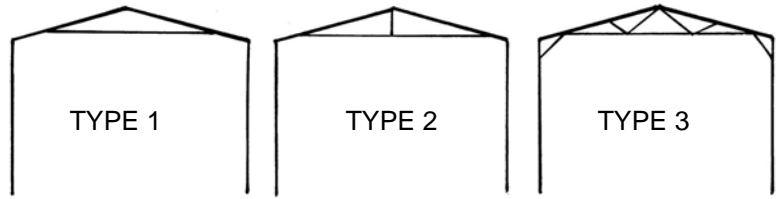
The corner brackets will come in the kit in the straight form and must be folded to fit the eave corner. Fold the bracket, place it on the side post corner, make sure that it is flush with both surfaces and fasten the bracket on both sides of the assembly with 4 screws per side. #12 x 3/4" self-drilling screws.



## TRUSS BRACING:

### TYPE (2) COLLAR TIE WITH VERTICAL, TYPE (3) COLLAR TIE WITH WEB BRACES

Your carport may or may not require a truss brace depending on carport width and the wind and snow load in your county. 10', 12' and 14' wide carports do not require truss braces. 16', 18', and 20' carports often do not require a brace. 24' and 30' wide carports require a brace. Check with your dealer if you have questions.



NOTE: TRUSS BRACES ARE USED ON ALL INSIDE FRAME SECTIONS, NOT ON THE TWO END FRAMES.

COLLAR TIE

COLLAR TIE WITH VERTICAL BRACE

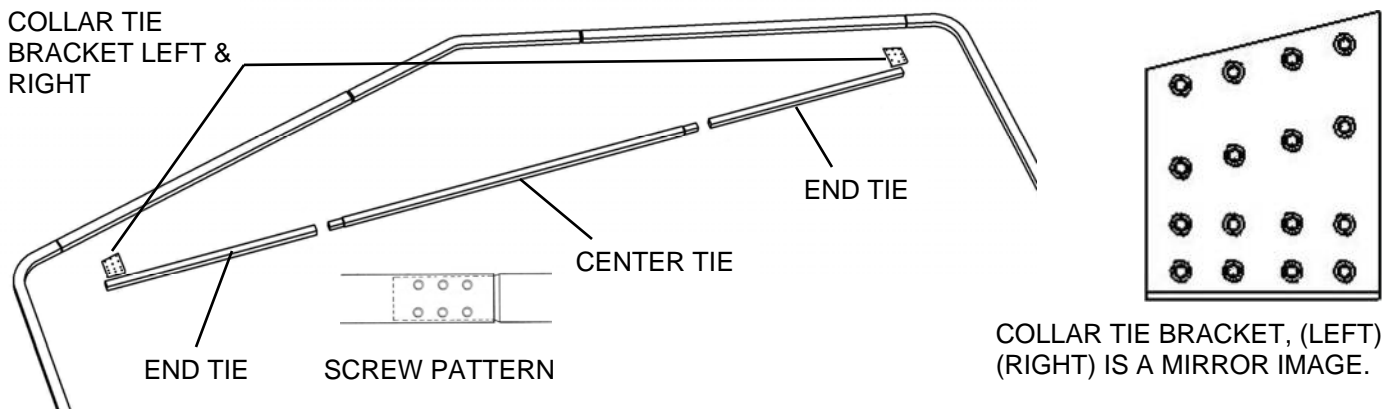
COLLAR TIE WITH WEB BRACING

### COLLAR TIE ASSEMBLY:

Collar Ties are made up of 3 parts: (1) Center Tie 2" x 2" x 111" long swaged (reduced) on both ends (part #74-1110) and (2) end ties. End Ties are 2" square tube. On 16' wide carports 26 1/2" (part #7400-2650) On 18' wide carports 38 1/2" (part #7400-3850), on 20' wide carports 50 1/2" long (part #7400-5050). On 24' wide carports 74 1/2" long (part #7400-7450). On 30' wide carports 111" long (part #7400-11100).

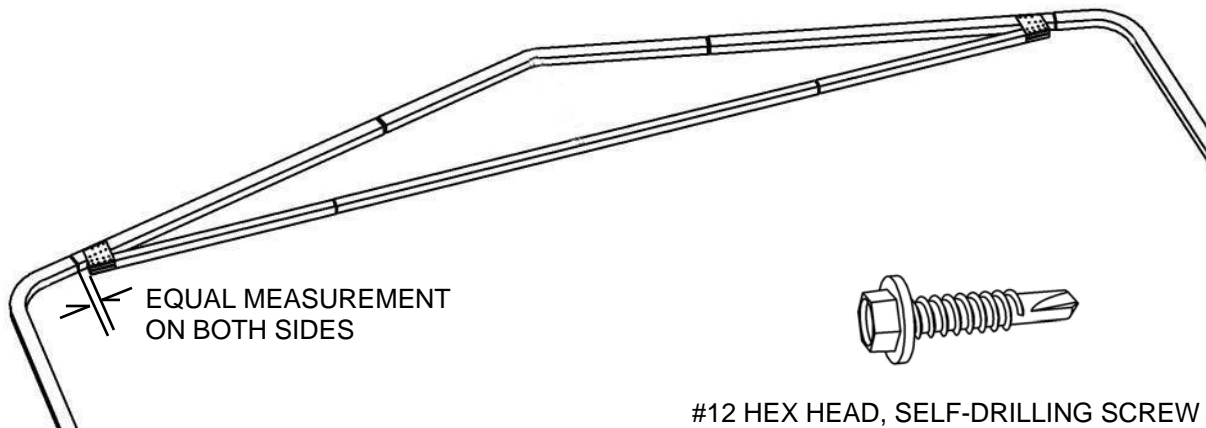
Assembly: Place an End Tie on both ends of the Center Tie and fasten each joint with (6) #12 hex head, self-drilling screws. Place screws on one side of the assembly as shown. Note: Make sure the assembly is straight when you install screws.

Install a left and right Collar Tie Bracket on both ends as shown. For 30'W structures, Collar Tie Brackets will be provided for the front and back of each collar tie assembly.



### ASSEMBLY OF COLLAR TIE TO ROOF/WALL FRAME:

The collar tie must be centered in the frame. Take a measurement from the end of the side post to the collar tie bracket on both ends of the truss brace. Adjust the brace side to side until the measurements are equal. Fasten the collar tie brackets to the rafters with (6) self-drilling screws on each side of the assembly.

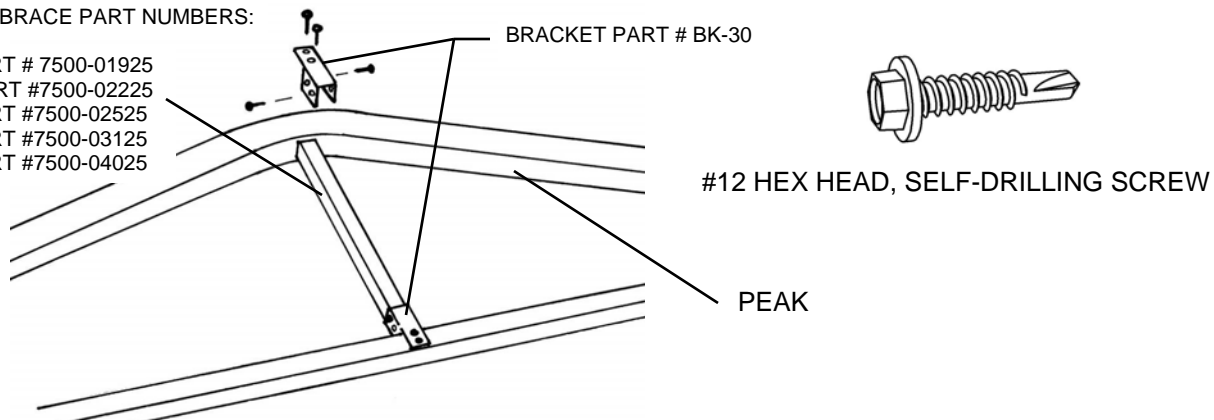


## INSTALLING VERTICAL BRACE FOR BRACE TYPE (2) TRUSS BRACE

The Center Vertical Brace is 1 1/2" square x 19 1/4" long on 16 wide carport, 22 1/4" on 18' wide, 25 1/4" long on 20' wide, 31 1/4" wide on 24' wide and 40 1/4" long on 30' wide. Fasten the brace to the Collar Tie and the Frame Peak with Single Purlin Brackets. Use two screws in the bracket tongue and one screw in each side flange as shown. Fasten the brackets to the vertical brace first. Place the assembly together and adjust the parts to fit before installing any screws. Make sure that the Collar Tie assembly is straight before you fasten the brace to the Collar Tie and Peak.

CENTER BRACE PART NUMBERS:

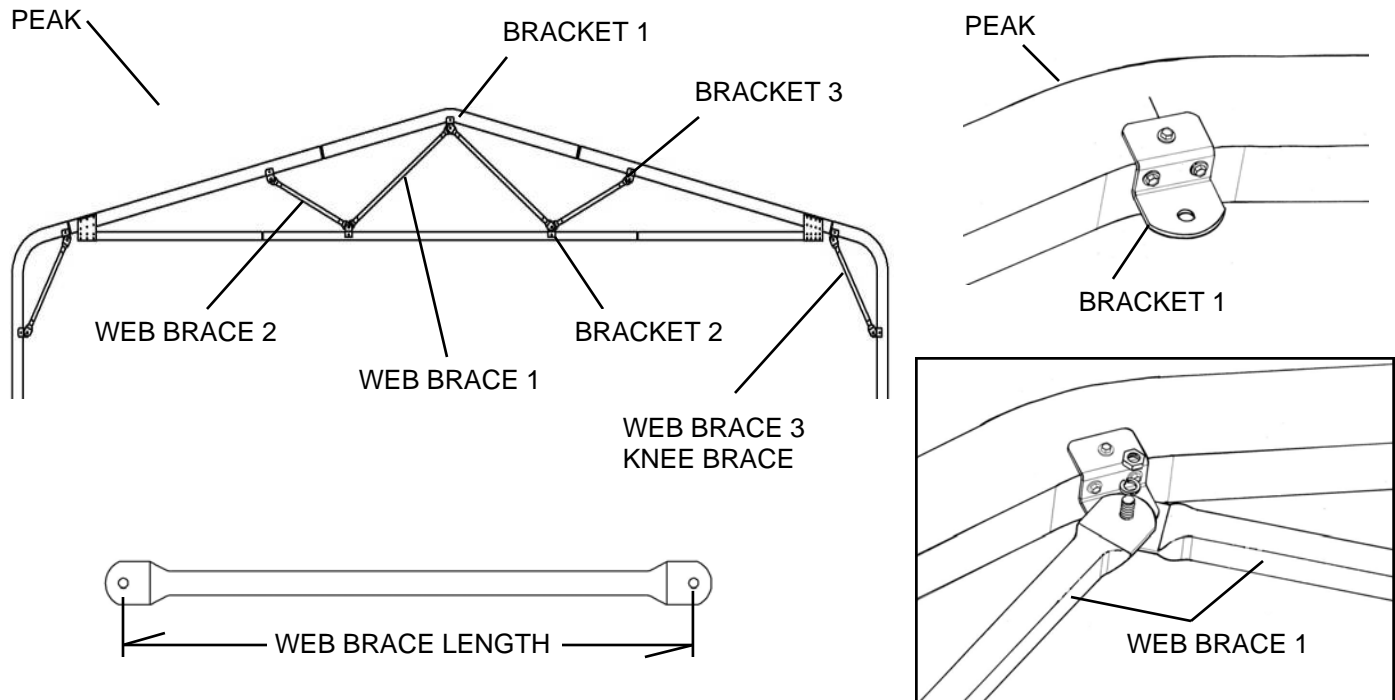
16W: PART # 7500-01925  
18W : PART #7500-02225  
20W: PART #7500-02525  
24W: PART #7500-03125  
30W: PART #7500-04025



