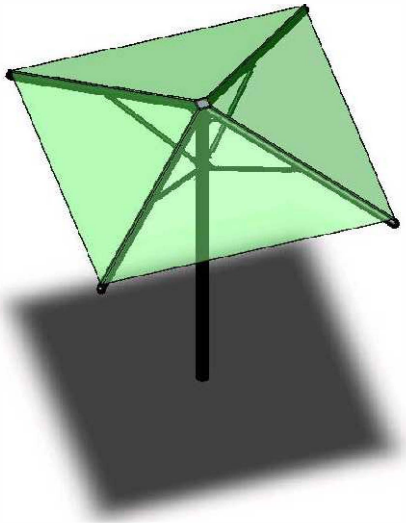
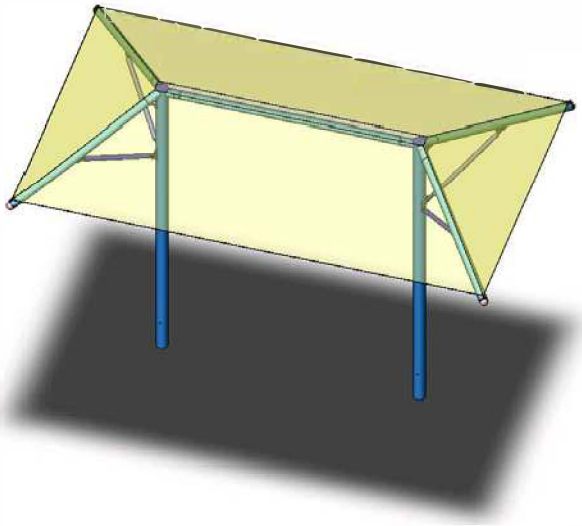
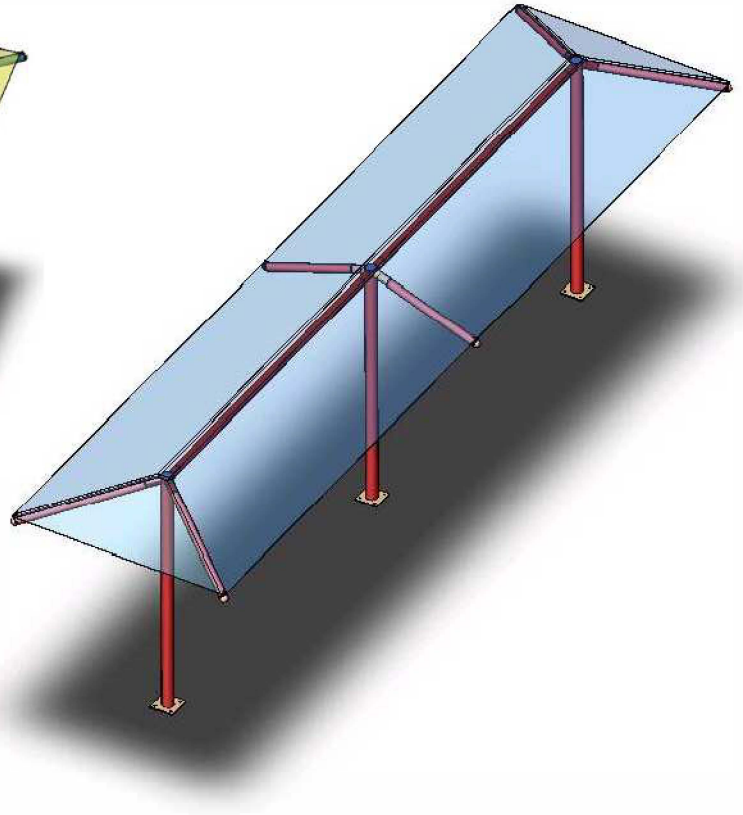
Umbrella Shade Design Installation

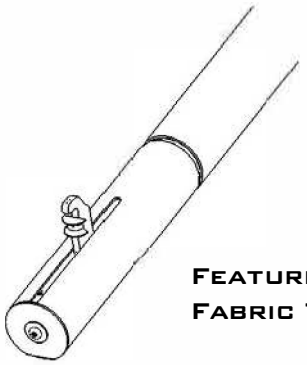
Single, Dual and Triple Column Models

Embedded And Surface Mount









Featuring The Glide Insert
Fabric Tensioning System.

