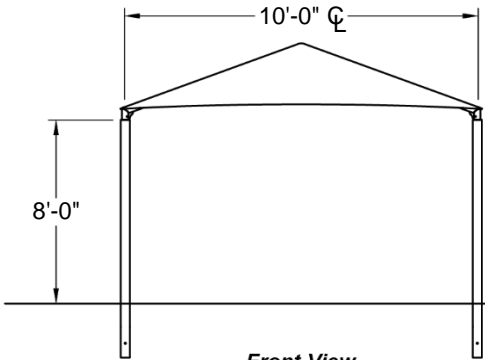
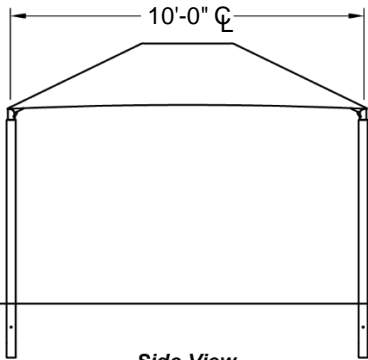


Trimetric View



Front View

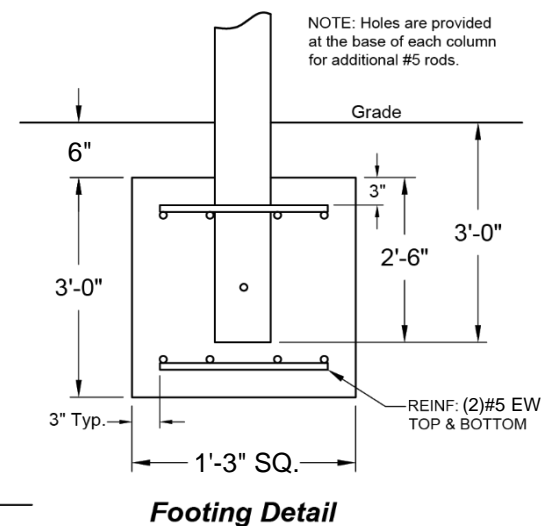
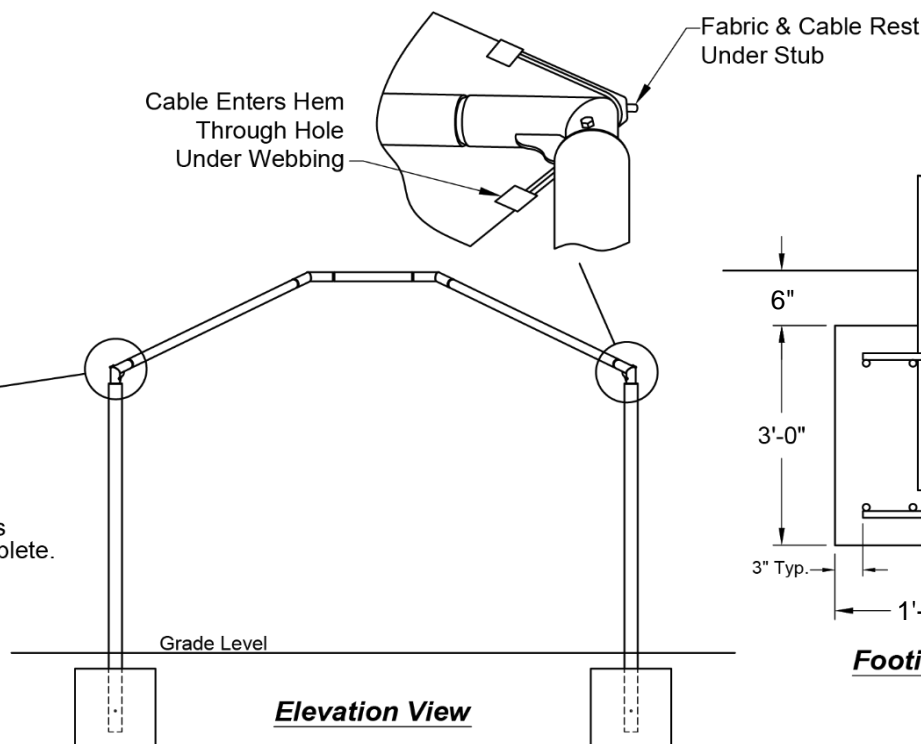
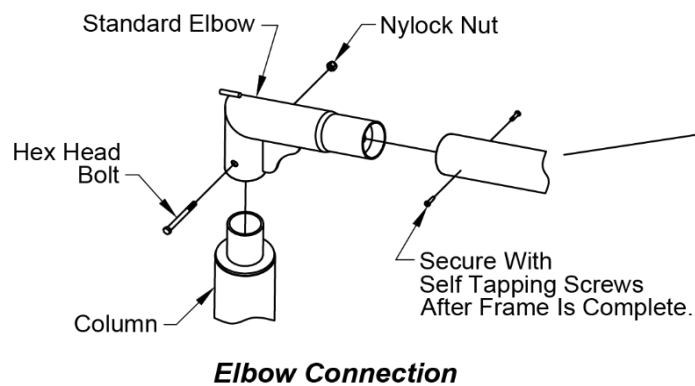
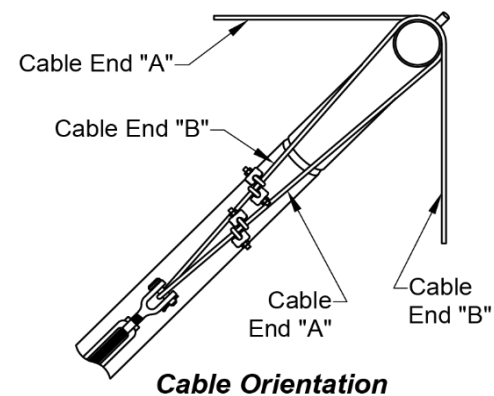
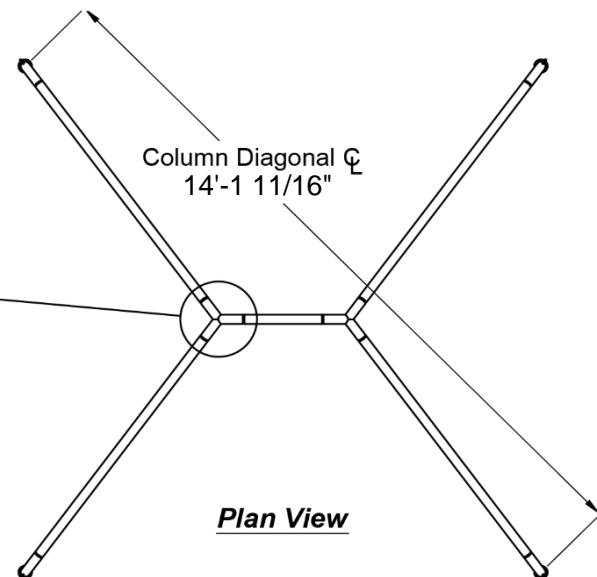
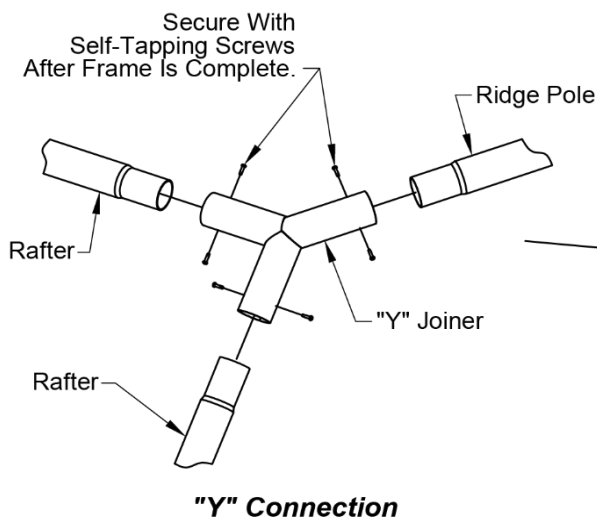


