

# Nor' Easter Greenhouse Installation Directions

**(603)629-9004 for Customer Support**

**Version 20-11**



## Suggested Tool List

8' step ladder

Utility knife

Clamps

4' level

Tape measures

100' or longer tape measure

Deep drive socket set with an adaptor for your drill

Sledge hammer

Sharpie markers

Cordless drills

Impact driver

Circular saw with wood blade if wood framed ends

Jigsaw or reciprocating saw with metal blade for polycarbonate or steel framing

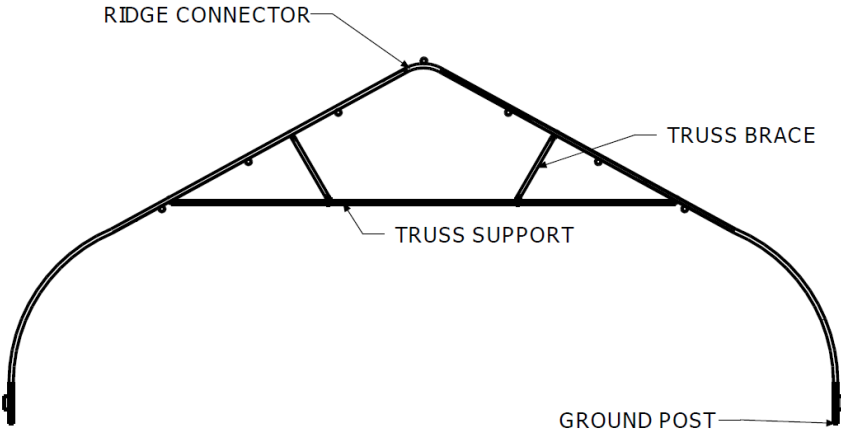
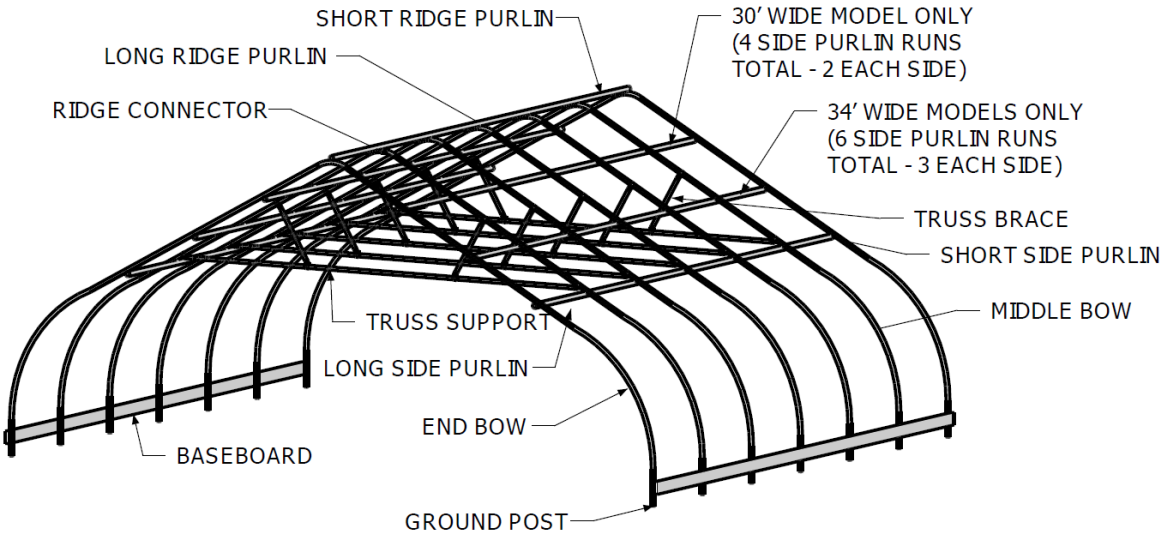
Extension cords

*RGS provides a care kit with a ground post driver, a 5/16" magnetic driver for tek screws and wood-mate screws, a line level, a 3/8" drill bit and mason line*

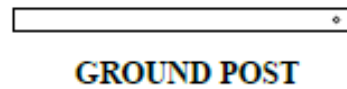
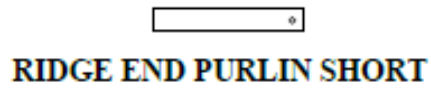
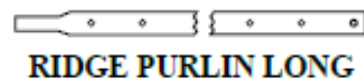
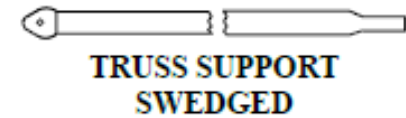
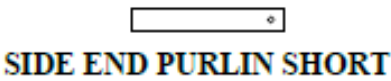
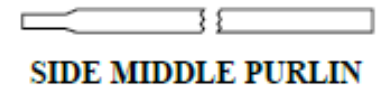
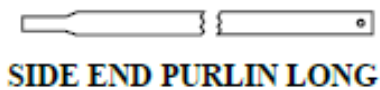
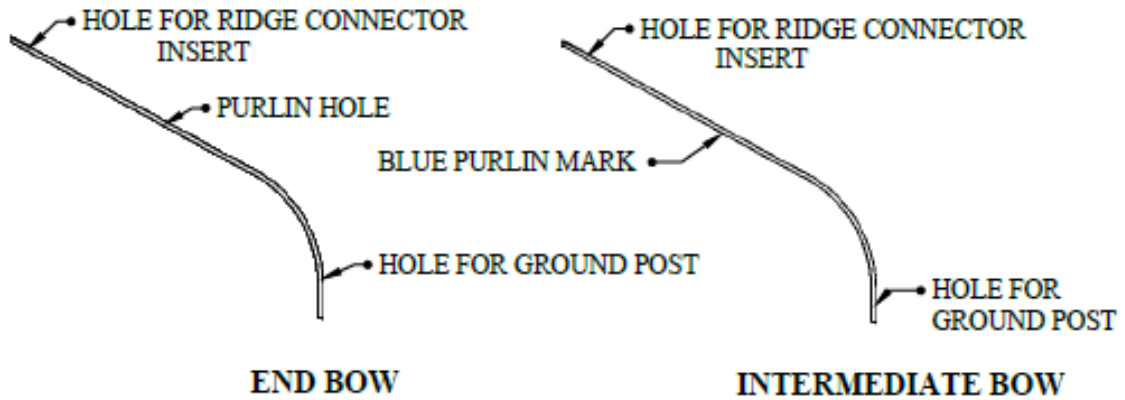
***Always refer to your pick lists for parts to be used in each step of the construction process.***

***READ THROUGH EACH SECTION OF THE MANUAL FIRST BEFORE YOU ENGAGE IN THE ASSEMBLY PROCESS. THIS WILL HELP YOU FULLY UNDERSTAND THE CONSTRUCTION PROCESS.***

# Illustrated Parts List



# ILLUSTRATED PARTS LIST



## Laying Out Your Greenhouse and Installing Ground Posts

Make sure your site location is clean and level as possible. A level greenhouse is especially important from end to end and the site must not have more than a few inches of height difference.



