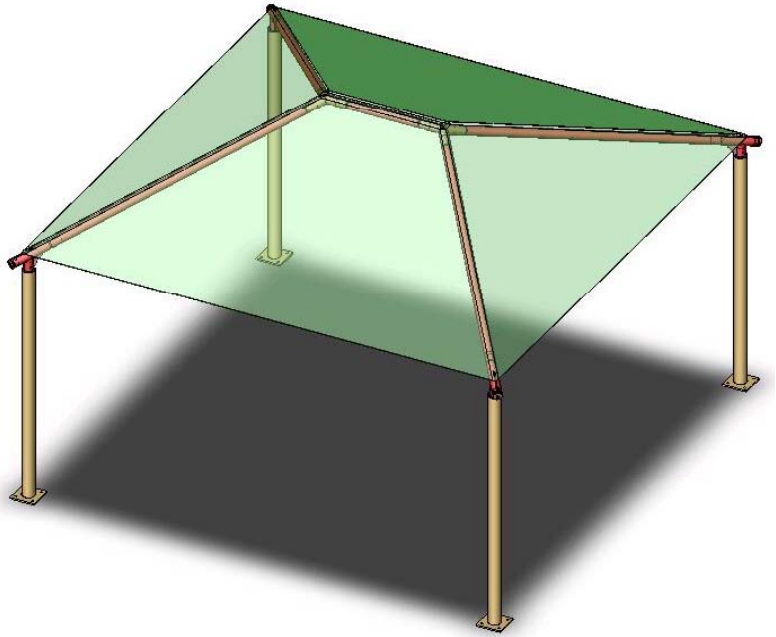
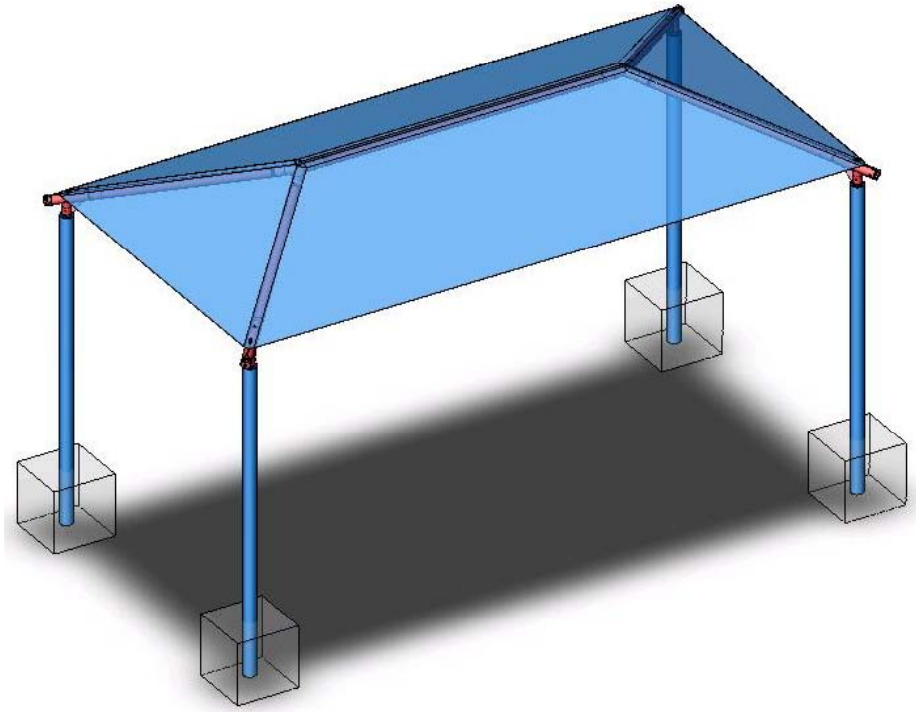
Hip Shade Design Installation



Rectangular Embedded
Rectangular With Base Plates

Square Embedded
Square With Base Plates



Covers Both
Standard & Glide
Elbows

INSTALLATION INTRODUCTION

It is very important that you read this entire manual before beginning the installation process. We are continuously striving to improve our product, and the *Installation Introduction* will Contain the latest up-to-date information.

STORAGE:

When Shade Unit equipment is received at the job site it should be installed as soon as possible (within a few days). We package the equipment components to keep them safe and damage-free during shipment. However, the packaging material is not suited for periods of extended storage in an uncontrolled environments. The combination of moisture in the air mixed with heat generated inside the plastic shrink-wrap may cause damage to the finish of powdercoated frame members.

If an immediate installation is not possible, certain steps should be taken to minimize the risk of damage to the components. If Shade components must be stored, ideally they should be kept in a controlled warehouse or storage container environment away from heat and moisture. If this is not possible, the packaging material should be removed. Care is recommended when using cutting blades to remove packaging. Keep blades away from powdercoated surfaces to avoid damage to finish..

INVENTORY:

It is very important that you inventory all Shade equipment received using the Packing List that shipped with your unit. Review all items for proper quantities and check for any damaged components.

***Please report any* items discovered missing within 72-Hours from time of delivery.**

SHADE UNIT SITE PREPARATION

Using the provided plan view drawing of your unit, locate the position of all four support columns.

All loose asphalt, concrete and debris must be removed from the entire site prior to installation.

Site must be graded as close to level as possible to aid in unit construction. Special installation considerations must be implemented for sites that are not level.

The customer is responsible for checking local soil and drainage conditions within the site area. Proper drainage around the unit and the support columns is important. Inquire with local contractors in your area for drainage recommendations.

