



GrowSpan™ Gothic Hobby Pro Greenhouses



Photo may show a different but similar model.

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WARNING: Cancer and Reproductive Toxicity - P65Warnings.ca.gov

STK#	DIMENSIONS
104886	14' W x 8' 6" H x 16' L
104887	14' W x 8' 6" H x 20' L
104888	14' W x 8' 6" H x 24' L

Revision date: 08.14.19



READ THIS DOCUMENT BEFORE YOU BEGIN

Thank you for purchasing this GrowSpan™ greenhouse. When properly assembled and maintained, this product will provide years of reliable service. These instructions include helpful hints and important information needed to safely assemble and properly maintain the greenhouse. Please read these instructions **before** you begin.

If you have any questions during the assembly, contact Customer Service at 1-800-245-9881 for assistance.

SAFETY PRECAUTIONS

- Wear eye protection.
- Wear head protection.
- Wear gloves when handling metal tubes.
- Use a portable GFCI (Ground Fault Circuit Interrupter) when working with power tools and cords.
- Do not climb on the greenhouse or framing during or after construction.
- Do not occupy the greenhouse during high winds, tornadoes, or hurricanes.
- Provide adequate ventilation if the structure is enclosed.
- Do not store hazardous materials in the greenhouse.
- Provide proper ingress and egress to prevent entrapment.

ANCHORING INSTRUCTIONS

Prior to assembling this greenhouse, please read the **MUST READ** document included with the shipment.

⚠️ WARNING: The anchor assembly is an integral part of the greenhouse construction. Improper anchoring may cause greenhouse instability and failure of the structure. Failing to anchor the greenhouse properly *will void the manufacturer's warranty* and may cause serious injury and damage.

LOCATION

Choosing the proper location is an important step before you begin to assemble the structure.

The following suggestions and precautions will help you determine whether your selected location is the best location.

- Never erect the structure under power lines.
- Identify whether underground cables and pipes are present *before* preparing the site or anchoring the structure.
- Location should be away from structures that could cause snow to drift on or around the building.
- Do not position the greenhouse where large loads such as snow and ice, large tree branches, or other overhead obstacles could fall.
- *Always check local building codes before you begin.*

SITE

After choosing a location, proper preparation of the site is essential. The following site characteristics will help ensure the integrity of the structure.

- *A level site is required.* The site must be level to properly and safely erect and anchor the structure.
- If the site is not level, use footings to provide a secure base to assemble the structure. Pre-cast concrete blocks, pressure-treated wood posts, or poured footings are all acceptable when properly used. (Some shelters use ground posts or rafter feet.)
- **Drainage:** Water draining off the structure and from areas surrounding the site should drain away from the site to prevent damage to the site, the structure, and contents of the structure.

⚠️ WARNING: The individuals assembling this structure are responsible for designing and furnishing all temporary bracing, shoring and support needed during the assembly process. For safety reasons, those who are not familiar with recognized construction methods and techniques *must seek the help of a qualified contractor.*

ASSEMBLY PROCEDURE

Following the instructions as presented will help ensure the proper assembly of your greenhouse. Failing to follow these steps may result in an improperly assembled and anchored greenhouse and will void all warranty and protection the owner is entitled to.

The steps outlining the assembly process are as follows:

1. Verify that all parts are included in the shipment. Notify Customer Service for questions or concerns.
2. Read these instructions, the Must Read document, and all additional documentation included with the shipment **before** you begin assembling the greenhouse.
3. Gather the tools, bracing, ladders (and lifts), and assistance needed to assemble the greenhouse.
4. Check the weather **before** you install the roof cover and any panels (if equipped). Do not install covers or panels on a windy or stormy day.
5. Re-evaluate the location and site based on the information and precautions presented in the documentation included with the shipment.
6. Prepare the site (if applicable).
7. Assemble the frame components in the order they are presented in these instructions.
8. Assemble the frame including the struts (if equipped).
9. Consult the MUST READ document and properly anchor the assembled frame.
10. Install the end wall framing. (End walls are optional items for some shelter types.)
11. Install, tighten, and secure the end wall end panels and doors.
12. Install, tighten (if applicable), or secure the main cover.
13. Read the care and maintenance information at the end of these instructions.
14. Complete and return all warranty documents as instructed.

LIST OF WORDS AND PHRASES

Before you begin, it is important to become familiar with the words and phrases used in this instruction manual.

These words and phrases are common to most GrowSpan™ shelters and identify the different parts of the shelter. (Some are used in this document. Others may not apply to this particular shelter.) These terms describe the shipped parts and can also be found on the materials list/spec sheets included with the shipment. To aid in the assembly, read through the following definitions before you begin to assemble your shelter.

- **Band Clamp:** Clamp used to connect the end wall framing to the rafter pipe. In some cases, band clamps are also used to connect diagonal struts to the assembled frame.
- **Clip or Fabric Clip:** A short, half-section piece of conduit (cut lengthwise) used to secure the end panel cover to the leg or rafter assembly. The clip or fabric clip is typically fastened in place using self tapping Tek screw.
- **Conduit:** An assembly of pipes used to secure the main cover and end panels (if equipped). Purlins and some strut assemblies also consist of connected pipes to form a conduit. Each pipe joint of a conduit assembly is secured with a self-tapping Tek screw to prevent separation. Some conduit assemblies are used to secure larger end panels and main covers. These conduits typically consist of sections of PVC tubing glued at the joints.
- **Cross Connector:** Any one of the metal brackets used to "connect" or secure a purlin to a rafter. Cross-connectors are typically pictured on the Pictorial Parts Guide page or in the Quick Start section (if present).
- **End Panel:** Fabric or material used to cover the end wall assemblies. End wall assemblies are optional for many shelters.
- **Must Read Document:** This document includes building and shelter anchoring instructions, steps for end wall reinforcement, safety precautions, and notices and warnings. The Must Read document is sent with all shelters and buildings. If you did not receive a Must Read document, contact Customer Service to request one.
- **On-Center:** Term used to describe a measurement taken from the vertical center of the rafter or frame member to the vertical center of another.
- **Purlin:** The pipe assembly that runs perpendicular to the rafters or framework that supports the main cover. Purlins are found on the sides and roof areas of the assembled frame, are evenly spaced, and typically run from the front to the back of the shelter.
- **Plain or Straight Pipe:** A term used to describe a pipe that has the same diameter or width throughout its entire length.
- **Strut:** A strut is usually a length of pipe with two flattened ends and is used for diagonal bracing of the shelter frame. A strut is typically secured to the frame work by special brackets and bolts.
- **Swaged End or Swaged Pipe:** The term "swaged" refers to the tapered end of the pipe or tube. Swaged ends of a pipe can be inserted into couplers and the straight ends of other pipes.
- **Tek Screw:** A self-tapping fastener used to secure pipe joints and to fasten brackets to rafters.

GROWSPAN™ GOTHIC HOBBYPRO GREENHOUSES

REQUIRED TOOLS

Space below is reserved for customer notes.

The following list identifies the main tools needed to assemble the shelter. Additional tools and supports may be needed depending on the structure, location, and application.

- Tape measure or measuring device
- Marker to mark locations on the pipes
- Variable speed drill and impact driver (cordless with extra batteries works best)
- Metal-cutting saw
- Wrenches and impact socket set, or an adjustable wrench
- Scissors, utility knife, or tin snips
- Hammers and gloves
- Adjustable pliers and self-locking pliers
- Ladders, work platforms, and other machinery for lifting designed to work safely at the height of the building
- Rope/cable for temporary rafter bracing during frame assembly

UNPACK AND IDENTIFY PARTS

The following steps will ensure that you have all the necessary parts *before* you begin to assemble the shelter frame.

1. Unpack the contents of the shipment and place where you can easily inventory the parts. Refer to the Bill of Materials/Spec Sheets.
2. Verify that all parts listed on the Bill of Materials/Spec Sheets are present. If anything is missing or you have questions, consult the Pictorial Parts Guide and all diagrams for clarification, or contact Customer Service.

NOTE: At this time, you do not need to open the plastic bags containing smaller parts such as fasteners or washers (if equipped).

QUICK START GUIDE

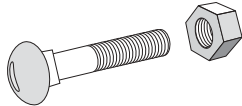
For a quick overview of the building and its components, consult the information and diagrams in the Quick Start section near the back of these instructions.



The following graphics and photos will help you identify the different parts. (Some parts are not shown.)



FA4482B
Tek Screw



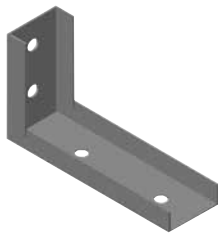
FAH320B & FALB02B
Carriage Bolt & Hex Nut



QH1400 & QH1402
Band Clamps



CC6212
Fabric Clip



QH1330
Angle Bracket



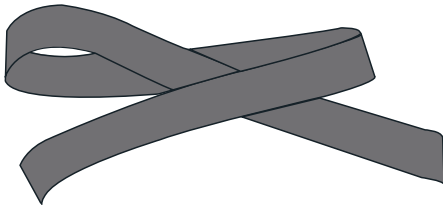
QH1061
Ratchet



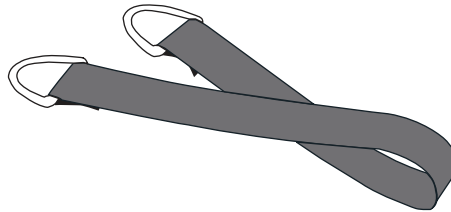
104074
Square-to-Round Tube
Connect Bracket



QH1072
Post Driver



103620B
Plain Black Strap



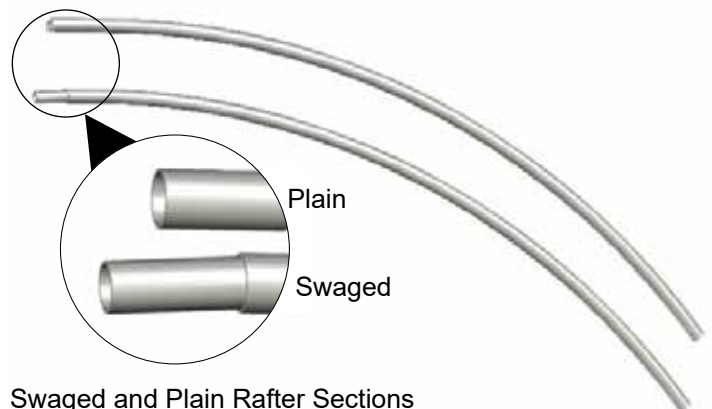
102947
Black Strap w/ D-rings



102855
End Clamp



102479
Cross Connector



Swaged and Plain Rafter Sections

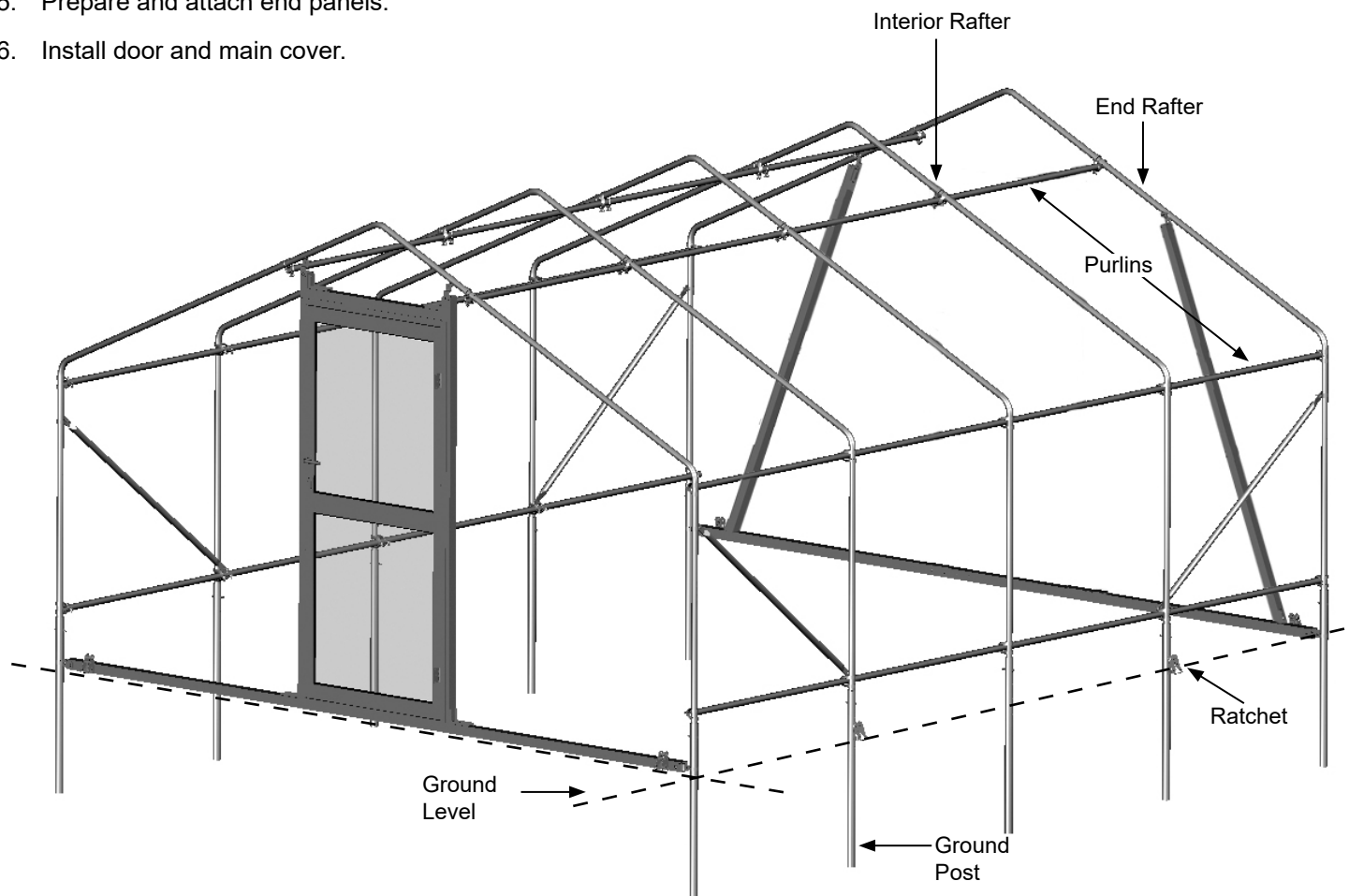


Gothic Hobby Pro Greenhouses

OVERVIEW

This section describes assembling your greenhouse. See illustration below to identify main parts of greenhouse.

1. Locate the required parts for each assembly procedure.
2. Assemble the rafters and frame.
3. Install struts and anchor the frame.
4. Assemble and install end walls.
5. Prepare and attach end panels.
6. Install door and main cover.



Frame length may differ from actual frame.

LAY OUT THE BUILDING SITE

After the site is prepared, lay out the building site.

IMPORTANT: Consult the front profile grid diagram in the Quick Start section near the back of this guide for on-center dimensions.

Drive ground posts to the proper depth. Width of the shelter is measured from the center of one ground post to the center of the remaining ground post.

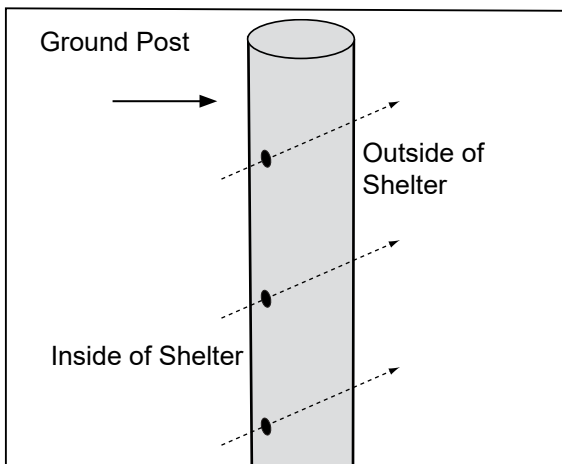
SQUARE THE SITE

Gather the parts:

- Ground posts
- 5/16" x 2-1/2" machine bolts
- 5/16" nuts

1. Identify a corner where a ground post will be positioned and drive the first ground post into the ground.

NOTE: Insert the ground post driver into the top of the ground post to protect the post and drive the post into the ground. **Top of post will be twelve (12) inches above the finished grade when properly driven.**



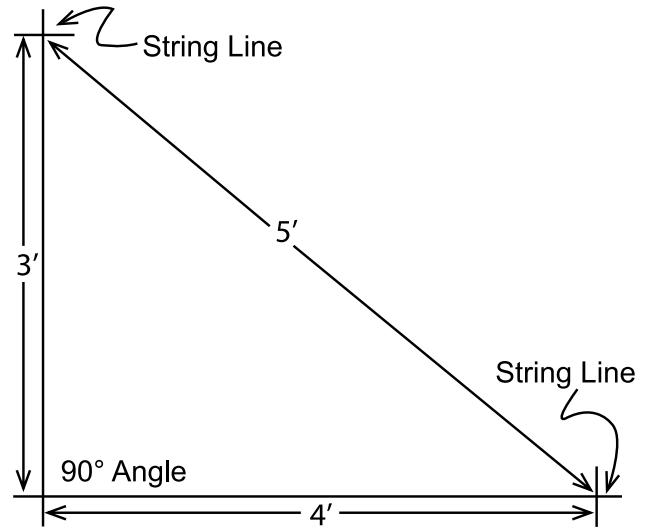
ATTENTION: Position the pre-drilled holes facing to the inside/outside of the shelter so they can be aligned with the bolt holes in the rafter legs.