If you have rocky or very hard soil, you should consider either renting a power auger or digging a continuous trench and backfilling it with clean soil.



The tools necessary will be mason twine, a line level and the ground post driver.



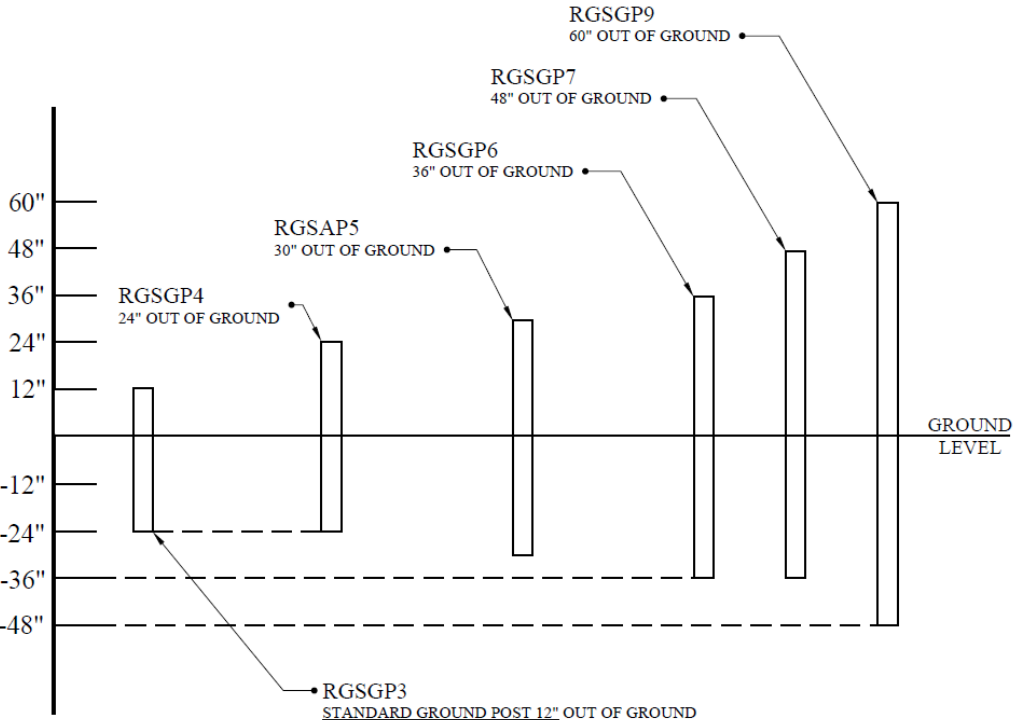
To layout your ground posts, you can either use the method below, or you can set up stringlines using batter boards. We provide a line level for you to make sure your string lines are level, however for greenhouses 96' or longer, we recommend using a laser level or a transit.



This is a laser level that can easily be rented.

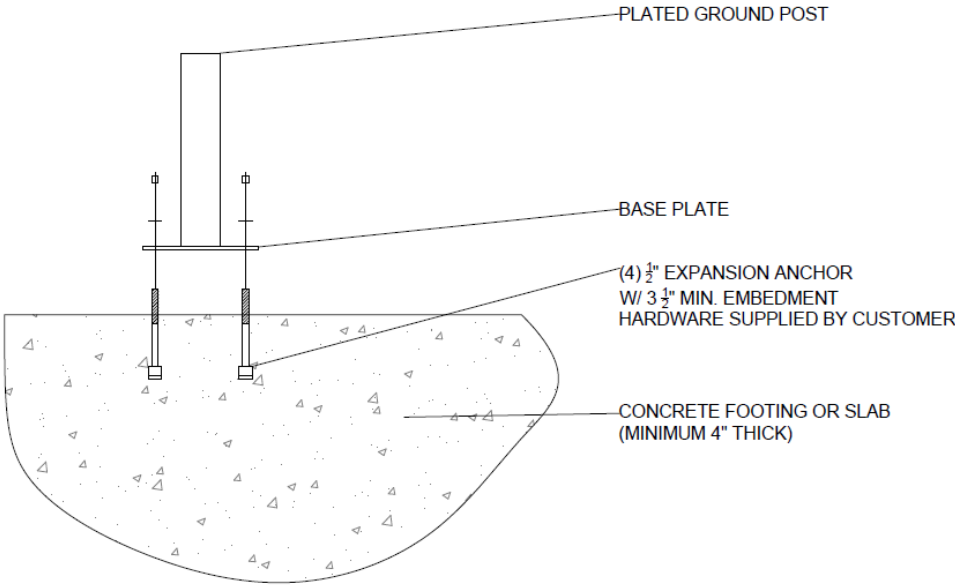
The depth of your ground post will be dependent upon which length that you have. Refer to the diagram below to determine how far into the ground you will drive your ground post.

EXTENDED GROUND POST





If you have plated ground posts, refer to the diagram below for attaching the ground posts to concrete.



Find the left rear corner of the greenhouse, and using the ground post driver and a sledge hammer, bang the ground post into the ground. Refer to your pick list and the diagram to determine how much of your ground post will be in the ground and out of the ground. The bolt holes are at the top of the ground post. Make sure your ground post is plumb, and the holes at the top of the ground post are facing inside and outside of the greenhouse.



This is the ground post driver inserted into the ground post

Next, install the left front ground post the length of your greenhouse. The most common lengths are typically 48', 72', 96' or 144', but your greenhouse may be a different length. The dimensions of the greenhouse are "on center" dimensions, so you are measuring from the center of each post to get your lengthwise measurement.

Next, using the twine and a line level, run a string line from one ground post to the other ground post to level. Run the string line around the holes at the top of the ground post. Pull the twine tight to get an accurate reading. A laser line level or transit also works very well to get an accurate reading.



Next, locate the right rear ground post widthwise from the left rear ground post to get the widthwise measurement. Set up another string line and level the ground post.