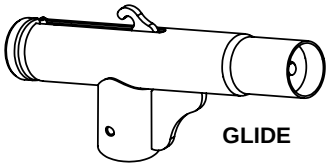
Site must be surveyed for underground hazards such as Electrical Cables, Phone Lines and Gas or Water Pipes. Serious injury or death could result if these hazards are not first located and marked within the site.

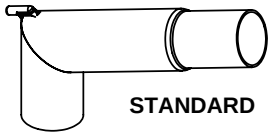
Never leave the job site unattended without making sure that all open holes are covered with material such as plywood. Rope off all unfinished construction to keep children away from site until job is complete.

REQUIRED TOOLS

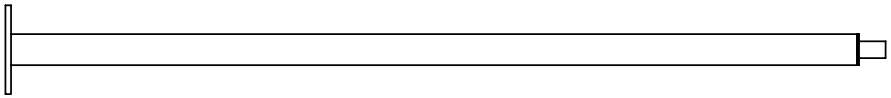
(A) Safety Glasses
(B) String Level, Magnetic Level
(C) Rubber Mallet
(D) Shovel / Post Hole Digger / Auger
(E) Tape measure
(F) Rechargeable Drill / Drill Bit Set
(G) Socket Set (SAE)
(H) Adjustable Wrench
(I) Center Punch
(J) Two Ladders (10’ recommended)
(K) Duct Tape
(L) One 2” x 8” x 16” Wood Length
(M) Multiple Scrap 2” x 4” x 8’ Lengths
(N) 1/2” x 4’ x 4’ Plywood Sheet
(O) Wheelbarrow / Loader

SHADE UNIT COMPONENT INVENTORY

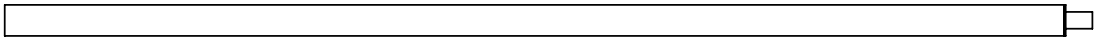


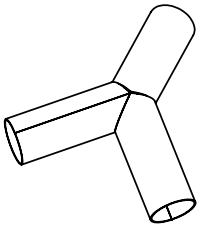


(4) Glide Or Standard Elbows

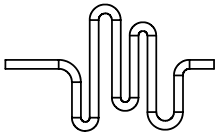


(4) Base Plate Or Embedded Columns

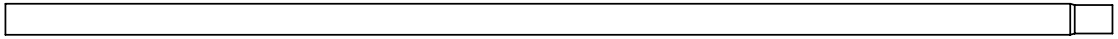




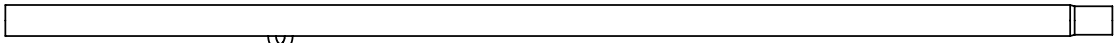
(2) "Y" Connections



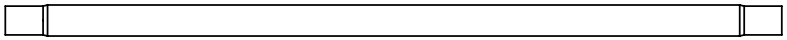
(1) Cable Length
Cable Will Be Installed Within Fabric If Shade Has Glide Elbows.



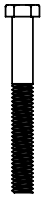
(4) Hip Rafters



Bracket Will Be Welded To One Rafter If Shade Structure Has Standard Elbows



(1) Ridge Pole

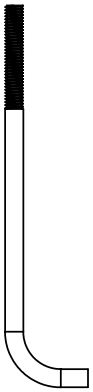


(4) Hex Head Bolts

(4) Nylock Hex Nuts

(4) Cable Clamps
Supplied With Shade Units Using Standard Elbows

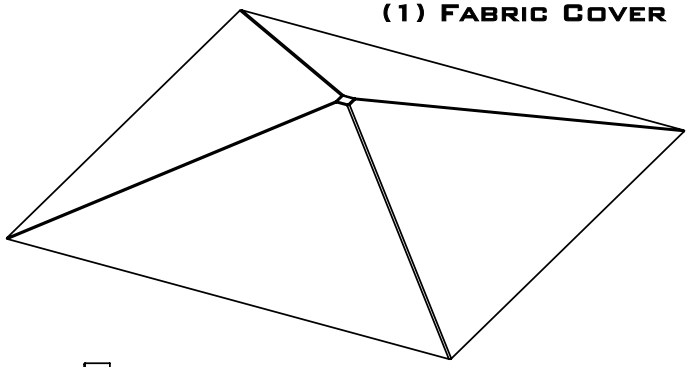
(20) Self Tapping Screws



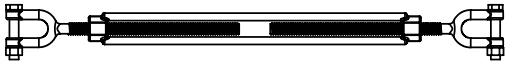
(16) Anchor Rods
Supplied With 12" x 12" Or Larger Base Plate Columns.

(32) Anchor Rod Nuts

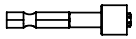
(32) Anchor Rod Washers



(1) Fabric Cover



Turnbuckle
Turnbuckle Is Supplied With Shade Units Using Standard Elbows.



Driver Tool

STEP #1:

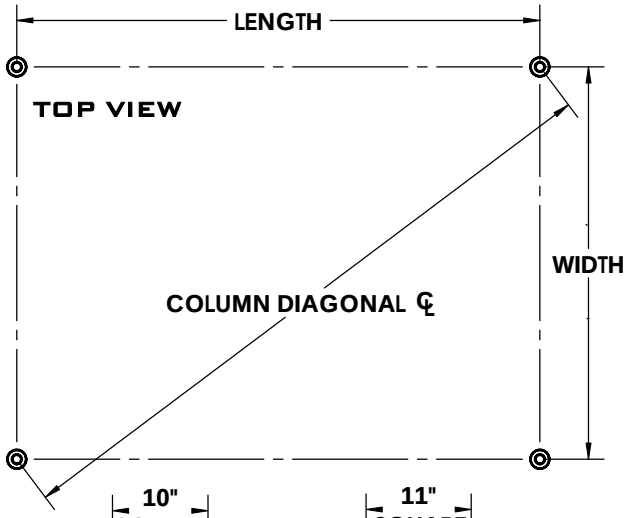
Locate and mark the positions of the four upright columns. Refer to the specific dimension information for your Shade unit provided in this packet.