## INSTALLING WEB BRACING FOR TYPE (3) TRUSS BRACE: WEB BRACING ON 20', 24' AND 30' ONLY.

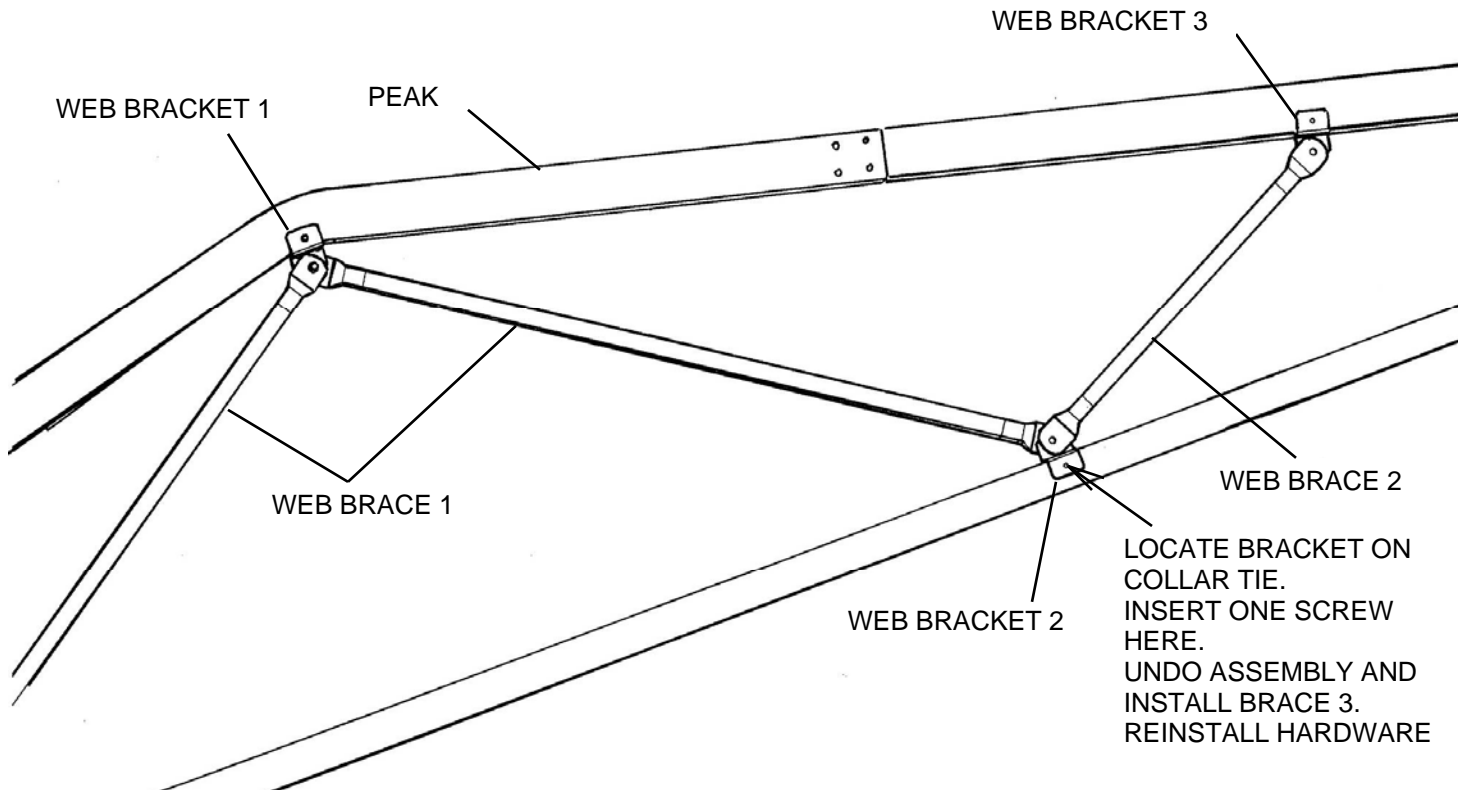
### STEP 1: INSTALLING THE PEAK WEB BRACKET.

Measure up from both ends of the peak to find the center and make a mark. Place a Web Bracket centered at your mark and pressed against the bottom of the peak. Fasten the Bracket to the peak with 3 self-drilling screws as shown in detail.



**STEP 2: INSTALL TWO OF WEB BRACE 1:** On 18' wide carports 30" long (part #76-3000), On 20' wide building 36" long (part # 76-3600), On 24' wide building 46" long (part #76-4600) and on 30' wide building 60" long (part # 76-6000). Place one of the brace ends on top of the Web Bracket tab and the other brace end on the bottom of the tab. Join the parts with a 3/8" x 1 1/4" hex bolt, lock washer and hex nut. Do not tighten at this time. It may be necessary to lift the frame to insert bolt.

STEP 3: INSTALL WEB BRACE 2: (On 20' buildings 24") (On 24' buildings 30") (On 30' wide buildings 36") Loosely attach Web Bracket 2 to the other end of Web Brace 1. Place the Web Bracket on the Collar Tie (make sure the collar tie is straight and fasten the face of the bracket to the collar tie with a self-drilling screw. Remove the hex nut and attach one end of Web Brace 2 to the Web Bracket 2 assembly. ( like the first assembly, one brace end should be on one side of the web bracket tab and one on the other.) Now, Loosely attach Web Bracket 3 to the other end of Web Brace 2 and fasten the bracket to the under side of the rafter. Repeat assembly for remaining Web Brace 2.

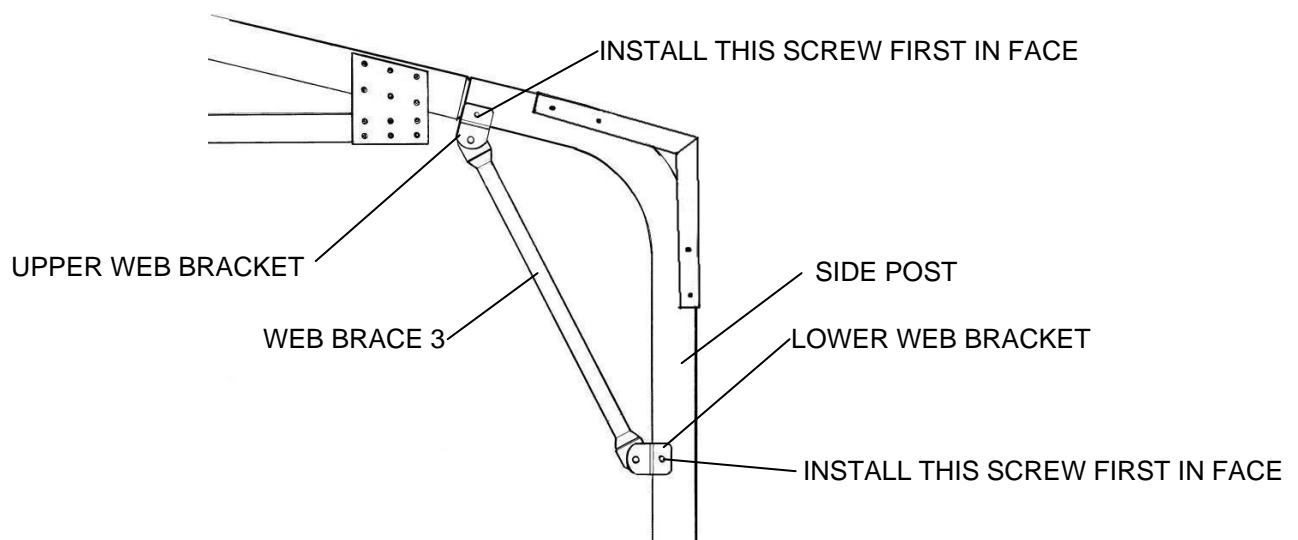


STEP 4: ASSEMBLING WEB BRACE 3: WEB BRACE 3 IS TYPICALLY 24" LONG ON 2X3 STRUCTURES. (30" FOR 2X4)

Measure out 1" from the end of the Collar Tie and make a mark. This will be the location of the upper Web Bracket for Web Brace 3. Attach the upper Web Bracket with 3 self-drilling screws. Now, fasten Web Brace 3 to the upper Web Bracket with a hex bolt, lock washer and hex nut. (Do not tighten at this time)

Loosely attach a Web Bracket to the lower end of Web Brace 3 and place it against the side post. Re-check the building dimension across the bottom of the frame 20', 24', or 30' before attaching lower bracket to side post. Now, attach the face to the side post with a screw, remove the hex nut, let the bolt drop down and install the two screws in the side of the Web Bracket. Now, reinstall the bolt, lock washer and nut. Repeat assembly for remaining Web Brace 3 on the other side of the frame.

WHEN ALL BRACES ARE IN PLACE, TIGHTEN ALL HARDWARE. The nut size is 9/16". You may also need to hold the bolt head with pliers.

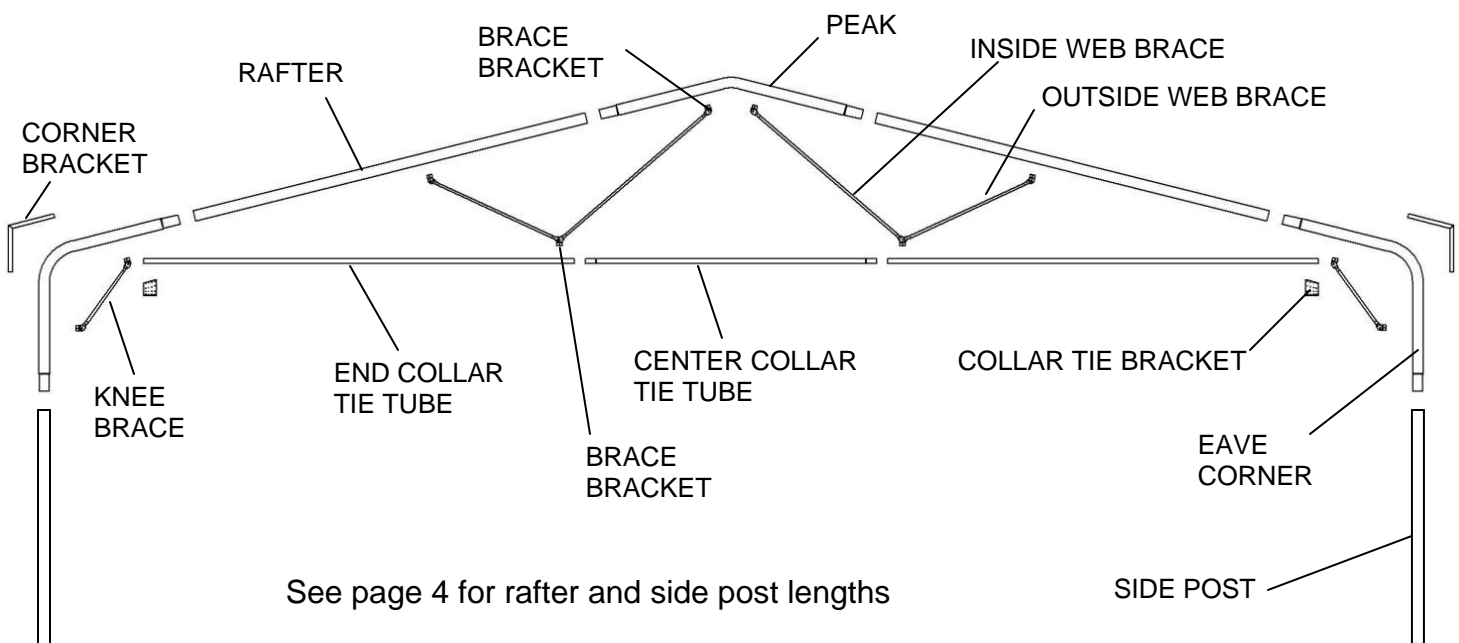


## ASSEMBLING 2X4 FRAME ROOF WALL FRAMES

A typical truss frame has 15 basic parts: 1 peak, 2 rafters, 2 eave corners, 2 corner brackets, 2 side posts, 1 collar tie center tube, 2 collar tie end tubes, 2 collar tie brackets (1 left & 1 right), 2 inside web braces, 2 outside web braces and 6 brace brackets with hardware. The knee braces (two) are not required on all carports. The length of rafters and braces will depend on the width of the building. All 2x4 frames over 24' wide will have truss braces on all frames, 24' and smaller frames may not require truss braces on the end frames.