To align the bolt holes in the ground posts with those in the rafter *after driving the ground posts*, insert a tapered rod or pry bar into a ground post bolt hole and turn the post using the rod or pry bar.

2. After the first corner ground post is in place, string a line the width of the building (center-to-center) and drive the second ground post into the ground just enough to hold it in place. **See the Quick Start Guide for required on-center building dimension.**

3. Use a transit or line level to drive the second corner post to the same depth as the first ground post.
4. String a line at least as long as the building from the first stake at 90°.

NOTE: A transit can be used to ensure an accurate 90° angle, or the 3-4-5 rule can be used. Refer to diagram. Using multiples of 3-4-5 such as 6-8-10 or 12-16-20 helps to maintain an accurate 90° angle.



5. After squaring the position of the building, measure the length (center-to-center) and drive the next corner ground post.
6. Repeat the same step for the last corner post.

NOTE: The distance measured diagonally between corner posts must be equal for the building to be square.

7. Check all dimensions (and adjust if needed) before driving the remaining posts to the required height.
8. After all corner posts are accurately installed, tie a string line between the tops of the corner ground posts on the same side of the shelter. The string is used to identify the tops of all remaining ground posts. The string must remain tight and level.
9. Use a tape measure to mark the 48" on-center locations of the remaining ground posts.
10. Drive the remaining ground posts into the ground at the required 48" on-center spacing and the height identified by the string. See Step 1 if needed.

NOTE: Verify that the holes in the ground posts are in the proper position and that each post is plumb and driven to the correct depth.

11. Continue with the **Rafter Assembly** steps that follow.

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ASSEMBLING THE GREENHOUSE FRAME COMPONENTS

After the site is prepared and an inventory of parts is complete, continue with the rafter assembly.

NOTE: All rafter assemblies consist of rafter tubes and purlin clamps. Consult the Front Profile diagram in the Quick Start section of these instructions before and during the rafter assembly process.

Assistance is required to assemble the greenhouse frame.

RAFTER ASSEMBLY

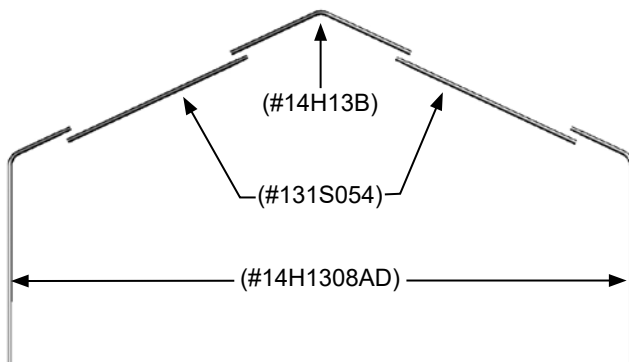
Gather the parts:

- Rafter pipe (#14H1308AD)
- Rafter pipe (#14H13B)
- Rafter pipe (#131S054)
- End clamps (#102855)
- Tek screws (#FA4482B)
- Magnetic nut setter 3/8" x 2-9/16"

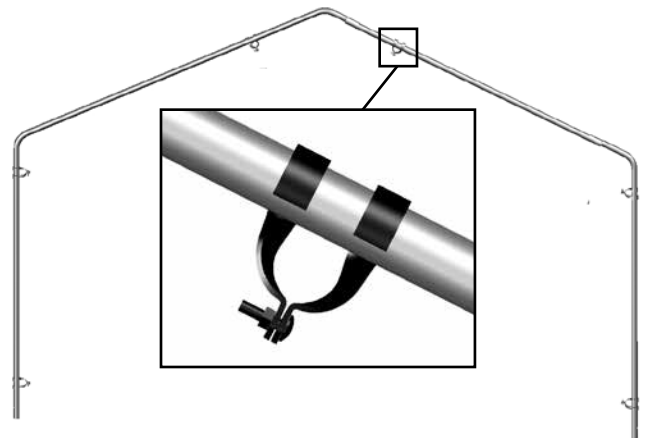
END RAFTER ASSEMBLY

The end rafters include purlin end clamps and band clamps. Install the purlin end clamps before the different pipes of the rafters are connected. The band clamps for the side struts are installed when the two (2) end rafters are set onto the ground posts.

1. Select the five (5) pipes needed to assemble the first end rafter and arrange on a level surface.



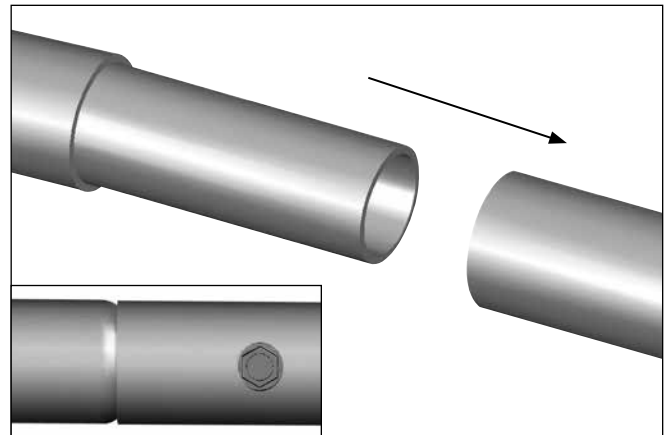
2. Slide six (6) end purlin clamps (one on each side of the peak) over the rafter pipes.



End clamp as seen from outside the assembled rafter.

NOTE: Consult the Front Profile diagram in the Quick Start section for proper end clamp placement and position.

3. After slipping the clamps over the rafter pipes, insert the swaged end of the rafter pipes into the plain ends of the pipes to assemble the rafter.



4. Once the rafter is assembled, install a Tek screw through the rafter pipes to secure each joint. See the diagram above.

IMPORTANT: Verify that you are installing the screw through the pipe that contains the swaged end of the adjacent pipe. To prevent damage to the cover and end panels (if equipped), position the Tek screws so the heads do not contact the cover when it is installed.

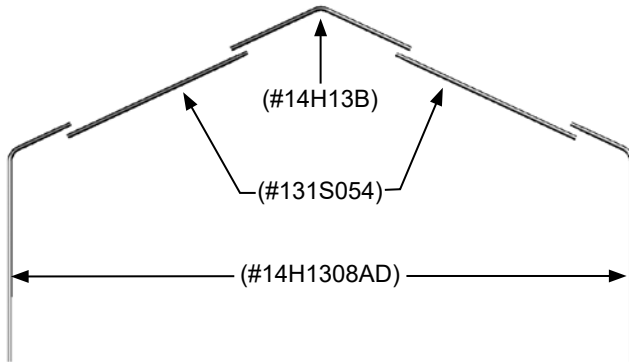
5. Repeat steps to assemble the remaining end rafter and set both end rafters aside.

RAFTER ASSEMBLY (CONTINUED)

INTERIOR RAFTER ASSEMBLY

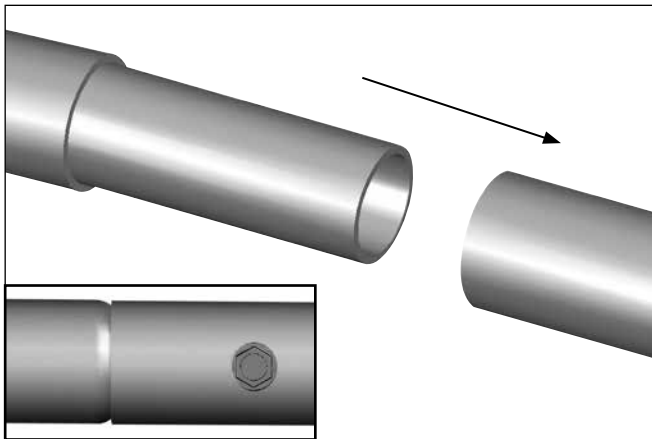
Complete the following steps *for the interior rafters*.

1. Select the pipes for the first interior rafter assembly and position these on the ground as shown.



IMPORTANT: Interior rafters do not use end clamps. Instead, cross connectors are attached during the frame assembly.

2. Insert the swaged ends of the rafter pipes into the plain ends of the pipes and secure each joint with a Tek screw.



NOTE: For longer frames, it may be easier to assemble a few rafters at a time and then begin to assemble the frame.

3. Once rafters are assembled, assemble the frame.

FRAME ASSEMBLY

After all ground posts are driven in place and rafters are assembled, assemble the frame.

PRE-MARK THE PURLINS (OPTIONAL STEP)

The following steps describe one way to speed the assembly process. Pre-marking the purlins ensures that an accurate spacing of the rafter assemblies is achieved and maintained during assembly.

Those familiar with the assembly of similar structures may elect to skip this procedure and continue with the ASSEMBLE THE FRAME procedure on the next page.

Gather the parts:

- Pipe 1.315" x 75" swaged (#131S075)
- Pipe 1.315" x XX" plain (#131P0XX)
- Marker and tape measure

NOTE: The purlins are part of the assembled frame and run perpendicular to the rafter assemblies. Each purlin consists of 1.315" x 75" (#131S075) swaged pipes (number is determined by shelter length) and one (1) 1.315" x XX" (#131P0XX) plain pipe.

The XX" represents the remaining length required to reach the end of the shelter. Consult the Spec Sheet for part identification.

1. Select the required pipe sections for one purlin and connect these by inserting the swaged ends of the pipes into the plain ends until the entire purlin is assembled.

NOTE: Assemble the purlins in a location that is accessible during the assembly of the frame, but will not interfere with the process of lifting and setting the rafters.

2. Verify that each pipe joint is properly seated.

NOTE: These pipes are separated during the assembly procedure. Do not fasten them together at this time.

3. For the 48" rafter spacing, measure forty-eight and three-quarters inches (48-3/4") from one end of the assembled purlin and mark the distance on the pipe.

NOTE: This first measurement is three-quarters (3/4) of an inch longer than the on-center rafter spacing to account for the length of purlin pipe that extends through the end purlin clamp of the first end rafter.

4. From the location marked in the previous step, measure forty-eight inches (48") and make another mark on the assembled purlin.

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FRAME ASSEMBLY (CONTINUED)

- Continue to mark the purlin in 48" intervals until all locations are marked. These marks help to maintain the 48" on-center rafter spacing of the shelter during assembly.
- Repeat this procedure until all assembled purlins are marked.
- After assembling all rafters and pre-marking the purlins, assemble the frame.

ASSEMBLE THE FRAME

After all ground posts are driven in place, rafters are assembled and purlins pre-marked, assemble the frame.

Gather the Parts:

- All rafter assemblies and pre-marked purlins
 - Band clamps (#QH1400)
 - Cross connector (#102479)
 - 5/16" x 2-1/2" machine bolts and 5/16" nuts
 - Lifts, ladders, and assistants
 - Rope or cable to temporarily brace rafters
- Carefully stand the *first end rafter*, slide a band clamp onto each rafter leg, and place the leg pipes in the first set of ground posts.

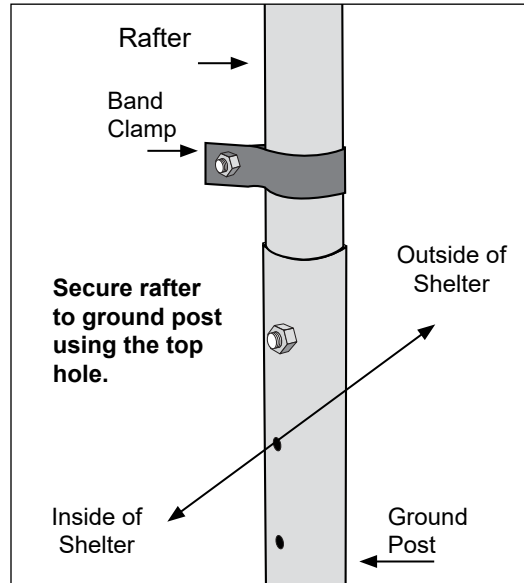
Brace the rafter in place to keep it straight. Depending on the frame size, a lift and additional assistants may be needed. Consult Quick Start section for details.



Rafter shown may differ in design.

ATTENTION: Stand the rafter so the nuts and bolts of the end clamps are to the inside of the frame.

- Secure the leg pipes to the ground posts (TOP HOLE) using the 5/16" x 2 1/2" machine bolts and nuts.

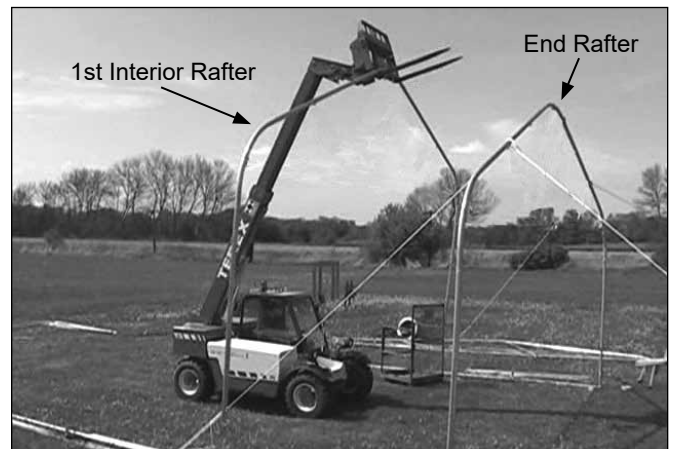


- Use rope or cable to brace the rafter in position.



Rafter shown may differ in design.

- Carefully position the first interior rafter in place and secure the leg pipes to the ground posts.



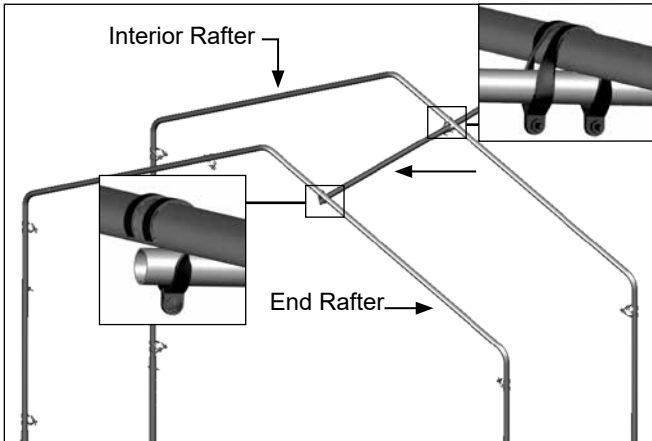
Rafter shown may differ in design.

FRAME ASSEMBLY (CONTINUED)

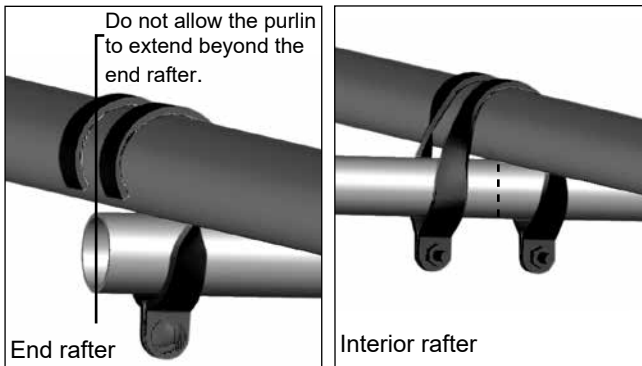
- As the second rafter is steadied, remove one section of pipe from one assembled purlin.