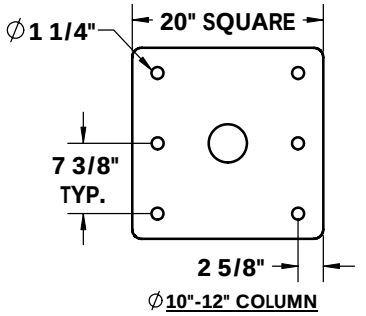
EMBEDDED COLUMNS:

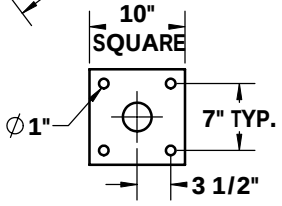
- -Excavate footings in accordance with the dimensions specified for your Shade unit. Refer to the specific dimensions provided for your unit within in this packet.
- -Place a 3" block in the bottom of each hole.
- -Place a column into each hole on top of each block.
- -Block and brace each column into position making sure that they are plumb and remain on centers. The distance between the columns at the top between cap centers must be correct.
- -Pour concrete around columns until it is three inches below grade level. Allow concrete to harden for 48-hours before proceeding to next step.

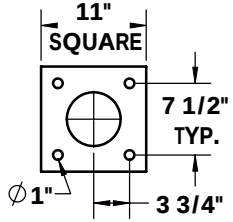
BASE PLATE COLUMNS:

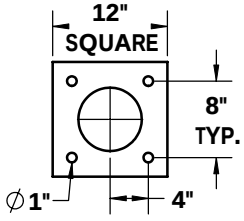
- -Excavate footings for concrete pads in accordance with the dimensions specified for your shade structure. Refer to the specific dimensions provided in this packet.
- -Cut the plywood sheet into four squares 2" larger than your base plates. Working from the center, mark off the hole pattern that applies to your base plate. Mark the center point of the column as well.
- -Drill four holes through the plywood at the outer marks. Make the holes slightly larger then the anchor diameter.
- -Insert the four anchors through the holes. Thread a nut completely over each anchor on top of the plywood. The four anchors should hang from the plywood.
- -Fill the footer holes with concrete to 4" below grade.
- -Place one Plywood sheet with anchors over each footer submersing the anchors into the concrete. Make sure the the center marks are on your column centers.
- -After the concrete has started to harden you must remove the hardware and plywood from each footer.
- -Let concrete harden for 48-hours.
- -Re-thread a nut over each anchor down to the concrete. Place a washer over each anchor followed by each column base plate. Adjust the nuts under the base plates to plumb each column. Insert a washer and thread a nut over each anchor tight against base plate.
- - Apply concrete Grout base between base plates and concrete.