To get the right front ground post correct, you will need to check the measurements of each opposite corner. The diagonal measurements of each of the opposite corners should be within 1" of each other. By checking the diagonals, it is squaring the greenhouse. The diagonal measurements are as follows for each length greenhouse:

30' wide structure 48' = 56.6 ft. or 57' 7"

34' width 48' = 58' 10"

30' wide structure 72' = 78 ft.

34' width 72' = 79' 7"

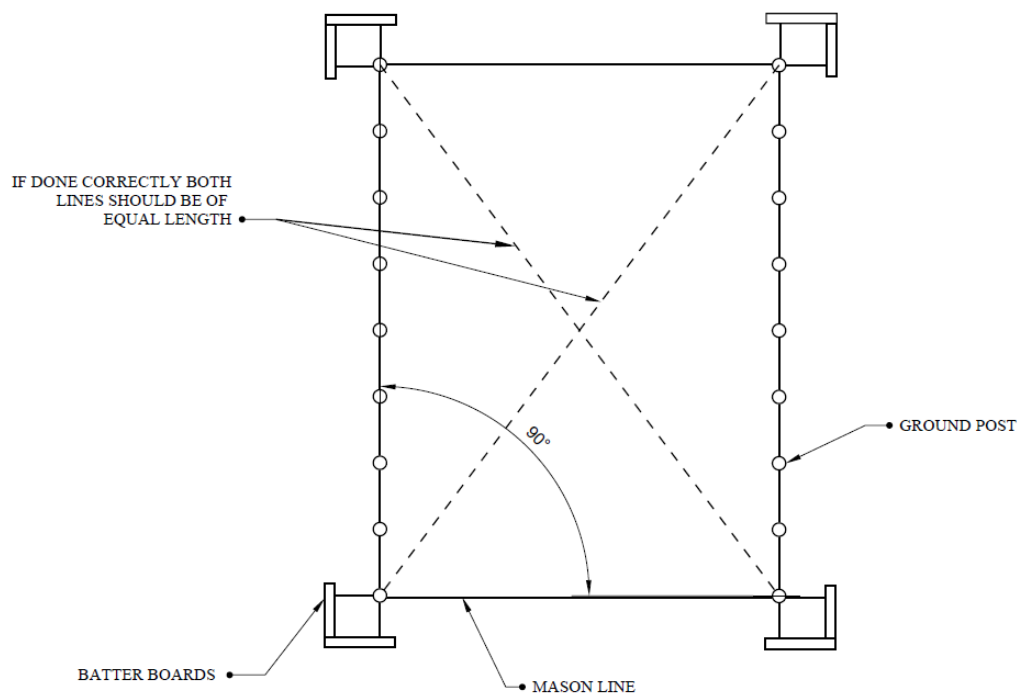
30' wide structure 96' = 100.6 ft. or 100' 7"

34' width 96' = 101' 10"

30' wide structure 144' = 147 ft.

34' width 144' = 148'

**Tip:** The way to determine the diagonal measurement is  $(A \times A) + (B \times B) = (C \times C)$ . A squared plus B squared equals C squared. A is the width of the greenhouse, B is the length of the greenhouse and C is the diagonal of the greenhouse. For example,  $(30 \times 30 = 900) + (48 \times 48 = 2,304) = (3,204)$ , then take the square root of this which is 56.6 ft.)



After the 4 corners are set and the ground posts are level and plumb, you are now ready to install the remaining ground posts. The ground posts are most commonly located 4' on center, but post spacing may be different if you purchased a greenhouse with either 2', 3' or 6' bow spacing. Using your long 100' tape, measure and mark the locations of each ground post on the string lines.



**Tip: Alternatives to using the ground post driver include the following. You can purchase a metal fence post driver from a hardware store or fence company. These are useful when driving in taller ground posts that are 6 ft. or higher and cost around \$40. You can also rent or buy a gas-powered post driver which is the most efficient way to install ground posts.**



This is a fence post driver



This is a gas-powered post driver



In this step, you will assemble the half end bows (with painted ends) and half middle bows to the ridge connector. You will then attach the truss support and truss braces to the bow assembly. Do not completely tighten any nuts and bolts. You will need to have some flex when installing the bow assemblies into the ground posts.

Lay out your bows and ridge connector on a flat and clean surface. The bows will connect to the ridge connector with an internal splice that is 8" long. See photos.