NOTE: Work from the end of the purlin where the first measurement was taken during the pre-marking procedure if that procedure was used.

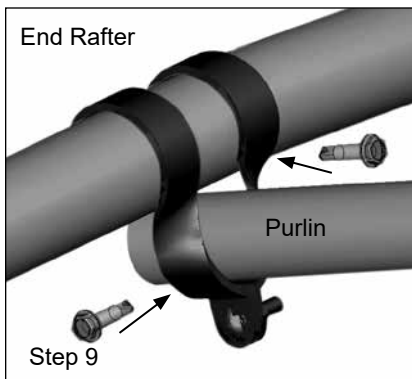
- Insert the purlin pipe through an upper end clamp of the end rafter and through a cross connector placed in the same position on the *interior rafter*. Consult Quick Start section for purlin location per frame.



- Align the plain end of the purlin with the center of the end rafter and rotate the purlin pipe so that the first mark is visible (near the clamp of the interior rafter).

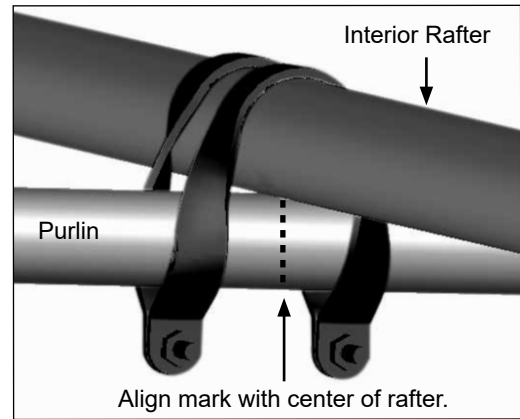


- Tighten the end clamp and secure it to the rafter with a Tek screw.

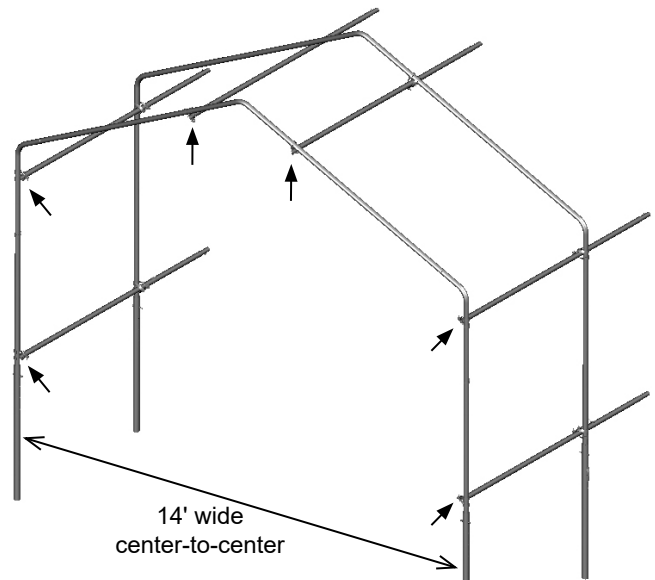


- Install Tek screw through end clamp and into the purlin pipe.

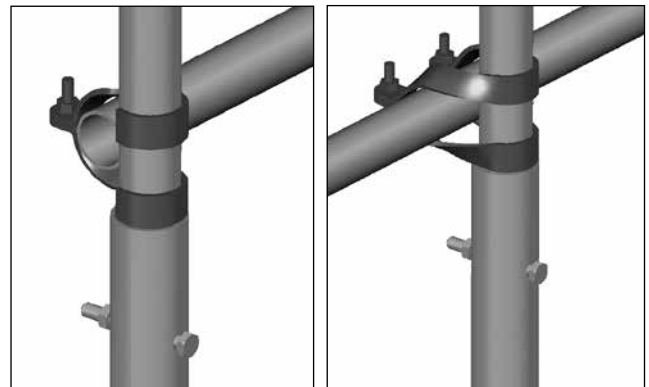
- Move to the interior rafter and align the mark on the purlin with the center of the rafter to maintain the proper rafter spacing.



- Verify that the rafter spacing is forty-eight inches (48") on-center (adjust as needed) and tighten the cross connector.
- Secure the cross connector to the rafter using a Tek screw. See Quick Start section if needed.
- Repeat Steps 6-12 to install the first section of each purlin assembly for the first two rafters.



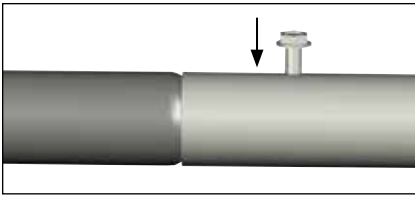
NOTE: The lower cross connectors and the end clamps will sit on top of the ground post as shown below.



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FRAME ASSEMBLY (CONTINUED)

14. Choose another interior rafter assembly and set it in position. **DO NOT USE THE REMAINING END RAFTER.**
15. Secure the rafter legs to the ground posts as previously described and steady the rafter.
16. Remove another section of purlin pipe from each pre-marked purlin assembly and attach these to the rafter.
17. Verify that the distance between the rafters is 48" center-to-center. *Adjust the rafter forward or backward as needed to maintain this dimension.*
18. Secure each purlin pipe joint with a Tek screw.

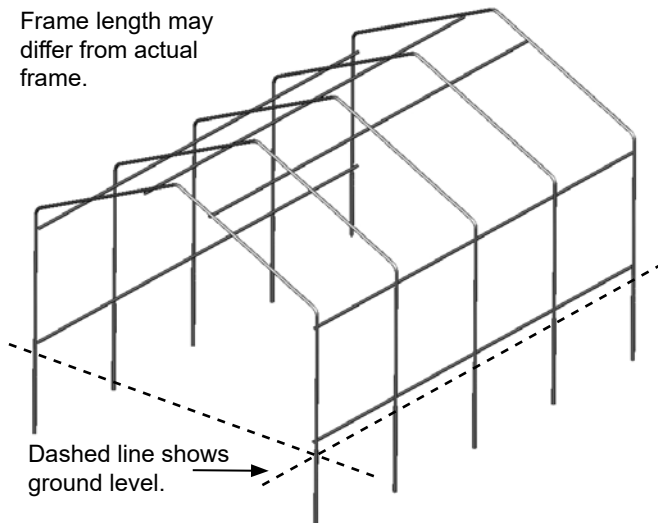


19. Repeat the above steps as needed to stand and secure the remaining interior rafters and purlins to complete the frame assembly.
20. Slide a band clamp onto each leg of the remaining end rafter, secure the rafter to the ground posts, and attach the purlins to it. Verify that the end clamps are positioned with the nut and bolt to the inside of the assembled frame. Refer to the Quick Start section and previous diagrams if needed.

NOTE: If the last end rafter is plumb and the purlin extends beyond the end of the rafter, cut the last section of purlin pipe to the required length.

Typically purlins do not require cutting. Verify that you have correctly assembled the purlin using the correct pipes *before cutting any pipe to length.*

Frame length may differ from actual frame.



21. Once all rafters are set and all purlins are in place and secure, return to each pipe splice of each purlin and rafter and verify that a Tek screw is installed to secure the joint. Install a Tek screw if needed.
22. Remove any temporary bracing (if needed) and install the side struts.

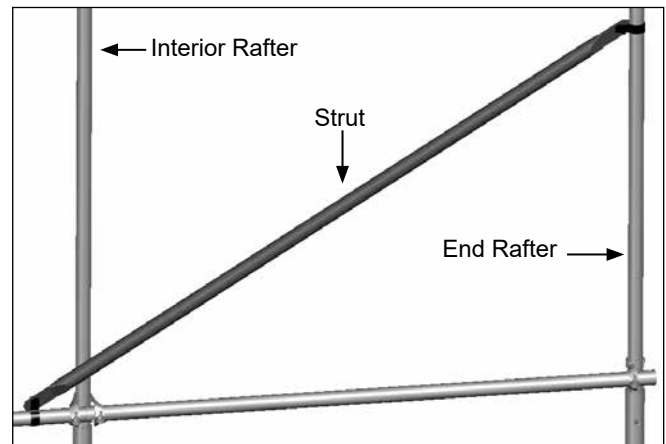
SIDE STRUT INSTALLATION

There are four (4) side struts for the shelter. These struts are positioned between the end rafters and the first interior rafter on each side of the shelter.

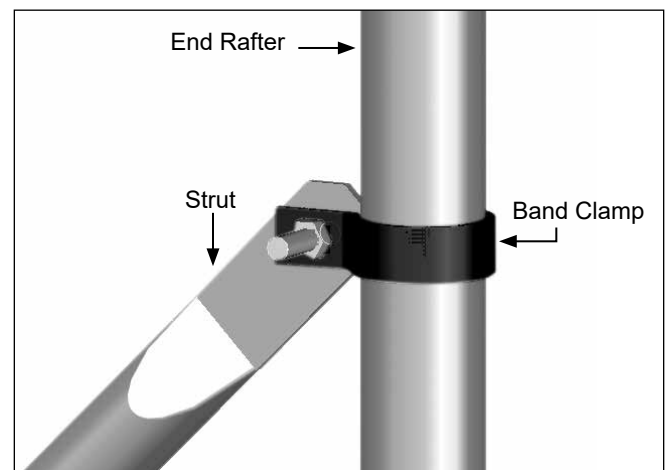
Complete these steps to install the four (4) side struts:

Gather the parts:

- Struts
 - Band clamps (#QH1400)
1. Locate one strut and position it between one end rafter leg and the leg of the first interior rafter as shown below.



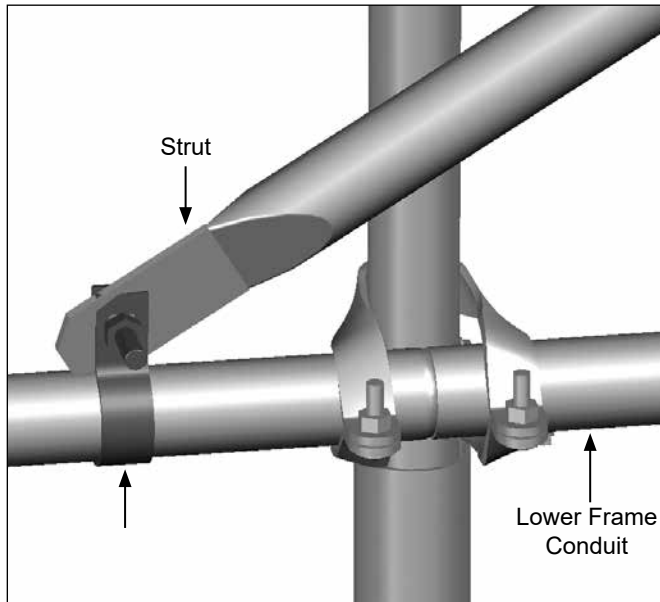
2. Attach one end of the strut to the band clamp as shown in the diagram below.



NOTE: Head of bolt on the band clamp must face the outside of the shelter.

SIDE STRUT INSTALLATION (CONTINUED)

- Place a band clamp around the lower frame conduit and attach the remaining end of the strut. See the diagram that follows for location.



- Repeat the above steps to attach the remaining side struts to the shelter.
- Secure each band clamp to the pipe using a Tek screw.
- After securing the struts, verify that all clamps are secured with a Tek screw to the rafters.
- Continue the next procedure to anchor the assembled frame.

ANCHOR THE ASSEMBLED FRAME

At this point, anchor the greenhouse frame. Consult the **MUST READ** document for anchoring information and suggestions. Please call customer service at 1-800-245-9881 for additional anchoring information.

CAUTION: The anchor assembly is an integral part of the greenhouse construction. Improper anchoring may cause instability and failure of the structure to perform as designed. Failing to anchor the shelter properly will void the manufacturer's warranty and may cause serious injury and damage.

END WALL INSTALLATION

The end walls for the greenhouse are installed *before* the main cover is attached. The steps to install the end walls for the greenhouse include the following:

- Measure, assemble, and temporarily install end wall frame tube (bottom). (See End Wall Diagram at the back of these instructions.)
- Mark rough door opening on bottom frame tube, remove tube, insert tube into the pocket at the bottom of the end wall panel (front only), and reattach bottom tube to end rafter.
- Install door frame tubes, attach end panels to end rafters, and remove excess panel material (if desired).

INSTALL END WALL FRAMING (Front and Back)

Site variations and different methods for anchoring the greenhouse may require slight changes to be made to these instructions. *It is the responsibility of the owner/builder to adapt these instructions as needed to adjust for these and other differences.*

A NOTE ABOUT INSTALLING THE END WALL FRAMING FOR OPTIONAL HEATERS, VENT FANS, AND MOTORIZED SHUTTERS (if equipped):

Optional accessories such as heaters, vent fans and motorized shutter units maybe installed or attached to the end walls of this greenhouse. ***Additional horizontal framing (not included) is installed between the vertical end wall frame tubes to mount these accessories.***

Diagrams do not show framing for the accessories.

When framing the end wall, consult the installation instructions for the accessories (if equipped), or measure the width of the accessory to accurately space and position the end frame tubes.

Before installing any greenhouse accessory, adhere to the following:

- Consult the end frame diagrams before installing the accessory horizontal framing.
- DO NOT REPOSITION THE END WALL VERTICALS USED FOR DOOR INSTALLATION.**
- Always consult the installation guides that shipped with the accessory for additional precautions, recommendations, and safety requirements.
- Before installing any electrical accessory, consult a professional electrician for precautions and additional assistance.
- For gas heaters, a professional, qualified service technician must install the unit.

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END WALL INSTALLATION (CONTINUED)

Complete these steps to install the accessory framing:

1. Based on the installation requirements and precautions of the accessory, choose a location in the end wall to mount the accessory, and cut a 1.5" x 1.5" frame tube (**additional purchase required**) to the correct length for framing.
2. Attach these horizontal frame tubes between the vertical frame tubes of the end wall (at the required height determined by the installation instructions included with that accessory) using QH1330 brackets (*additional purchase required*).

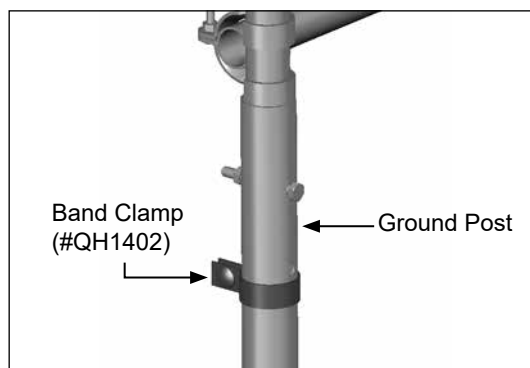
INSTALL END WALL FRAME AND PANEL

Refer to the end frame diagrams (Quick Start section). The materials and parts needed to assemble the end wall frame include:

- 2" x 2" Square tubes (#105328)
- Band clamps (#QH1400 and QH1402)
- Square tube middle coupler (#104628)
- Square-to-round tube connect bracket (#104074)
- Carriage bolt (#FAH320) and nut (#FALB02B)
- Tek screws (#FA4482B) & angle brackets (#QH1330)

ATTENTION: Consult the End Framing - Connections in the Quick Start Guide at the back of these instructions before you start the steps that follow.

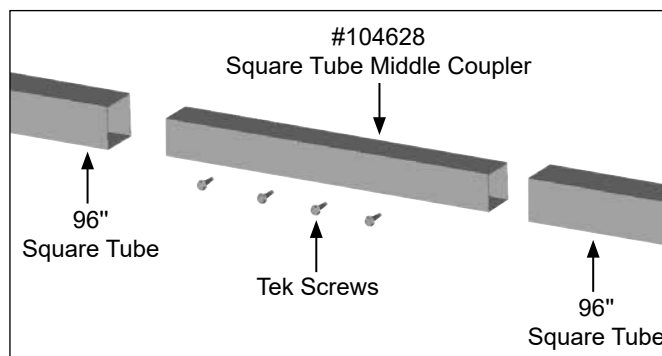
1. Install a QH1402 large band clamp around each ground post of the front, end rafter assembly.



2. Locate the square metal tubing for the bottom frame member of the end wall. The bottom frame member consists of two (2) long 96" plain sections of square pipe, joined using a square tube middle coupler, and cut to the correct length (if needed).

NOTE: When cutting the bottom end wall frame tube to the proper length, remember to *subtract 1 3/4" for each of the 104074 square to round tube brackets*, which are attached to the ends of the frame tube.