ASSEMBLY: Use #12 x 3/4" self-drilling screws and screw gun with 5/16" socket with extension in all assembly operations.

1. Install a rafter on both ends of the peak. Use 4 screws in each joint
2. Install a eave corner at the other end of each rafter. Before you install screws, measure from the outside of one eave corner to the other and set the dimension at the building width. (Example 30', or 40') Keep the joint spaces equal on both sides of the assembly. This will keep the peak centered in the building. Use 4 screws in each joint.
3. Install side posts to lower swaged end of eave corner tubes. (See page 4 for rafter and side post lengths)
4. Attach eave corner brackets (shipped unbent) to the eave corner by bending the bracket around the eave corner. Use a straight edge to ensure that the bracket is flush against the eave corner. Install 2 screws on each side of the truss at both ends of the bracket. This will require turning the truss over.
5. Join the 3 collar tie pieces. (1 collar tie center tube and 2 collar tie end tubes) Use a straight edge to make sure the assembly is straight and install 8 screws in each swage joint.
6. Attach a right collar tie bracket on one end of the assembly and a left collar tie bracket on the other end. Fill all of the screw holes.
7. Center the collar tie assembly in the frame (approximately 18" from outside of truss) and attach the brackets to the eave corners. Fill all of the screw holes.
8. The web braces are 1" square tubes with flattened ends and 1 hole. The length of a web brace is from the center of one hole to the center of the other hole. Braces are attached to the brackets with 3/8" x 1 1/4" hex bolts, lock washers and nuts. The brackets are attached to the frame with 3 self-drilling screws. Two braces can be bolted to the same bracket.  
 Install the first 2 brackets on the under side of the peak about 7 3/4" from the center line of the building.  
 Attach one end of the inside (longer) brace to the bracket. Do not tighten at this time. (x2)  
 Attach the other end of the inside brace to another brace bracket on the same side as the other bracket. (x2)  
 Attach a outside (shorter) brace to the opposite side of the same bracket. Do not tighten at this time. (x2)  
 Attach the other end of the outside brace to another brace bracket on the same side as the other bracket. (x2)  
 Make sure that the collar tie is straight and attach the brackets with the 2 braces connected to the collar tie. (x2)  
 Attach final brackets to the rafter and then tighten all bolts and nuts.
8. Knee Braces: Knee braces are the same as web braces. The typical knee brace is 30" long for 2x4 buildings. You should check with our engineering department to see if knee braces are required on your building. If you are installing knee braces attach a brace bracket to the under side of the eave corner about 1" from the end of the collar tie. Attach a Knee brace to the bracket and a bracket to the lower end of the knee brace. Attach the lower bracket to the lower portion of the eave corner. Repeat on the other opposite end of the truss. Tighten all nuts and bolts securely.



SEE THE NEXT PAGE FOR MORE DETAIL ON BRACKETS AND ASSEMBLY

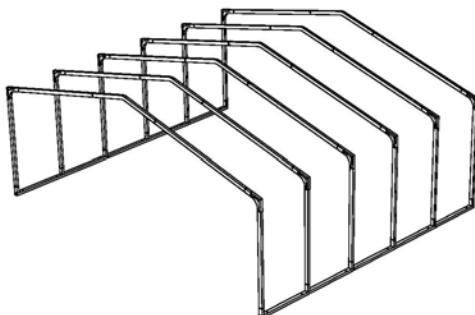
## INSTALLING ROOF/WALL FRAMES TO BASE RAILS

NOTE: This assembly will require at least two people. 24' and 30' frames may require more. Most 2x4 frames will require a small crane of some sort to lift the frames into place.

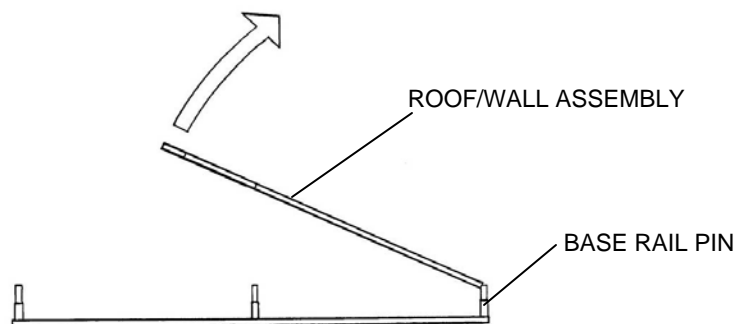
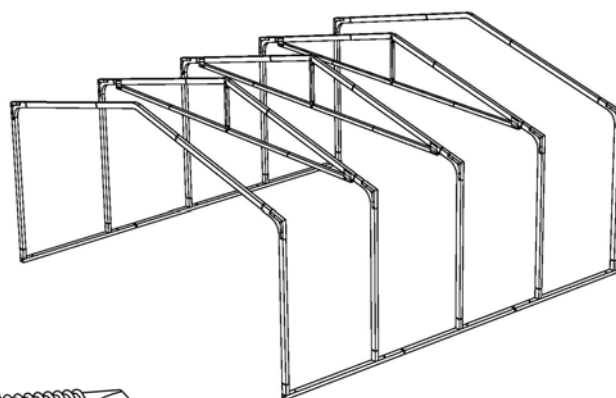
Start at one end of the carport and place a Roof/Wall assembly, with no truss brace, on the first base rail vertical pins. Fasten joints with two screws each.

Repeat this assembly until all Roof/Wall assemblies are installed. ( Remember, no Truss Braces at the ends of the carport)

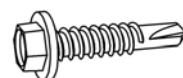
Place bottom of side posts on base rail pins at an angle. Raise frame section and drop it onto pins at the same time on both sides of the carport. Tap lightly on the side post with a hammer if parts do not drop into place.



5' ON CENTER FRAME  
WITH TRUSS BRACES



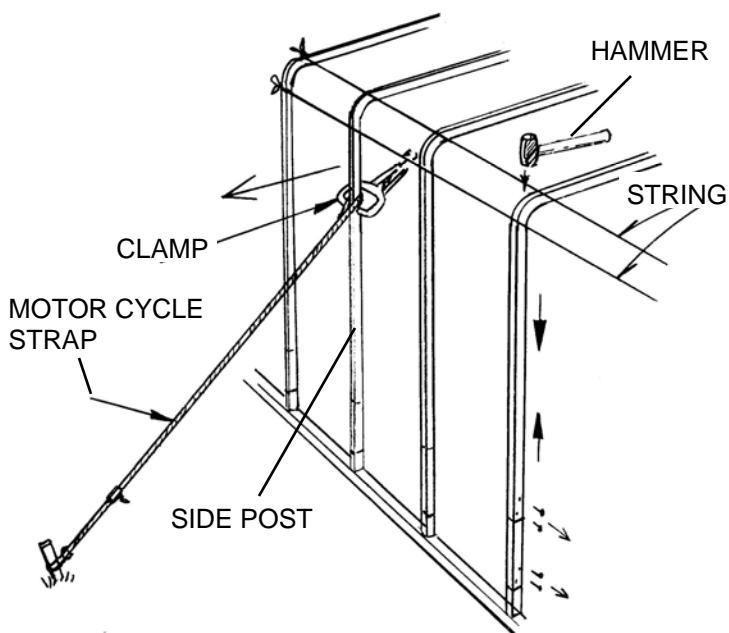
### SQUARING UP YOUR FRAME



#12 SELF-DRILLING SCREW

Before you install sheet metal panels, you may want to check the Roof/Wall assemblies to make sure they are square and that the height of each side post is equal. To do this, first check the front and back Roof/Wall sections to make sure that they are square with the frame. If adjustments must be made, you can drive a wooden or metal stake into the ground about 8' from the building and use a Motor Cycle strap or Ratchet strap to pull the side post into plumb. Place a clamp on the side post as shown and attach the strap above the clamp.

When the front and back sections are plumb (side to side) tie two strings from the front side post to the back side post at the bottom and top of the bend radius as shown. These strings will let you see which sections are high, low or out of plumb. If the side posts are high or low, remove the joint screws and raise the low posts and hammer down the higher posts as much as possible. Reinstall the screws in a new location. Check the height of the side posts on both sides of the building. The straps should remain in place until the roof purlins are installed.



Note: this is not a critical step, but it may improve the appearance of your building. If side posts are out of plane with the other side posts more than 1/4" it may be visible.