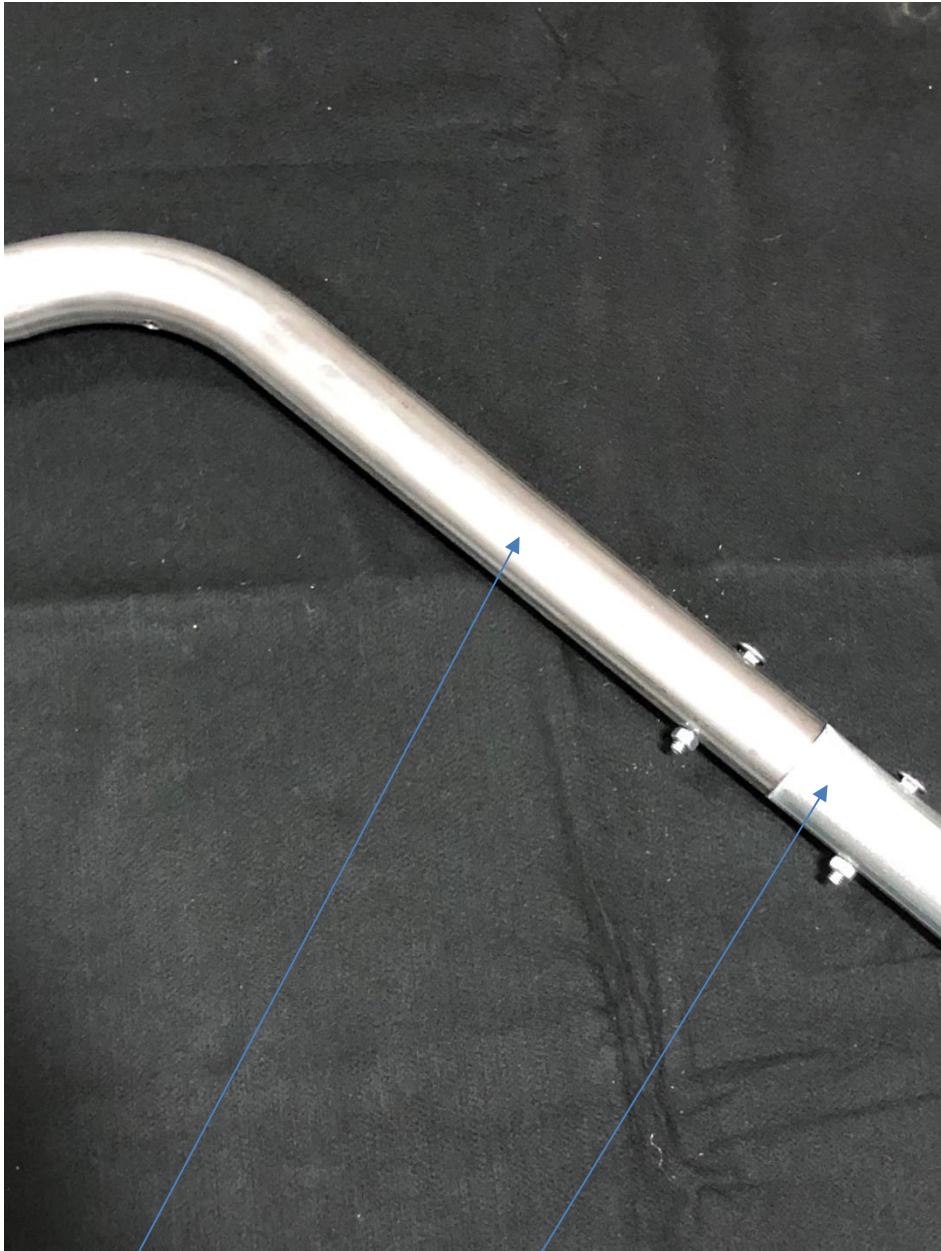
Bow

Internal Splice

Ridge Connector







Ridge Connector

Bow

The next step will be attaching the truss support and truss braces to the bow assembly using 5/16" x 1" carriage bolts and nuts and brace bands as shown in the photo.



Slide (2) 2" brace bands onto each side of the bow assembly.

Next, you will assemble the two pieces of the truss support together. Truss supports come in two separate pieces. One piece has a swedged end and one piece has a non-swedged end.



This is what a swedge looks like.



This is the other end of the truss support

Refer to your pick list for specific lengths of each part

Prior to connecting the two pieces together, slide a 1 3/8" brace band onto each tube. Then insert the swedged piece into the non-swedged piece and insert (2) #12 x 1" tek screws into the connection as shown. We provide a 5/16" driver.



These are tek screws





Attach the assembled truss support to the bow assembly as per the diagram using the brace band on the bow to connect to the truss support with the 5/16" x 1" carriage bolt and nut. Hand tighten only, and try to align the brace band on the green marks of the bow.

Attach the truss braces to the bow and truss support as per the diagram. Hand tighten only, and try to align the brace bands on the red marks on the bow.

Prior to the next step which is assembling the bows to the ground posts, install an 8" insert into each side of the bow assembly with a 5/16" x 2 1/2" carriage bolt and nut.

## **Installing the bows into the ground posts**

The first bow assembly that will be installed into the ground posts is the bow assembly with the painted ends and holes drilled into the bows for the purlin connection on the end bows. The 30' Nor' Easter will have two holes on each side of the bow assembly and the 34' Nor' Easter will have three holes on each side of the bow assembly.

**Tip:** Prior to installing the bows, slip one brace band on each side of the first bow assembly, two on each side of the second bow assembly and one on each side of the third bow assembly at both ends. The brace bands will be used later when you install the wind bracing.

With two people, lift your bow assembly into the ground posts and attach with the 2 ½” carriage bolts and nuts.



Then, install the remaining intermediate bow assemblies until you get the other end of the greenhouse.



If the holes of the ground post and bow do not line up, use a pipe wrench to turn the ground post. If the holes are slightly off with the inserts, you can use a drift pin or a small screwdriver to move the insert to attach the bolt to the assembly.



After all of the bows are installed into the ground post, you can completely tighten all of the nuts and bolts. Impact drivers work well with this process and you want to make sure that the square part of the carriage bolt is sucked into the ridge connector and ground post



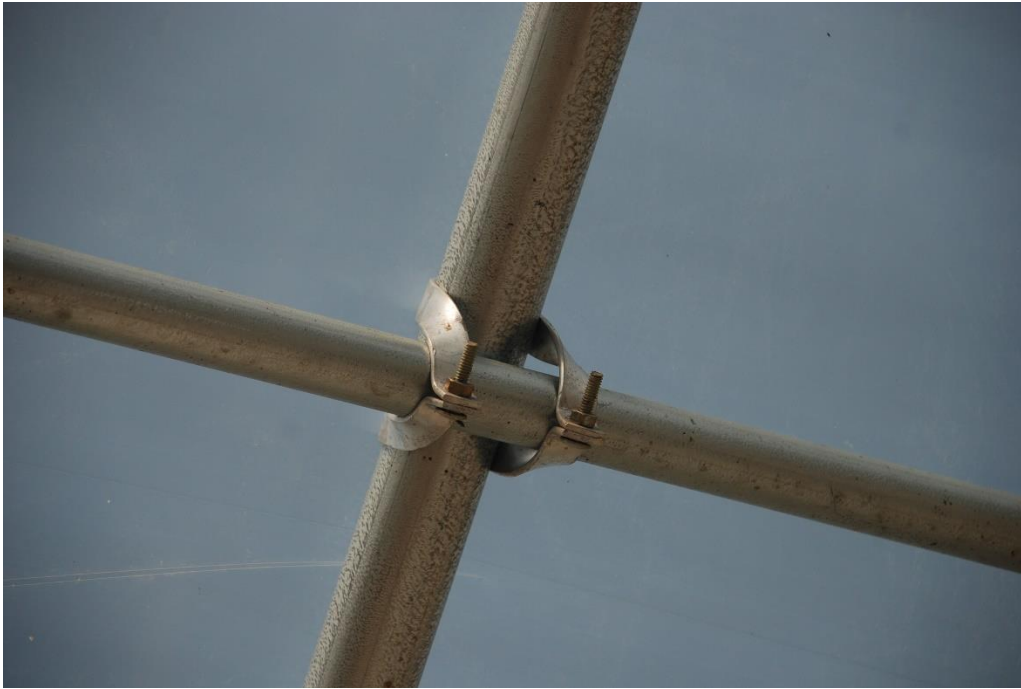
## **Purlin Installation**

You will begin by installing the ridge purlin. The ridge purlin has holes drilled every 4 feet (unless you have a special bow spacing for your greenhouse). The first ridge purlin is 12' 2" long. The remaining ridge purlins are 12' 3" long. Attach using 5/16" x 4" carriage bolts and nuts through each connection. The ridge purlin can be installed either on top of the ridge connector or below the ridge connector.