Side View

Ref. #	Part Description	Qty.
1	Column - Embedded	4
2	Elbow - Standard	4
3	Rafter - Swaged One End	4
4	Y-Joiner	2
5	Ridge Pole - Swaged Both Ends	1
6	Fabric Canopy - with Cable Insert	1
7	Frame Hardware Kit	1

SD101008IN

DESCRIPTION:			<b>SQUARE 4-COLUMN HIP SHADE WITHOUT GLIDE</b>
SCALE:	SHADE STYLE:	SHEET:	
<b>VARIES</b>	<b>HIP DESIGN</b>	<b>1 of 3</b>	
DATE:	UNITS:	PROPOSAL NO:	
	<b>FEET/INCHES</b>		

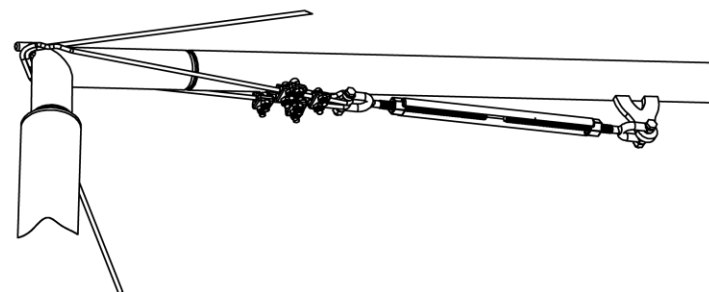


**HELPFUL FOR ASSEMBLY:**  
UNFOLD FABRIC TO DETERMINE LOCATIONS OF RAFTER(S) WITH BRACKETS IN RELATION TO CABLE ENTRY/EXIT HOLES IN FABRIC HEMS.

Turnbuckle Brackets  
On One Rafter

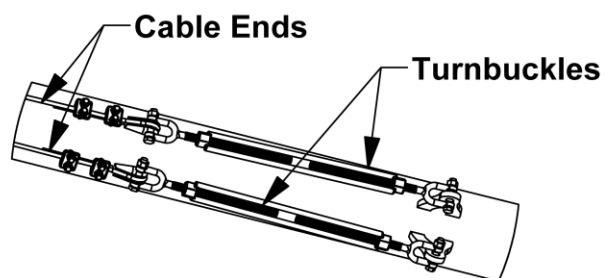
Smaller Hip Shades

**NOTE:** Cable ends will exit fabric hems, wrap around elbow leg from opposite sides, run along underside of rafter, and connect to turnbuckles.



Two Turnbuckle Brackets  
Two On Diagonal Rafters

Two Turnbuckle Brackets  
On Two Diagonal Rafters



Larger Hip Shades



## **WARNING:**

**Cables must exit through holes under webbing to ensure spacing for the FOUR cable clamps.**

# Shade

## 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. Notify *Terrabound Solutions* immediately if any components are missing or damaged at (877)-857-2915

**Superior Shade is not responsible for items discovered missing after 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.

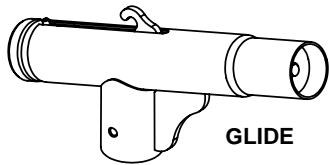


## **REQUIRED TOOLS**

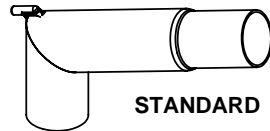
- (A) Safety Glasses
- (B) String Level, Magnetic Level
- (C) Rubber Mallet
- (D) Shovel / Post Hole Digger / Auger
- (E) Tape measure
- (F) Rechargeable Drill / Drill Bit Set
- (G) Socket Set (SAE)
- (H) Adjustable Wrench
- (I) Center Punch
- (J) Two Ladders (10' recommended)
- (K) Duct Tape
- (L) One 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

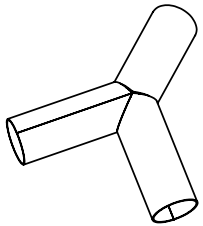


GLIDE

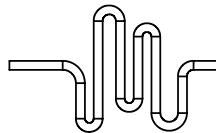


STANDARD

(4) GLIDE OR STANDARD ELBOWS

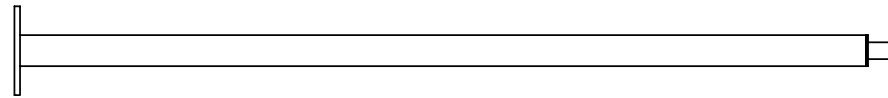


(2) "Y" CONNECTIONS

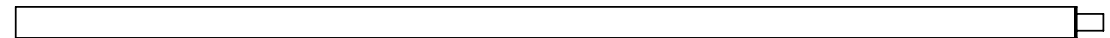


(1) CABLE LENGTH

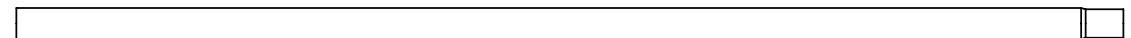
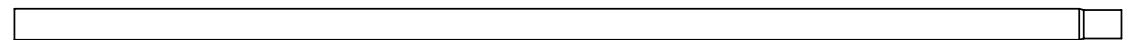
Cable Will Be Installed Within Fabric If Shade Has Glide Elbows.



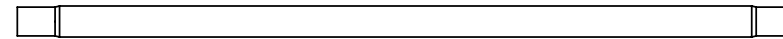
(4) BASE PLATE OR EMBEDDED COLUMNS



(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



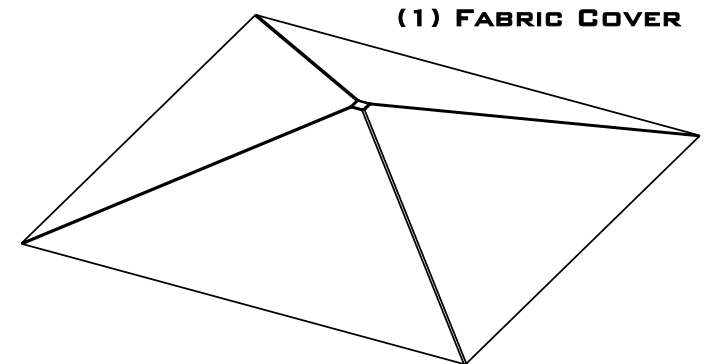
(20) SELF TAPPING SCREWS



(32) ANCHOR ROD NUTS



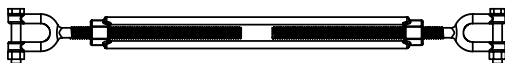
(32) ANCHOR ROD WASHERS



(1) FABRIC COVER

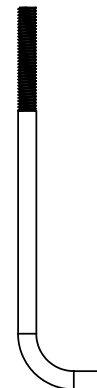


DRIVER TOOL



TURNBUCKLE

Turnbuckle Is Supplied With Shade Units Using Standard Elbows.