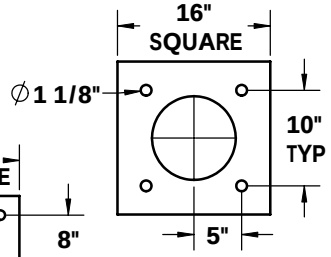


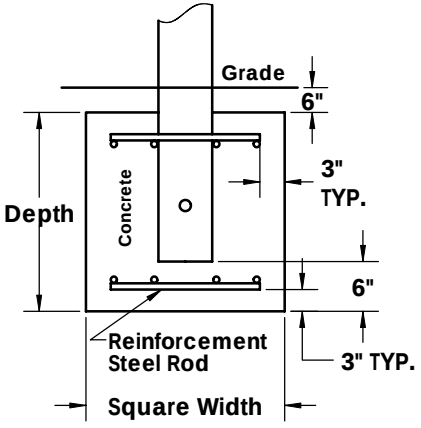




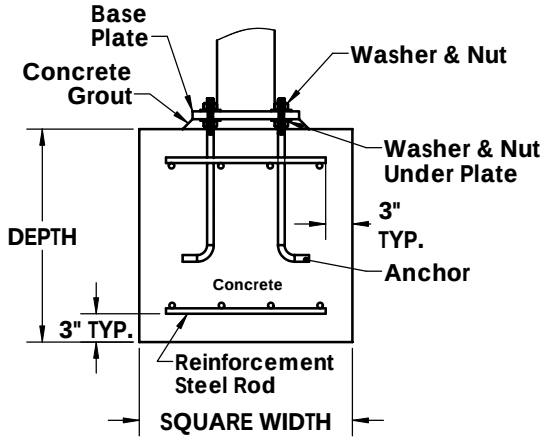




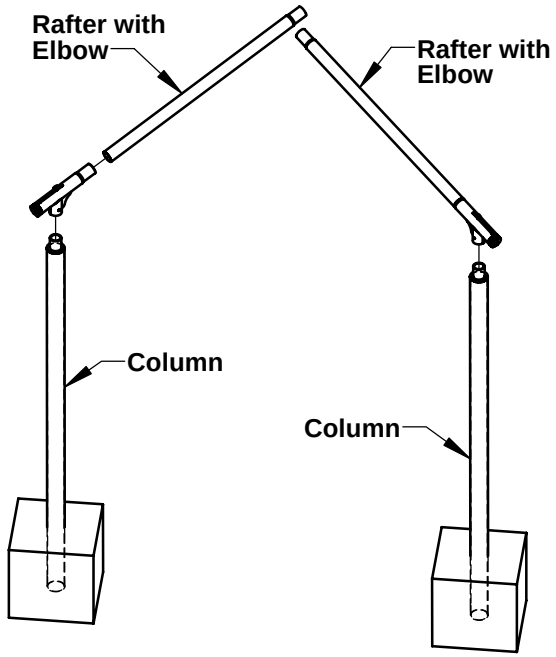




NOTE: A HOLE IS PROVIDED AT THE BASE OF EACH COLUMN FOR ONE #4 ROD



BASE PLATE APPLICATIONS AND DIMENSION



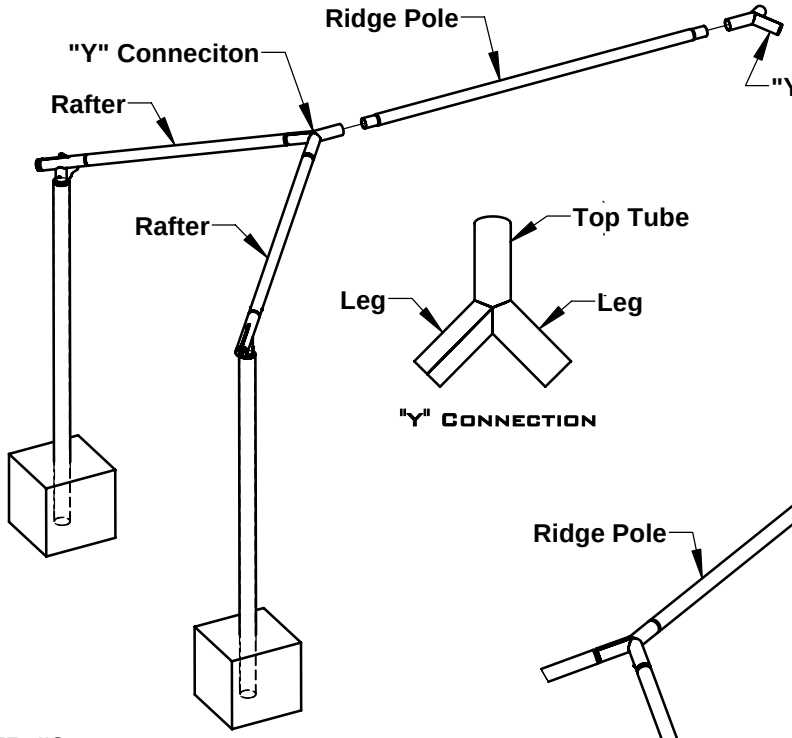
STEP #2:

-Begin the frame assembly by inserting the tappered ends of two elbows into the non-tappered ends of two rafters.
HELPFUL HINT: Wrap the joined parts with Duct Tape over the seam to hold them in place.

Standard Elbows:

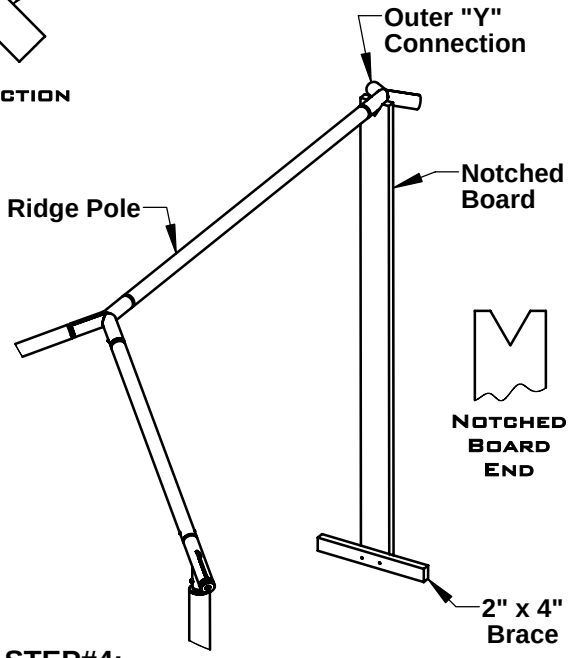
One of your four Rafters will have a welded turnbuckle bracket along its length. Location of this Rafter is optional but Turnbuckle Bracket must be toward ground.

-Using adequate manpower and ladders, lift the two rafter assemblies and slide open leg of elbow down over the top of the column cap.



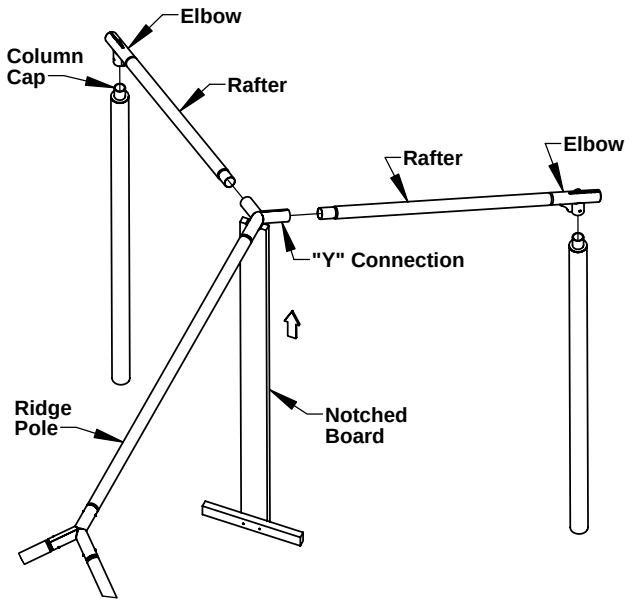
STEP #3:

-Slide the legs of a "Y" Connection over the tappered ends of the assembled rafters.
-Insert one of the tappered ridge pole ends into the "Y" Connection top tube.
-Slide the top tube of the second "Y" over the remaining tappered Ridge Pole end.
-Wrap all joining seams with Duct Tape to hold them in place.