The next step is to attach the side purlins to the bows. Begin with the uppermost purlins first. The end purlin is 12' 3" long with a hole drilled at the non-swaged end. This will connect to the end bow with a carriage bolt and nut and the purlin should be placed on the underside of the bow.

The remainder of the purlin will be attached to the bows using the aluminum cross connectors. The cross connectors use  $\frac{1}{4}$ " x 1  $\frac{1}{2}$ " carriage bolts and nuts. See photos of the cross connector and the use of the provided wooden jig to help with spacing to make sure the bows remain at a 4' on center measurement.



At each swedged connection, attach the purlins together using two 1" tek screws



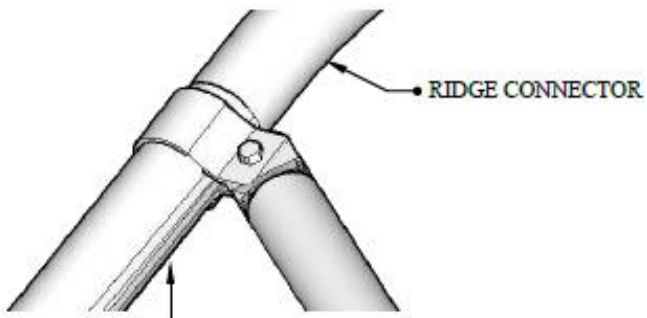
### **Installing wind bracing**

Wind braces are 54" long and attach from the end bow to the first bow and from the first bow to the second bow in all four corners using brace bands, bolts and nuts as per the previous instructions. See photo.

If you have a high wind kit, install the extra wind braces in the upper part of the frame as per the photo.



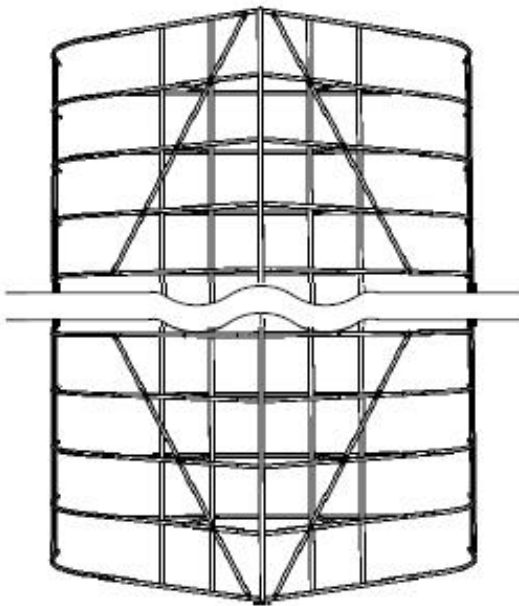
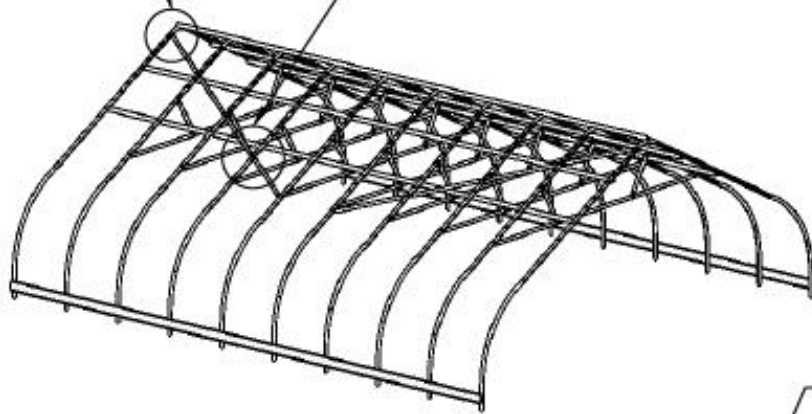
Standard wind kit bracing shown. The next page shows extra bracing installed with the optional high wind kit



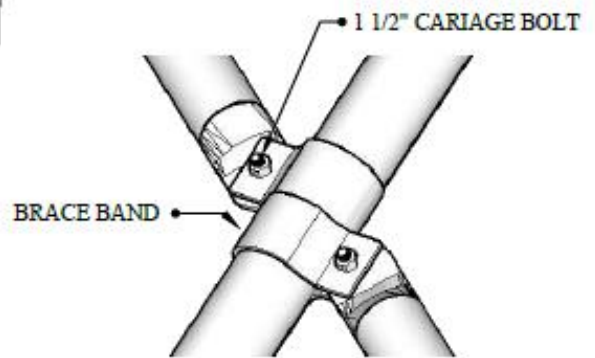
BOW

B

A



TOP VIEW



A

## Baseboard installation

It is recommended to use as large a baseboard as your budget allows. Either 2 x 10 or 2 x 12 lumber is recommended. You can attach your baseboards to the frame at your desired height using two 2-hole pipe straps per ground post connection. Insert a 1" tek screw through each pipe strap to secure it to the frame of the greenhouse as shown. On the ends of the greenhouse, it is recommended to drill a 3/8" hole using the bit provided through the baseboard and ground post to bolt the baseboard onto the ground post. See photo.





## **Framing End Walls**

1. Make sure your greenhouse is plumb.
2. Read all of the instructions for your doors and equipment first to double check rough openings and assembly process.
3. Using the grids on the following pages, sketch out where your doors and equipment will be located. See rough openings for all doors and equipment and make note of the dimensions.
4. See examples of layouts for doors and equipment. If you need further assistance on the layout, please contact your salesman for more specific information.
5. You will need 6 verticals per end wall. Verticals should be set into concrete for stability. One bag of concrete is sufficient as a footing.
6. Horizontals should have a maximum spacing distance of 4 ft. apart.
7. See photos of how wood framing and metal framing is constructed
8. Read through these entire directions to see illustrations and photos

## **Sequence of Construction:**

1. First frame out your two center verticals which will most likely be a location of a door.
2. Frame out two verticals on both the right and left side which will be your location of fans, shutters or possibly no equipment.
3. Frame out horizontal members for completion of rough openings for doors and other equipment.
4. Frame out remaining horizontals to fill in gaps where support is necessary for covering end wall of greenhouse.