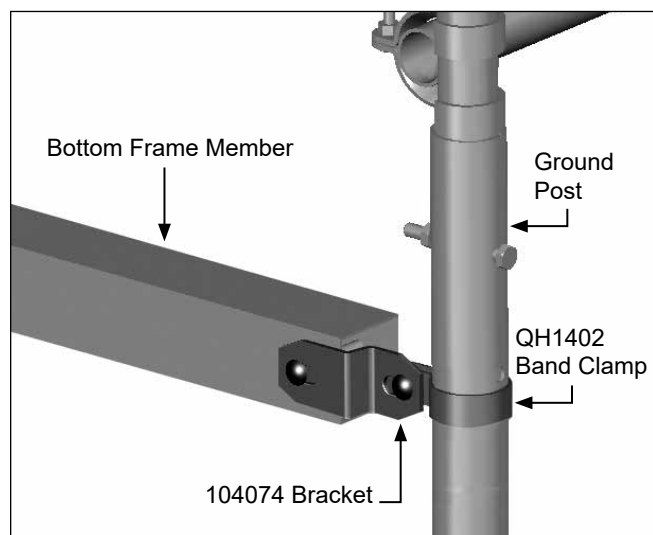
3. Using the square tube middle coupler (#104628) as an insert, connect the both 96" square tubes to form the bottom frame member of the end wall.



4. Rotate the square tube so that the Tek screws are to the inside of the shelter.

ATTENTION: To prevent damage to the end panel and interference with the door installation, do not position the rail with the Tek screw heads to the top or front/ outside surface of the assembled tube.

5. Position this assembled bottom frame member on the ground between the legs of the end rafter at the front of the greenhouse and temporarily secure the tube to the band clamps on the ground posts using a square-to-round tube.

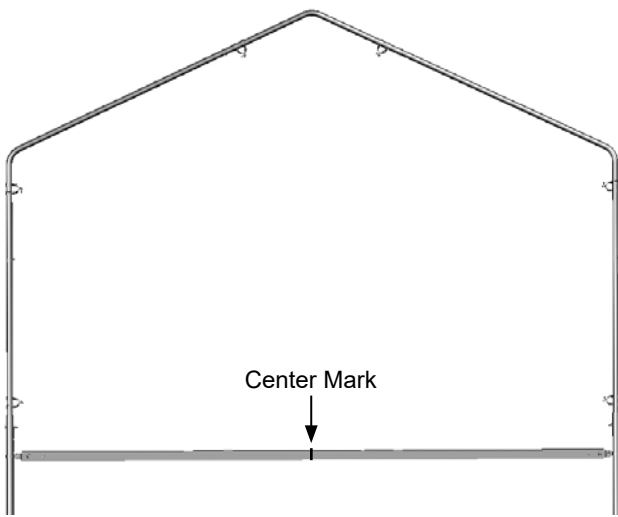


This bottom end wall frame section will be directly below the end rafter.

NOTE: Do not tighten the bolts at this time. The frame tube will be removed after the rough door opening is marked on the tube.

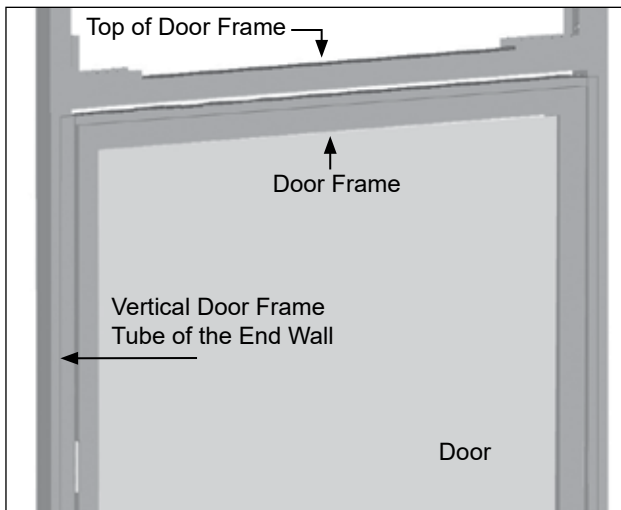
END WALL INSTALLATION (CONTINUED)

6. After the bottom frame member is in position, locate the center of the bottom end wall frame and mark the location.



7. Locate the pedestrian door that shipped with your shelter and measure the width of the door.
8. After measuring the width, add 1/2" to the dimension to allow room to properly install and adjust the door.

ATTENTION: The frame of the door is designed to "wrap around" the vertical door frame tubes of the end wall. Diagram below shows how the door is installed

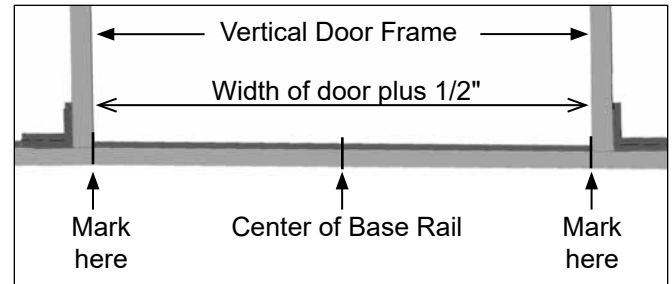


NOTE: Verify that you are measuring the width of the door correctly to allow it to be installed.

9. Using the center mark and the width determined in Steps 7 and 8, mark the *inside rough opening* for the pedestrian door.

Consult the comment that follows if needed.

REMEMBER: The dimension for the inside rough opening of the door is the width of the door (Step 7) plus 1/2" (Step 8). Vertical tubes can be adjusted once the door is set in position.



NOTE: Vertical door frame tubes (shown above) are installed later.

10. Repeat the steps for the back end wall if installing an optional pedestrian door.

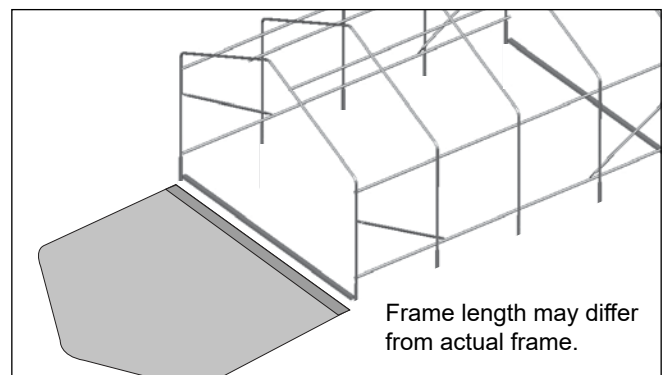
ATTENTION: If you are not planning to install an optional pedestrian door in the back wall, the vertical frame tubes for the door frame can be cut and moved outward to align with the zippered end wall cover. This will allow for the unobstructed use of the open back panel of the greenhouse.

If the zippers of the end panel (back wall) are angled in the panel, install the frame tubes at the same angle if desired. Adjust the QH1330 variable angle bracket to the required angle and secure the frame tubes as needed. See Quick Start section if needed.

Remember to position the vertical end frame members in line with the zippers of the end panel but in a position that will not interfere with the operation of the zippers.

All vertical end wall frame tubes for the end walls are installed after the end wall panels are secured to the end rafters.

11. Locate the plain end panel for the front of the greenhouse and spread it out on a clean, flat surface.



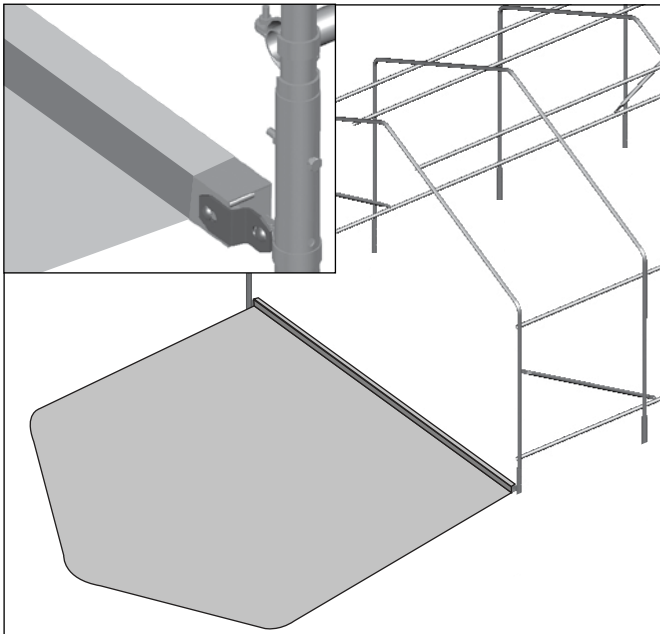
12. Unfasten the bottom end frame member of the front end wall by removing the bolts that hold the frame tube to the band clamps around the ground posts.

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END WALL INSTALLATION (CONTINUED)

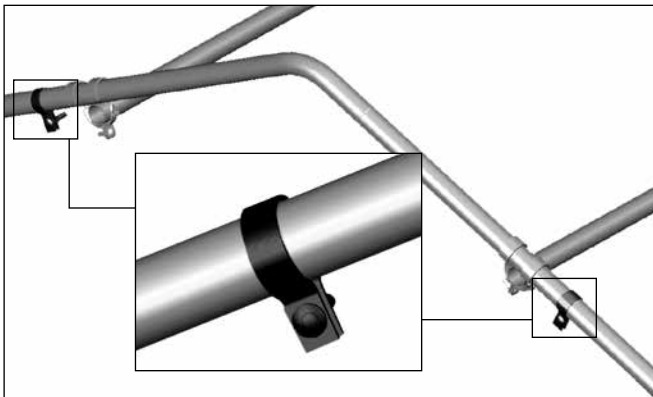
13. With the end panel situated on a flat, clean surface, insert the assembled bottom end frame tube into the pocket at the bottom of the front end panel.
14. Once the frame tube is fully inserted into the end panel pocket, reattach the frame tube to the band clamps as previously described.

NOTE: Depending on the width of the greenhouse and the end panel, it may be necessary to cut or trim the end panel pocket to reattach the frame member between the ground posts.



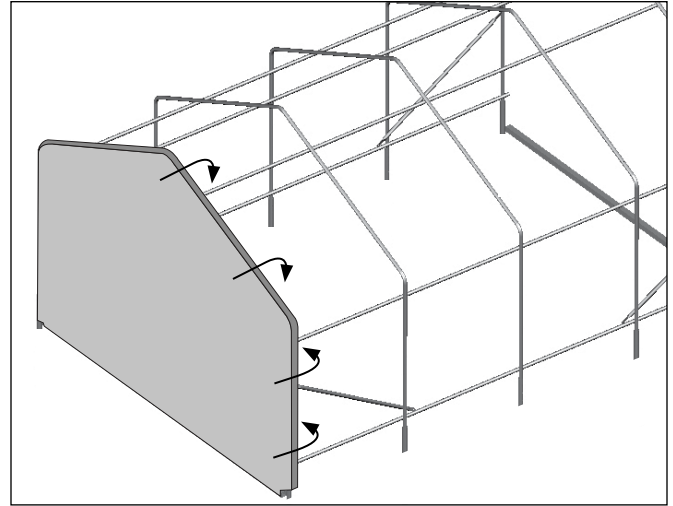
If this is necessary, center the panel on the bottom end frame tube before cutting the panel.

15. Take two (2) band clamps (#QH1400), remove the bolt and nut, and place the clamp over the upper tube of the end rafter.



Use a set of pliers to squeeze the clamp back into shape once it is in position on the rafter if needed.

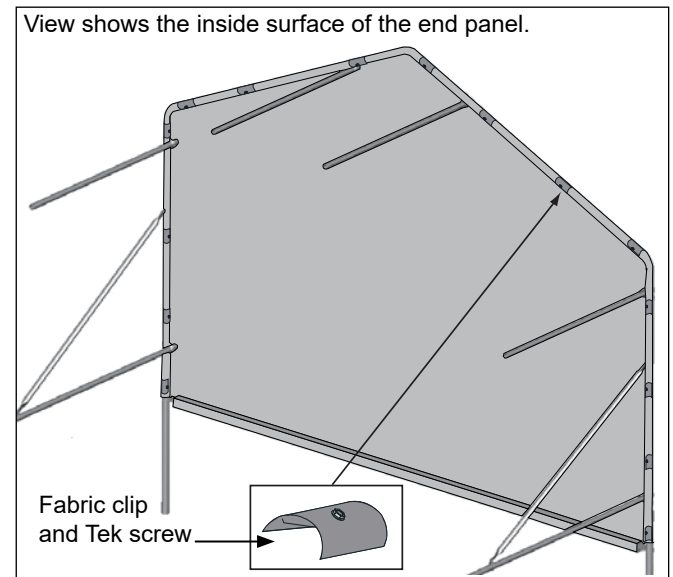
16. Using adequate assistance, lift the end panel up and over the end rafter and stretch it into position.



The excess end panel material can be removed after the panel is attached to the rafter pipe.

17. Fold the edges around the rafter pipes and secure the panel to the rafter pipes using fabric clips and Tek screws.

ATTENTION: Divide the fabric clips in half and use half to secure each end panel. Space the clips evenly along the rafter as shown below.



Position the Tek screws so they will not touch the main cover when it is installed.

The number of fabric clips shown above may not match the number used for your greenhouse.

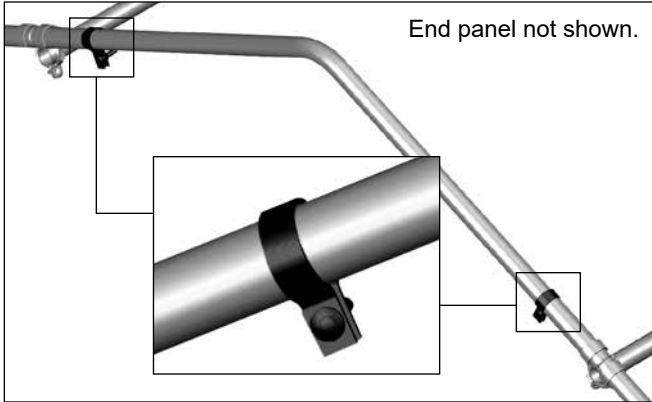
18. After securing the end panel to the rafter, continue by attaching the door frame tubes to the end wall bottom frame tube and end rafter.

END WALL INSTALLATION (CONTINUED)

ATTACH VERTICAL DOOR FRAME

The following steps describe how to attach the vertical frame members to the end rafter.

1. Locate the band clamps previously placed near the top of the end rafter.



NOTE: You may need to loosen the fabric clips in these locations to access the band clamps.

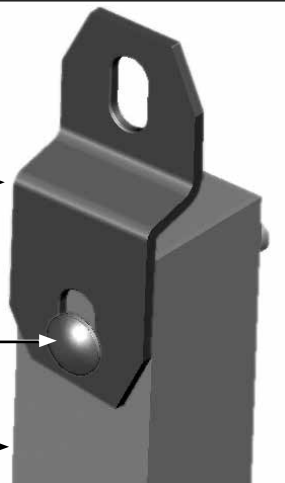
2. Move to the bottom frame tube of the end frame and locate the center of the frame tube.
3. Using a utility knife or scissors, cut through the end panel pocket covering the end frame tube and locate the center mark previously made on the end tube.
4. Continue cutting along the top of the frame tube toward the outside of the greenhouse in each direction until the pre-marked rough door openings are found.
5. At the clamp positioned on the rafter, measure the distance between the top of the bottom frame member and band clamp to determine the length of the first vertical end wall frame tube.
6. On the vertical frame tube, mark the length determined in Step 5 (above) and subtract 1 3/4" to account for the 104074 square to round tube bracket, which is attached to the top of the frame tube (shown below and on the End Wall Diagram).

Use a 5/16" drill bit and drill to drill the hole for the 5/16" carriage bolt.