(16) ANCHOR RODS

Supplied With 12" x 12" Or Larger Base Plate Columns.

## STEP #1:

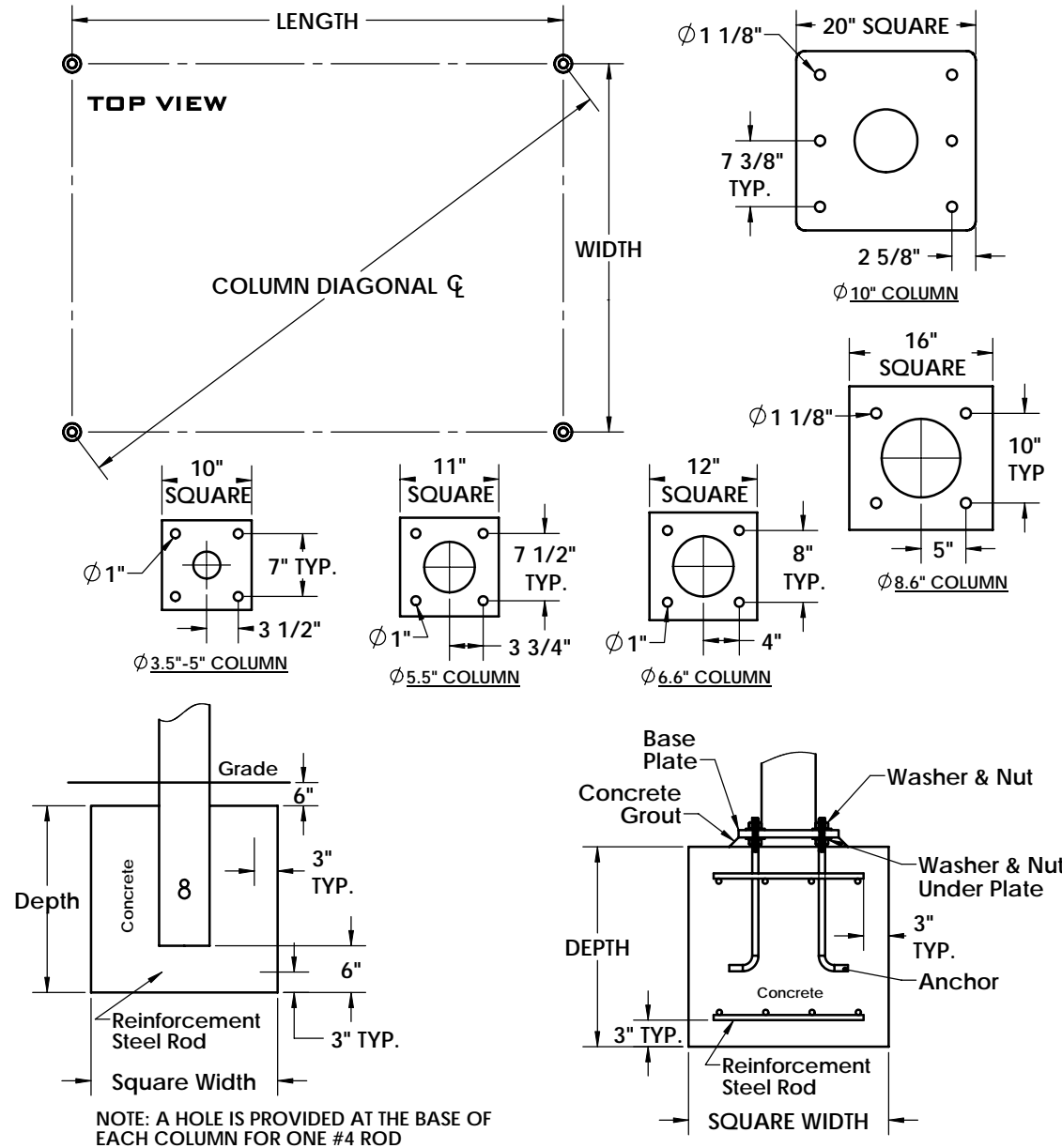
Locate and mark the positions of the four upright columns. Refer to the specific dimension information for your Shade unit provided in this packet.

### EMBEDDED COLUMNS:

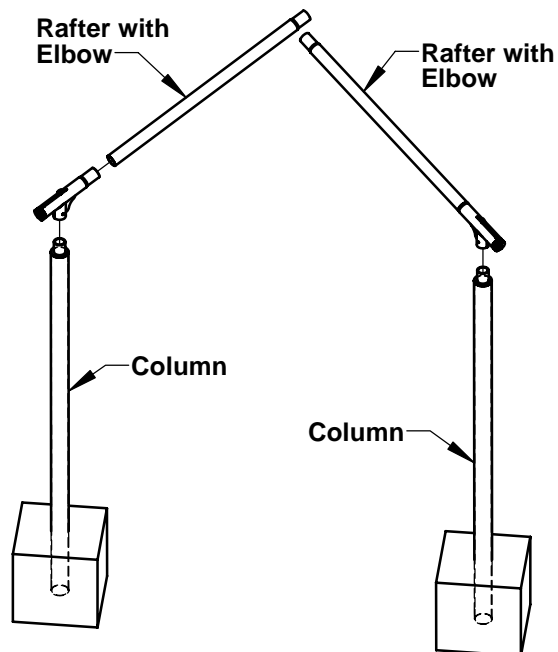
- Excavate footings in accordance with the dimensions specified for your Shade unit.
- Refer to the specific dimensions provided for your unit within in this packet.
- Place a 3" block in the bottom of each hole.
- Place a column into each hole on top of each block.
- Block and brace each column into 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 than 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.







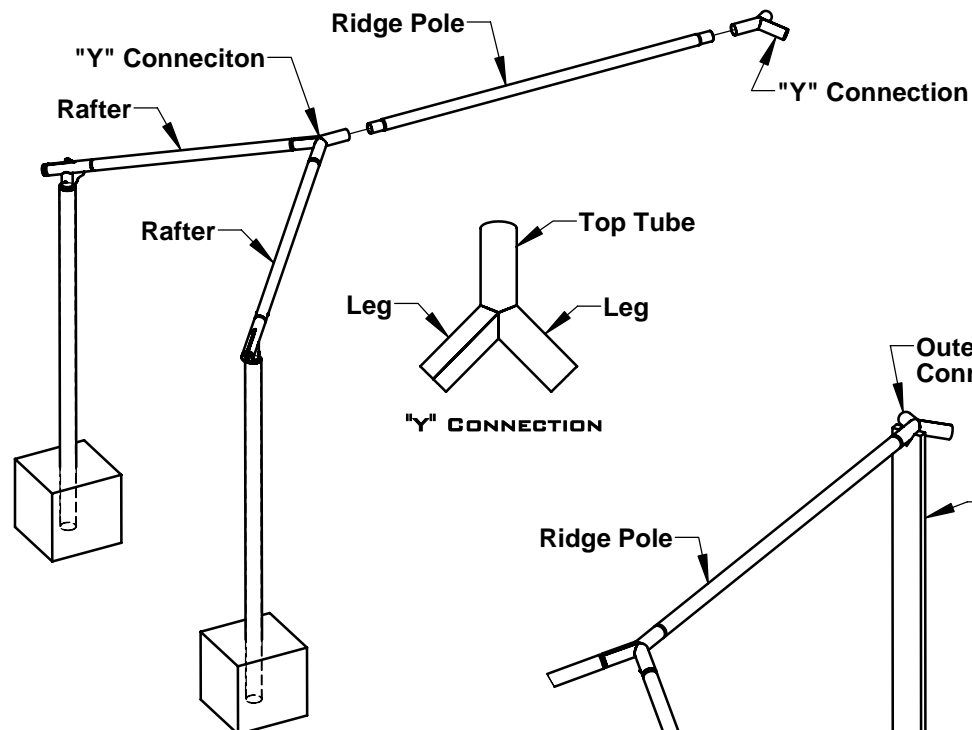
## STEP #2:

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

### Standard Elbows:

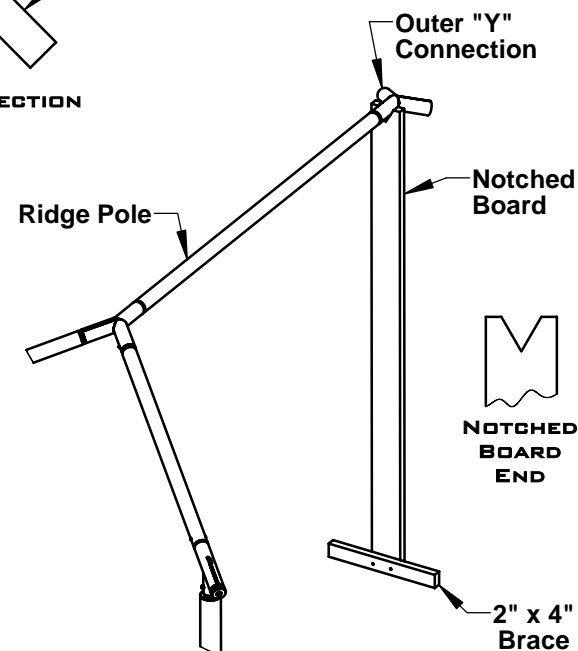
One of your four Rafters will have a welded turnbuckle bracket along its length. Location of this Rafter is optional but Turnbuckle Bracket must be toward ground.

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



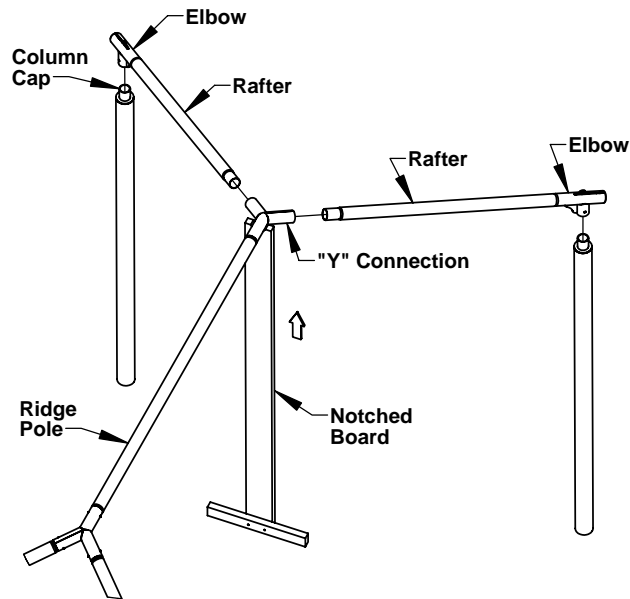
## STEP #3:

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



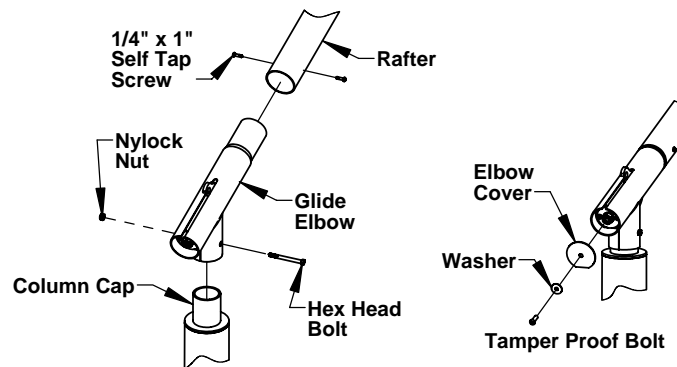
## STEP#4:

-Cut a vee notch in one end of the 2" x 8" that will cradle 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.



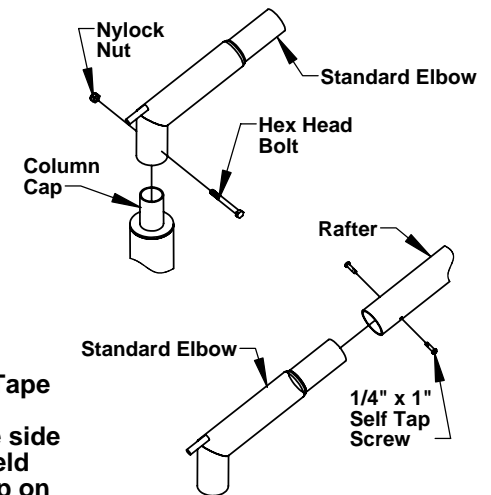
#### **STEP#5:**

- Insert the remaining two Elbows into the non-tapped ends of the remaining Rafters. Wrap seams with Duct tape.
- Insert the tapered 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.