## **Rough Openings for Equipment:**

### **Tracrite Roll-Up Doors (part # TR940XXX)**

Same size as door. Example – an 8' x 8' door has an 8' x 8' rough opening. Note the framing requires a minimum of two pieces of either 2 x 4 lumber or 1 ½" square tubing to support the weight of the door and to properly have enough surface area to attach the door to the frame.

### **HC Pre-Hung or Sliding Doors (part # HCXXXX)**

Double sliding doors-rough opening is 3" less than door width and 1" less than door height.

Example-4' x 8' double sliding doors have a 93" wide opening and a 95" high opening.

Double hung doors-rough opening is 1 ½" more than door height and 1 ¾" more than door width. Example-3' x 7' double hung doors have a 85 ½" high opening and a 73 ¾" wide opening

Single sliding door-rough opening is 3" less than door width and 1" less than door height.

Example-4' x 8' single sliding doors have a 45" wide opening and a 95" high opening.



Single hung door-rough opening is 1 ½" more than door height and 1 ¼" more than door width. Example-3' x 7' single hung door has 85 ½" high opening and a 37 ¼" wide opening. If you are using steel framing and covering with poly on the ends, double up on the steel framing around the door so that you have a surface to attach the wire lock.

### **Coolair Fans (part # ACNBFXXX )**

NBF24	33 ½" h x 33" w
NBF30	39 ½" h x 39" w
NBF36	45 ½" h x 45" w
NBF42	51 ½" h x 51" w
NBF48	57 ½" h x 57" w

### **Coolair Shutters (part # ACLRWXXX)**

Add ½" on to width and height of shutter. Example-39" shutter is 39 ½" x 39 ½".

### **Quietaire Fans (part # QTAGCSXXX)**

AGCS24	29 ½" h x 28 ¾" w
AGCS30	35 5/8" h x 34 ¾" w
AGCS36	42" h x 40 ¾" w
AGCS42	48 ¼" h x 46 ¾" w
AGCS48	54 ¼" h x 52 ¾" w

### **Quietiare Shutters (part # QTHDEXXX)**

Same as Coolair shutters. See above.