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.

IF YOU NEED TO REPLACE DAMAGED PARTS OR HAVE INSTALLATION QUESTIONS, PLEASE CALL OUR CUSTOMER SERVICE REPRESENTATIVES

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.

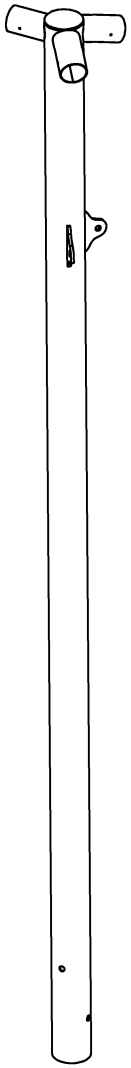
REQUIRED TOOLS

(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

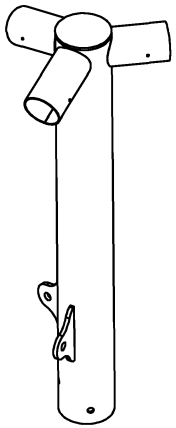
WARNING:

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

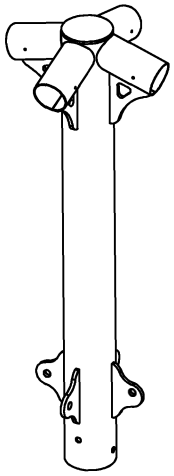
UMBRELLA SHADE COMPONENT INVENTORY



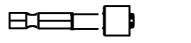
Single Column



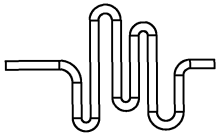
Two & Three Column Crown



Single Column Crown

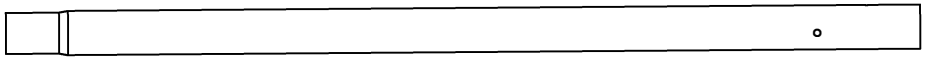


driver Tool

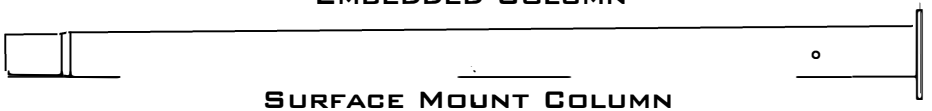


Cable Length

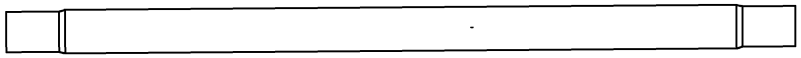
Cable Will Be Installed Within Fabric If Shade Has Glide Equiped Rafters



Embedded Column

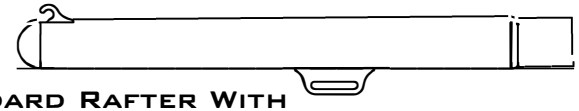


Surface Mount Column



Ridge Pole

Two & Three Column Umbrellas



Standard Rafter With Capped End & Hook

Anchor Rod Washers

Rafter With Glide Insert

Hex Head Bolts

Nylock Hex Nuts

Washers

Self Tapping Screws

Cable Clamps

Supplied With Umbrellas Using Turnbuckle

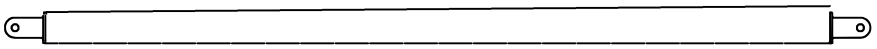
Turnbuckle

Turnbuckle Is Supplied When Unit Has Standard Rafters

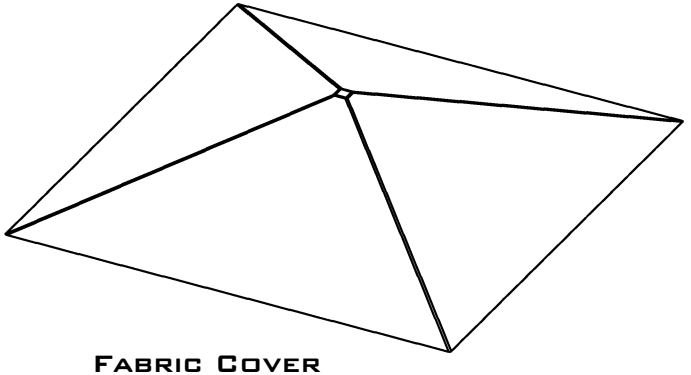
Anchor Rods

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

Anchor Rod Nuts



Rigid Strut



Fabric Cover

STEP #1:

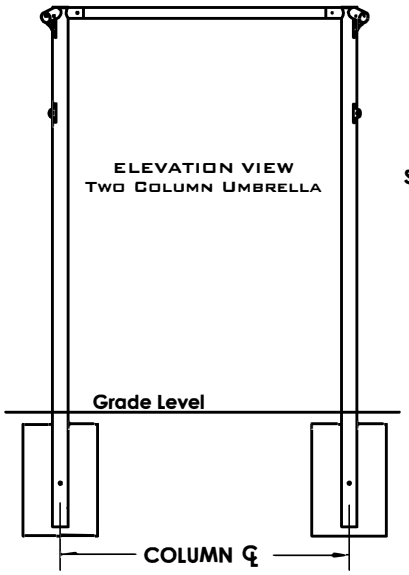
For two and three column Umbrellas locate and mark the positions of the upright columns. Refer to the specific dimension information for your Shade unit provided in this packet.

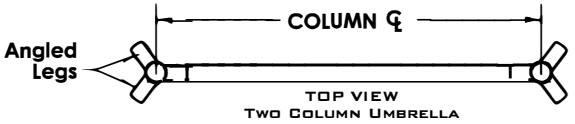
EMBEDDED COLUMNS:

- **-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 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:

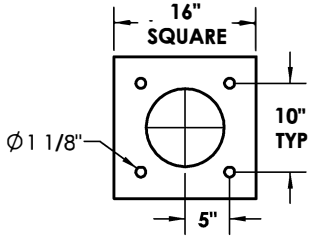
- **-Excavate footings for concrete pads in accordance with the dimensions specified for your shade structure. Refer to the specific dimensions provided in this packet.**
- **-Cut the plywood sheet into four squares 2" larger than your base plates. Working from the center, mark off the hole pattern that 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.**



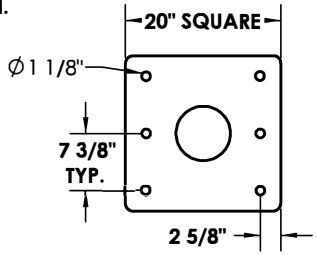


IMPORTANT NOTE:

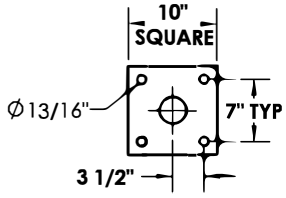
Some ∅5" And Larger Columns Are One Part And Do Not Have A seperate Crown. Ridge Pole Must Be Positioned Between Columns Before Concrete Is Poured.



