

American 
POLE BARNs

POST FRAME & STEEL TRUSS
INSTALL GUIDE

REVISED 03/16/2021

IMPORTANT INFORMATION

The application and detail drawings in this manual are strictly for illustration purposes and may not be applicable to all building designs or product installations. All projects should conform to applicable building codes for that particular area. It is recommended to follow all building regulations and standard industry practices. We cannot be responsible for the performance of the post frame system if it is not installed in accordance with the suggested instructions referenced in this manual. If there is a conflict between this manual and the approved erection drawings, the approved erection drawings are to take precedence. Prior to ordering and installing materials, all dimensions should be verified by field measurements. We reserve the right to modify, without notice, any details, recommendations or suggestions. Any questions you may have regarding proper installation of the Stile roofing system should be directed to your representative. Consult your representative for any additional information not outlined in this manual. This manual is designed to be utilized as a guide when installing post frame building systems. It is the responsibility of the erector to ensure the safe installation of this system.

SAFETY

STUDY APPLICABLE OSHA AND OTHER SAFETY REQUIREMENTS BEFORE FOLLOWING THESE INSTRUCTIONS.

The installation of metal roof systems is a dangerous procedure and should be supervised by trained knowledgeable erectors.

USE EXTREME CARE WHILE INSTALLING TRUSSES AND ROOF PANELS.

It is not possible for us to be aware of all the possible job site situations that could cause an unsafe condition to exist. The erector of the building system is responsible for reading these instructions and determining the safest way to install the roof system.

These instructions are provided only as a guide to show a knowledgeable, trained erector the correct parts placement one to another. If following any of the installation steps would endanger a worker, the erector should stop work and decide upon a corrective action. Provide required safety railing, netting, or safety lines for crew members working on the roof. Do not use the roof panel as a walking platform. The roof panels will not withstand the weight of a person standing at the edge of the panel. Do not stand on any part of a roof panel until the panel has been completely attached.

CORPORATE

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Tuff-Rib

Dade County NOA #07-0713.03.03 & ASCE 7-98 Compliant ; Florida Building Code Approval #FL4586.3, #FL6144.3, #FL9610.3 ; Texas Department of Insurance Approval #116 ; UL 790 Fire Resistance Class A ; UL 2218 Impact Resistance Class 4 ; UL 580 Uplift Class 90 Construction #584

Angle Iron Steel Truss

Our angle iron steel trusses are manufactured by certified welders and are engineered to meet Alabama, Tennessee, Kentucky and Georgia engineering requirements. They feature a 90-mph wind load (IBC 2009), 115-mph design wind speed rating, a 20 PSF roof live load, a 9 PSF allowable dead load, and a 30 PSF ground snow load when set on 6 x 6 posts at 10-foot centers (2012 IBC). We use 1 1/2" x 1 1/2" x 3/16" angle for both the top and bottom chords with 1 1/4" x 1 1/4" x 1/8" angle for webbing.

Angle iron trusses are available in gable trusses up to 50', lean-to trusses up to 30' and header trusses up to 24'.

Sturdi-Wall Anchors

MODEL NO.	BRACKET DIMENSIONS				POST SIZE	FASTENERS ⁴ (Quantity-Type)		ASD (C _D = 1.6)		LRFD (λ = 1.0)	
	W (in.)	D (in.)	H (in.)	B (in.)		Screws	Bolts	F _t ⁵ (lbf)	F _{uplift} (lbf)	F _t ⁵ (lbf)	F _{uplift} (lbf)
SW6C ⁶	-	5	13	3 1/2	4x6	6	0	1,120	1,300	1,510	1,950
SW60 ⁷	-	5	15	3 1/2	6x6 ⁸	4	2	2,100	3,400	2,830	5,110
SW80 ⁷	-	7	18	3 1/2	8x8 ⁸	8	2	3,030	4,500	4,080	6,760
SW46	3 5/8	5	13	12 1/8	4x6	4	2	2,100	2,970	2,830	4,460
SW55	4 5/8	5	13	12 1/8	5x5	4	2	2,100	3,330	2,830	5,010
SW63	4 5/8	5	13	12 1/8	3-ply 2x6	4	2	2,100	3,680	2,830	5,530
SW64	6 1/8	5	13	13 5/8	4-ply 2x6	4	2	2,100	3,620	2,830	5,450
SW65	7 5/8	5	13	15 1/8	5-ply 2x6	4	2	2,100	3,440	2,830	5,170
SW66	5 5/8	5	13	13 5/8	6x6	4	2	2,100	3,640	2,830	5,470
SW83	4 5/8	7	18	12 1/8	3-ply 2x8	8	2	3,030	4,980	4,080	7,480
SW84	6 1/8	7	18	13 5/8	4-ply 2x8	8	2	3,030	4,880	4,080	7,330
SW85	8 1/8	7	18	15 1/8	5-ply 2x8	8	2	3,030	4,800	4,080	7,240
SW88	8 1/8	7	18	15 1/8	8x8	8	2	3,030	4,800	4,080	7,210

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N.

PANELS

The standard panel for our Pole Barn Kits is 29ga Tuff-Rib. Each panel has a coverage of 36" and is cut to length. Tuff-Rib is a direct fastened (exposed) system. This guide is applicable to installs utilizing Tuff-Rib panel, PRB-Panel, 5-V Crimp, and Corrugated.

Use of Standing Seam panels or other styles of concealed fastened panels will require additional instructions and preparation.

FASTENERS

Roofing panels are fastened using a #10 WoodTite Metal-to-Wood Screws. These are carbon steel screws and should not be used with treated lumber.

Steel trusses are fastened to posts using a 1/2-13 X 7.00 Grade 2 Carriage Bolt, 1/2 Grade 5 Lock Washer, and 1/2-13 Grade 5 Nut.

Steel trusses are connected using 1/2-13 X 1.50 Grade 5 Bolt, 1/2 Grade 5 Lock Washer, and 1/2-13 Grade 5 Nut.

Collar ties are fastened using 1/2-13 x 3.00 Grade 5 Bolt, 1/2 Grade 5 Flat Washer, 1/2 Grade 5 Lock washer, 1/2-13 Grade 5 Nut.