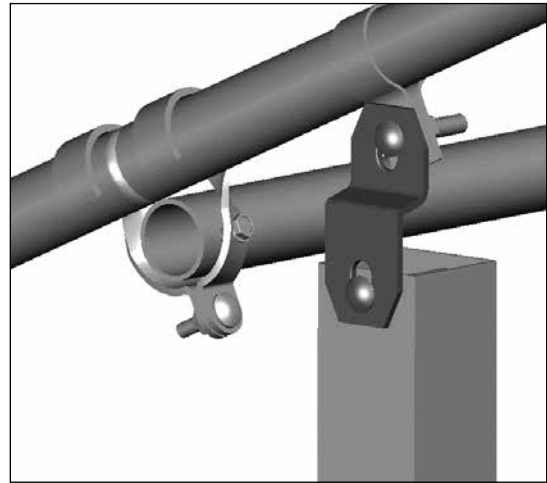
Square-to-Round Tube Bracket (#104074)

Carriage Bolt (#FAH320B)

Square Tube (#105328)

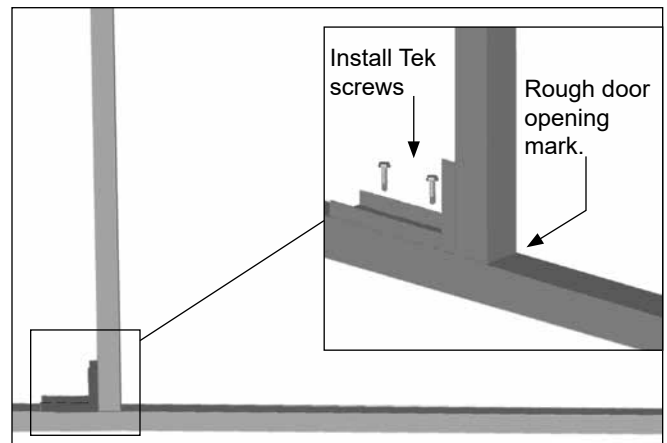


7. Select a 104074 square to round tube bracket and attach the bracket to one end of the vertical frame member. Use a 5/16" drill bit to drill a hole through the tube and attach the bracket to the tube using a nut and carriage bolt.
8. With the 104074 square to round tube bracket attached to the top of the frame member, attach the frame member to the band clamp on the rafter.

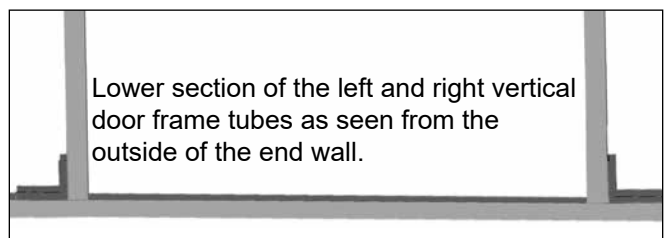


NOTE: Install the nut, but do not tighten the clamp at this time.

9. Carefully position one (1) vertical door frame tube on the base rail and align the inside edge with one mark of the rough door opening. See the diagram below.
10. Secure the angled bracket (#QH1330) to the base rail tube using two (2) Tek screws.



11. Repeat the steps for the remaining vertical door frame tube.

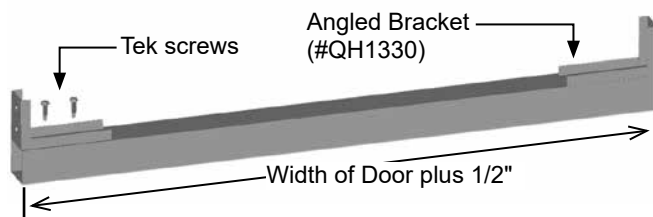


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END WALL INSTALLATION (CONTINUED)

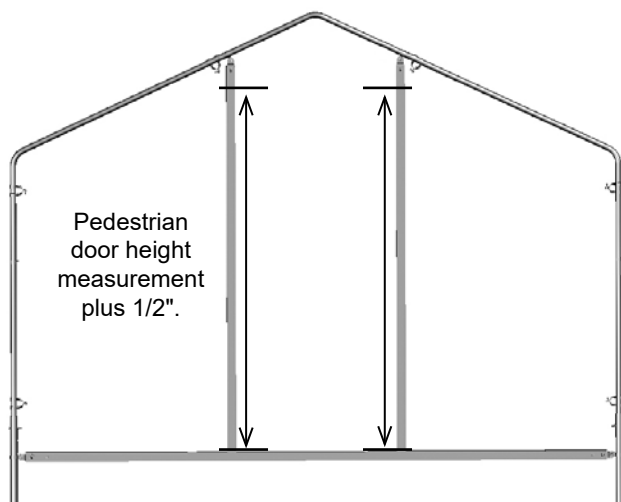
12. Take a 2" x 2" square tube and cut it to the width of the rough door opening. This tube is used for the top horizontal end wall door frame tube (header).
13. Attach two (2) angled brackets to the header tube as shown below.

The length of the header tube is the width of the door plus 1/2".



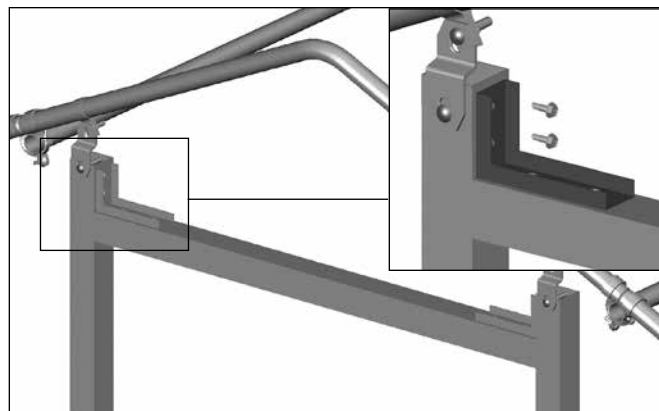
NOTE: Attach the angled brackets (#QH1330) flush with the ends of the header tube.

14. Using the pedestrian door, measure the height of the door and add 1/2" to allow for the proper installation and adjustment.
15. Using the dimension determined in the previous step, measure along each door frame tube from the top of the base rail and mark the location.



16. Position the horizontal door frame member between the vertical frame members and align the *bottom of the horizontal tube with the rough opening marks*.

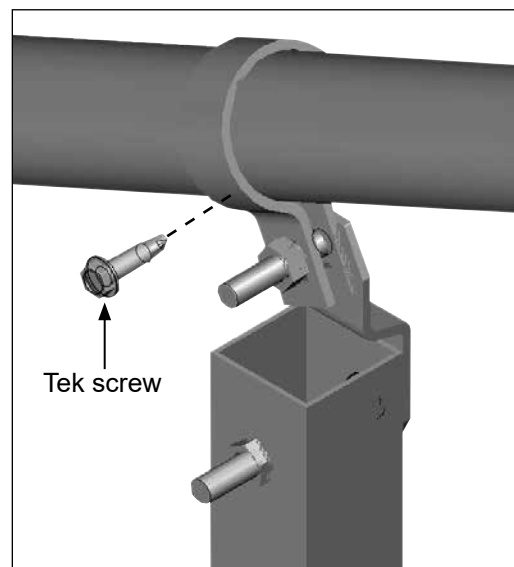
17. Temporarily secure the horizontal tube to the vertical end frame tubes using two (2) Tek screws for each angled bracket. This frame tube will be removed to install the door *after* installing the end panel.



NOTE: Clamps can also be used to temporarily clamp the horizontal tube between the vertical frame tubes.

Verify that the vertical door frame tubes are plumb and secure both pipe clamps to the end rafter.

18. Recheck the rough door opening dimensions (top and bottom) to verify that the door opening is square.
19. Return to each band clamp and install a Tek screw through the clamp and into the rafter pipe from the inside of the shelter to secure the clamp to the rafter.



View above is from the inside (or backside) of the end wall frame and shows the top of one vertical frame tube.

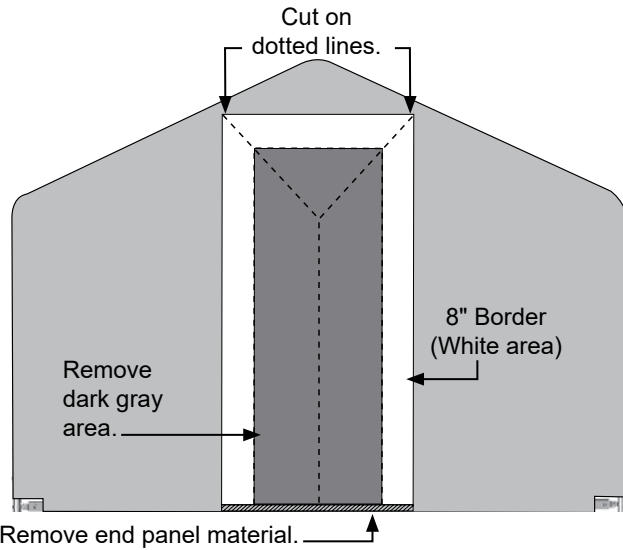
NOTE: To this point, all end wall frame tubes are in place, plumb, and secured. The end panel is also installed.

20. Continue with cutting the end panel and installing the pedestrian door.

CUT THE DOOR OPENING: FRONT END PANEL

The end panel material is cut and removed from the rough opening of the pedestrian door. These steps describe one way to do this.

1. From the outside of the shelter, use a utility knife to cut the end panel as shown below. The dashed lines show where to make the three (3) cuts.
2. After cutting the end panel in the locations shown by the dashed lines, remove the part of the panel shown by the shaded area in the diagram below.



ATTENTION: Allow an 8" border to remain in the door opening. The white areas in the above diagram identify this 8" border.

This material is wrapped around the door frame tubes of the end wall and secured to the inside of the door frame tubes using Tek screws and fender washers.

3. Remove the end panel material *from the base rail between the vertical door frame tubes*. See diagram above.
4. Continue by installing the pedestrian door.

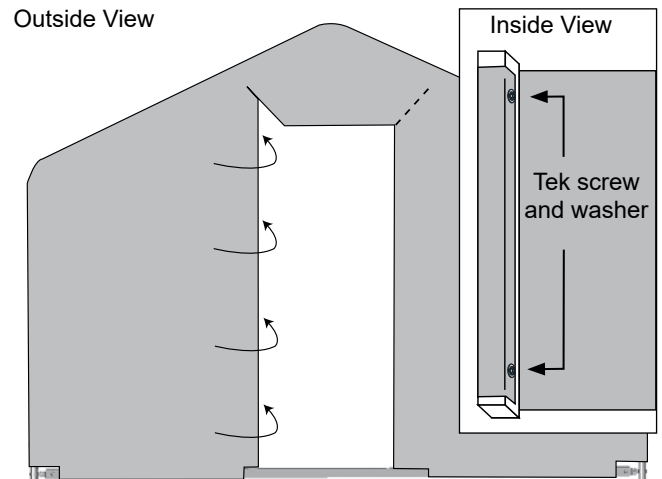
INSTALL THE PEDESTRIAN DOOR

The door for the shelter is installed between the vertical door frame members of the end wall. The following steps describe one way to install the door.

1. Wrap one side of end panel material (remaining in the door opening) around the left vertical door frame member, *which is secured to the base rail*.

ATTENTION: The remaining vertical door frame tube should be loose at the bottom to allow for the installation of the door. If this tube is attached to the rail, remove the Tek screw before you continue with these steps. See the following diagram.

2. Secure the end panel material to the door frame tube using Tek screws and washers and evenly space these (12"-14") along the tube.

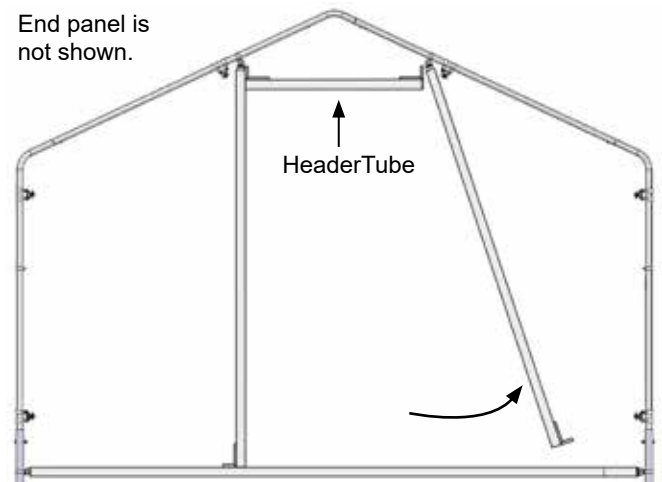


The insert above shows the Tek screws and washers attached to the frame *from the inside of the shelter*.

NOTE: Do not secure the end panel material *to the backside of the vertical door frame tubes*. Doing so will interfere with the installation of the door.

The arrows in the previous diagram show which surface of the vertical tube to attach the end panel material that is wrapped around the vertical door frame tube.

3. With the end panel secured to the left door frame tube, remove the header tube. Allow the brackets to remain *attached to the header tube*.



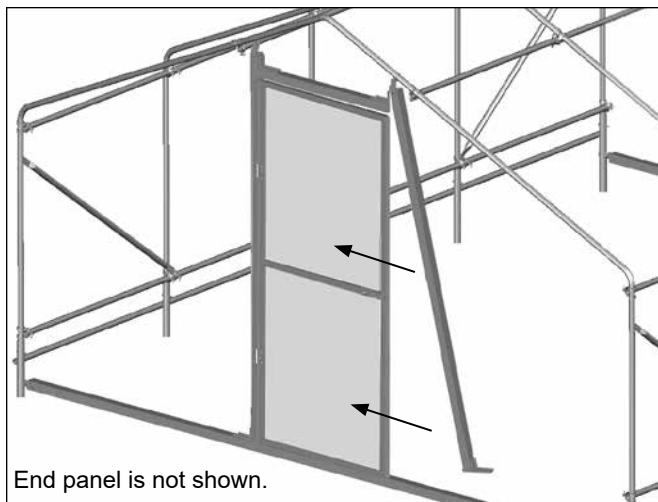
View is from the *outside of the frame*. End panel is not shown to better show the frame.

4. Move to the bottom of the vertical door frame tube and swing the tube outward as shown above.

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INSTALL THE PEDESTRIAN DOOR (CONTINUED)

5. With the proper assistance, lift the pedestrian door and position it in the opening.



ATTENTION: The vertical door frame tubes sit within the frame channel of the door. The header tube will sit on top of the installed door.

6. With the door installed, swing the loose vertical door frame tube back into position.
7. Feed the end panel material between the vertical tube and the frame of the pedestrian door.
8. Secure the vertical tube to the base rail and reattach the horizontal tube (header) between the vertical tubes.

NOTE: Verify that the end panel material is between the top of the door frame and the header before you reattach the tube.

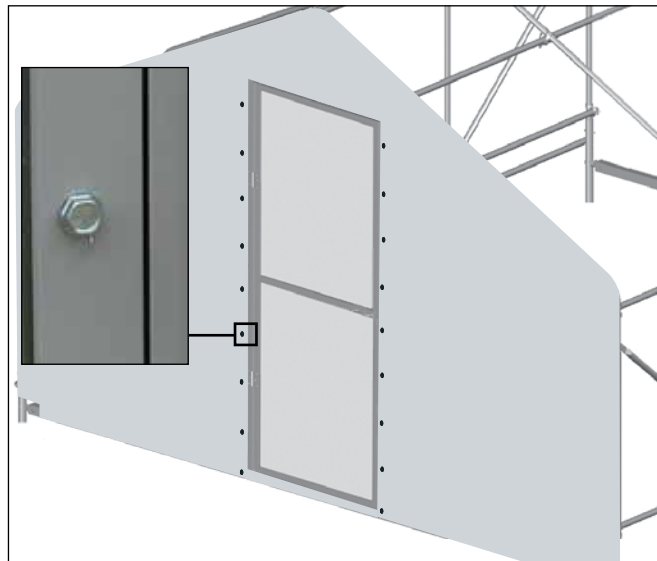
The header can be adjusted as needed to properly adjust the door.

9. Stretch the panel material as needed and secure it to the remaining door frame members on the inside of the assembled frame.

ATTENTION: Refer to Steps 1 and 2 if needed.

10. Verify that the door is in the desired position and adjusted and install Tek screws from the outside through the door frame of the door and into the end wall door frame tubes.

Check the operation of the door before you secure it to the end frame. Shim if needed.



Evenly space the Tek screws (12"-14") to secure the door to the end wall frame.

11. After the door is secured to the end wall frame, verify that the end panel is stretched, test the door, and remove the excess panel material (if desired).
12. After the front end wall is completed, repeat the procedure for the back end wall.

NOTE: When inserting the end frame tube into the pocket of the zippered end panel (back), DO NOT insert the tube into the pocket of the center section of the panel if you want to open the panel for ventilation.

Remember to position the vertical end frame members in line with the zippers of the end panel if no optional pedestrian door is installed.