### **J & D Fans (part # JDVNSXXXX)**

VNS24 32" h x 31 1/2" w

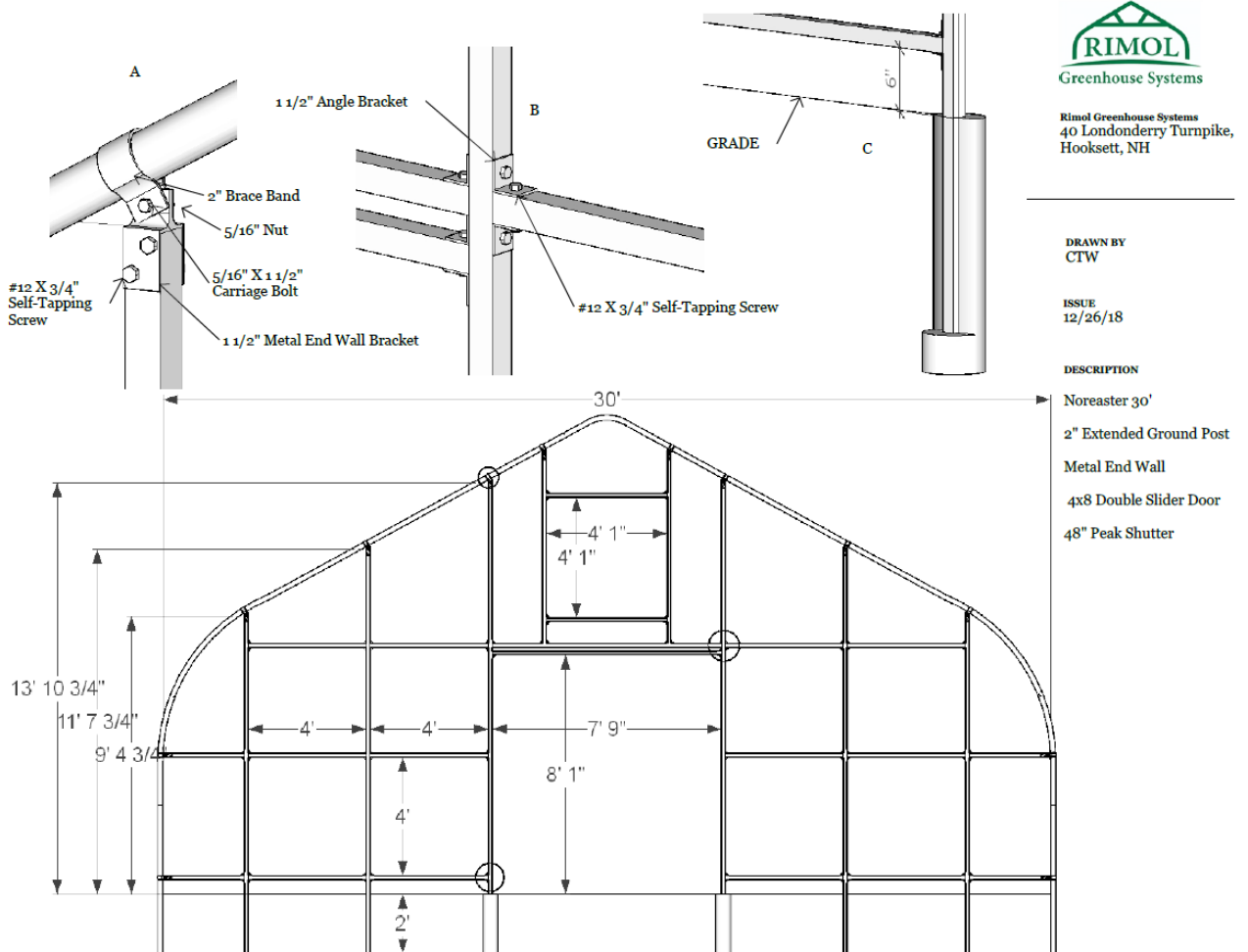
VNS30 38" h x 37 1/2" w

VNS36 42" h x 41 1/2" w

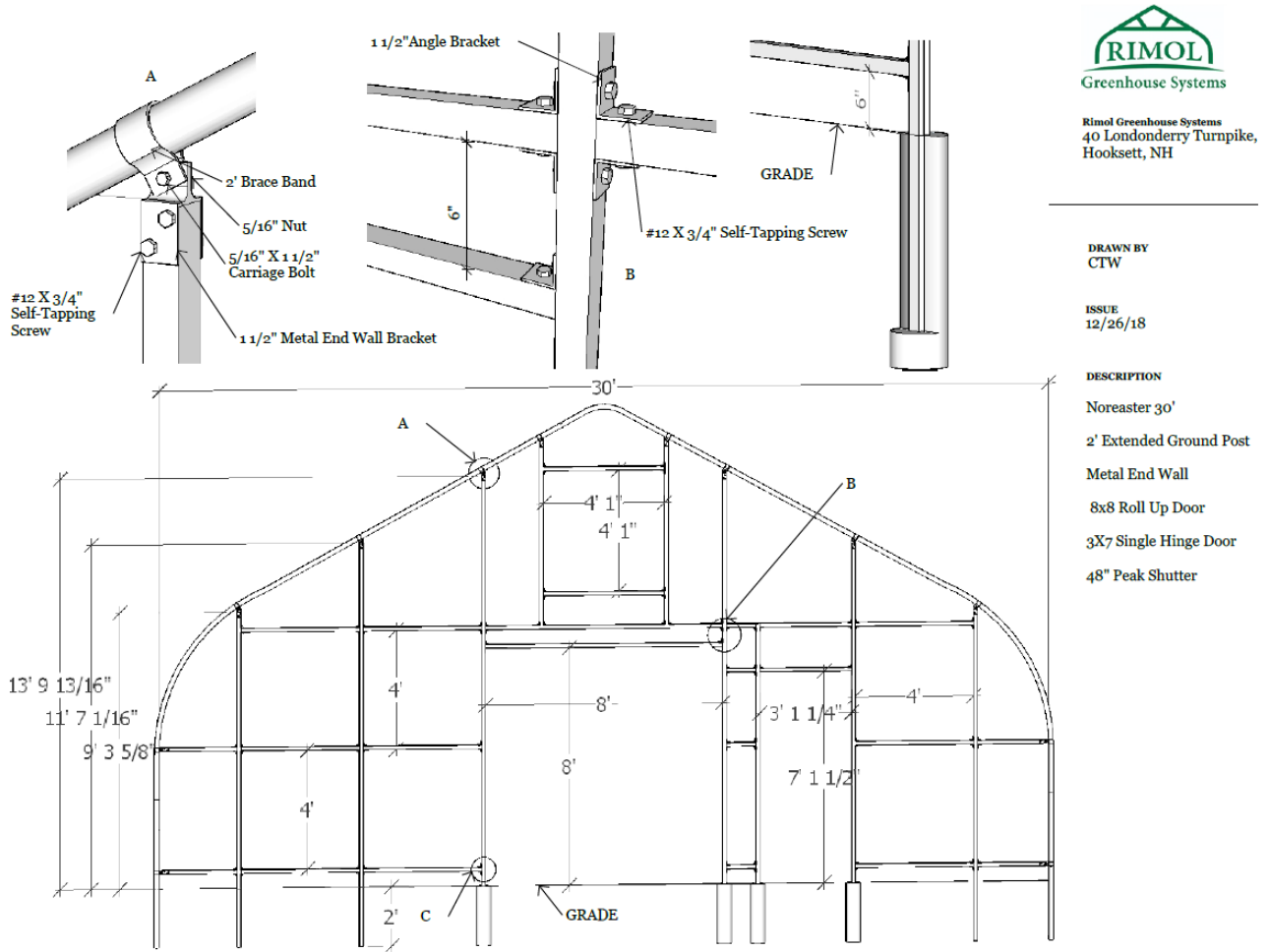
VNS48 56 1/2" h x 55 1/2" w

### J & D Shutters (part # JDVRSGXPS)

Same as Coolair shutters. See above.



Example of a 8 x 8 roll-up door, 48" gable shutter and steel framing on a high tunnel



Example of a 8 x 8 roll-up door, 3 x 7 hinged door, 48" gable shutter and steel framing on a high tunnel

**Make sure the greenhouse is plumb**

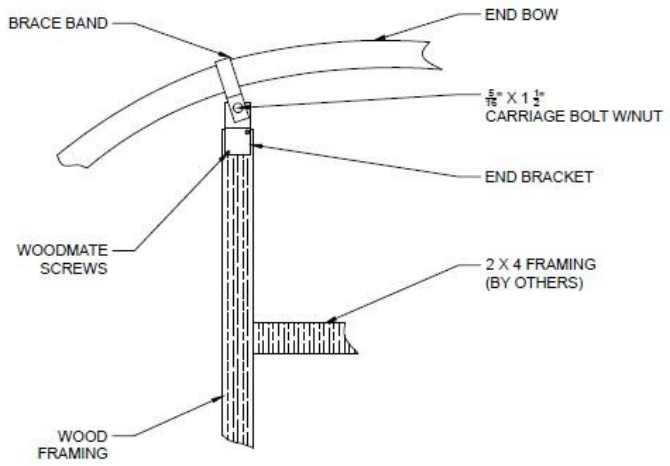


Pull the greenhouse forward from one end to plumb the greenhouse

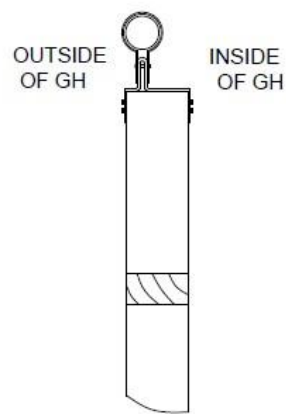


String a line from one ground post to the other ground post to square up the ends