Sturdi-Wall (Plus) brackets are fastened to post columns using 7" carriage bolts and Spax Lag Screws.

Sturdi-Wall brackets are anchored to pad using a 5/8" x 6" concrete anchor.

ROOF PURLINS

Non-treated 2"x6"x10' dimensional #2 SYP non-treated lumber is used for the primary roof purlins. #2 2"x6"x12' are used for the gable ends to achieve overhang.



POSTS

Solid, treated 6x6 posts for truss spans under 50' and/or post heights under 16'. Solid, treated 8x8 posts or approved telephone poles for spans 50' thru 60' and/or post heights 16' or greater. Posts greater than 6x6 must be notched to accommodate steel trusses.

FOUNDATION

Option 1: Post Set On Concrete Footer Pad

Six inch thick concrete pad 14-16 inches in diameter placed 4' below ground level.

Option 2: Post Set In Poured Concrete

Four feet of concrete 14-16 inches in diameter poured around the post.

Option 3: Wet Set Brackets

Highest strength foundation connection. Pre-welded 1/4" steel bracket installed in wet concrete.

Option 4: Drill Set Brackets

Pre-welded 1/4" steel bracket installed in set concrete using hammer drill and concrete anchors.

Option 5: Perma-Column®

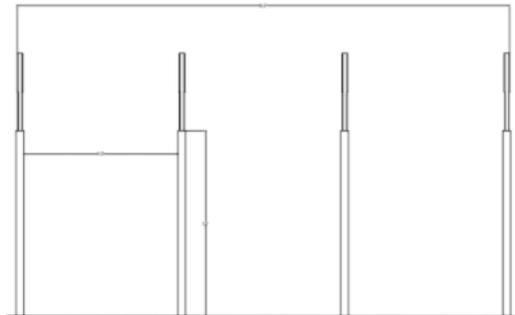
Pre-cast concrete post reinforced with 60,000 psi rebar welded to 1/4" steel bracket. Set on concrete footer pad or composite footer pad.

TRUSSES

Our steel trusses are manufactured in the United States and engineered using 1-1/2" x 1-1/2" x 3/16" Grade 50 KSI steel angle that is dip coated with a matte black finish. All default measurements for trusses are outside measurements.

The standard roof pitch for gable trusses is 4:12. The standard for Lean-To trusses is 1:12. Other pitches are available upon request. These are not stocked and will therefore have an extended lead time. The standard overhang from eave to truss edge is 18".

Our steel trusses are scissor trusses and provide greater overhead space than traditional wood trusses would provide. They come with pre-welded purlin buckets spaced every 24". They also come with all of the hardware needed to join the trusses together, carriage bolts included.



When quoting steel trusses be sure the measurement for the truss is from inside to inside of the post columns. When figuring trusses the first truss counts as zero.

Ex: 100'/10' = 10 Trusses + 1 (First Truss which is zero) So for 100' you will need 11 trusses.



Our steel trusses come with pre-welded purlin cups designed to hold 2x6 dimensional lumber. These cups will not accommodate rough cut lumber.

Purlin cups are spaced 24" apart at the webbing apex and feature four pre-drilled holes for easy installation of supplied #10 Woodtite Metal-to-Wood screws.

Steel trusses feature a base which allows the truss to sit flush on top of a post column without and need for notching when used with a 6x6 post.

If posts larger than 6x6 are used, the post may need notched to accommodate the truss overhang. Bases are made from 1-1/2" x 1-1/2" x 3/16" Grade 50 KSI steel angle.



Our angle iron steel trusses are manufactured by certified welders and are engineer stamped for Alabama, Tennessee, Kentucky, and Georgia. They feature a 90-mph wind load (IBC 2009), 115-mph design wind speed rating, a 20 PSF roof live load, a 9 PSF allowable dead load, and a 30 PSF ground snow load when set on 6 x 6 posts at 10-foot centers (2012 IBC). We use 1 1/2" x 1 1/2" x 3/16" Grade 50 KSI steel angle for both the top and bottom chords with 1 1/4" x 1 1/4" x 1/8" angle for webbing.

GABLE TRUSS

Gable Trusses are the most common style of truss. They can be built up to 100' wide at any pitch.

From 10'-40' gable trusses are made from 1-1/2" x 1-1/2" x 3/16" single chord Grade 50 KSI steel angle and 1-1/4" x 1-1/4" x 1/8" Grade 50 KSI webbing.

Trusses greater than 40' are made with double chord 1-1/2" x 1-1/2" x 3/16" Grade 50 KSI steel angle and 1-1/4" x 1-1/4" x 1/8" Grade 50 KSI webbing.

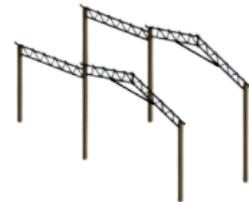
60' or greater are made from 2" x 2" x 3/16" A36 angle and 1-1/4" x 1-1/4" x 1/8" Grade 50 KSI webbing.

Gable trusses have a Roof Live Load of 20PSF, Design Wind Speed of 115 mph, Ground Snow Load of 30 PSF and Allowable Dead Load of 10 PSF.



LEAN-TO TRUSS

Lean-To trusses can be manufactured up to 50'. They are easily added on to an existing building by mounting onto an existing post column. If the truss is stand-alone you will need two post columns per truss. If mounting onto an existing post column, only one post column is needed per truss.



HEADER TRUSS

Header trusses (sometimes called "bar joist") allow you to span up to 30' between posts providing additional bay widths.



SNOOT TRUSS

Snoot trusses are perfect for achieving an awning without an extra post. They are available in 3', 4', and 5' lengths.



COLLAR TIE

Collar ties, also called tension bars or lateral braces, are provided with certain sizes of gables trusses to provide stability. Collar ties are made from 1-1/4" x 1-1/4" x 1/8" A36 angle.



Option #1

Post set on concrete pad.

Concrete pad is poured below ground level. Post is placed on top of the pad. Post hole is then back-filled. The concrete "cookie" pad should be at least 14'16" in diameter and no less than 6" thick. Approved composite footing pads may also be used in place of pouring a pad. It is not recommended to sit the post directly on soil as moisture could cause the post to sink. Consider using a post protector for this application to slow the rate of post deterioration.