## INSTALLING HAT CHANNEL ON ROOF

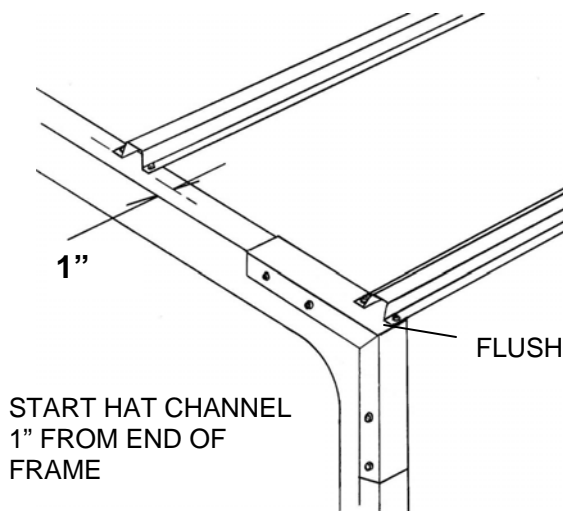
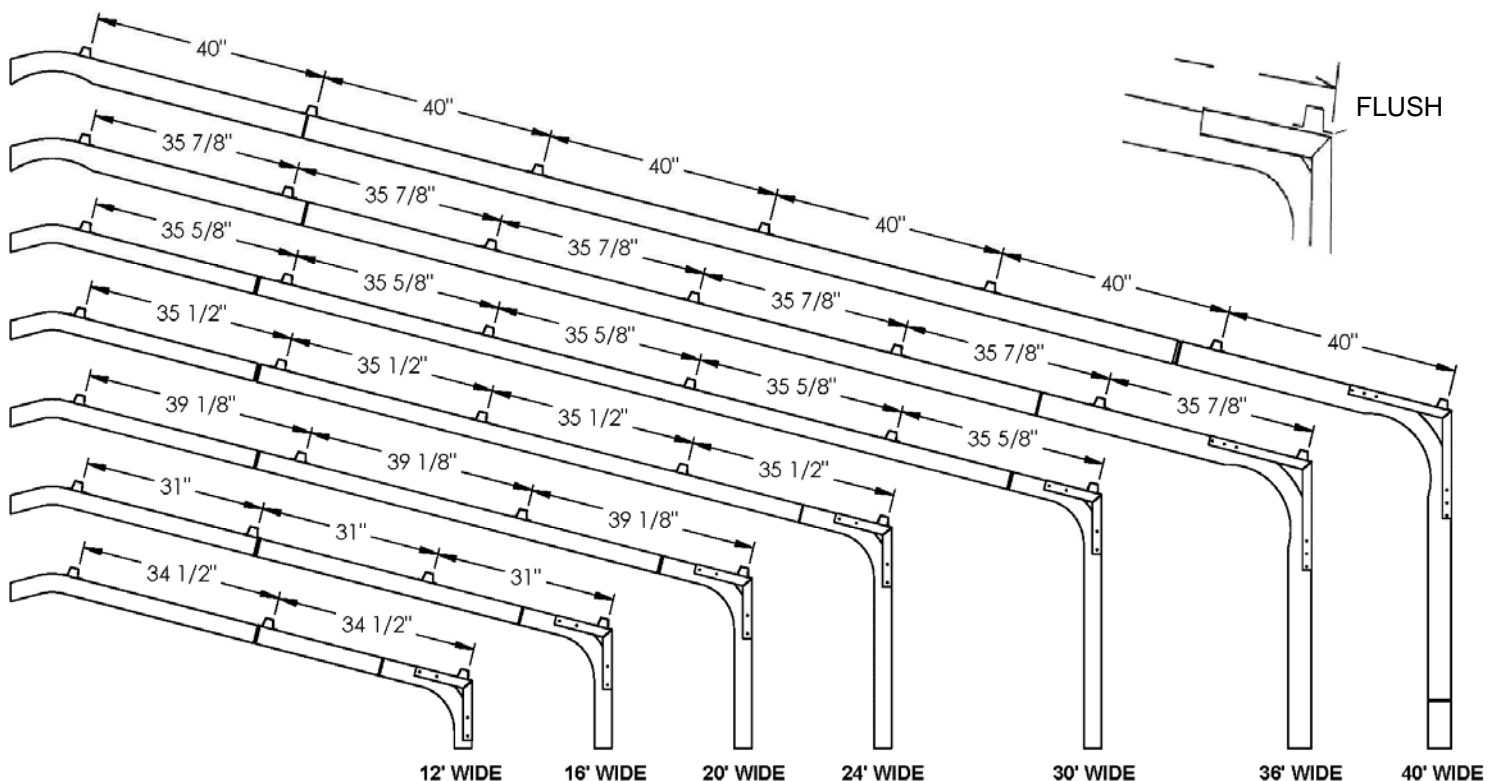
The purlins on the roof are **Hat Channel**. The hat channels are 8' and 4' long for 4' on center frames or 5' and 10' long for 5' on center frames.

Before you start the installation of hat channel purlins on the roof we recommend that you brace the one end wall of the building. Make sure that the end wall is plumb and attach angle braces from the end wall side posts to the lower portion of the next frame section side posts. You can use wood or metal for this job. Place a brace on both sides of the building. You can clamp the braces in place or use self-drilling screws. If you use screws you may want to mount the braces to the outside of the frame. Braces could also be attached to a wood stake driven into the ground 5' or 6' away from the back of the building.

See the chart below for the location dimensions for the Hat Channel on the roof .

You can measure and locate each hat channel as you go or mark the locations of all the channels on the front and back frame sections and snap a chalk line the length of the building to mark the hat channel locations on all of the interior frame sections.

### LOCATION OF HAT CHANNEL PURLINS ON THE ROOF OF THE CARPORT



**NOTE: IF ANY SHEET METAL IS BEING INSTALLED ON THE EAVE SIDES OF THE STRUCTURE, INSTALLATION OF SAID EAVE METAL WILL NEED TO BE COMPLETED BEFORE ROOF METAL INSTALLATION BEGINS. GO TO PAGES 16-18 FOR VERTICAL INSTALLATION OR PAGE 19-20 FOR HORIZONTAL INSTALLATION. IF NO EAVE SIDE METAL, SKIP TO PAGE 21.**

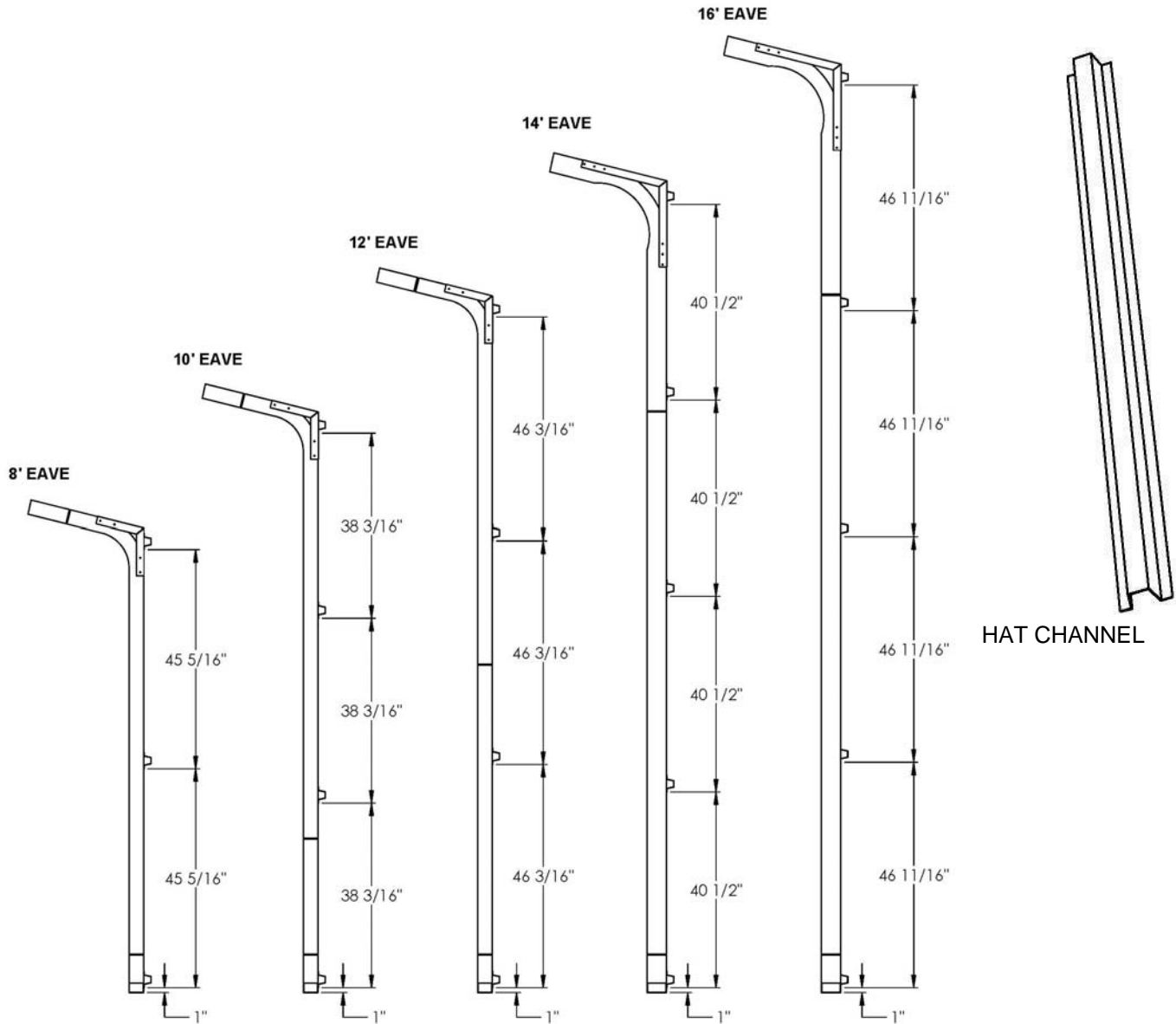
## INSTALLING HAT CHANNEL GIRTS ON SIDES OF CARPORT. If you are not installing side wall panels skip to Page 21.

The purlins on the roof and the girts on the sides of your building are **Hat Channel**. Most of the hat channel that you install will be 10' long on buildings with frame sections on 5' centers or 8' long for buildings on 4' centers.

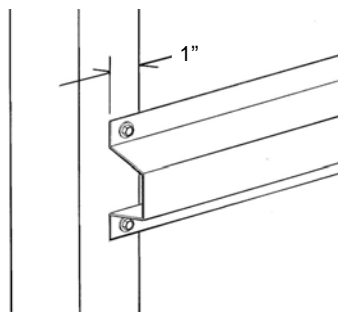
See the chart below for the location dimensions for the Hat Channel on the sides of the carport.

You can measure and locate each hat channel as you go or mark the locations of all the channels on the front and back frame sections and snap a chalk line the length of the building to mark the hat channel locations on all of the interior frame sections.

### LOCATION OF HAT CHANNEL GIRTS ON THE SIDE OF THE CARPORT



Don't forget that the ends of the hat channel girts are to be centered on the carport frame sections. This means that the first hat channel installed will be 1" from the end of the carport frame.



### INSTALLING RAT TRACK

Rat Track is additional Hat Channel Girts that are installed on top of the collar tie to assist with longitudinal strength. Rat track will be included with all buildings 30' Wide or larger. The rat track will start on the second frame and end on the second to last frame. For 30'W, you will receive 3 runs of Hat Channel (40'W—4 runs; 50'W—5 runs, etc). Evenly space the hat channel on your collar tie and attach with (2) #12 x 3/4" self-drilling screws per connection.



## INSTALLING VERTICAL SIDE SHEET METAL PANELS: If you have no side wall panels skip to Page 21.

### **SHEET METAL PANELS FOR THE SIDE OF THE CARPORT ARE 8'-1", 10'-1", OR 12'-1" LONG.**

Start at one corner of the building. (It is preferred that you chose a corner that is away from the prevailing wind). Make sure that the frame is plumb when installing the first side panel. All additional panels will depend on the first panel being plumb and square.

Carefully place the first panel on the slab sheeting ledge (or at the bottom of the base rail if no sheeting ledge is available.) Place the overlap edge at the starting corner of the building. This will allow you to easily overlap the second panel over the first and so on down the length of the building. Attach the panels to the hat channels with #12 x 1" painted, Self-Drilling Screws with rubber washers. Place one screw about 3/4" to one side of each major rib.