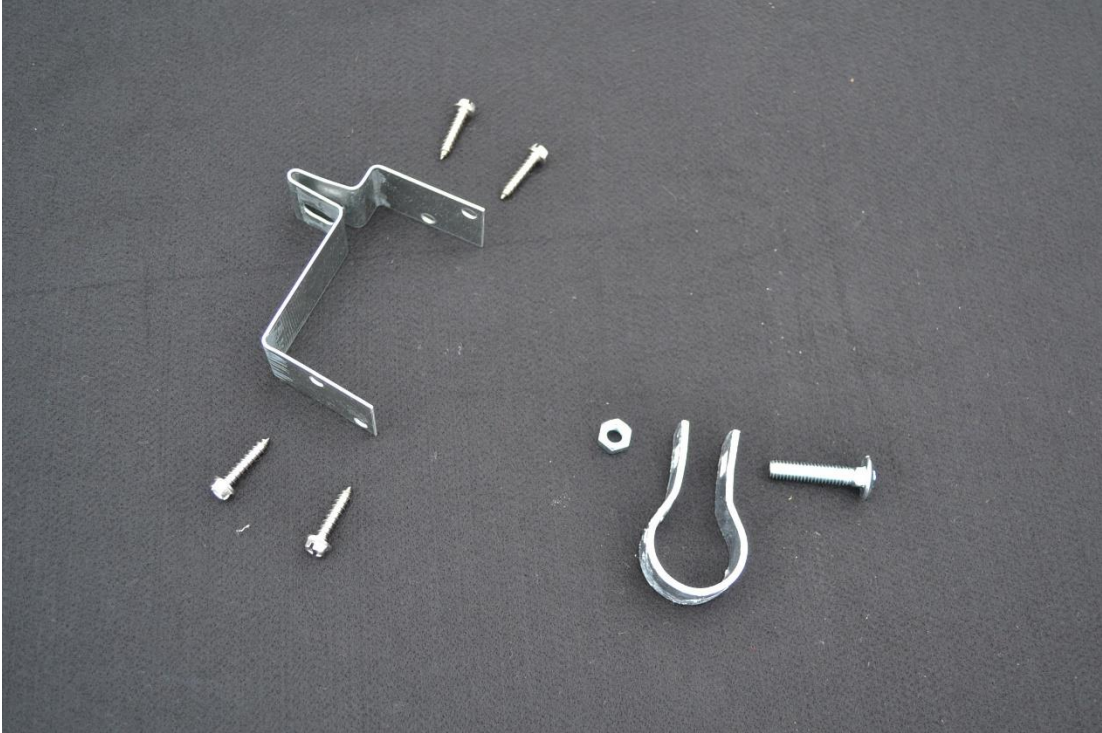
## 2X4 END WALL BRACKET ASSEMBLY



1 FRONT VIEW



2 SIDE VIEW

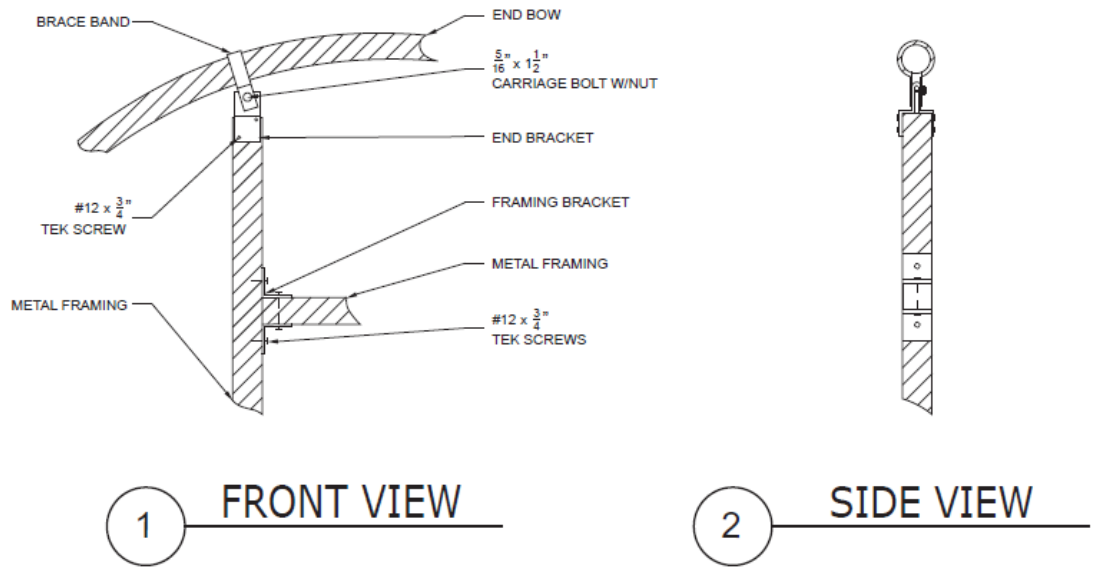




This shows how you can use an angle bracket to also connect framing lumber to the bows

METAL END WALL BRACKET ASSEMBLY

ILLUSTRATION 2









Examples of framing and installation of a roll-up door in the next series of photos











## Examples of other framing







## **LIMITED WARRANTY**

Rimol Greenhouse Systems, LLC. (RGS) warrants to only the original purchaser ("Buyer") that the greenhouse frame(s) manufactured by RGS will be free of defects in materials and workmanship for a period of five (5) years. This limited warranty shall not be effective unless the Buyer's greenhouse is installed on level ground and there are no other objects or structures within ten (10) feet of the greenhouse, and the Buyer hereby waives any claims under this warranty in the event these two conditions are not satisfied.

This warranty covers all defects in material and workmanship, EXCEPT:

1. Damage resulting from accident, misuse, abuse, neglect or from other than normal and ordinary use of the frame(s).
2. Damage resulting from failure to use the product in accordance with RGS specifications and instructions.
3. Damage resulting from repair or attempted repair by anyone other than RGS or an authorized repair contractor or facility.
4. Damage resulting from the use or installation of any other equipment or products used in the greenhouse.

This warranty applies only to the products being supplied by RGS and physically attached to the RGS products at the RGS factory. Defects in equipment installed with any RGS product, or defects in the installation of the RGS product, whether or not sold by RGS, are warranted, if at all, by the installers or manufacturers of such equipment, and are not covered by this warranty.

RGS makes no warranties other than those stated above and specifically does not warrant that any of the RGS frames, parts or products are of a merchantable equality or that they can be used for any particular purpose by the buyer.

RGS shall have the right to inspect any parts before taking corrective measures under this warranty.

RGS shall be notified of any warranty claim within 48 hours of damage. Proof of purchase must be furnished with any claim.

## **Limitation of Liability**

In no event will RGS be liable for incidental, consequential, special or indirect damages, lost business profits, regardless of the form of action, whether in contract, tort (including negligence), breach of contract, breach of warranty or otherwise, even if RGS has been advised as to the possibility of same. Buyer's sole and exclusive remedy is repair or replacement, at RGS's option, of any defective parts or workmanship. In the event this exclusive remedy fails of its essential purpose, Buyer's exclusive remedy shall be refund of the defective part.

## **Jurisdiction**

Any disputes arising between RGS and Buyer shall be governed by New Hampshire law without regard to conflicts of law principles. Buyer hereby submits, and waives any objection, to the exclusive personal and subject matter jurisdiction by New Hampshire courts and submits, and waives any objection, to New Hampshire as the proper venue for any disputes.