STEP#4:

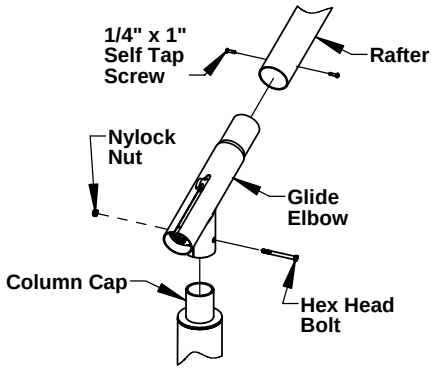
-Cut a vee notch in one end of the 2" x 8" that will craddle the "Y" Connection top tube. Cut length from the bottom of the board to equal height of ridge pole above ground. Add a 2" x 4" brace across the bottom. Place the boards under the outer "Y" to support the assembly.

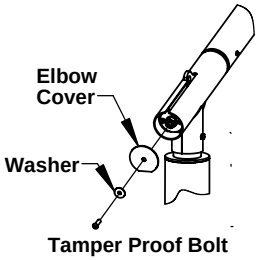


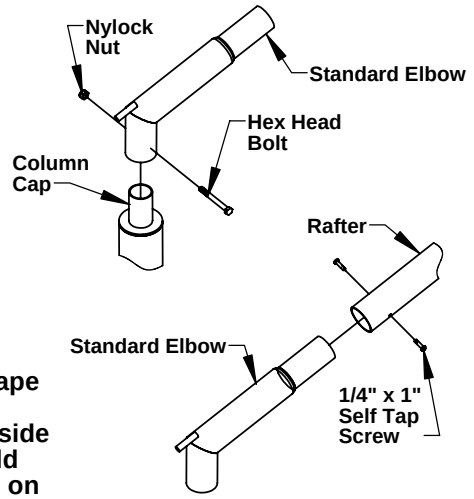
STEP#5:

- Insert the remaining two Elbows into the non-tappered ends of the remaining Rafters. Wrap seams with Duct tape.
- Insert the tappered ends of the Rafter assemblies into the suspended "Y" Connection.
- Raise the rafters now connected to the Ridge Pole and pull Elbow legs over remaining Column caps. Slide Elbow legs down over Column caps completely.

HELPFUL HINT: Have a third person lift the board to raise the Ridge Pole when pulling Elbows into position. This will help locate the Elbow legs over the Column caps.

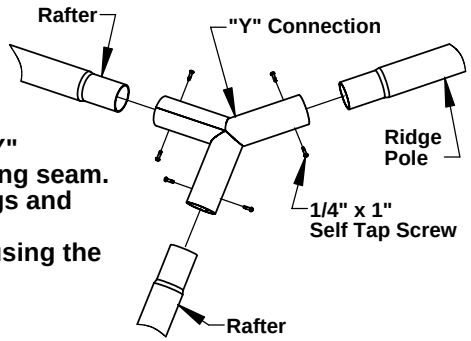






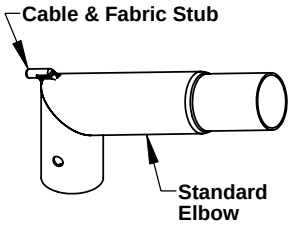
STEP#6:

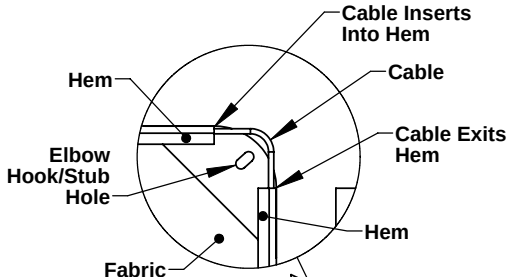
- At this point the frame is complete and all Duct Tape can be removed.
- Using a steel center punch, strike a point on one side of each elbow 2" above the column cap plate. Field drill a hole completely through the elbow and cap on your mark. Use a 7/16" bit for 3/8" bolts and a 9/16" bit for 1/2" bolts.
- Install the provided 3/8" or 1/2" hex head bolts through the hole and secure with a Nylock hex nut of the same size.
- Remove Protective Covers from Glide Elbows if applicable.
- Strike a point on each side of each Rafter 2" above the joining seam with the Elbow.
- Field drill a 3/16" hole through the rafter and Elbow end at each location.
- Install a self tapping screw in each hole using the provided tool and drill.