13. After installing both end panels and the door, continue with installing the main cover.

PREPARE MAIN COVER

Gather the Parts:

- Ratchet (1" 4000lb)
- Pipe 1.315" x 75" Swaged
- Pipe 1.315" x XX" Plain
- Cover
- Tek Screws

Assembly Procedure:

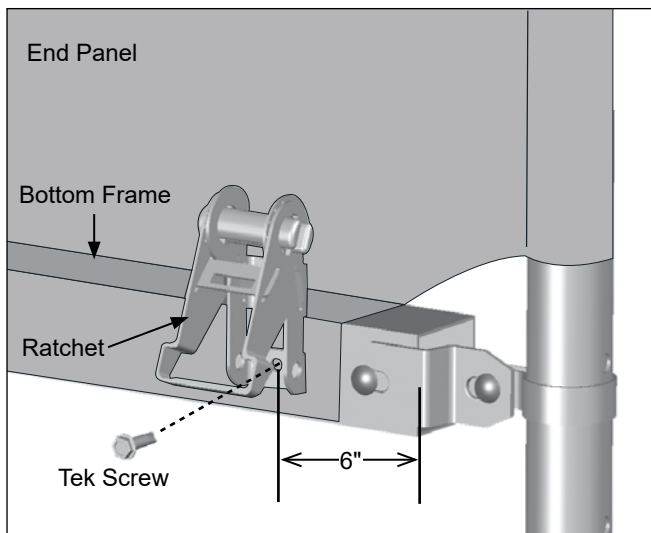
The main cover is attached to one side of the shelter using D-ring straps. It is stretched and secured to the remaining side with straps and ratchets.

The ends (front and back) are secured to the bottom of each end wall corner with a ratchet attached to the bottom frame tube. The straps to secure the ends of the main cover come pre-installed.

NOTE: When handling the main cover and setting it in position, do not pull on the end straps. They will pull out of the cover.

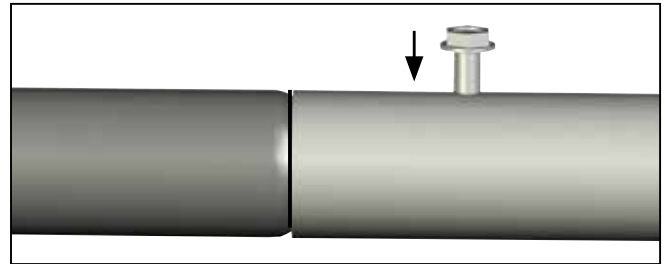
⚠ WARNING: To prevent damage to the cover and to prevent serious personal injury, DO NOT attempt to install the main cover on windy days.

1. Fasten a ratchet to the bottom frame tube using a Tek screw in the bottom hole of the ratchet as shown below. The ratchet should be about 6" in from the end of the conduit. Repeat this step in all four corners.



View shows the end wall as seen from the outside.

2. Assemble two main cover conduits. Start each conduit assembly with one plain pipe and add swaged pipes to arrive at the correct length. *This conduit is identical to the purlins that are attached to the frame.*
 - a. Locate all sections of pipe needed to assemble the cover conduit.
 - b. Insert the swaged end of each pipe into the plain end of another pipe until the conduit is assembled.
 - c. Secure each pipe joint with a Tek screw.



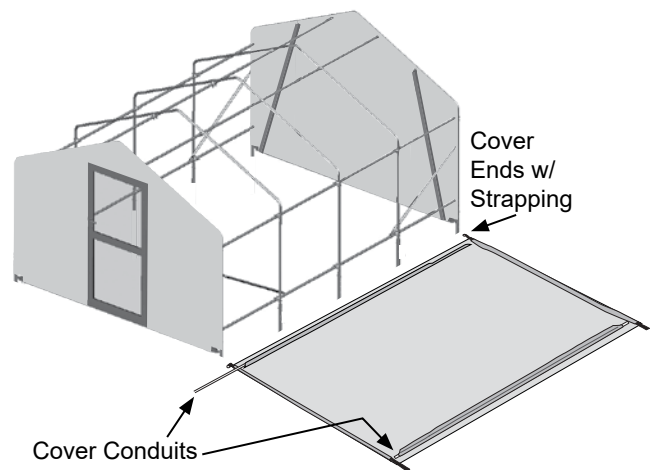
NOTE: Duct tape Tek screws to prevent damage to main cover.

These cover conduits are inserted into the pockets sewn into the main cover. The conduits are used to tighten and secure the main cover.

3. After assembling the cover conduits, locate the main cover and unfold it on a clean, smooth surface near the frame.

NOTE: Unfold the main cover with the inside surface facing up.

4. Locate the cover ends with strapping and align with the front and back of the shelter.
5. Insert the cover conduits into the pockets of the main cover.



NOTE: Shelter shown above may be a different length than this model.

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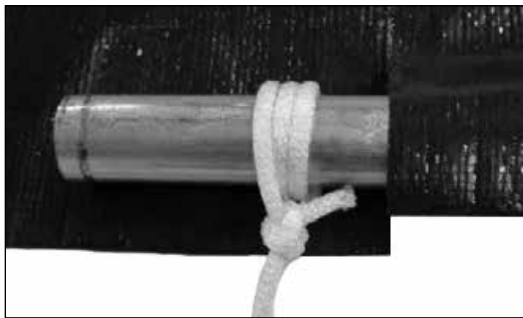
ATTACH MAIN COVER

Gather the Parts:

- Main cover (with conduits already inserted)
- Ropes long enough to reach over the frame (provided by customer)
- D-ring Straps and Plain Straps
- Tek screws and Fender washers
- Box cutter or utility knife

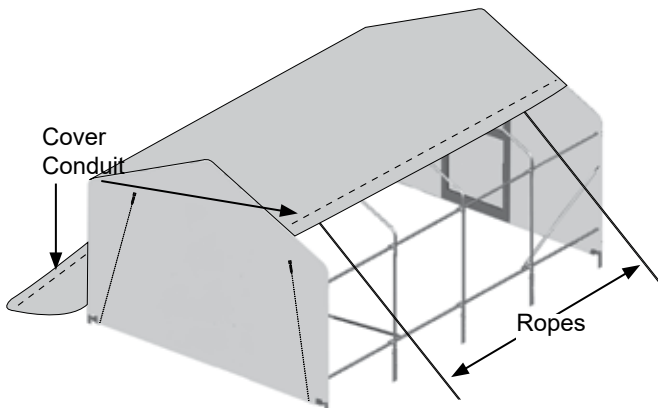
Assembly Procedure:

1. To pull the cover over the frame, attach ropes to both ends of the cover conduit. Wrap the rope around the conduit a few times to prevent it from slipping off.



NOTE: Depending on the length of the cover it may be necessary to attach additional ropes to the cover conduit between the end ropes by cutting a small opening in the cover pocket and tying the rope around the conduit. **DO NOT** cut through the main cover. *Cut through the conduit pocket only.*

2. With all ropes attached to the cover conduit, lift the conduit and carry the cover toward the base of the frame.
3. Toss the ropes over the frame and pull the cover into position. One person is required at each rope.

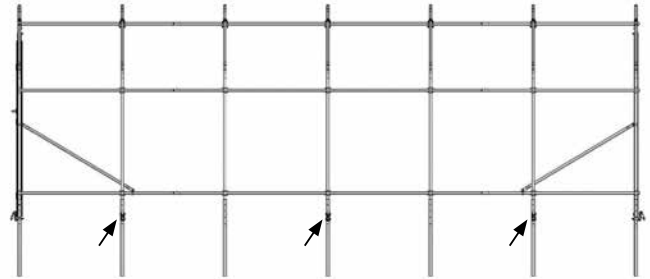


Shelter shown above may be a different length than this model.

4. Once the main cover is pulled into position, center the cover on the frame and remove the ropes. Loosely secure the ends of the cover to the ratchets attached to the front and back end panel conduits.

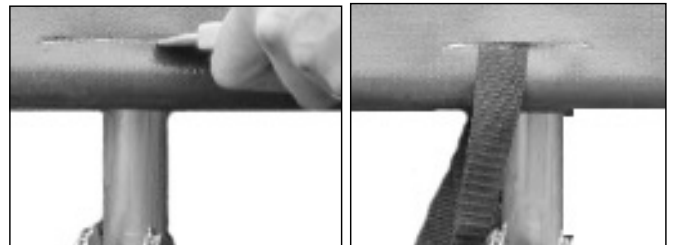
ATTENTION: Do not tighten the straps at this time

5. Place the D-ring straps on the ground along one side of the shelter beside the rafters identified by the arrows below. Place the plain straps and ratchets *on the opposite side of the shelter* at the base of the same rafters as the D-ring straps. See Side Profile diagrams.



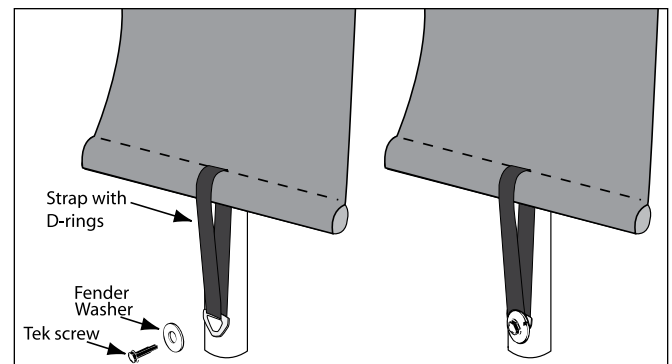
NOTE: Diagram above is an example of the 24' shelter.

6. On the side of the shelter where the D-ring straps are located, lift the main cover skirt and cut a slit through the main cover pocket at the rafters identified by the arrows above.



NOTE: **DO NOT** cut through the main cover. *Cut through the conduit pocket only.*

7. Thread the D-ring strap through the slit in the cover pocket, wrap it around the cover conduit, and attach the strap assembly to the rafter.



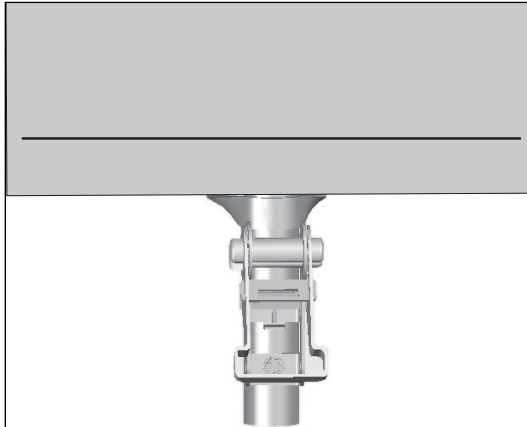
NOTE: Verify that the cover is centered side-to-side before attaching the straps.

ATTACH MAIN COVER (CONTINUED)

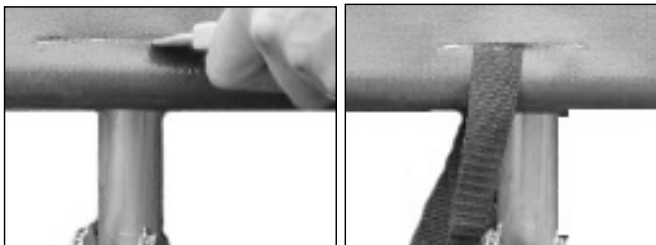
- Repeat the steps for the remaining D-ring straps.

NOTE: D-ring straps are attached to one side of the shelter. Ratchets are attached directly across from the D-ring straps on the *same rafter assembly*.

- Move to the other side of the shelter and attach the ratchets to the rafters. Use the main cover conduit as a guide to attach the ratchets to the rafters at the proper height. Fasten ratchets to the outside of these rafters using a Tek screw.

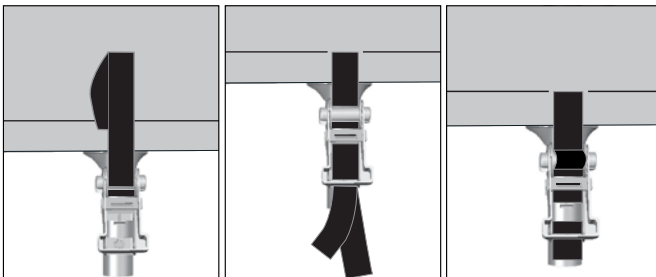


- As previously described, make a slit in the cover conduit pocket and insert a 3' section of strap through the slit and around the cover conduit.



- Thread the strap ends into the ratchet and slightly tighten.

NOTE: It may be necessary to remove excess strap if it binds up in the ratchet.



- Repeat the steps for the remaining ratchet or ratchets.

- Using additional help (if needed) tighten the main cover beginning with the ratchets along the side of the shelter frame.

- After the side ratchets are tightened, return to the front and back end wall ratchets and tighten.

NOTE: Loosen the ratchets if needed to remove excess strap and tighten. If the main cover is not centered as desired, the D-ring straps can be repositioned (higher or lower) as needed and the main cover retightened.

- Fold the skirt of main cover down and over the ratchets and D-ring straps to complete the installation of the main cover.

SHELTER CARE AND MAINTENANCE

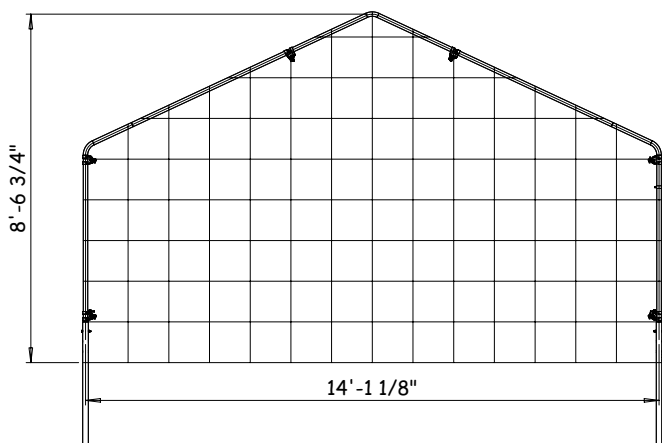
Proper care and maintenance of your shelter is important. Check the following items periodically to properly maintain your shelter:

- Regularly check the main cover and panels (if equipped) to see that these remain tight and in proper repair.
- Check connections and all fasteners to verify that they remain tight.
- Do not climb or stand on the shelter at anytime.
- Remove debris and objects that may accumulate on the shelter. Use tools that will not damage the cover when removing debris.
- Remove snow to prevent excess accumulation. Use tools that will not damage the cover when removing snow.
- Check the contents of the shelter to verify that nothing is touching the cover or the side panels that could cause damage.
- Check the anchoring system to ensure that all components are tight and in good repair.
- If the shelter is moved, inspect all parts and connections before reassembling.
- For replacement or missing parts, call 1-800-245-9881 for assistance.