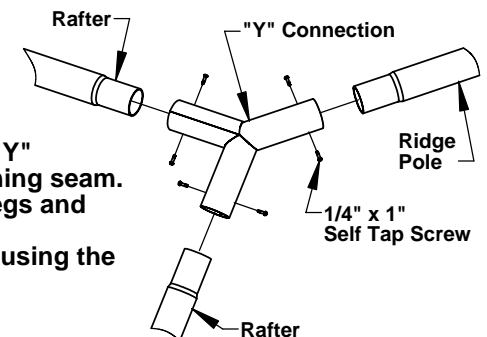
#### **STEP#6:**

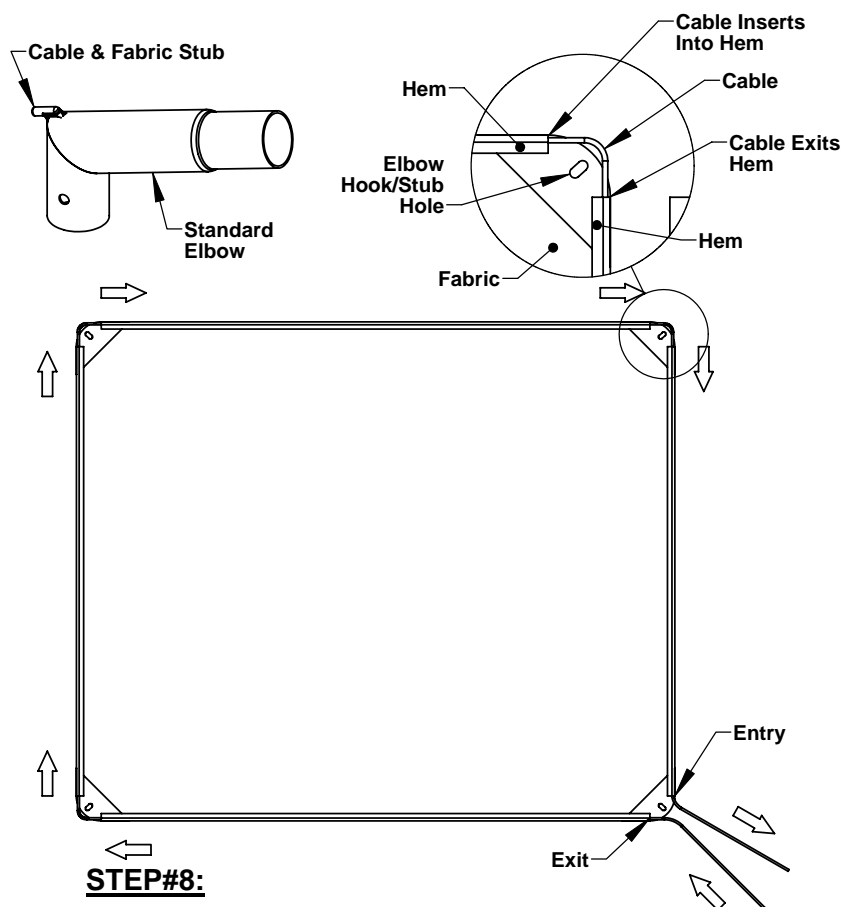
- At this point the frame is complete and all Duct Tape can be removed.
- Using a steel center punch, strike a point on one side of each elbow 2" above the column cap plate. Field drill a hole completely through the elbow and cap on your mark. Use a 7/16" bit for 3/8" bolts and a 9/16" bit for 1/2" bolts.
- 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:**

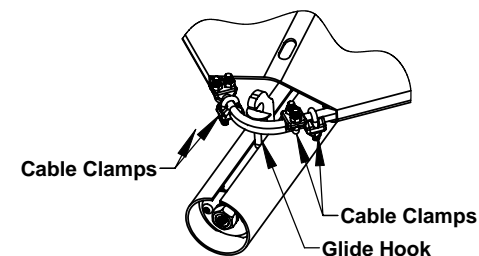
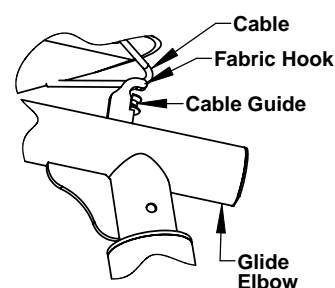
- Strike a point on each side of the three "Y" Connection legs 2" above the Rafter joining seam.
- Field drill a 3/16" hole through the "Y" legs and Rafter end at each location.
- Install a self tapping screw in each hole using the provided tool and drill.





#### 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.**

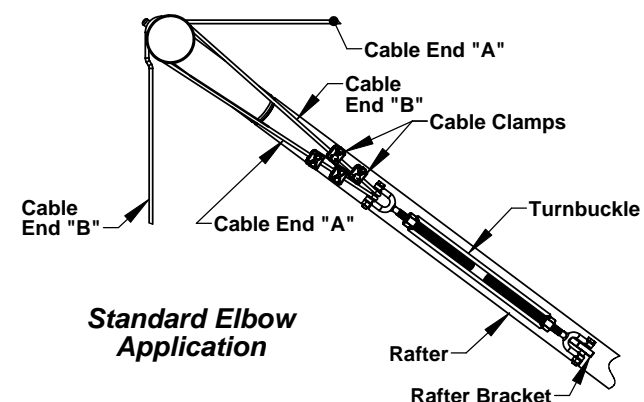
- Working from either end of the structure, pull the Fabric cover over the framework with the HEM SIDE DOWN.
  - Start with one of the corners without the loose ends. Pull the cable over the hook and place in cable guide if applicable.
  - Pull the Fabric Strap sewn to the corner underside over the hook.
  - 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.

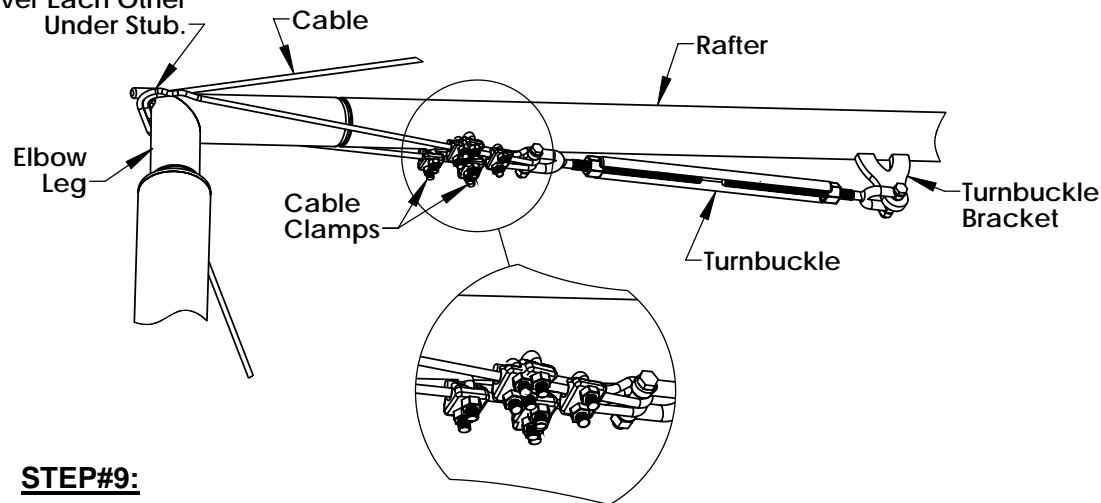
Draw cables tight removing all slack. Secure the cables together with two clamps on either side of hook.

Tuck loose cable ends back into fabric hems.



**Standard Elbow Application**

Cables Cross  
Over Each Other  
Under Stub.

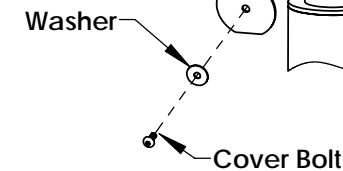


### **STEP#9:**

#### ***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.

Protective Cover  
\*Drain Opening  
At The Bottom



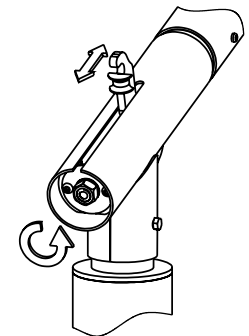
### **STEP#10:**

#### ***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.



## Shade Warranty

Superior Recreational Products (SRP) warrants that its product will be free from defects in materials and workmanship as well as maintain structural integrity for the periods listed below from the date of invoice and once SRP has been paid in full. This warranty is in effect only if the product has been assembled and installed strictly in accordance with the setup instructions provided by SRP, good construction practices, general maintenance and care is provided as per instructions in the customer packet, and has been subjected only to normal use and exposure. Product should be maintained per the instructions given at time of delivery.

**LW** Lifetime\* Warranty on stainless steel hardware

**20** 20-Year Limited Warranty on framework

**10** 10-Year Limited Warranty on fabric

**5** 5-Year Limited Warranty on powder coat

**1** 1-Year Limited Warranty on cables

**1** 1-Year Limited Warranty on materials not above

The Limited Warranty excludes abnormal conditions, contingent liability, cosmetic defects such as scratches, dents, marring, stripping, peeling, or fading; damage due to incorrect installation, vandalism, misuse, accident wear and tear from normal use; exposure to extreme weather, immersion in salt or chlorine water, damage due to sand, salt spray, or other abrasive and corrosive material; unauthorized repair or modification, abnormal use, or lack of maintenance. The warranty does not cover damages due to "acts of God" such as hail, flooding, lightning, tornadoes, sand storms, shifts of terrain, earthquakes, mudslides, and wind-storms.