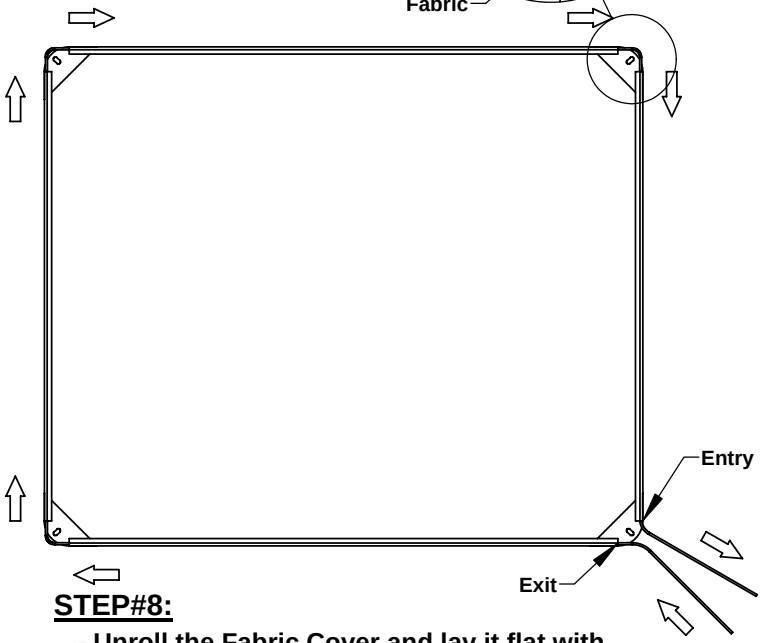


STEP#7:

- Strike a point on each side of the three "Y" Connection legs 2" above the Rafter joining seam.
- Field drill a 3/16" hole through the "Y" legs and Rafter end at each location.
- Install a self tapping screw in each hole using the provided tool and drill.

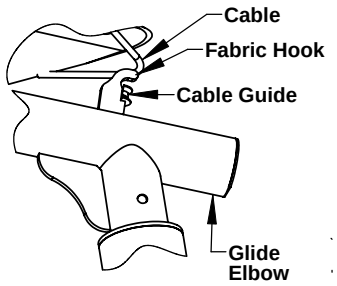


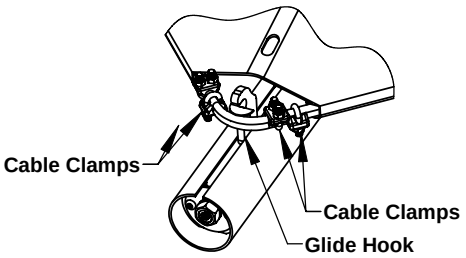




STEP#8:

- Unroll the Fabric Cover and lay it flat with the bottom (Hem side) up.
- Insert one end of the cable into the one of the two Hem openings at a corner. Feed the cable through the hem until it exits at the next corner. Pull the cable completely through leaving 1'- 3'" at the insertion end.
- Tuck the end that just exited back into the adjacent hem on the same corner.
- Repeat this procedure until both ends exit the same corner.





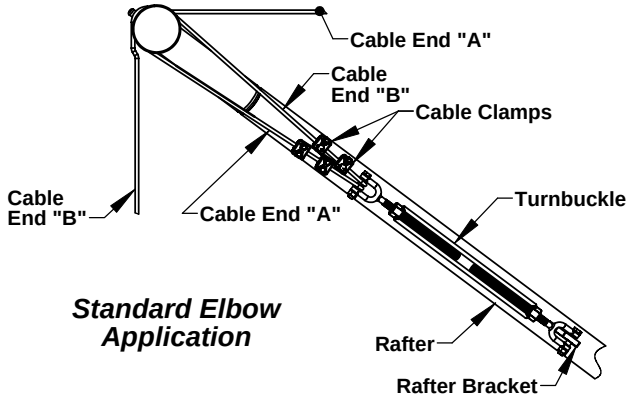
STEP#9:

Securing Fabric Cover

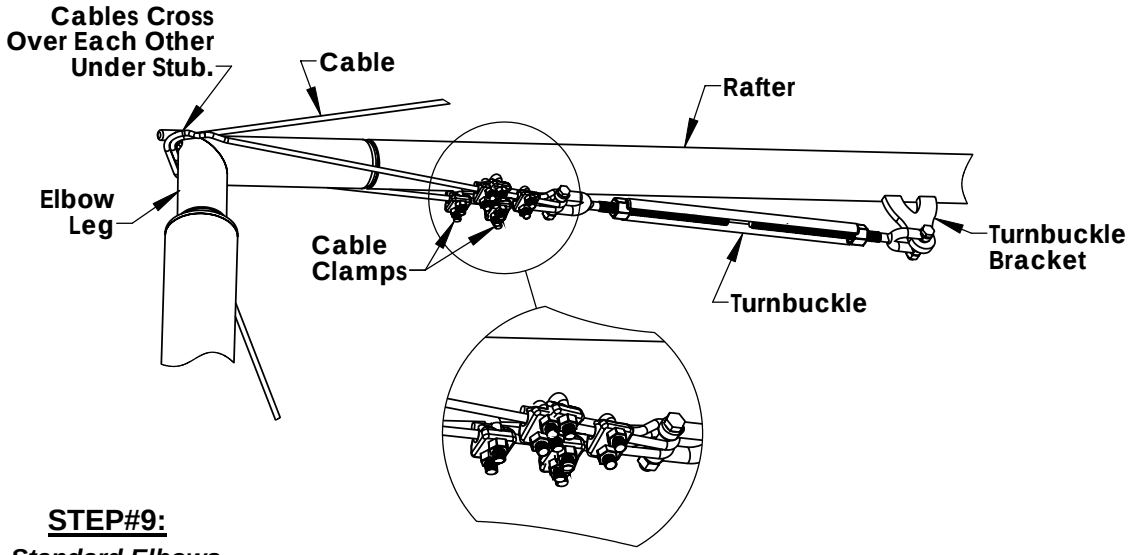
NOTE: Larger shades will have a Cable Guide at the base of the fabric hook to separate the cable from the fabric.