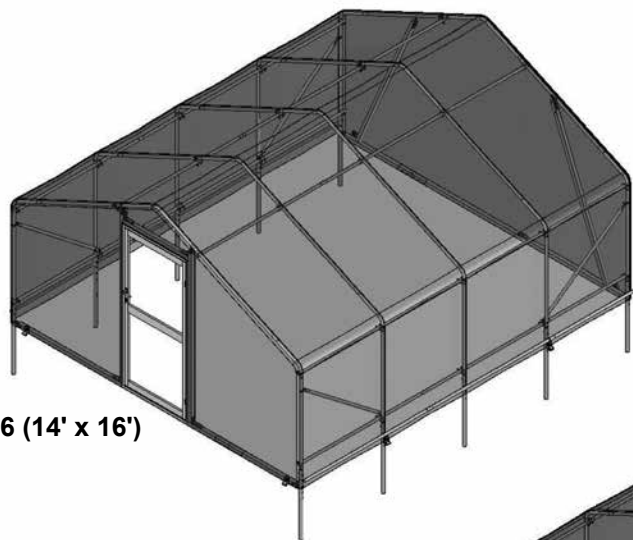


QUICK START GUIDE

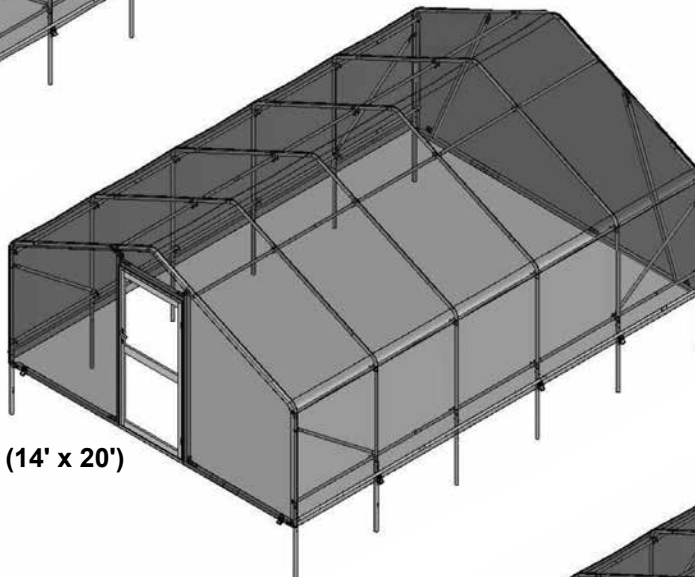
14' Wide Pro Greenhouse



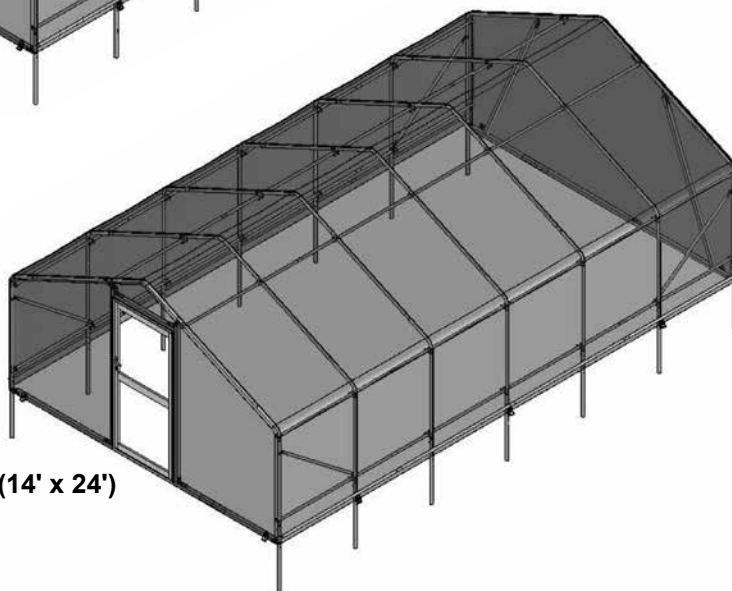
NOTE: Dimensions may vary depending on how ground posts are set.



104886 (14' x 16')

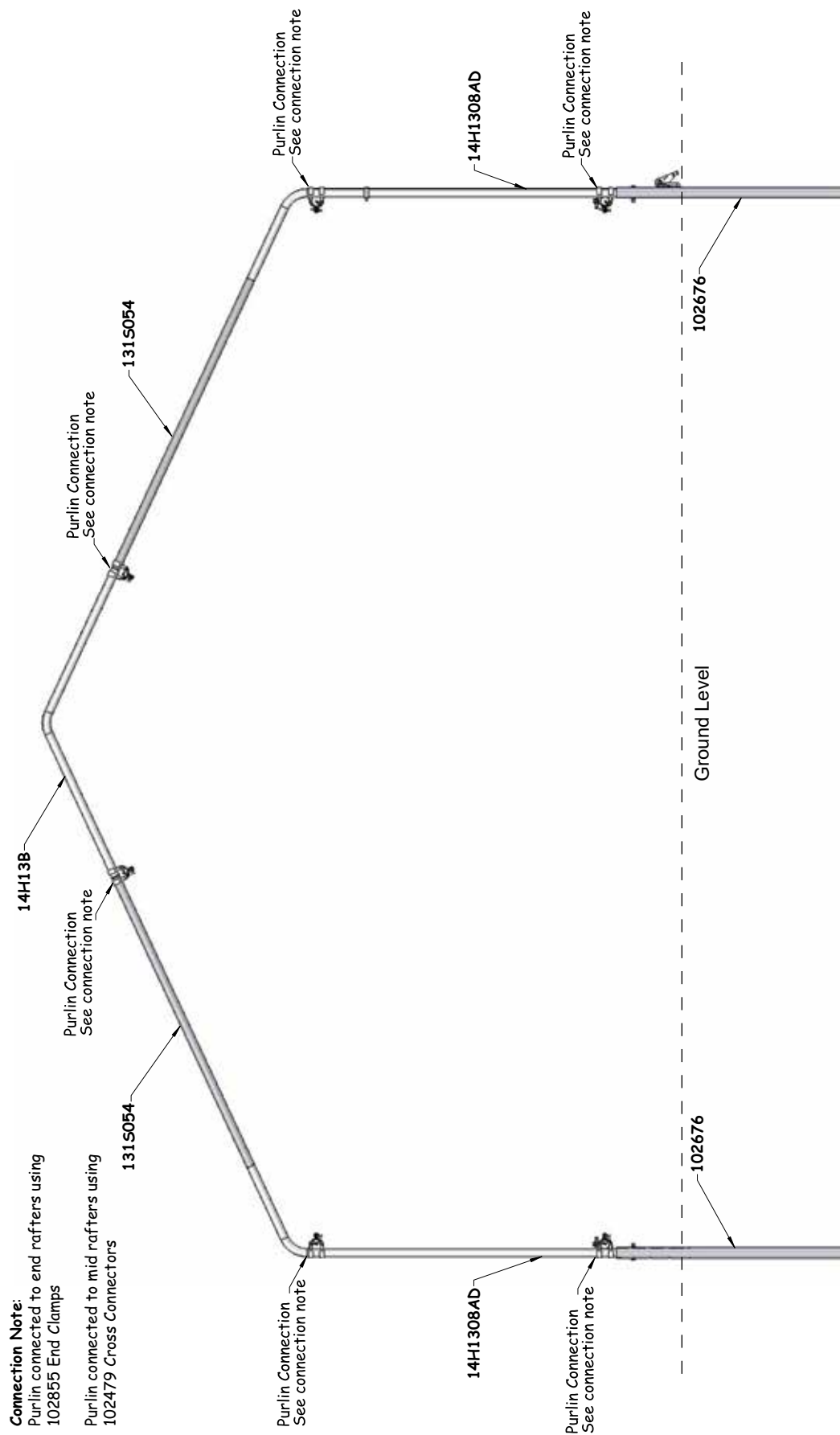


104887 (14' x 20')

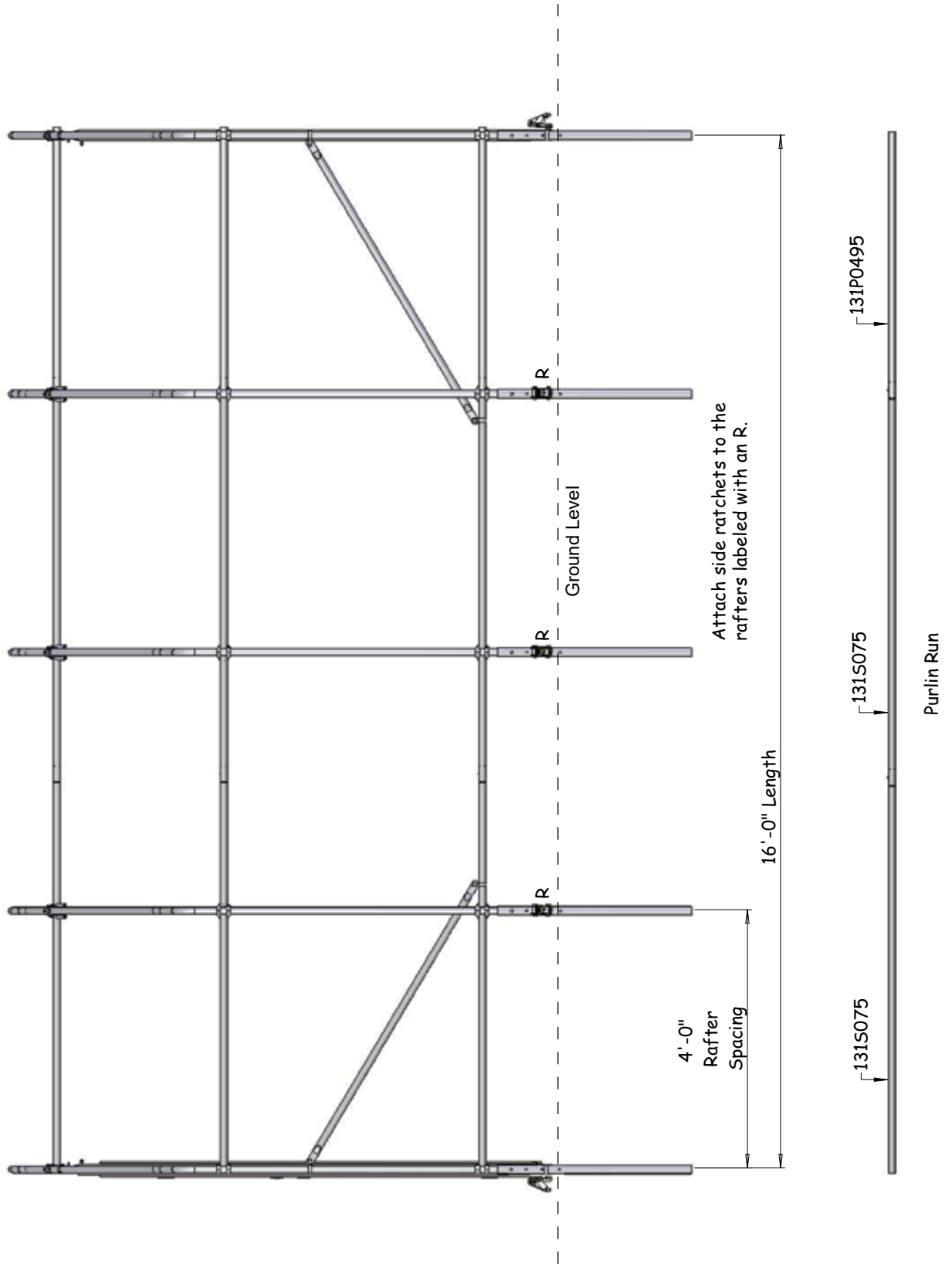


104888 (14' x 24')