SRP does not warrant product for defects caused by erection, harsh site conditions, lack of maintenance, and/or other conditions beyond SRP's control. SRP will not be held responsible for any materials that were not properly stored prior to installation. SRP reserves the right to void the limited warranty if it not installed per the installation instructions and/or unauthorized modifications.

In the unlikely event of failure, SRP reserves the right to alter the design, color, or contributing factors to rectify the condition and help prevent any future reoccurrence(s). SRP has the option to repair or replace any defect in materials.

The warranty is void if any changes, modifications, additions, or attachments are made to the product without the written consent of the manufacturer.

No signs, objects, ornaments, fans, lights, fixtures, or decorations may be hung from the structure unless specifically designed and engineered by the manufacturer or has manufacturers written approval.

SRP excludes any implied warranty of merchantability, fitness, or purpose, and there are no warranties which extend beyond the description of the face hereof. Under no circumstances will SRP be responsible for any indirect, special, consequential, incidental, or liquidated damages due to breach of warranty and such damages are specifically excluded from the warranty.

The owner shall notify SRP with original Sales Order Number issued from SRP to arrange for an inspection within 30 days after discovery of any defect under this warranty and before any alteration or repair is made or attempted. This Limited Warranty shall be null and void if the owner makes any alterations in design.

This warranty is the only express warranty given by the company. No person has authority to change or add to these obligations and liabilities. The company reserves the right to determine whether the fault is caused by faulty workmanship, material, or the part that is defective.

SRP will repair or replace at its discretion any defective part/s on an Ex-Works basis only. It is the responsibility of the customer to return the whole unit or the defective part/s at their own cost back to SRP for inspection along with proof of the date of purchase. SRP will not be liable for any costs incurred by the customer as a result of replacing the defective part/s, including but not limited to the costs of site visits and the labor costs involved with the removal and reinstallation of the whole unit or the defective part/s. Furthermore SRP will not be liable for any claimed compensation while the unit is not working or not present at the site whatsoever. This guarantee does not entitle the customer to a complete new product due to a defective component.

### Limited Warranty: Structural Steel

SRP offers a 20-year Limited Warranty on structural steel frames for shade canopies against failure due to rust-through corrosion under normal environmental conditions. Should the fabric or parts need to be replaced under the warranty, SRP will manufacture and ship new replacement parts at no charge for the first ten years, thereafter pro-rated at 10% per annum over the last ten years.

Workmanship is warranted for a period of five years. This steel warranty shall be void if damage to the steel is caused by the installer or from physical damage, damage by salt spray or sprinkler systems, contact with chemicals, chlorine, pollution, misuse, vandalism, or any act of God.

### **Limited Warranty: Powder Coat**

Superior Recreational Products offers a 5-year Limited Warranty for powder coating to the original purchaser. This Limited Warranty is for factory applied finish only. Damage occurring from shipping, erection, vandalism, accidents, or field modification is not covered in this limited warranty and will require field touch-up immediately and periodically thereafter. The owner must report any defect in powder coat at the time the installation is completed. Not covered by this Limited Warranty are acute angles, welds, and end plates.

The Limited Warranty for powder coating provides the following after a 5-year exposure period when applied according to the recommendations listed on the product's technical data sheet and appropriate surface preparation has been utilized.

- The coatings shall retain their original color with a  $\Delta E$  of  $<7.5$  units for high chroma colors (yellows, reds, oranges, etc.) and a  $\Delta E$  of  $<5.0$  units for low chroma colors, when tested in accordance with ASTM D 2244.
- The coating shall retain a minimum of 50% of its original gloss level after washing, when tested in accordance with ASTM D 523.
- The coating shall exhibit chalking no worse than numerical rating of 6, when evaluated in accordance with ASTM D 659-80.

### **Limited Warranty: Shade Fabric**

Traditional shade fabric made with PTFE fiber that is high strength and low shrinkage and VALMEX® MEHATOP F 1 waterproof fabric carry a 10-year limited warranty. This warranties that the sewing thread used on the traditional shade fabric will be free from defects in material and workmanship and will not be damaged by exposure to sunlight, weather, and water. All other warranties are disclaimed.

SRP fabrics carry a 10-Year Limited Manufacturer's Warranty from the date of delivery against failure from significant fading\*\*, deterioration, breakdown, outdoor heat, cold, or discoloration. Should the fabric need to be replaced under the warranty, SRP will manufacture and ship new fabric at no charge for the first six years, thereafter pro-rated at 18% per annum over the last four years.

\*\*The colors red and yellow are warranted against significant fading for only two years.

If the corners of the fabric are equipped with both holes in the fabric corner PLUS reinforcing straps, BOTH the strap and fabric hole must be placed over each corner hook or the fabric warranty is void.

Fabric curtains, valences, or flat vertical panels are not covered under the warranty.

Fabric is not warranted where it is installed on a structure that is not engineered and built by SRP or its agents.

This warranty shall be void if damage to or failure to the shade is caused by contact with chemicals, chlorine, bleaching agents, hydrocarbons or hydrocarbon containing solvents, misuse, vandalism, or any act of God, including but not limited to wind in excess of the wind limitations set forth below.

All fabric tops are warranted for sustained winds up to 76 mph (Hurricane Force 1) and for gusts of up to 3 seconds duration up to 90 mph. Removal of the shade fabric is required if damaging winds are called for. Damage due to snow and/or ice accumulation is not covered by this warranty. Canopies should be removed during the "off season."

These structures have been designed to eliminate any friction between the rafters and the fabric. The warranty will, therefore, be voided if any modification (temporary or permanent) is made to the rafter, cross pieces, or ridge beams, or if the fastening apparatus or canopy are not secured accordingly.

Structures are warranted for winds up to 90 or 105 mph only if shade canopies have been removed as per requirement set forth above in the fabric paragraph. Removal and re-installation must be performed by a qualified person or authorized dealer.

*\*For the purpose of this warranty, lifetime encompasses no specific term of years, but rather that seller warrants to its original customer for as long as the original customer owns the product and uses the product for its intended purpose that the product and all parts will be free from defects in materials and manufacturing workmanship. This warranty does not cover damage caused by vandalism, misuse or abuse, altered or modified parts, or cosmetic damage such as scratches, dents, or fading or weathering and normal wear and tear. This warranty is valid only if the structures are installed in conformity with instructions provided by Superior Recreational Products using approved Superior Recreational Products parts. Superior Recreational Products will deliver the repaired or replacement part or parts to the site free of charge, but will not be responsible for labor or the labor costs of replacement. Warranty claims must be filed within the applicable warranty period and accompanied by a sales order or invoice number.*

# Appendix

## Proper Care, Maintenance, and Safe Removal of the Shade Canopy

### THINGS TO AVOID

**SNOW, ICE, AND HIGH WINDS:** Remove the canopy in winter conditions as ice and snow loads are not covered by the warranty. The same goes for winds in excess of hurricane force 1.

**SHARP OBJECTS:** Always avoid dragging the fabric across surfaces, etc. Roll or fold the fabric and carry it. Avoid sharp objects, bolts, snags, and other protrusions including mounting hardware.