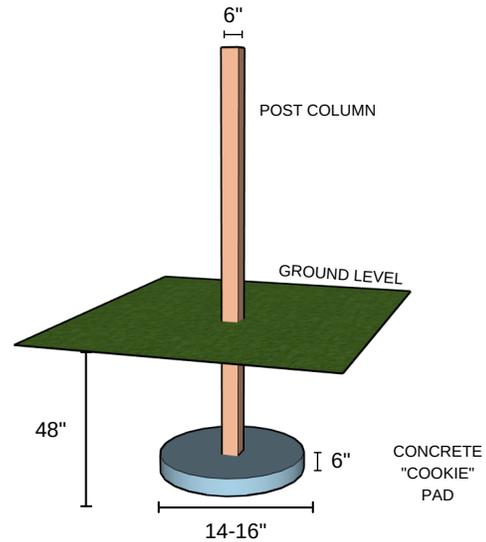


FIGURE #1

Option #2

Post set in poured concrete.

Ground is excavated to allow for a 4' concrete fill that is 24" in diameter. Post is set in ground and concrete is then poured. Care must be taken for moisture to not get trapped between concrete fill and the post. Should moisture get trapped, rapid post decay may occur.

Ensure concrete is properly mixed and settled. Air pocket in the pour can allow moisture to accumulate and will result in rapid post deterioration.

Consider using a post protector for this application to slow the rate of post deterioration.

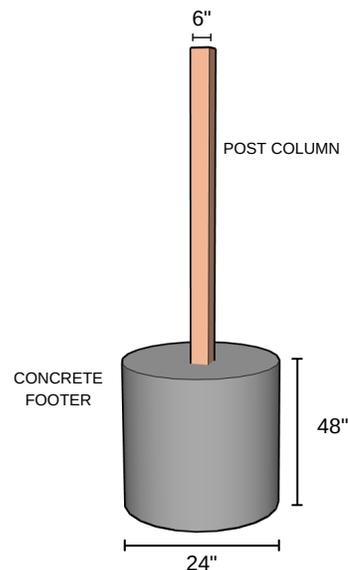


FIGURE #2

Option #3

Sturdi-Wall Plus wet set brackets.

Use these brackets when pouring a new concrete pad.

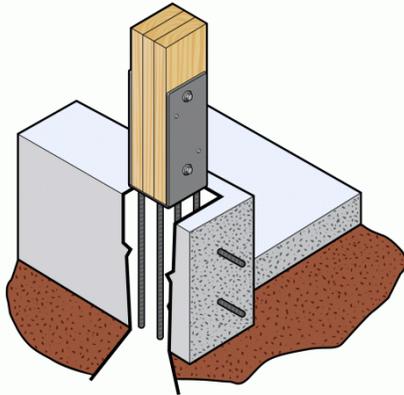


FIGURE #3A

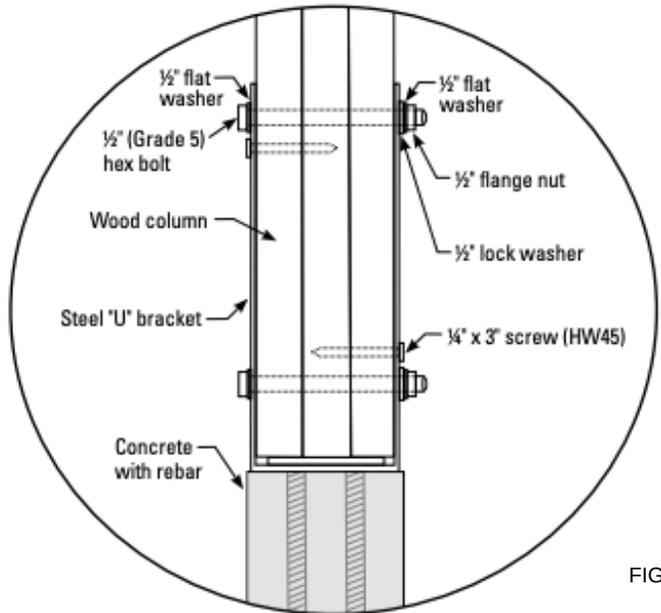


FIGURE #3B

Option #4

Sturdi-Wall drill set brackets.

Use these brackets when attaching posts to an existing concrete pad.