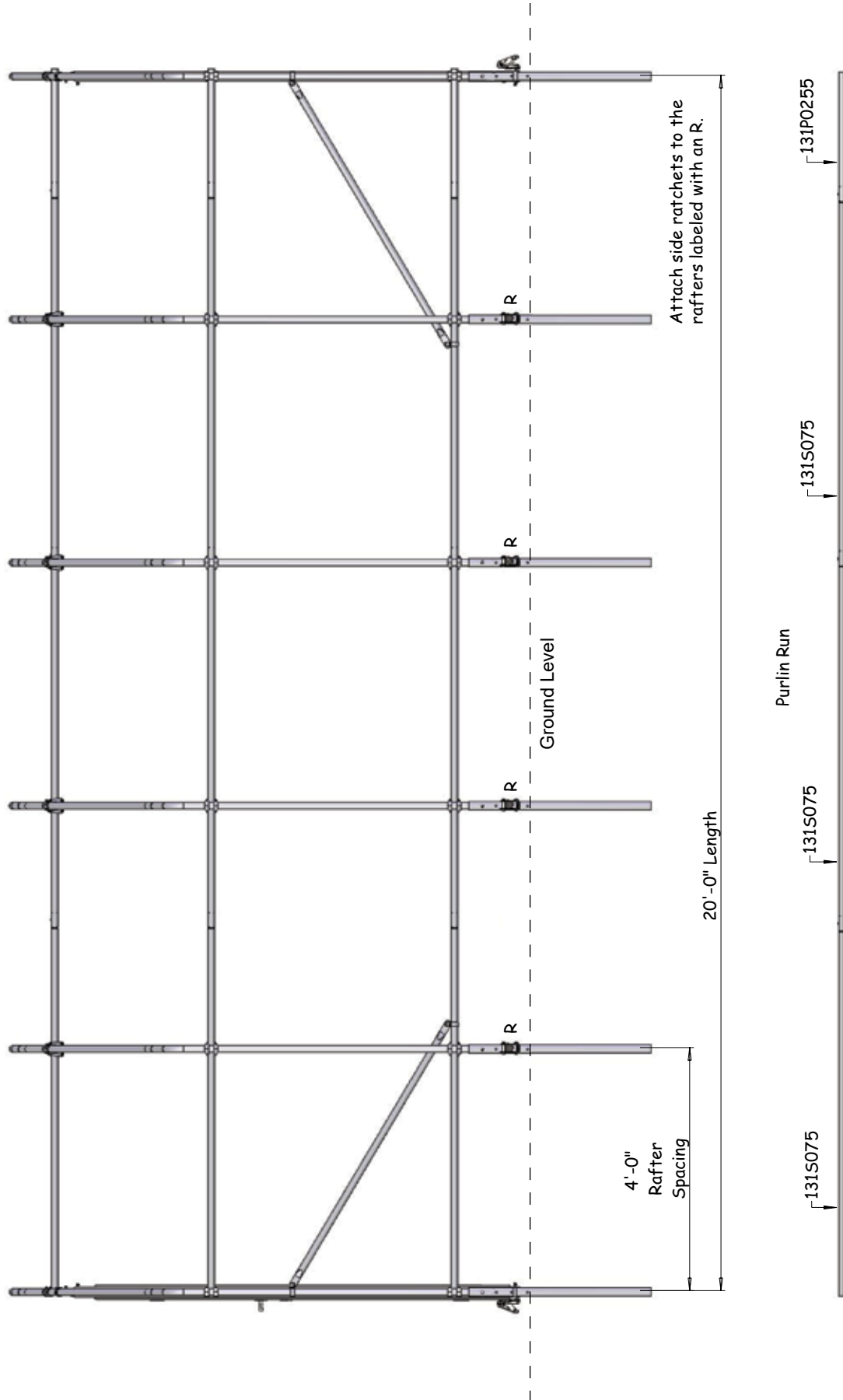
FRONT PROFILE



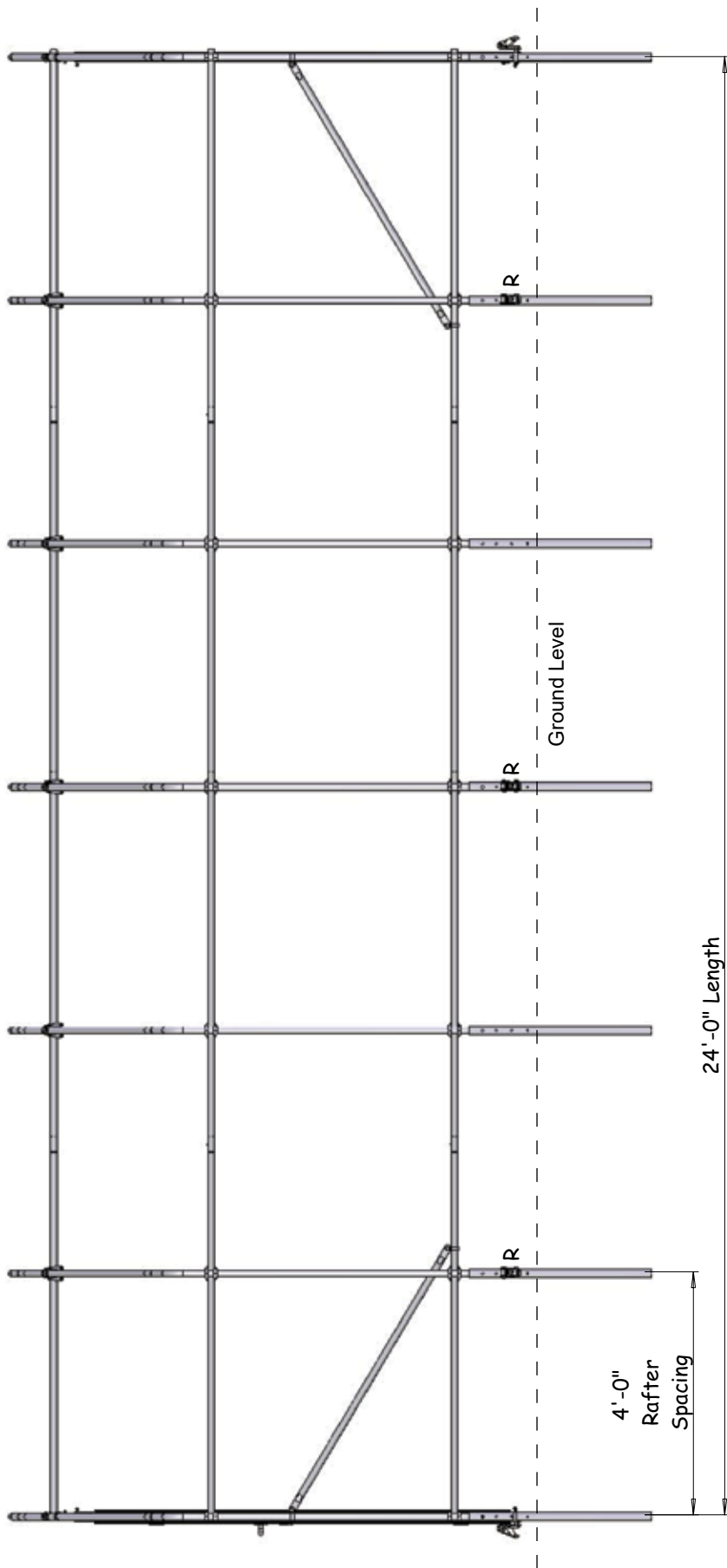
SIDE PROFILE - 104886



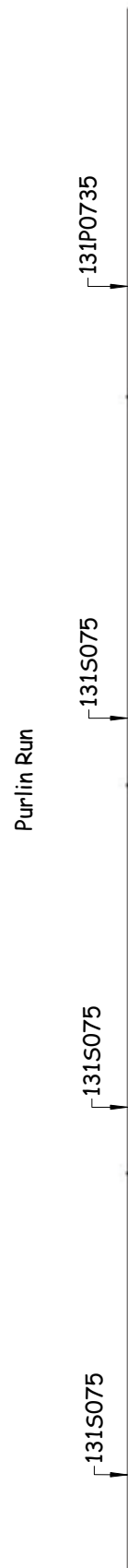
SIDE PROFILE - 104887



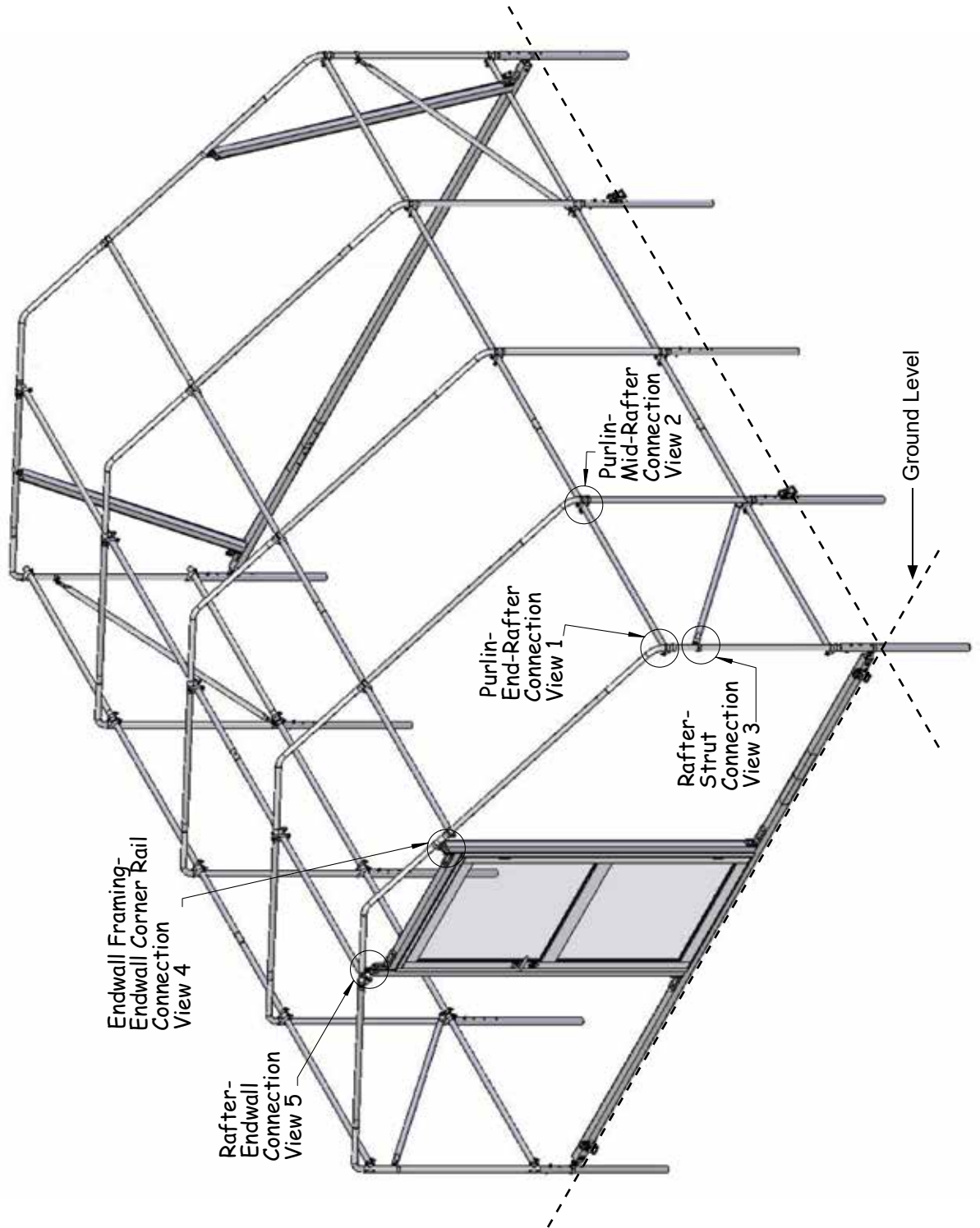
SIDE PROFILE - 104888



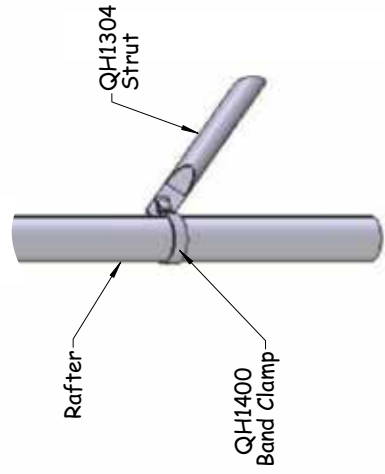
Attach side ratchets to the rafters labeled with an R.



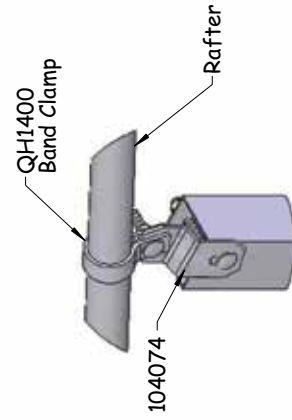
CONNECTIONS



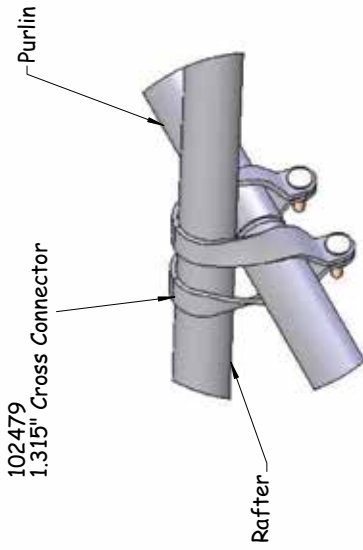
CONNECTION DETAILS



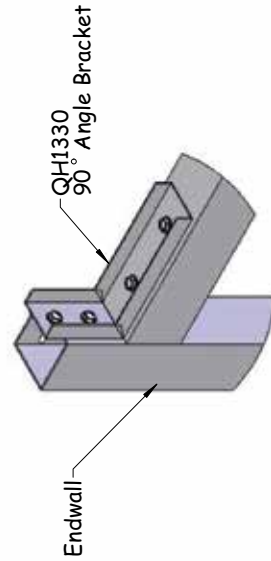
Rafter-Strut Connection View 3



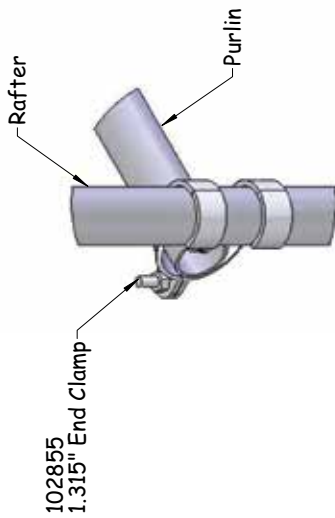
Rafter-Endwall Connection View 5



Purlin-Mid Rafter Connection View 2

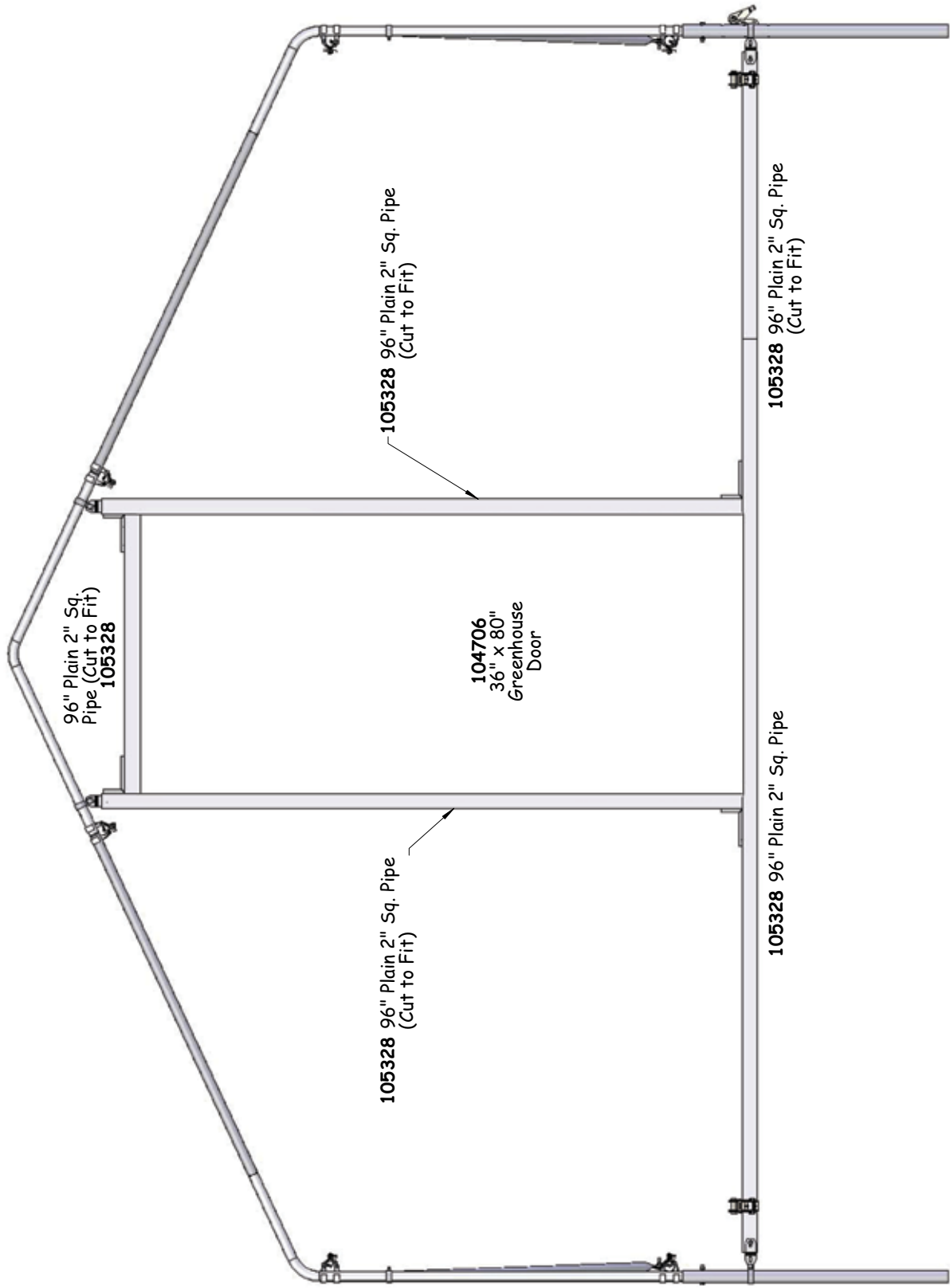


Endwall Framing-Endwall Corner Rail Connection View 4

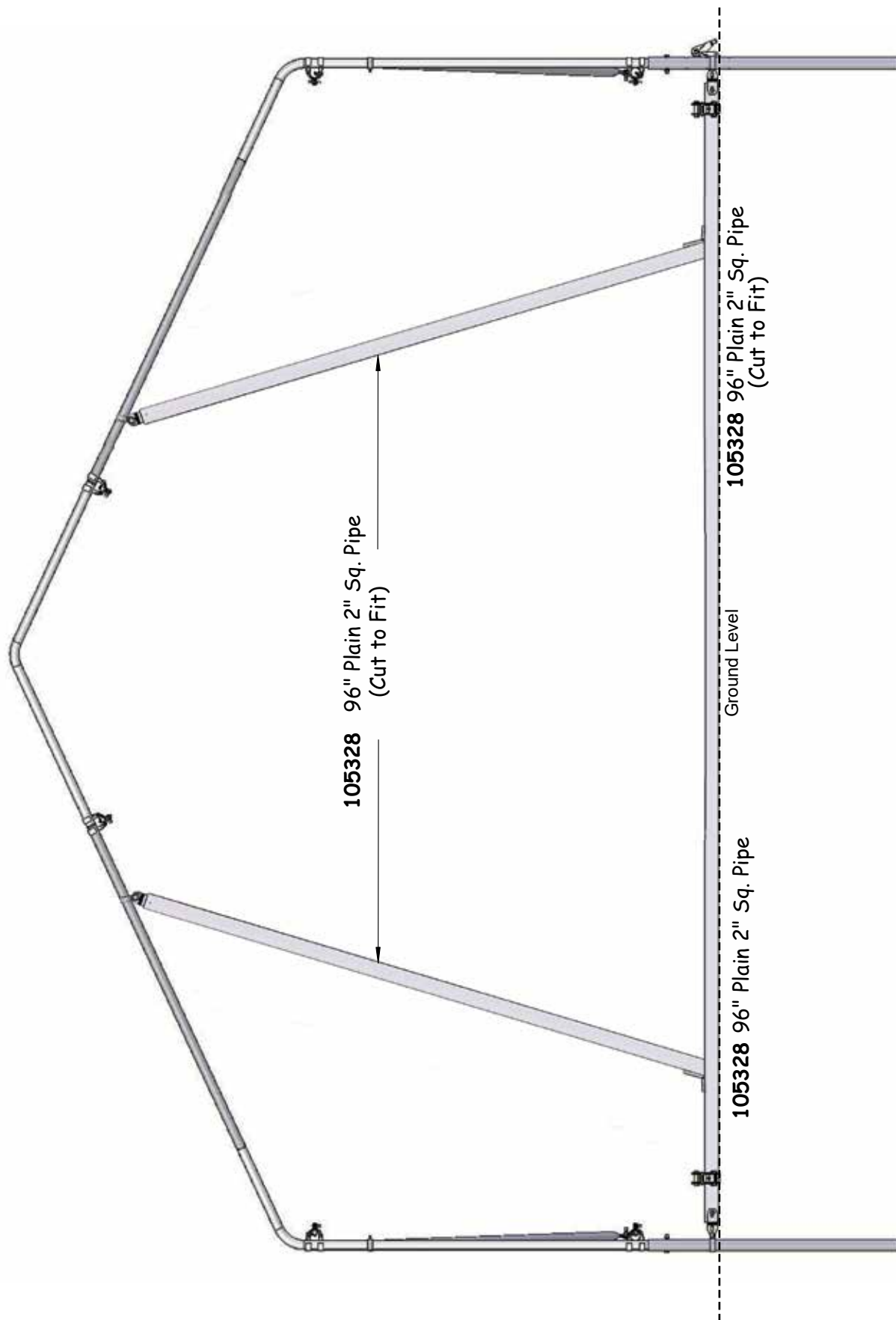


Purlin-End Rafter Connection View 1

END FRAMING - FRONT



END FRAMING - BACK



END PANEL DIAGRAM

End Wall Diagram (14' Wide)
with a Pedestrian Door*

* Frame shown may differ slightly from actual frame.

NOTES:

- Pedestrian door is centered in the end wall.
- End wall base rail consists of two (2) 96" square tubes cut to length and one (1) square tube middle coupler (#104628)
- Measure the pedestrian door and frame the rough opening approximately 1/2" wider and higher than the actual door.