**OBSTRUCTIONS:** Keep foliage, such as tree limbs, shrubbery, and bushes, trimmed back and away from fabric at least three to four feet.

**SOURCES OF HEAT:** Avoid contact with heat sources such as hot lights, torches, and avoid using grills, etc. under the fabric or fireworks near the fabric..

**SLACK CABLE IN CANOPY:** Canopies with loose cables can fail.

### CLEANING THE FABRIC

The fabric itself is generally maintenance free with the exception of necessary removal due to weather or seasonal requirements. The fabric does not harbor mildew or mold, but residues such as tree sap, leaves, bird droppings, dust and dirt may need to be removed. To clean the fabric, use water and mild soap. A soft mop or soft broom may also be used. Cleaners that do not contain hydrocarbons, solvents, bleach or ammonia may be used. Use of solvents, hydrocarbons, bleach, and ammonia type cleaners will void the fabric warranty. A pressure washer may be used if necessary using a wide-spray nozzle.

### CABLES AND HARDWARE

It is recommended that the cables be replaced every 3 to 4 years or if corrosion is visible, whichever comes first. Canopy cables that are not maintained at optimum tension will be subject to shorter lifespans and potential failures earlier than our recommend cable replacement scheduling. The cable ends must be wrapped with tape to secure any wires; thus, preventing the wires from tearing the fabric. Taping must be done when removing old cable as well as when installing new cable. Clamps should be replaced when the cable is replaced. If the cable appears slack on a still day (no wind), immediately have the cable and clamps re-tightened by a qualified person. The cable should not be slack.

### GLIDE ELBOW™

Lubricate Glide Elbows™ annually and before operating. A waterproof grease is recommended such as a lithium-based grease or anti-seize thread lubricant.

### STORAGE

Fabric must be stored in a clean, dry place free from snags, sharp edges, etcetera. The storage area must be rodent-free. Wrap all hardware fittings with rags or some other protector, as they can damage the fabric.

### UNINSTALLING THE SHADE CANOPY

**NECESSARY CARE:** It is important to take necessary care when handling the fabric during removal and installation to prevent damage to the fabric as well as SAFE control of the fabric in a breeze or wind. The fabric is tough and engineered for use as a shade, but it can tear or cut when or if pulled over a snag or sharp item; it can puncture from bolts or other protruding objects; and it can melt from objects such as like cigarettes, matches, hot torch tips, sparks and the like. In addition, care must be exercised to avoid the fabric hooks after the fabric is unhooked from the elbow corners and sides of the structure where there are intermediate supports. It is best to wrap any connected mounting hardware to prevent it from harming the fabric.

**PROPER AND SAFE:** Based on the size of the canopy, several persons may be needed to properly and safely handle the fabric during the uninstalling process. You will need several commercial ladders or other means to work safely at heights such as scissor lifts, etc. It is advised that you pad the post side of the ladder and tie the ladder to the post. The pad is to protect the post finish. Also keep in mind that every 100 square feet of fabric (10' X 10') weighs approximately five pounds; a large canopy can get heavy fast. For proper control of the fabric, read below. It is best to remove the fabric on a still day. Do not attempt to remove the canopy in strong or gusty winds.

**REMOVAL OF THE CANOPY:** Do not attempt to remove the canopy in strong or gusty winds.

**STANDARD ELBOWS:** For shade structures with Standard Elbows, loosen the turnbuckle several turns in order to put enough slack in the cable to allow the fabric and cable to unhook from all the elbow hooks. Attach 3/8" or larger ropes to each corner of the fabric and cable before unhooking to secure and properly control the fabric from ground level. If uninstalling in breezy conditions, choose the windy side of the fabric and tie these corners to the posts with the ropes with enough slack to allow for unhooking the fabric from the structure. These ropes are to prevent the shade from flying away in the breeze and to help prevent injury to ground personnel. Once the corners have been secured to the posts, unhook the fabric and cables from each corner.

On the side away from the wind, release the corners of the fabric and cable and have a person hold on to each rope. It may help to wrap the rope around a column to help hold it from getting caught in the wind. Fold the fabric back away from the hooks. Now it will be necessary to remove the cable clamps to allow the cable to be free from the structure and the turnbuckle. If the cable ends are frayed, wrap them with tape. It is usually not necessary nor is it recommended that the cable be removed from the canopy. With a person on each rope, starting at the windy side, gently pull the canopy down in between the framework of the structure. The side away from the wind can be guided with the ropes toward the persons pulling the canopy down. It is important when reinstalling the canopy, that it is put back in its original orientation to the structure. Starting at the turnbuckle corner, the fabric and cable corners should be returned to their original positions.

**GLIDE ELBOWS:** For shade structures with Glide Elbows, remove the protective covers from the ends of the glide elbows. Then, using the proper wrench, turn the hex nuts on the end of the Glide Elbow to run the glide hooks to their top most position. Do not loosen the cable clamps, leave the cable intact. Attach 3/8" ropes to each corner of the fabric and cable before unhooking to secure and properly control the fabric from ground level. If uninstalling in breezy conditions, choose the windy side of the fabric and tie these corners to the posts with the ropes with enough slack to allow for unhooking the fabric from the structure. These ropes are to prevent the shade from flying away in the wind and to help prevent injury to ground personnel. Once the corners have been secured to the posts, unhook the fabric and cables. On the side away from the wind, release the corners of the fabric and cable and have a person hold on to each rope. Fold the fabric back away from the hooks. It is a good idea to put the Glide Elbow protective covers back in place. With Glide Elbow installations it is not necessary to loosen or remove the cable clamps nor to remove the cable from the canopy. If the cable ends are frayed, wrap them with tape. When uninstalling the canopy, mark or identify the corner of origin in such a way that when reinstalling the canopy, it is put back in its original orientation to the structure. The fabric and cable corners should be returned to their original positions when reinstalling the canopy. The cable and fabric should tighten properly when the glide elbows are adjusted down into their tension positions.

**SHADE SAILS WITH FANS:** For shade sails equipped with fans, loosen the adjustable threaded rod several turns in order to put enough slack in the cable to allow the shackle pin to be removed (do not remove the pins until the fabric corners have been secured with ropes). Attach 3/8" or larger ropes to each corner of the fabric and fan before unhooking to secure and properly control the fabric from ground level. If uninstalling in breezy conditions, choose the windy side of the fabric and tie these corners to the posts with the ropes with enough slack to allow for unhooking the shackle from the structure. These ropes are to prevent the shade from flying away in the breeze and to help prevent injury to ground personnel. Once the corners have been secured to the posts, unhook the shackles and lower the fabric and cable to the ground.

## **REINSTALLING HINTS**

Using the same rope technique, install from the windy side (if it is breezy) making sure to secure these ropes to the posts. Then, throw the remaining corner ropes over the structure and gently pull the canopy into position. The cables and fabric corners can now be fastened on the hooks (and cable guides if so equipped). Next reinstall the clamps if applicable and tightened the cable with the turnbuckle or the Glide Elbows. Do not attempt to install the canopy in strong or gusty winds.