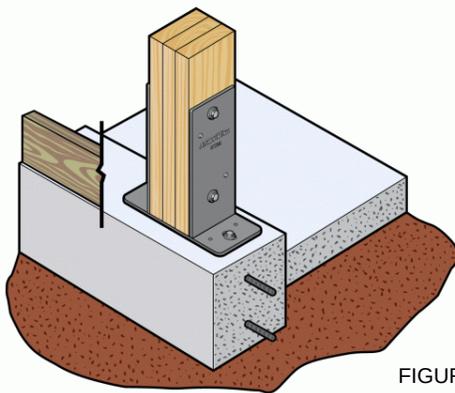


FIGURE #4A

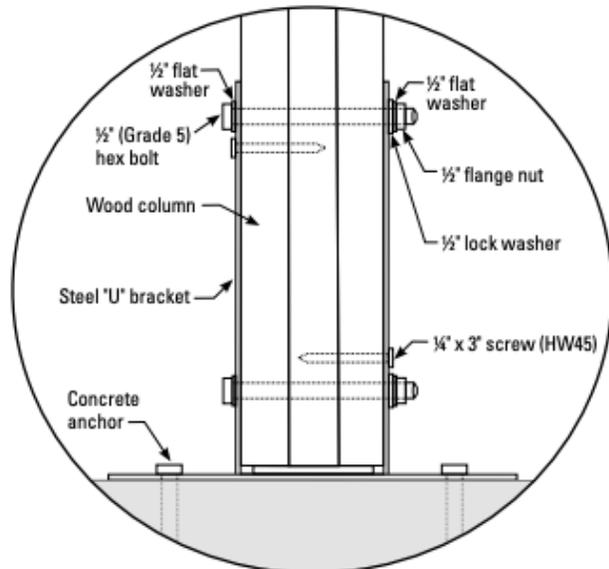
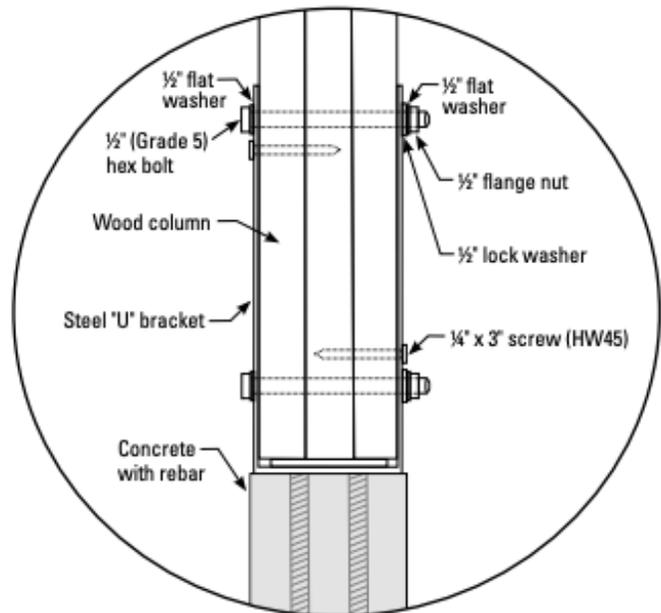
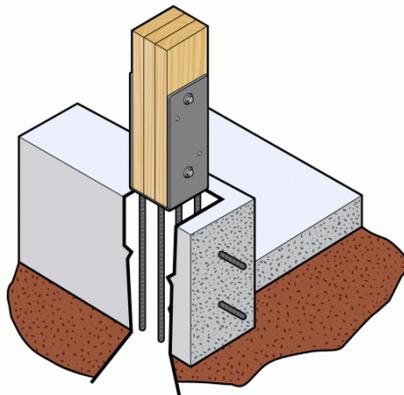


FIGURE #4B

How to Install Wet Set Brackets

Sturdi-Wall Plus brackets are used in wet set concrete applications and provide the highest strength bracket to foundation connection when concrete is fully cured. Wet set brackets require less concrete coverage than the Drill Set brackets, allowing them to work well in pier foundations, stem walls, post repair and renovations. Sturdi-Wall Plus brackets are available in Standard, OT and GL models.

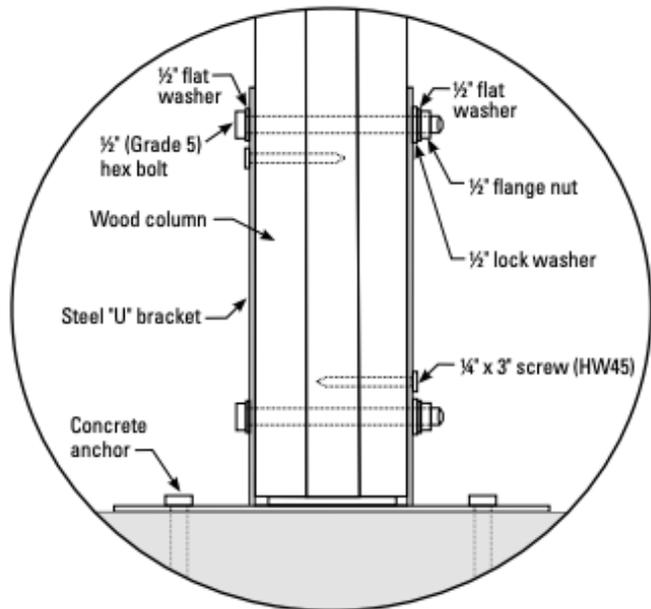
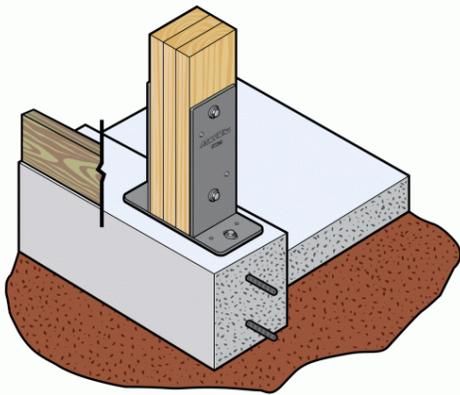
Sturdi-Wall Plus brackets are a heavy duty engineered anchoring system that attaches a wood column to concrete foundations and are generally used in the post frame building industry. These brackets are made with $\frac{1}{4}$ " steel plate, A706 rebar in either # 4 or # 5 size depending on model, robotically welded to meet engineering specs and are given a professional look with a baked EpoxZi Shield coat finish. Some models are available in Hot Dipped Galvanized for more corrosive environments.



How to Install Drill Set Brackets

Sturdi-Wall brackets are a heavy duty engineered anchoring system that attaches a wood column to concrete foundations and are generally used in the post frame building industry. These brackets are made with 1/4" steel plate robotically welded to meet engineering specs and are given a professional look with a baked EpoxZi Shield coat finish. Some models are available in Hot Dipped Galvanized for more corrosive environments.

Sturdi-Wall drill set brackets are used where the concrete foundation has already been poured and concrete anchors are used for attachment. The main advantage of drill setting is the reduction of wet set concrete placement errors. Sturdi-Wall brackets are available in Standard, OT and GL models.



Option #5

Pre-cast Perma-Column.

The Perma-Column columns are factory manufactured precast reinforced concrete columns with a steel “U” shaped bracket on the top for attachment to a wood post for laminated wood column. The column protrudes above finish grade, to allow for the attachment of a wood post or laminated wood column. See Figure 1 for an illustration of a typical Perma-Column column

ICC (ESR-4238) approved precast concrete Perma-Column® that are an alternative to preservative treated wood thus ensuring the structural integrity of your building’s foundation, a simple and efficient construction method that has the durability of a concrete foundation. No Mess. No Cure Time.