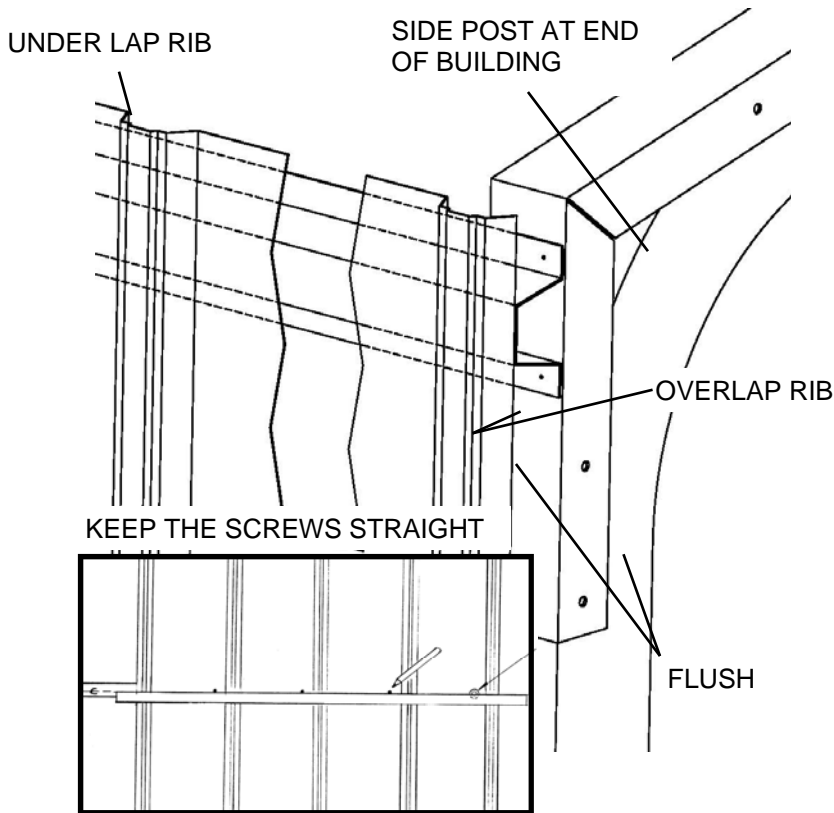
NOTE: It is important to keep the panels from stretching or compressing in width as you install them. The panels should be 36" from the center of the major rib on one side of the panel to the center of the major rib at the other side of the panel. Measure each panel as you go or pre-mark the building frame every 36" to check the panel width as you go.

The last panel installed on the side on the building should come out flush with the other end of the building frame if the length is devisable by 3. If not (example 20' or 25' long building) you will need to trim the last panel to be flush with the building frame.

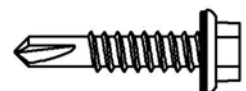
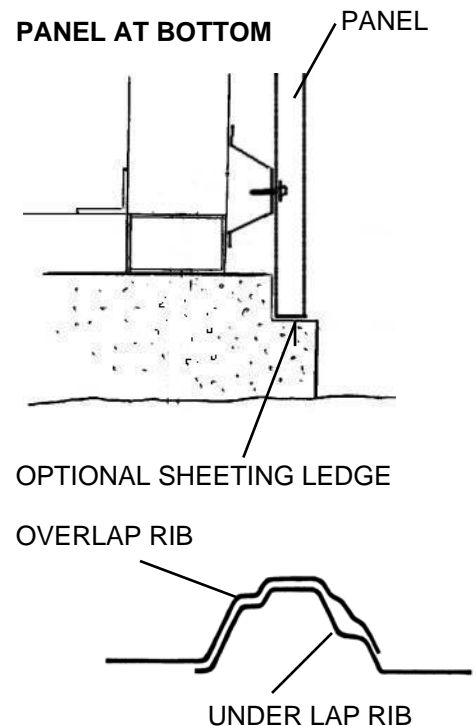
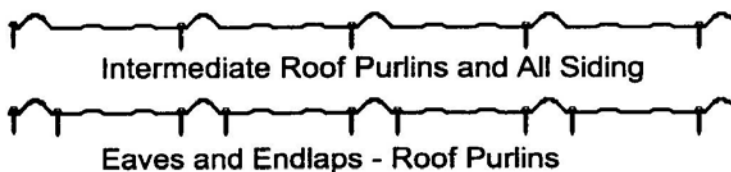
NOTE: All sheet metal cladding applied to the VersaTube frame are attached with self drilling screws with a rubber washer. These screws produce small shavings when drilling through the cladding. If the shavings are allowed to sit on the sheet metal for an extended period, rust spots will form. It is the recommended to brush off all shavings after driving each self drilling screw.

Remember to be careful not to scratch up the bottom of the panels as you place and adjust them on the concrete slab or sheeting ledge.

Tip: To keep the screws in a straight line down the length of the building, install screws next to the 1st major rib. Hold a straight edge between the center point of the screw and the center of the hat channel at the other side of the panel and mark dots along that line where the remaining screws will be located with a felt tip marker. You can also tie a small loop in one end of a string, hook it over the first screw and draw the string to the center of the hat channel. Holding the string taut, use a felt marker to mark location points for the remaining screws. A speed square and a pencil can also be used.



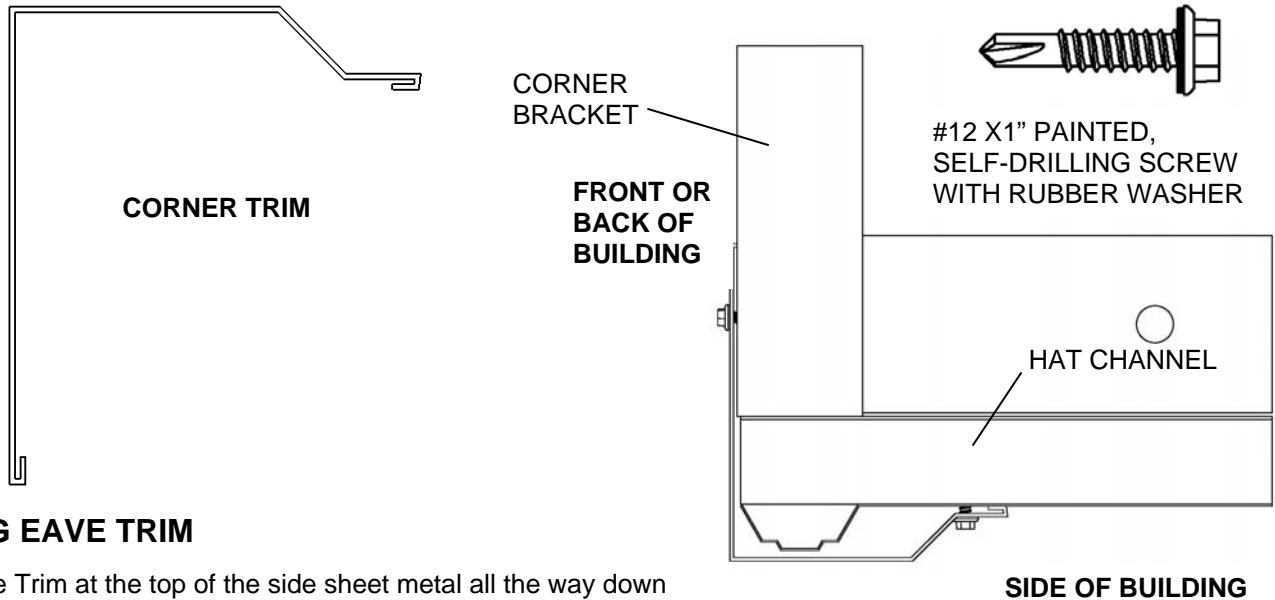
**Screw Patterns**



**#12 X 1" PAINTED, SELF-DRILLING SCREW WITH RUBBER WASHER**

## INSTALLING CORNER TRIM

Cut corner trim to fit the corner height of your building. Corner trim should sit down in sheeting ledge if your slab has one. Install a piece of Corner Trim on the 4 corners of the building with 1" Painted, Self-Drilling Screws. Install the screws through the flat flanges at the edges of the trim into the tubing and hat channel (sides).



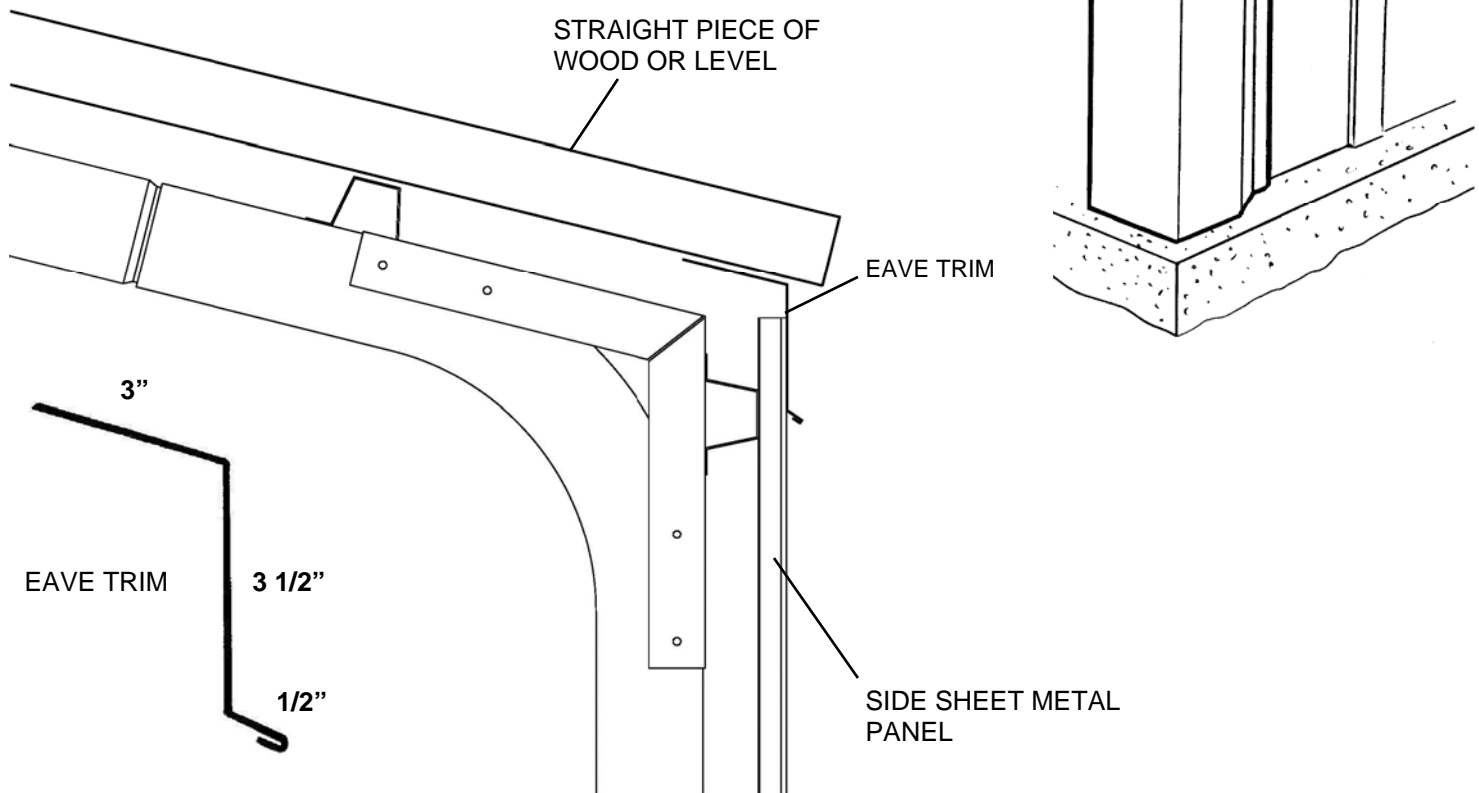
## INSTALLING EAVE TRIM

Attach the Eave Trim at the top of the side sheet metal all the way down both sides of the building with #12 x1" Painted, Self-Drilling Screws with Rubber washers. Place the screws into the center of every other major rib.