## Material Specifications

### Fabric

- Shade fabric is made of UV stabilized cloth manufactured by Alnet Americas or approved equal
- The high density polyethylene material shall be manufactured with tensioned fabric structures in mind
- 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
- Cloth meets fire resistance tests as follows:

Alnet Americas Extra Block: California State Fire Marshall Reg. #F-93501

Others: NFPA 701-99 (Test Method 2) and ASTM E-84

#### Fabric Properties

Stretch	Stentored
Tear Tests (lbs/ft)	WARP 44.8 WEFT 44
Burst Tests (lbs ft)	828 lbf (ASTM 3786)
Fabric Weight (oz/sqFT)	Avg 1.02 to 1.07 oz.
Fabric Width	9' 10"
Roll Length	150'
Roll Size	63" x 16 ½"
Weight	120 lbs.
Life Expectancy	10 Years
Fading	Minimum Fading After 6 years, 3 Years for Red and Yellow
Min. Temperature	-77°
Max. Temperature	+167°

#### Shade Protection and UV Screen Protection Factors

Color	Shade Cover	UVR Block Out
True Blue	93%	89%
Beige	97%	87%
Forest Green	96%	94%
Sun Blaze	94%	91%
Silver	95%	93%
Rivergum Green	88.7%	92.9%
Sky Blue	89%	92.2%
Navy Blue	93.6%	94.4%
Turquoise	86%	91.5%
Yellow	77.6%	95.5%

To view a complete list of fabrics, please reference the Color Options page of our catalog by clicking [here](#).

### Thread

- Shall be 100% expanded PTFE fiber that is high strength and low shrinkage
- Shall have a wide temperature and humidity range
- Abrasion resistant and UV radiation immunity
- Shall be unaffected by non-hydrocarbon based cleaning agents, acid rain, mildew, chlorine, saltwater, and pollution
- Lockstitch thread - 1200 Denier or equal
- Chain stitch thread - 2400 Denier or equal

Steel Tubing

- All fabricated steel must be in accordance with approved shop drawings and calculations
- All steel is cleaned, degreased, or etched to ensure proper adhesion of Superdurable powder coat in accordance with manufacturer's specifications
- All Steel used on this project needs to be new and accompanied by the mill certificates if requested. Structural steel tubing up to 5"-7 gauge shall be galvanized per Allied Steel FLO-COAT specifications. Schedule 40 black pipe fabrications shall be sand-blasted and primed as described below
- All non-hollow structural shapes comply with ASTM A-36, unless otherwise noted
- All hollow structural steel shapes shall be cold formed HSS ASTM A-53 grade C, unless otherwise noted
- Plate products shall comply with ASTM A-36

Superdurable Powder Coat and Primer

- All non-galvanized steel shade to be sand-blasted and primed prior to Superdurable powder coating using reclaimable blast media in a mixture of GL50 & GL80 Steel Grit
- All non-galvanized steel must be coated with rust inhibiting primer prior to applying the Superdurable powder coat. Primer shall be Marine Grade Cardinal Industrial Finishes Corp. E396-GR1372 epoxy Superdurable powder coating semi-gloss smooth zinc rich primer
- Welds shall be primed with rust inhibiting primer prior to applying the Superdurable powder coat. Primer shall be Marine Grade Cardinal Industrial Finishes Corp E396-GR1372 epoxy Superdurable powder coating semi-gloss smooth zinc rich primer
- All steel parts shall be coated for rust protection and finished with a minimum 3.5 mil thick UV-inhibited weather resistant Superdurable powder coating

Powder Coat Tests		Results
ASTM	Gloss at 60°	85-95
HOI TM 10.219	PCI Powder Smoothness	7
ASTM D2454-91	Over-Bake Resistance Time	200%
ASTM D3363-92A	Pencil Hardness	H-2H
ASTM D2794-93	Dir/Rev Impact, Gardner	140/140 in/lbs
ASTM D3359-95B	Adhesion, Cross Hatch	5B Pass
ASTM D522-93A	Flexibility Mandrel	¼" dia. No fracture
ASTM B117-95	Salt Spray	1,000 hours
UL DtOV2	Organic Coating Steel Enclosures, Elect Eq.	Recognized

Powder Coat Process Characteristics			Application Criteria		
N.3.1	Specific Gravity	1.68+/-0.05	N.5.1	Electrostatic Spray Cold	Substrate:0.032 in. CRS
N.3.2	Theoretical Coverage	114+/- 4 ft 2/lb/mil	N.5.2	Cure Schedule	10 minutes at 400° F
N.3.3	Mass Loss During Cure	<1%	N.5.3	Pretreatment	Bonderite 1000
N.3.4	Maximum Storage Temperature	75° F	N.5.4	Film Thickness	3.5 Mils

## Welds

- All shop welds shall be executed in accordance with the latest edition of the American Welding Society Specifications
- Welding procedures shall comply in accordance with the AWS D1.1-AWS Structural Welding Code-Steel
- 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
- All welds shall develop the full strength of the weaker member. All welds shall be made using E70xx.035 wire
- Shop connections shall be welded unless noted otherwise. Field connections shall be indicated on the drawings. Field welded connections are not acceptable
- All fillet welds shall be a minimum of ¼" unless otherwise noted
- All steel shall be welded shut at terminations to prevent internal leakage
- Internal weld sleeving is not acceptable
- On-site welding of any component is not acceptable

## Sewing

- On-site sewing of a fabric will not be accepted
- All corners shall be reinforced with extra non-tear cloth and strap to distribute the load
- The perimeters that contain the cables shall be double lock stitched

## Installation Hardware

- Bolt and fastening hardware shall be determined based on calculated engineering loads
- 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
- Upon request, Stainless Steel hardware shall comply with ASTM A-304
- 1/4" galvanized wire rope shall be 7x19 strand with a breaking strength of 7,000 lbs. for shades generally under 575 sq. ft. unless requested larger by the customer. For shades over 575 sq. ft., cable shall be 5/16" with a breaking strength of 9,800 lbs. Upon request, 1/4" Stainless Steel wire rope shall be 7x19 strand with a breaking strength of 6,400 lbs. 5/16" Stainless Steel wire rope shall be 7/19 strand with a breaking strength of 9,000 lbs.
- All fittings required for proper securing of the cable are hot dipped galvanized

## Concrete

- Concrete work shall be executed in accordance with the latest edition of American Concrete Building Code ACI 318 unless specified by the governing municipality
- Concrete specifications shall comply in accordance with, and detailed as, per plans as follows:
  1. 28 Days Strength  $F'_c = 2500$  psi
  2. Aggregate: HR
  3. Slump: 3-5
  4. Portland Cement shall conform to C-150

**CONCRETE CONTINUED ON NEXT PAGE**

5. Aggregate shall conform to ASTM C-33

- All reinforcement shall conform to ASTM A-615 grade 60
- Reinforcing steel shall be detailed, fabricated and placed in accordance with the latest ACI Detailing Manual and manual of Standard Practice
- Whenever daily ambient temperatures are below 80° F, the contractor may have mix accelerators and hot water added at the batch plant (see table)
- The contractor shall not pour any concrete when daily ambient temperature is below 55° F

**Concrete Temperate Chart**

Temperature Range	% Accelerator	Type Accelerator
75-80°	1%	High Early (non calcium)
70-75°	2%	High Early (non calcium)
Below 70°	3%	High Early (non calcium)

## Footings

- All anchor bolts set in new concrete shall be ASTM A-307, or ASTM F-1554 if specified by engineer
- All anchor bolts shall be zinc plated unless specified otherwise
- Footing shall be placed in accordance with and conform to engineered specifications and drawings