Concrete Column -

Self Consolidating Concrete (SCC) precasting technology that includes microfibers, superplasticizers, microsilia, a corrosion inhibitor for rust protection of rebar reinforcements and an admixture that gives freeze/thaw protection. Our mix design technology gives three times the strength of standard concrete and guarantees a lifetime of durability..

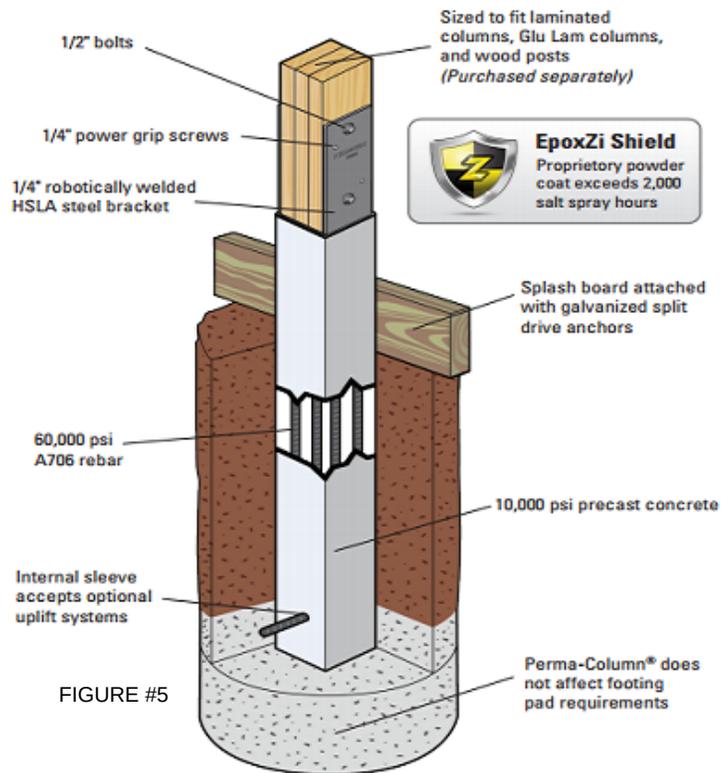


FIGURE #5

Steel Bracket – The wood column is attached with ½” Grade 5 thru-bolts and ¼” lags to a “U” shaped steel bracket made of ¼” steel (double plated on the bottom). This bracket is robotically welded to steel reinforcement bars (A706 #4 or #5 – depending on Model) that runs the entire length of the column with a hole precast into the base of the column to allow easy attachment of uplift anchors or column extenders. All steel is premium high strength alloy purchased in the U.S.A. and finished with EpoxZi Shield Proprietary powder coat paint.

Strength – Perma-Column® have been extensively tested by both Wisconsin and Purdue University and in comparative strength tests have proven Perma-Column® outperforms the industry standard wood columns. Certified by the International Code Council, the patented Perma-Column® with 10,000 psi strength concrete foundation system lasts for generations.

POST COLUMN LAYOUT

If posts are being set in ground, set a string line to mark your post holes. Once holes have been augured, use a temporary board to suspend your posts and ensure the building is square. If you are using solid posts ensure any crown or bow is facing the inside of the building. Once the posts are set you can prepare your footer and backfill to grade.

Detail #6 depicts the side elevation post column layout for a 30'w x 12'h structure. Posts should be spaced no more than 10' apart. If it necessary to have a wider bay, a header truss must be used.

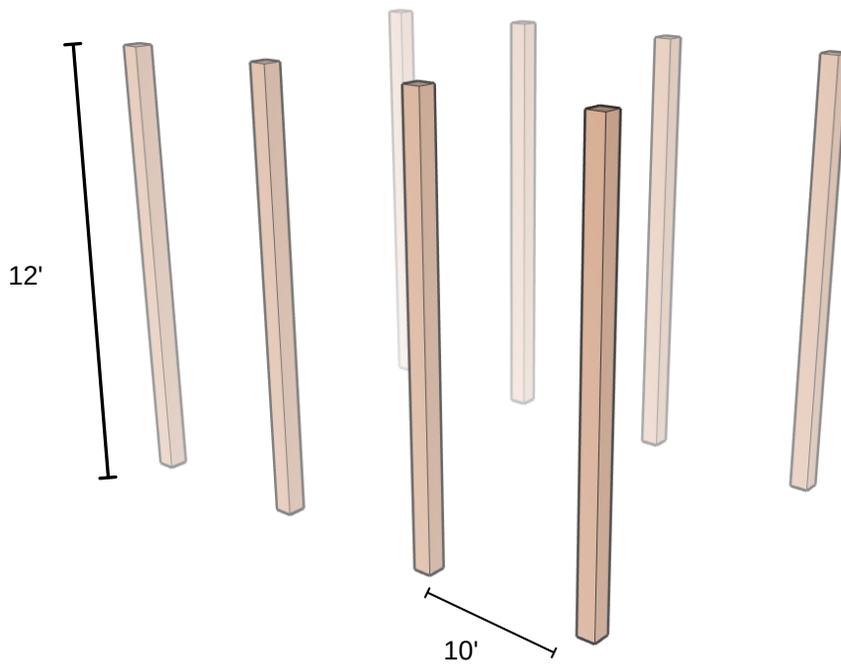


FIGURE #6

POST COLUMN PLACEMENT

If posts are being set in ground, set a string line to mark your post holes. Once holes have been augured, use a temporary board to suspend your posts and ensure the building is square. If you are using solid posts ensure any crown or bow is facing the inside of the building. Once the posts are set you can prepare your footer and backfill to grade.