To position the Eave Trim place a straight board or level on top of the roof frame and extend it out to act as a stop for the top of the Eave Trim. See the illustration below. Eave Trim comes in 10' lengths. You will need to overlap the trim about 3" at the ends. Trim excess at end of building flush with the outside of the corner trim.

Eave Trim should overlap Corner Trim. Your trim will look better if you start at the back of the building and work forward.

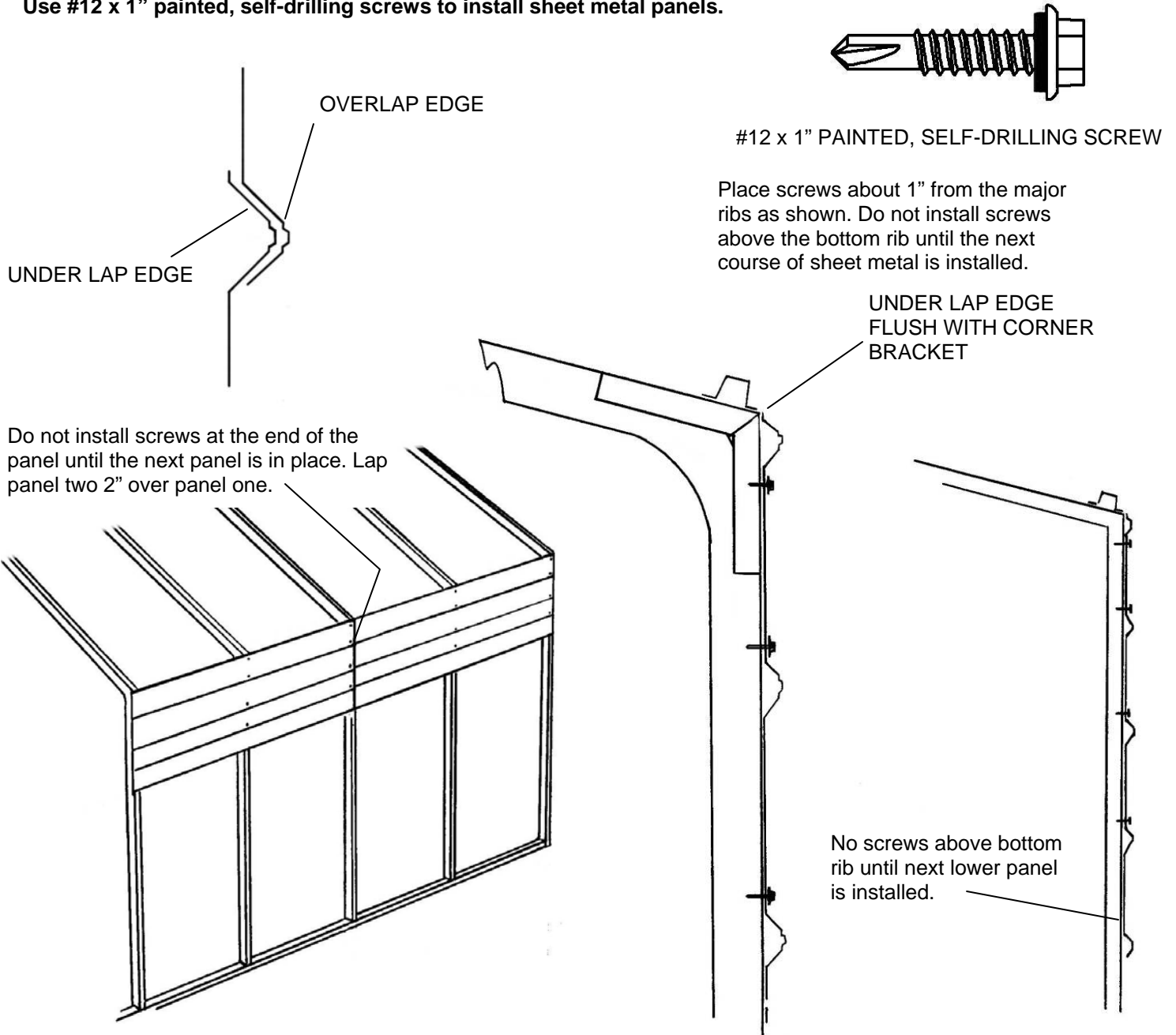
Attach the Eave Trim to side metal by using the typical sheet metal screw with rubber washer. Screw through every other major rib, about every 18".



## INSTALLING HORIZONTAL SIDE METAL PANELS

The sheet metal panels provided by VersaTube will be 8'-2" long if your building is on 4' centers. If your building is on 5' frame centers the side panels will be 10'-2" long.

Start your first run of sheet metal panels at the eave corner of the building. Start at the back of the building. The sheet metal panels have an under lap and an overlap edge. The under lap edge is a complete rib with a small flange. The overlap edge is a partial rib. The under lap edge will always be placed to the top and the overlap edge to the bottom. **Use #12 x 1" painted, self-drilling screws to install sheet metal panels.**



## IF INSTALLING ONE RUN OF HORIZONTAL SHEET METAL:

Add a strip of J-Trim along the bottom. Attach the J-Trim with sheet metal screws.

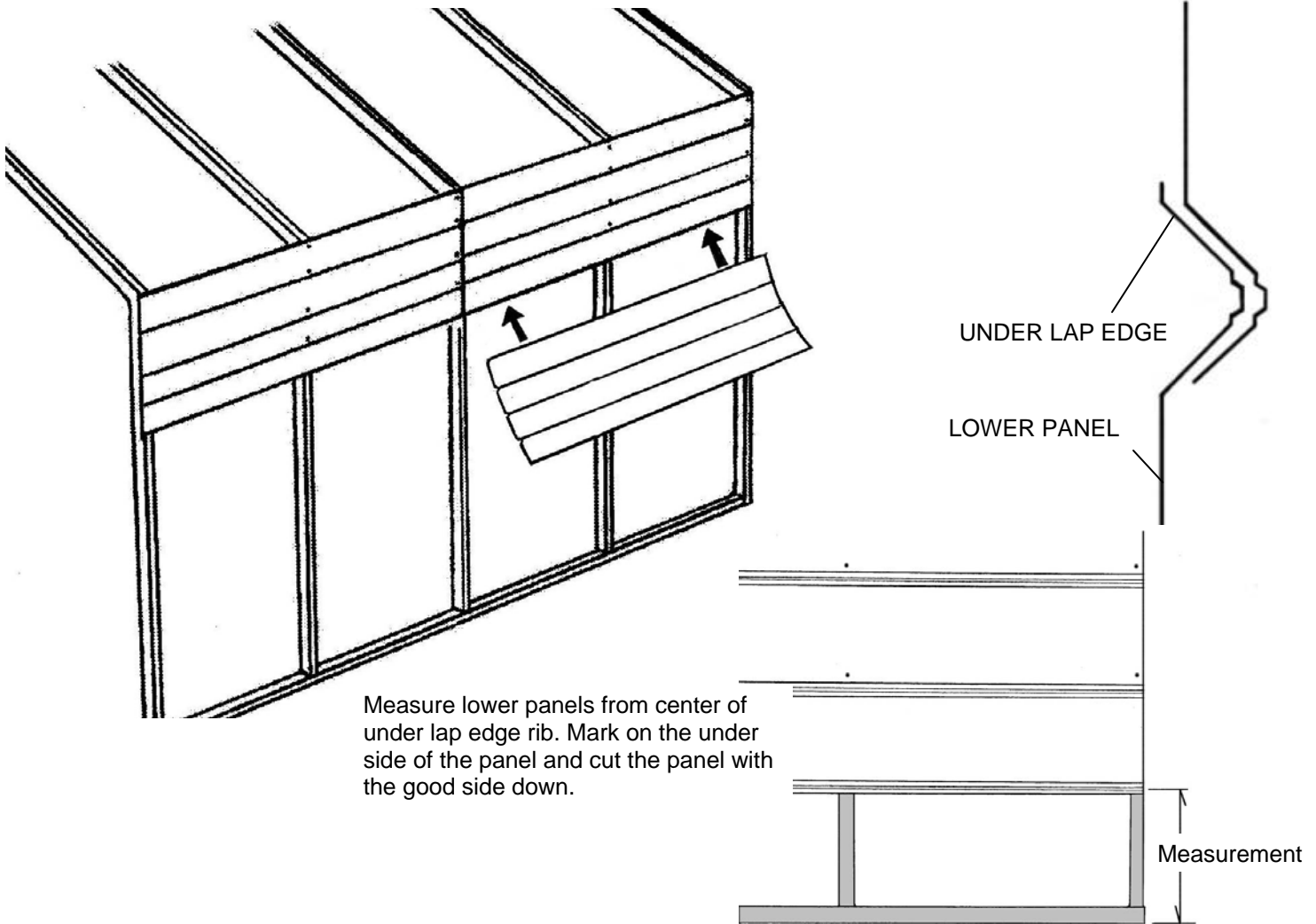


## INSTALLING ADDITIONAL COURSES OF SIDE METAL PANELS

When you have completed the installation of the first course of side wall panels at the eave of the building, start the second course at the same end of the building. Insert the under lap edge of the panels under the overlap edge of the panels in the first course. Attach the panels with screws as you did the first course of panels. Once again, leave the screws out of the lower edge so you can insert the lower course of panels.

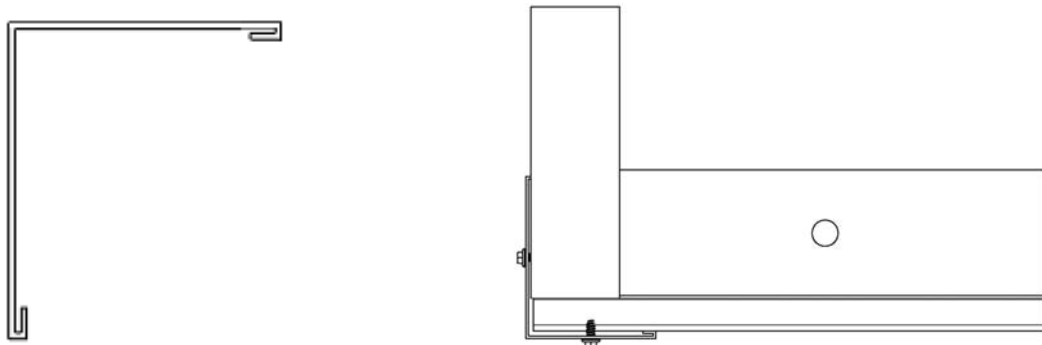
Continue installing panels until you get to the last course at the bottom of the side wall. You will probably have to cut the last course of panels to fit. Take a measurement from the center of the lower edge to the bottom of the base rail. Subtract about 1/8" from that measurement. Now, mark the lower panel on the under side of the panel. Cut the length of the panel with a circular saw with a metal cutting blade. (The good side of the panel should be facing down when you make the cut. *Make sure you are wearing eye and ear protection when you cut these panels.*)

Repeat the installation of side panels on the other side of the building.