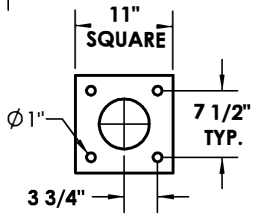
∅8.6" COLUMN



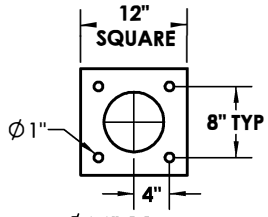
∅10"-12" COLUMN



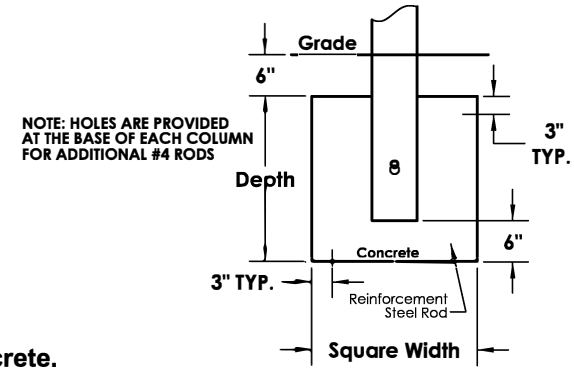
∅3.5"-5" COLUMN

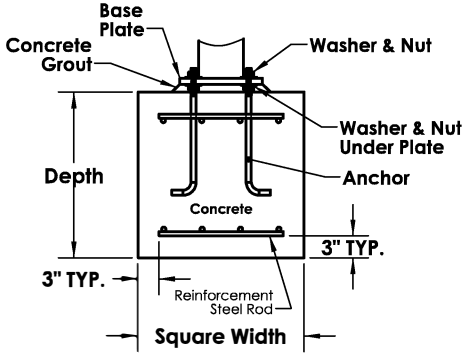


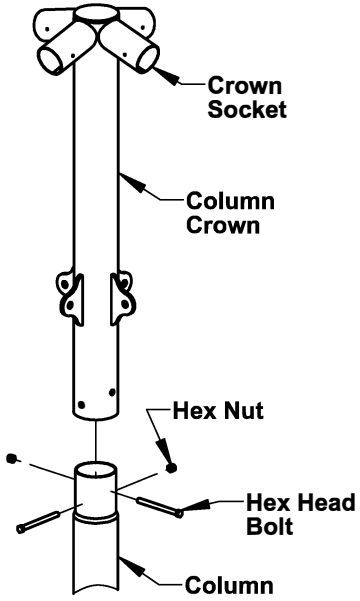
∅5.5" COLUMN



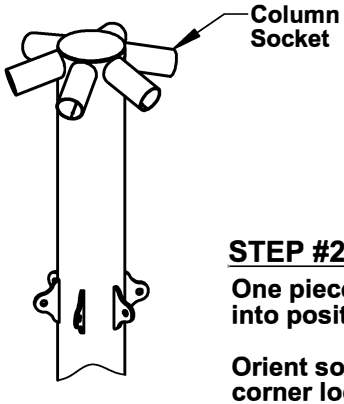
∅6.6" COLUMN







TWO PIECE COLUMN



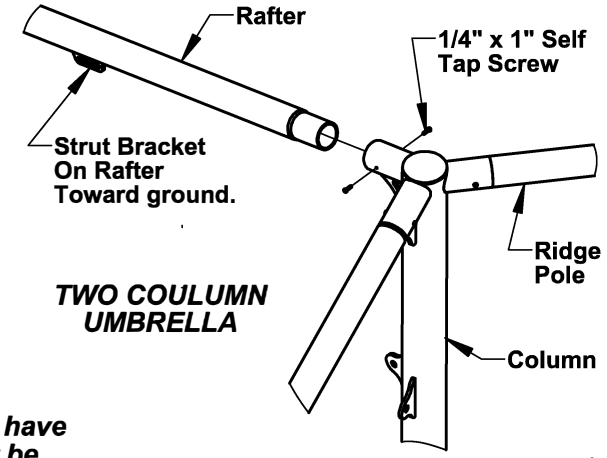
ONE PIECE COLUMN

STEP #2: Single Column

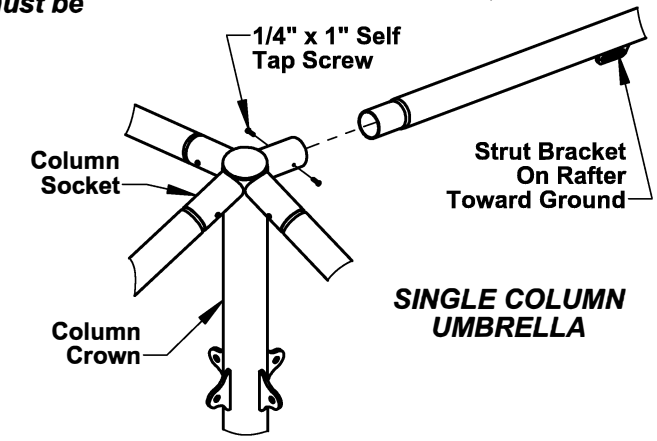
One piece columns must be rotated into position while concrete is still wet.