Before attaching fabric make sure that all glide hooks are in their highest position at the top end of the slot.

- Working from either end of the structure, pull the Fabric cover over the framework with the HEM SIDE DOWN.
- Start with one of the corners without the loose ends. Pull the cable over the hook and place in cable guide if applicable.
- Pull the Fabric Strap sewn to the corner underside over the hook.
- Pull the corner over the hook inserting hook through hole in fabric fabric.
- Repeat procedure at all corners without the loose ends. Be sure that cable is always below fabric. NOTE: Fabric will be tight and may need pulled over hooks.
- Cross cables over within the cable guide or hook at the remaining corner. Draw cables tight removing all slack. Secure the cables together with two clamps on either side of hook. Tuck loose cable ends back into fabric hems.



Standard Elbow Application



STEP#9:

Standard Elbows

-Locate the Rafter with the Turnbuckle Bracket. This will be the corner where the loose cable ends of the Fabric cover will be located.

-Starting at the corner diagonal to the loose cables, pull the cable and Fabric corner hole over the stub welded to the tip of the Elbow. Cable must go over first.

- Move to the adjacent two corners and repeat this procedure.
  NOTE: Fabric will be tight and may need pulled by rope and guided over stub.

- Attach one end of the supplied Turnbuckle to the Bracket. Extend the Turnbuckle to near full length leaving one inch of threads unused at each end.

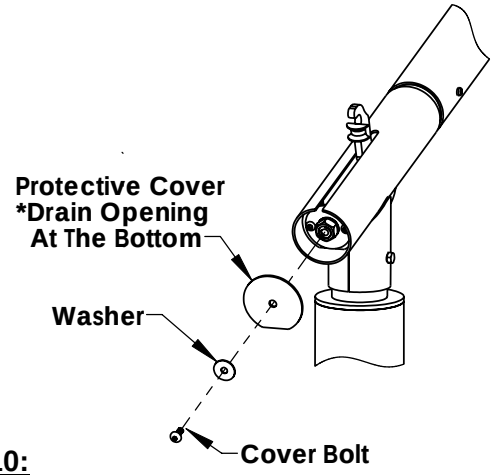
-Pull one of the loose cable ends around the Elbow leg under the stub. Run the cable end up the rafter and loop it through the remaining Turnbuckle end. Pull cable snug tight and secure snug tight with cable clamp.

- Repeat this procedure with remaining cable end crossing over the first cable under stub. Pull this cable as tight as possible before clamping.

- Pull Remaining Fabric corner hole over Elbow stub using rope if necessary.

- Re-adjust both cables as tight as possible before securing with two cable clamps per cable.

- Rotate Turnbuckle to apply more tension to cables being careful not to over tighten.



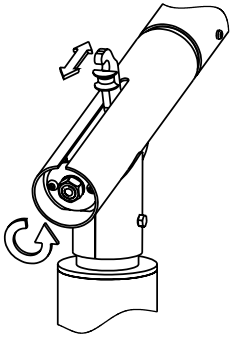
STEP#10:

Glide Elbow:

- Remove protective cover from Elbow end using standard Allen head wrench or provided T-45 Torx wrench.

STEP#11:

- Rotate Hex Nuts within Elbow ends the same amount at all corners to tension or loosen Fabric Cover. Be careful not to over tighten cable and fabric.
- Re-insert protective covers and secure with hardware.



FABRIC & SHADE STRUCTURE SPECIFICATIONS

1.01 FABRIC SPECIFICATIONS

A. UV shade fabric is made of UV stabilized cloth manufactured by ALNET, or approved equal.

B. The high density polyethylene material shall be manufactured with tensioned fabric structures in mind.

C. The fabric knit is to be made using monofilament and tape filler which has a weight of 9.38 to 10.32 oz. sq. yd. Material to be Rachel-knitted to ensure material will not unravel if cut.

D. Burst strength of 3.7Kn.

E. Cloth meets fire resistance tests as follows:
Alnet Extra Block: California State Fire Marshall Reg. # F-50303
Others: NFPA 701-99 (Test Method 2)
ASTM E-84

F. Fabric Properties

STRETCH	STENTORED
Tear Tests (lbs)	WARP 31 lbs/inch WEFT 34 lbs/inch
Burst Tests (Kn)	3.7Kn
Fabric Weight (oz/m2)	9.38 to 10.32 oz. sq. yd.
Fabric Width	10’
Roll Length	150’
Roll Size	63” x 16.5”
Weight	120 lb’s
Life Expectancy	10 years
Fading	Minimum fading after 6 years. 3 years for red.
Temperature	-22 degrees
Maximum Temperature	167 degrees

1.02 THREAD

A. Shall be 100% expanded PTFE fiber which carries an 8 year warranty that is high strength and low shrinkage

B. Shall have a wide temperature and humidity range.

C. Abrasion resistant and UV radiation immunity.

D. Shall be unaffected by non-hydrocarbon based cleaning agents, acid rain, mildew, rot, chlorine, saltwater, and pollution.

E. Lockstitch thread – 1200 Denier or equal.

F. Chainstitch thread – 2400 Denier or equal.

1.03 STEEL TUBING

A. All fabricated steel must be in accordance with approved shop drawings and calculations.

B. All steel is cleaned, degreased or etched to ensure proper adhesion of powder-coat in accordance with manufacturer's specifications.

C. All steel used on this project needs to be new and accompanied by the mill certificates if requested. Structural steel tubing up to 5"-7gauge shall be galvanized per Allied Steel FLO-COAT specifications. Schedule 40 black pipe fabrications shall be sandblasted and primed as described below.