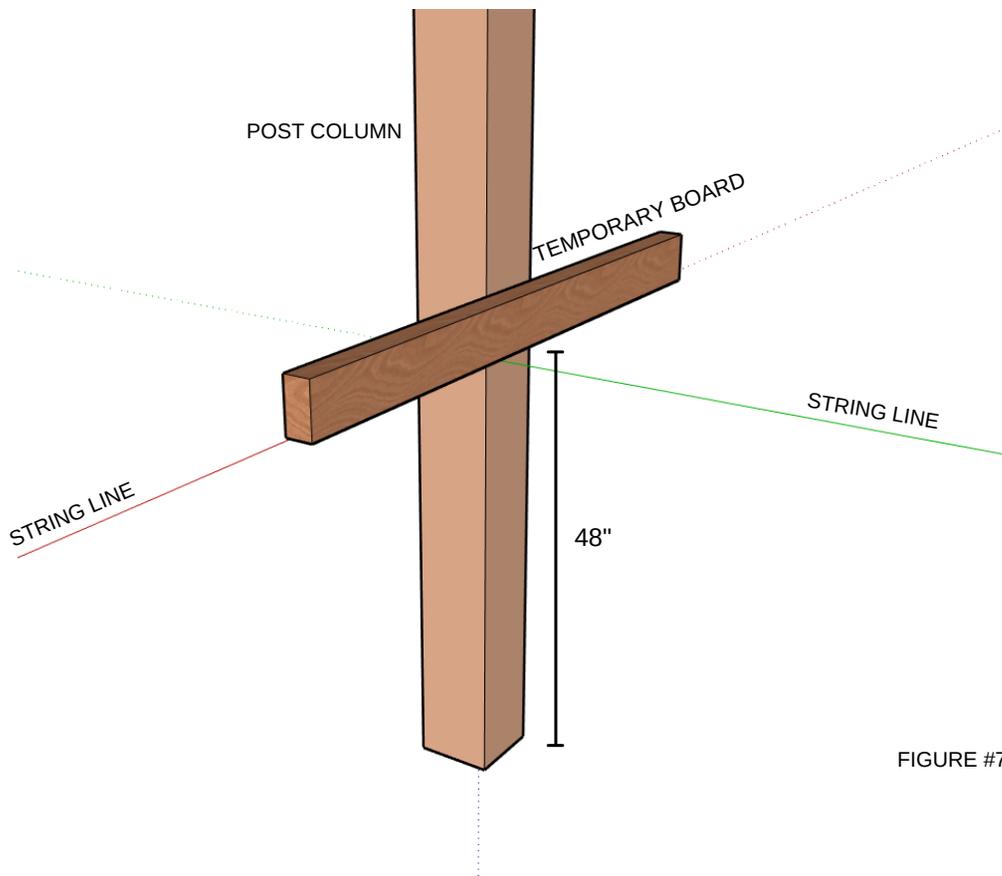


FIGURE #7

The steel truss is mounted on the post column by sitting the truss post platform on the top of the post as shown in Detail #8. Steel trusses do not use a header board so there is no need to notch the post unless using an 8x8 post.

The truss is secured to the post using (2) 7" Grade 2 Carriage Bolts that are supplied with your kit (as shown in Detail #9). 3/8" x 6" lag bolts can be used in place of carriage bolts, though carriage bolts provide superior strength.

Steel trusses can expand and contract according to the environment's temperature. Tolerances within .50 are acceptable.



FIGURE #8



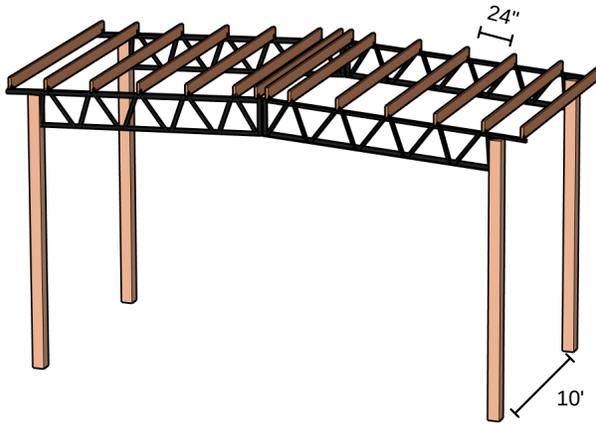


FIGURE #10

The steel trusses come with pre-welded purlin buckets (or "cups" spaced every 24". The buckets are pre-drilled for easy attachment. Four screws are needed per purlin cup.

Place the 2x6 purlin in the bucket and secure using provided #10 WoodTite Metal-to-Wood fasteners as shown in Figure #10 and Figure #11.



FIGURE #11

STORAGE

If metal is not to be used immediately, store inside in a well ventilated, dry location. Condensation or other moisture can form between the sheets during storage causing water stains or white rust which detract from the appearance of the product and may affect the product's useful life. Trapped moisture between sheets of painted metal can cause white rust to form under-neath the paint. This can cause the paint to flake off the panel immediately or several years later. To prevent white rust and staining, break the shipping bands on the material. Store the material on end or on an incline of at least 8" with a supporting board underneath to prevent sagging. Fan the sheets slightly at the bottom to allow for air circulation. Keep the sheets off of the ground with an insulator such as wood. Any outdoor storage is at the customer's own risk. If outdoor storage cannot be avoided, protect the metal using a canvas cover or waterproof paper. Never cover the metal with plastic as this will cause condensation to form. Some Safety Precautions Always wear heavy gloves when working with steel panels to avoid cuts from sharp edges. When cutting or drilling steel panels, always wear safety glasses and sweep off any metal shavings immediately to prevent eye injury from flying metal fragments. If you must walk on a metal roof, take great care. Metal panels can become slippery, so always wear shoes with non-slip soles. Avoid working on metal roofs during wet conditions when the panels can become extremely slippery. Walking or standing on a metal roof which does not have a plywood or other deck beneath it is not recommended. However, if you must do so, always walk on the purlins, never between.

GENERAL INSTALLATION INFORMATION

Insure that the structure is square and true before beginning panel installation. If the structure is not square, the panels will not properly seal at the sidelaps. Start the first panel square to eave by using 3, 4, 5 Triangle Method. Green or damp lumber is not recommended. Moisture released from the damp lumber may damage the metal panels. Nails installed in green or damp lumber may back out. Remove any loose metal shavings left on the roof surface immediately to prevent corrosion. After installing roof, remove any debris such as leaves or dirt to prevent moisture from getting trapped on panels. Do not install in direct contact with chemically treated lumber.