## INSTALLING CORNER TRIM

Cut corner trim to fit the corner height of your building. Corner trim should sit down in sheeting ledge if your slab has one. Install a piece of Corner Trim on the 4 corners of the building with 1" Painted, Self-Drilling Screws. Install the screws through the flat flanges at the edges of the trim into the tubing.



## INSTALLING ROOF PURLIN HAT CHANNEL AND SIDE GIRT HAT CHANNEL IF REQUIRED ON 2X4 CARPORT FRAME

Install the first run of roof purlin hat channel at the eave corner. Place the lower edge of the channel flush with the corner of the eave corner bracket. Attach the channel to the eave corner with #12 x 3/4" self drilling screws as you did the side hat channel. Check the on center spacing of the frames as you go. Complete the first run of roof hat channel down the length of the carport. Repeat this on the other side of the carport. Butt hat channels together at the ends, centered on a frame.

**Roof purlins for the 2x4 frames. Note that the 2x4 frame has corner brackets and the lower hat channel will start at the corner of the bracket.**

CHECK THE SPACE  
BETWEEN FRAMES  
46" FOR 4' ON CENTER,  
58" FOR 5' ON CENTER,

START THE END OF  
THE HAT CHANNEL IN  
THE CENTER OF THE  
BRACKET OR 1" FROM  
THE OUTSIDE EDGE.

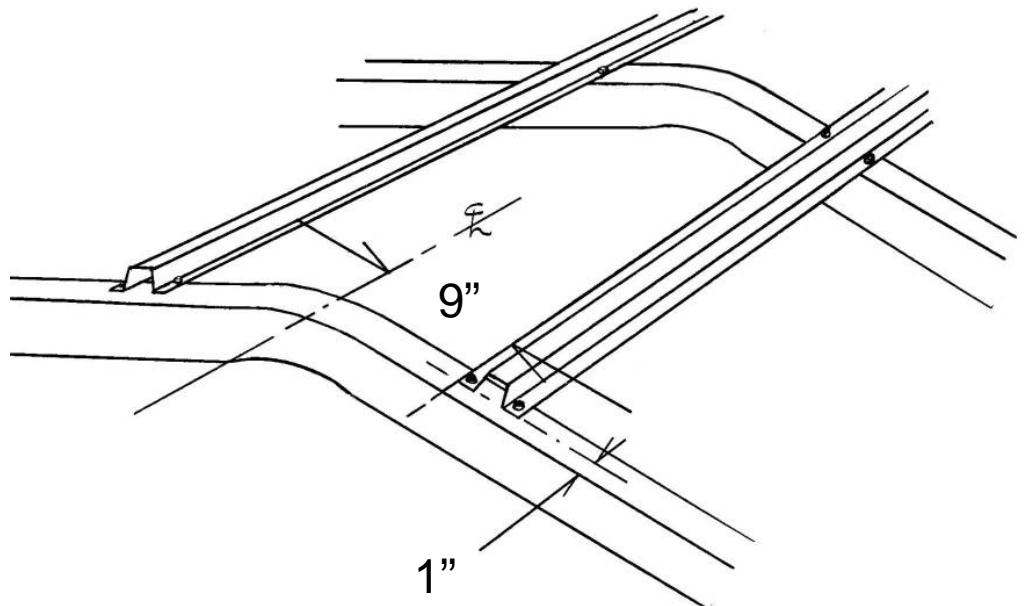
HAT CHANNEL PURLIN  
FLUSH WITH EDGE OF  
EAVE CORNER BRACKET

END OF HAT CHANNEL  
CENTERED IN FRAME

BUTT ENDS OF HAT  
CHANNEL TOGETHER  
CENTERED IN FRAME

### HAT CHANNEL AT THE PEAK OF THE BUILDING

After the eave hat channel purlins have been installed on both sides of the building install two runs of hat channel at the peak of the building. Locate the top edge of the hat channel 9" from the center of the peak frame member and 1" from the end of the building frame as shown at right. Be sure to measure and set the frames on 4', 5', or 6' centers as you go depending on your carport.



## INSTALLING SHEET METAL PANELS ON ROOF

### Panel lengths:

If you have a 12' wide carport the roof panels will be 6'-5" long.

If you have a 16' wide carport the roof panels will be 8'-6" long.

If you have a 20' wide carport the roof panels will be 10'-6" long.

If you have a 24' wide carport the roof panels will be 12'-6" long.

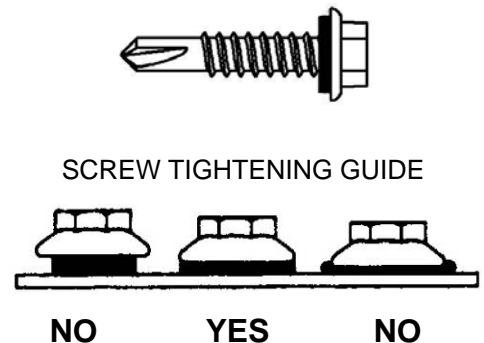
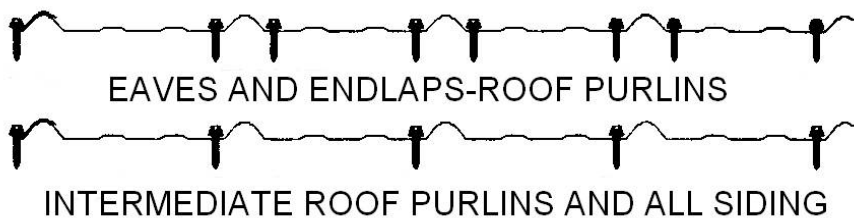
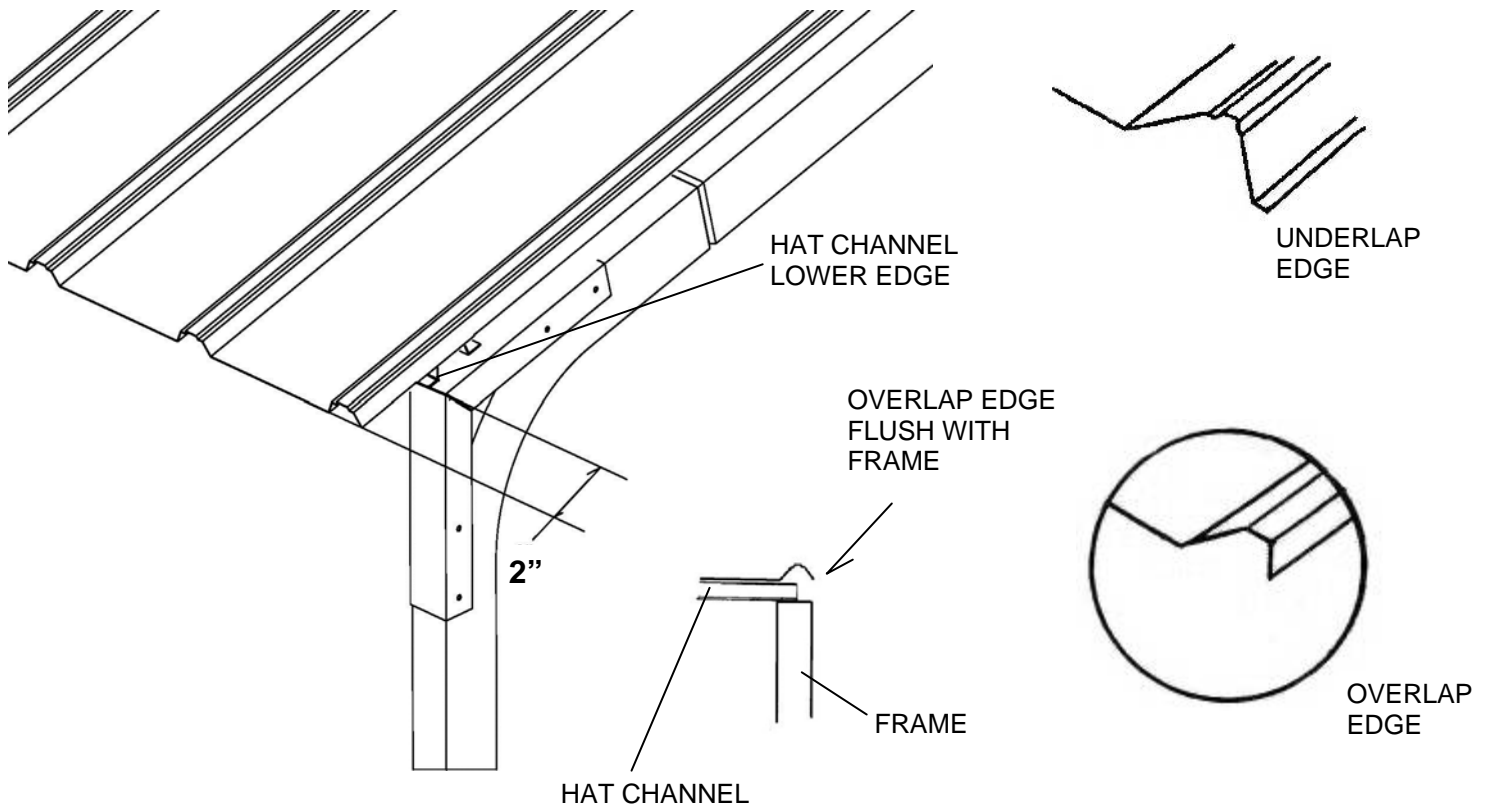
If you have a 30' wide carport the roof panels will be 15'-9" long.

If you have a 36' wide carport the roof panels will be 18'-10" long.

If you have a 40' wide carport the roof panels will be 20'-10" long.