D. All non-hollow structural shapes comply with ASTM A-36, unless otherwise noted.

E. All hollow structural steel shapes shall be cold formed HSS ASTM A-53 grade C, unless otherwise noted.

F. Plate products shall comply with ASTM A-36.

1.04 POWDER COATING & PRIMING

A. All non-galvanized steel shall be sandblasted and primed prior to powder coating using G50 steel grit.

B. All non-galvanized steel must be coated with rust inhibiting primer prior to applying the powder coat. Primer shall be Cardinal Industrial Finishes Corp. H304 – GR312 Epoxy Polyester Hybrid Powder Coating Anti-gassing Primer.

C. Welds shall be primed with rust inhibiting primer prior to applying the powder coat. Primer shall be Cardinal Industrial Finishes Corp H304 – GR312 Epoxy

Polyester Hybrid Powder Coating Anti-gassing Primer or equivalent.

D. All steel parts shall be coated for rust protection and finished with a minimum 3.5 mil thick UV-inhibited weather resistant powder coating.

E. Characteristics: Powder used in the powder-coat process shall have the following characteristics:

STRETCH	STENTORED
Tear Tests (lbs)	WARP 31 lbs/inch WEFT 34 lbs/inch
Burst Tests (Kn)	3.7Kn
Fabric Weight (oz/m2)	9.38 to 10.32 oz. sq. yd.
Fabric Width	10’

Powder-coating shall meet the following tests:

STRETCH	STENTORED
Tear Tests (lbs)	WARP 31 lbs/inch WEFT 34 lbs/inch
Burst Tests (Kn)	3.7Kn
Fabric Weight (oz/m2)	9.38 to 10.32 oz. sq. yd.
Fabric Width	10’
Roll Length	150’
Roll Size	63” x 16.5”
Weight	120 lb’s
Life Expectancy	10 years
Fading	Minimum fading after 6 years. 3 years for red.

F. Application Criteria

STRETCH	STENTORED
Tear Tests (lbs)	WARP 31 lbs/inch WEFT 34 lbs/inch
Burst Tests (Kn)	3.7Kn
Fabric Weight (oz/m2)	9.38 to 10.32 oz. sq. yd.
Fabric Width	10’
Roll Length	150’
Roll Size	63” x 16.5”

1.05 WELDING

A. All shop welds shall be executed in accordance with the latest edition of the American Welding Society Specifications.

B. Welding procedures shall comply in accordance with the AWS D1.1-AWS Structural Welding Code-Steel.

C. All welds to be performed by a certified welder. All welds shall be continuous where length is not given, unless otherwise shown or noted on drawings.

D. All welds shall develop the full strength of the weaker member. All welds shall be made using E70xx.035 wire.

E. Shop connections shall be welded unless noted otherwise. Field connections shall be indicated on the drawings. Field –welded connections are not acceptable.

F. All fillet welds shall be a minimum of ¼" unless otherwise noted.

G. All steel shall be welded shut at terminations to prevent internal leakage.

H. Internal weld sleeving is not acceptable.

I. On-site welding of any component is not acceptable.

1.06 SEWING

A. On-site sewing of a fabric will not be accepted.

B. All corners shall be reinforced with extra non-tear cloth and strap to distribute the load.

C. The perimeters that contain the cables shall be double lock stitched.

1.07 INSTALLATION HARDWARE

A. Bolt and fastening hardware shall be determined based on calculated engineering loads.

B. All bolts shall comply with SAE-J429 (Grade 8) or ASTM A325 (Grade BD). All nuts shall comply with ASTM F-594, alloy Group 1 or 2.

C. Wire rope cable shall be 7x19 strand galvanized wire rope with a breaking strength of 7,000 lbs. (1/4" diameter) for shades generally under 1400 sq. ft. unless requested larger by the customer. For shades >1400 sq. ft. cable shall be 5/16" @9800# breaking strength.

D. All fittings required for proper securing of the cable are hot dipped galvanized.

1.08 CONCRETE

A. Concrete work shall be executed in accordance with the latest edition of

American Concrete Building Code ACI 318 unless specified by the governing municipality.

B. Concrete specifications shall comply in accordance with, and detailed as per plans as follows:

1. 28 Days Strength F'c = 3000 psi
2. Aggregate: HR
3. Slump: 3-5
4. Portland Cement shall conform to C-150
5. Aggregate shall conform to ASTM C-33

C. All reinforcement shall conform to ASTM A-615 grade 60.

D. Reinforcing steel shall be detailed, fabricated and placed in accordance with the latest ACI Detailing Manual and manual of Standard Practice.

E. Whenever daily ambient temperatures are below 80 degrees Fahrenheit, the contractor may have mix accelerators and hot water added at the batch plant (See Table 1).

F. The contractor shall not pour any concrete when daily ambient temperature is below 55 degrees Fahrenheit.

STRETCH	STENTORED
Tear Tests (lbs)	WARP 31 lbs/inch WEFT 34 lbs/inch
Burst Tests (Kn)	3.7Kn
Fabric Weight (oz/m2)	9.38 to 10.32 oz. sq. yd.
Fabric Width	10'
Roll Length	150'
Roll Size	63" x 16.5"
Weight	120 lb's

1.09 FOOTINGS

A. All anchor bolts set in new concrete shall be ASTM A-325

B. All anchor bolts shall be hot dipped galvanized.

C. Footings shall be placed in accordance with and conform to engineered specifications and drawings.