FASTENING

If you wish to predrill fastener holes, use a cover sheet to prevent hot shavings from sticking to panels. Screws - For best results, use a 1-1/2" double washered wood screw in the flat of the panel as shown in the illustration below. Fasteners should be applied at every purlin. Drive the fastener so that the washer is compressed securely against the metal. Do not over drive the fastener as this will form a dimple that can collect water and cause leakage. Do not leave any loose fasteners that have missed the purlin. Use a #14 stitch screw or caulk to fill the hole.

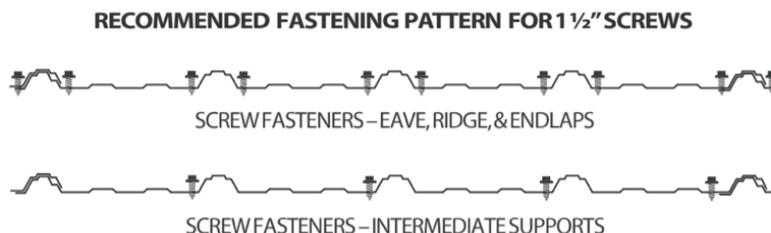


FIGURE #12

Install the Tuff-Rib roofing panels from left to right as shown in Figure #13 below.

Direction of Installation 

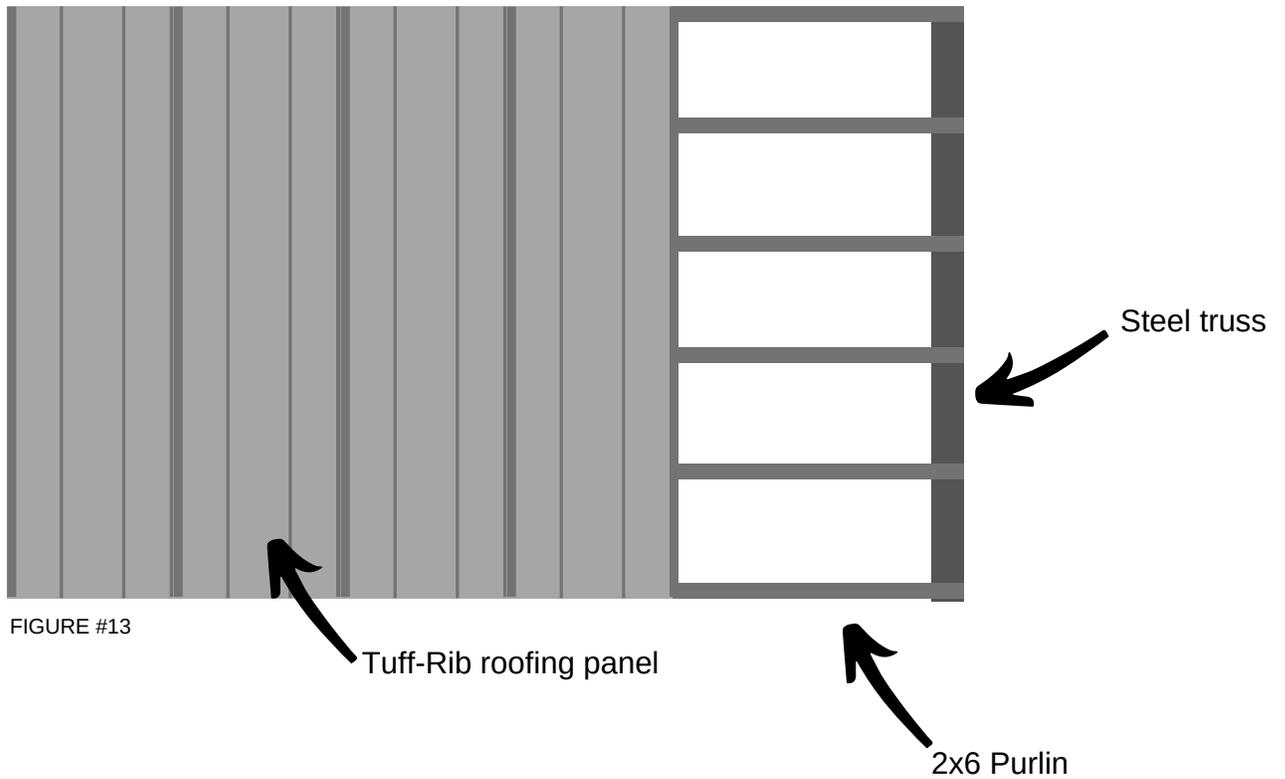
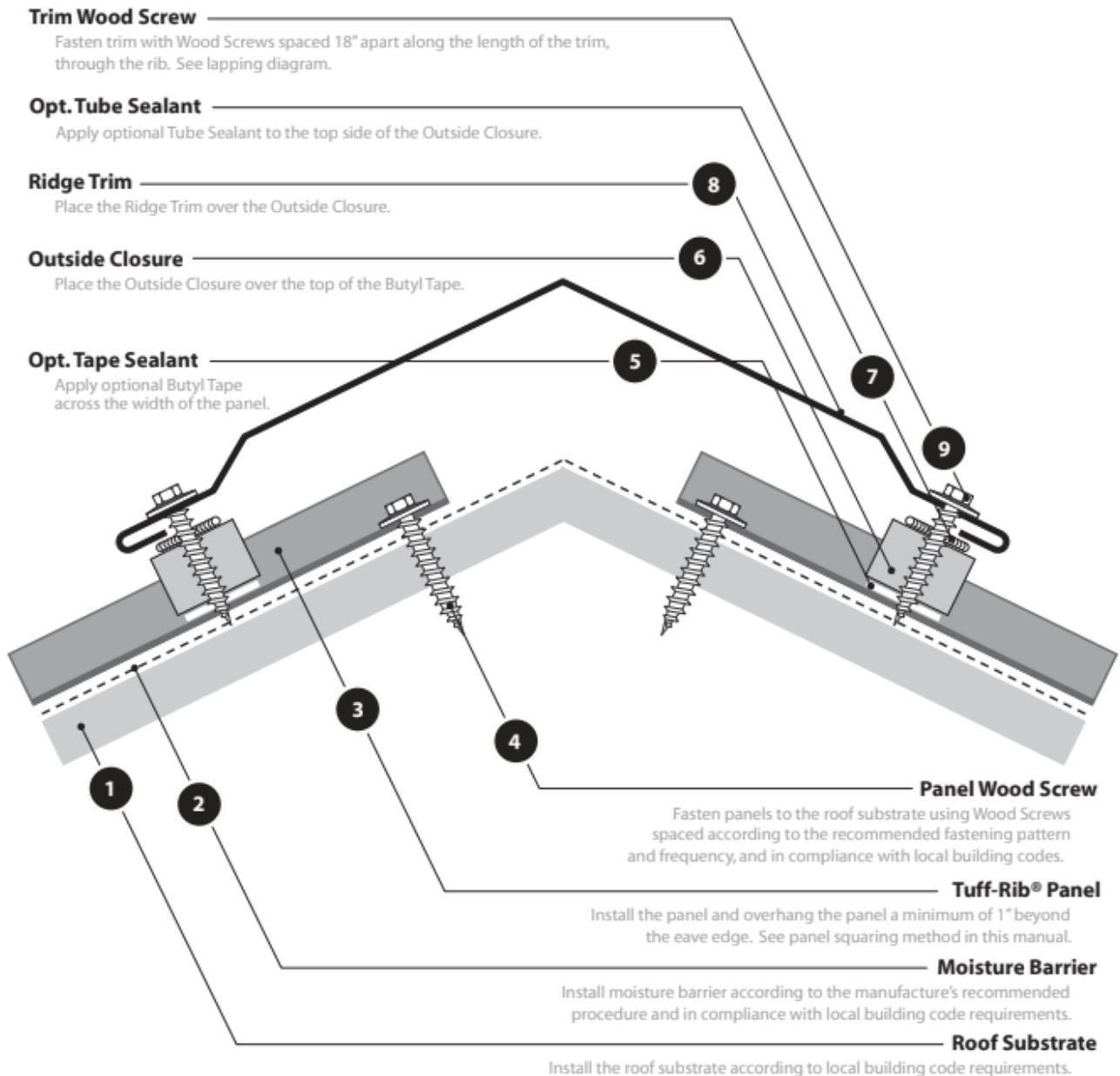