### INSTALLING THE FIRST PANEL

Place the first panel at the back of the roof. Position the overlap edge of the panel to the rear flush with the carport frame. The lower edge of the panel should be positioned 2" from the lower edge of the first hat channel or the edge of the corner bracket. (See the illustration below) Clamp the panel in place once you have it in position. Attach the panel to the hat channel with painted #12 x 1" self-drilling screws with rubber sealing washers. Using your drill driver, install one screw about 1" from each major panel rib. Along the eave of the carport install a screw on both sides of each major rib. (Do not over tighten the screws. See the guide below, right)



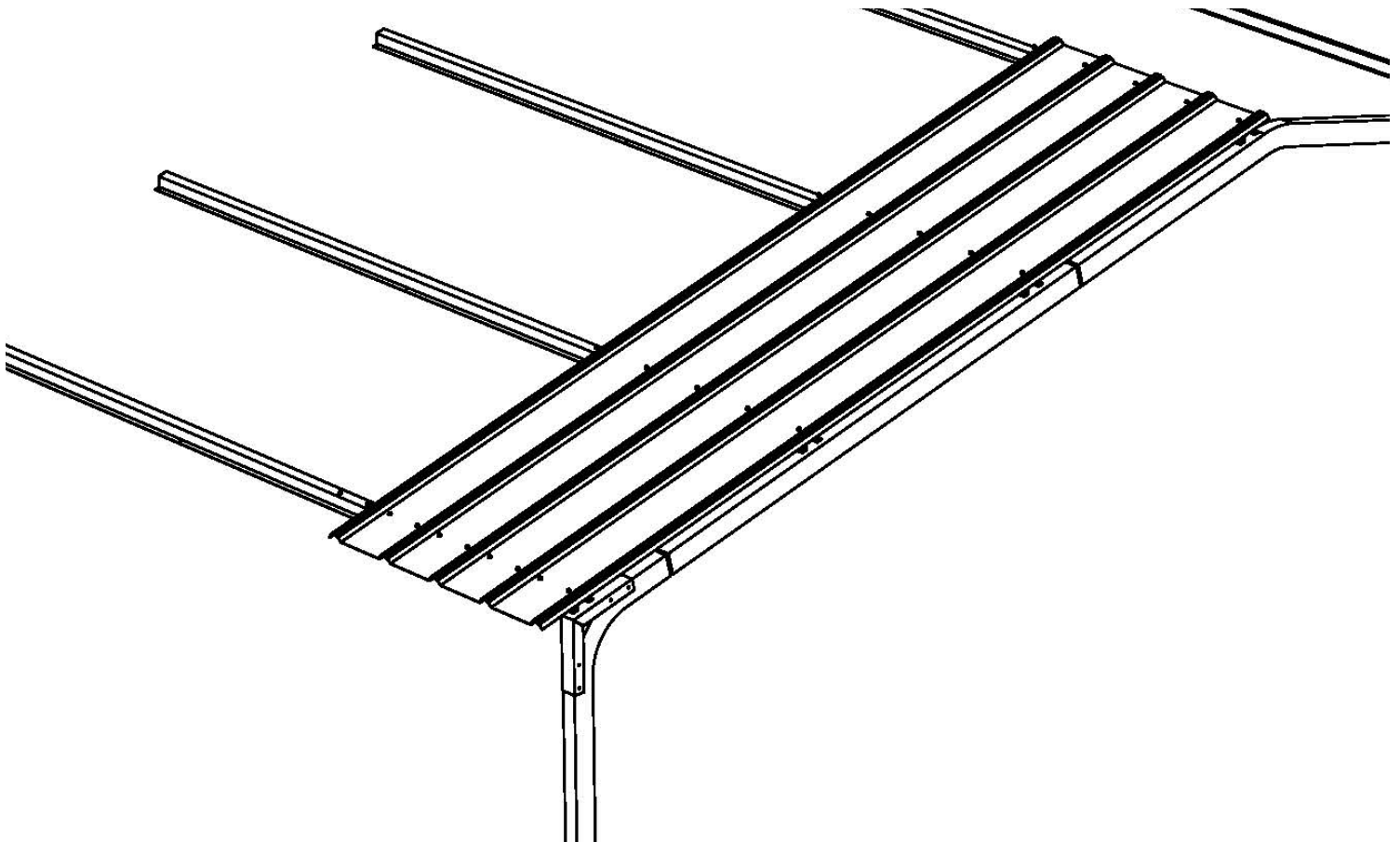
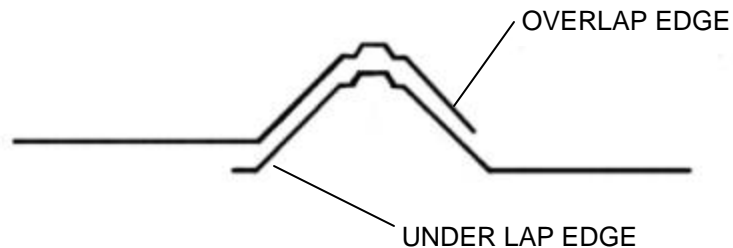
## PANEL INSTALLATION CONTINUED

### Attaching the remaining panels.

Continue installing panels as you did the first panel. Each additional panel should be positioned with the overlap edge of the panel over the under lap edge of the previously installed panels. The bottom edge of the panel should be flush with the previously installed panel. Screw the panels to the hat channel with the same screw pattern as the first panel/panels. When you get to the other end of the carport you will need to trim the last panel/panels to be flush with the frame at that end. Repeat the assembly for the other side of the carport.

### Trimming the last panels:

If your carport has a 20'-2" frame (no length extensions) you will have to trim the last panels to be flush with the front of the carport frame. You will trim about 11" off the last panels. Place the last panels on the roof and mark the under side of the panel using the carport frame as a guide. The easiest way to cut the panels in the rib direction is to use a circular saw with a blade for use with ferrous metals. You can find these blades at you local hardware or home center. Place the panel face down to make the cut. Be sure to wear you safety glasses and ear protection. Electric metal sheers will also make a good cut.



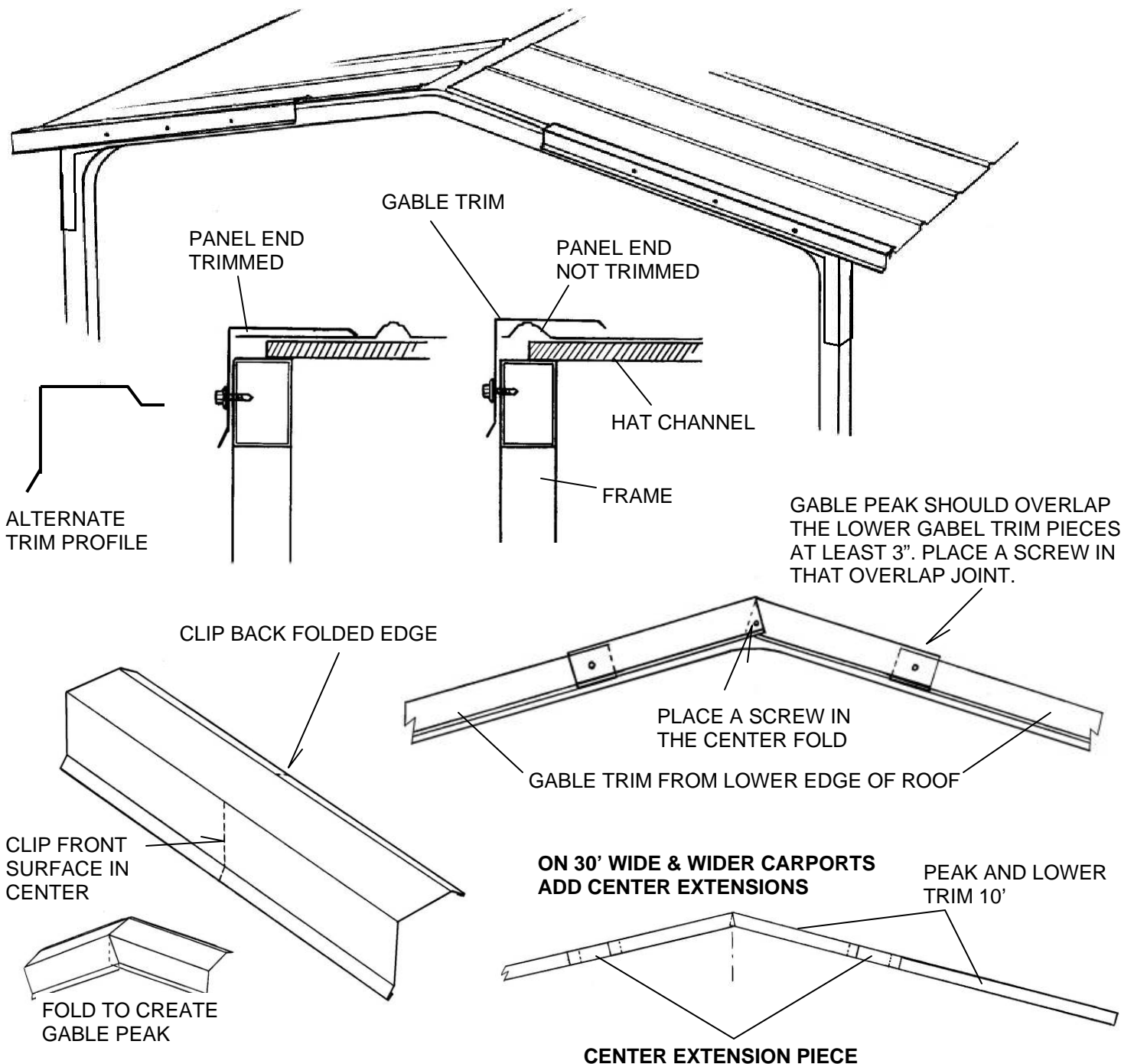
## INSTALLING THE GABLE TRIM

Gable trim will trim up the gable ends of the carport roof. You will use two pieces of trim on each side of the peak starting at or flush with the eave of the roof. You will then cut and fold a piece of trim in the center to create a piece of peak trim. The peak trim will overlap the lower pieces of trim about 3".

If you have a 12' wide or 16' wide carport: Cut two pieces of 10' trim in half. These 5' pieces of trim will be the lower gable trim pieces for the front and back of the carport. Now, from another piece of 10' trim cut two pieces 42" long to create the peak trim pieces for 12' wide carports, 91" long for 16' wide carports. Clip each piece in the front center up to the corner and then clip the back flange to the bend. Then bend the trim to create a gable peak piece of trim. See the illustration below left. Fasten the trim to the frame with the same screws that you used for the roof panels. Place a screw about every 24" into the front surface of the trim.

The length of the lower trim pieces for 20', 24', 30', 36' & 40' wide carports is 10'. On a 30' wide carports, you will need center extension pieces 16 1/2" long. See illustration lower right. On 36' wide carports you will need extensions 53 1/5" long and for 40' wide carports you will need extensions 78 1/2" long.

The lengths of the gable trim peaks are: 42" on 12' wide, 91" on 16' wide, 20" on 20' wide, 69" on 24' wide, 10' on 30' wide, 36' wide and 40' wide.





## INSTALLATION OF RIDGE CAP

RIDGE CAP WILL COME IN 10'-6" LENGTHS. YOU WILL OVERLAP PIECES 5" UNTIL YOU GET TO THE OTHER END OF THE CARPORT WHERE YOU WILL TRIM THE LAST PIECE TO FIT. THE RIDGE CAP SHOULD OVERHANG THE GABLE TRIM 1/2" AT BOTH ENDS OF THE BUILDING.

Place a piece of Ridge Cap on the peak of the carport starting at the back. Center it and make a mark at the lower edges at the end of the carport. Do the same thing at the opposite end of the carport and snap a chalk line between the marks. This will make the Ridge Cap easier to line up and provide a measuring point for locating Butyl Sealing Tape and Outside Foam Closure Strips.

Apply a bead of Butyl Sealing Tape to the roof panels the full length of the building 3/4" up from the chalk lines on both sides of the roof. Now, press Outside Foam Closure strips to the Butyl Tape all the way down the carport on both sides of the roof. The edge of the Closure should be 1/4" up from the chalk line.

Install the first piece of Ridge Cap on the peak at the back of the carport. Let the Ridge Cap overhang the Gable Trim by 1/2". Fasten with 1" Painted, Self-drilling Screws through the edge flange and into the top of every other major rib. Run two beads of butyl tape at the end of the first piece of ridge cap to seal it to the next overlapping piece of Ridge Cap. If you have a 20' long carport you will not cut the 10'-6" long ridge cap. The second piece of ridge cap will overlap the first about 9" in the center of your carport. If you have added length extensions to the carport you will have to measure and cut the last piece of ridge cap to overlap the first piece at least 6" and to overhang the other end of the carport gable trim 1/2".

Lap the next piece of Ridge Cap 9" over the first, press the seam together and attach with screws. so on down the carport. The last piece should overhang the Gable Trim at the other end of the carport 1/2".