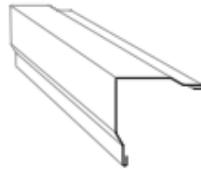
FIGURE #13

RIDGE CAP INSTALLATION

Numbers indicate suggested trim assembly sequence.



RAKE TRIM INSTALLATION



Tape Sealant —————
Apply Butyl Tape along the length of the panel.

Tuff-Rib® Panel ————— **3**
Install the panel and overhang the panel a minimum of 1" beyond the Eave trim edge. See panel squaring method in this manual.

Panel Wood Screw ————— **4**
Fasten panels to the roof substrate using Wood Screws spaced according to the recommended fastening pattern and frequency, and in compliance with local building codes.

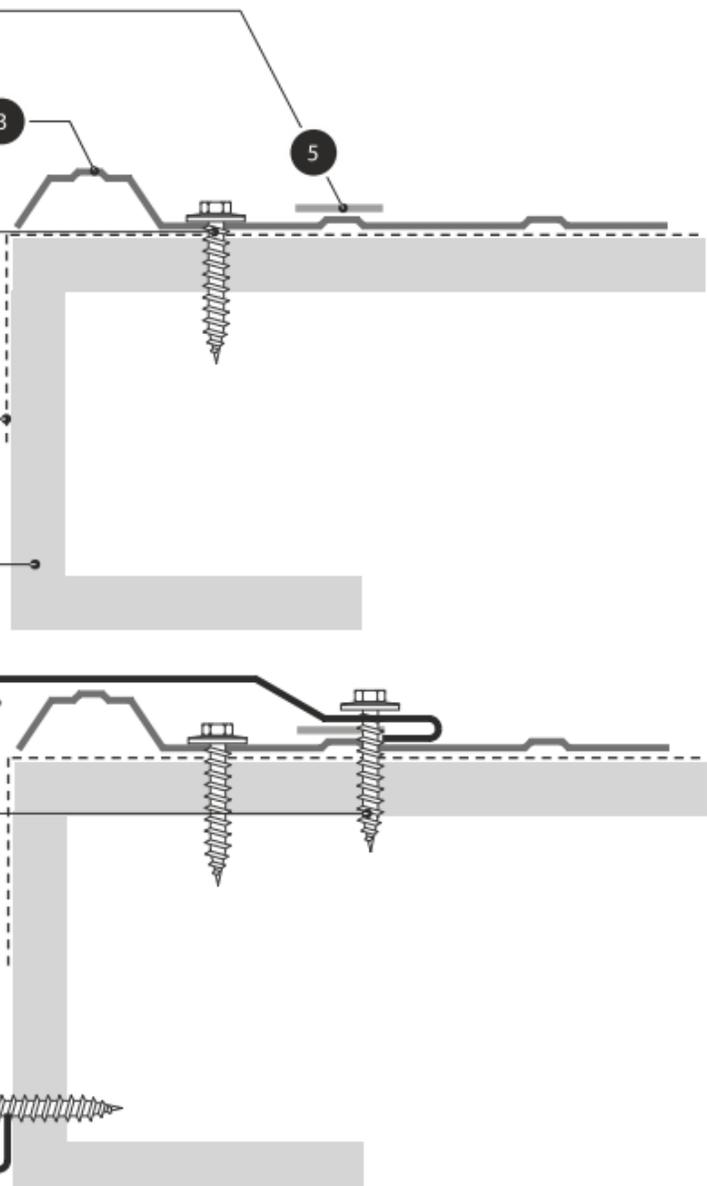
Moisture Barrier ————— **2**
Install moisture barrier according to the manufacture's recommended procedure and in compliance with local building code requirements.

Roof Substrate ————— **1**
Install the roof substrate according to local building code requirements.

Gable / Corner Trim ————— **6**
Install the Corner trim and overlap the ends 4". See lapping diagram in this manual.

Trim Wood Screw ————— **7**
Fasten trim with Wood Screws spaced 2' apart along the length of the trim.

Trim Wood Screw ————— **8**
Fasten trim with Wood Screws spaced 2' apart along the length of the trim.



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