Orient sockets toward the desired fabric corner locations.

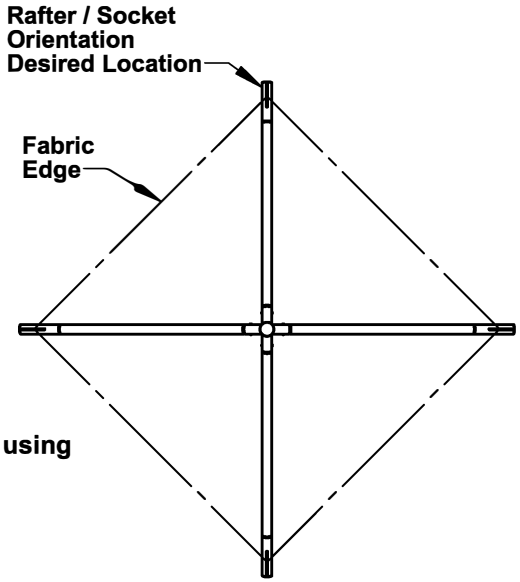
NOTE: With Two Column Umbrellas that have one piece columns, the Ridge Pole must be fitted before concrete is poured.



TWO COULUMN UMBRELLA



SINGLE COLUMN UMBRELLA



STEP #2: Crowned Columns

Smaller single column Umbrellas will have a seperate Crown that will need to be placed over the swaged end of column after the concrete has hardened.

Orient the crown so that the sockets point toward the desired Fabric corner locations.

Field drill ∅9/16" through both walls of column using holes in crown as template (Two Locations).

Secure with two 1/2" hex head bolts and nuts.

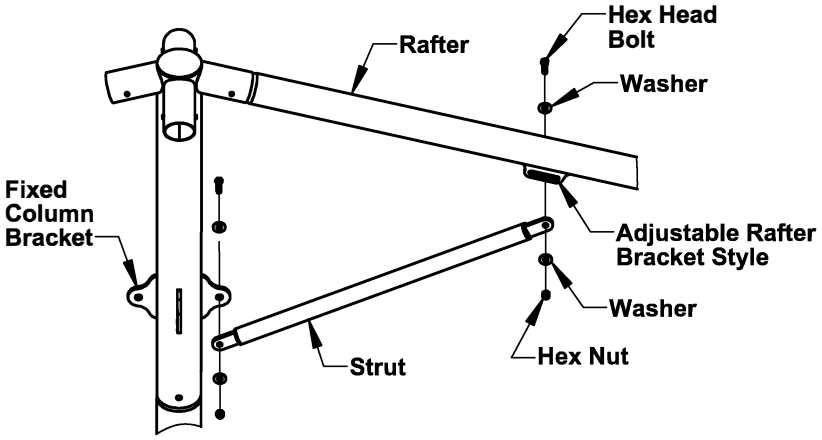
STEP #3:

Insert swaged end of Rafters into column sockets.

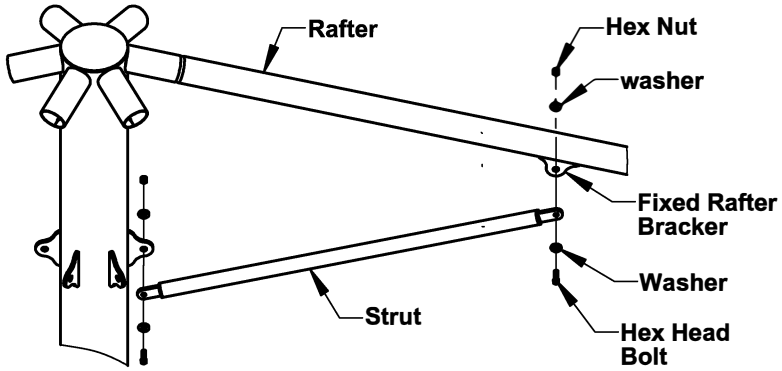
Orient rafter strut brackets to point down toward ground.

Drill two ∅3/16" pilot holes through each rafter using the holes in the socket as a template.

Secure with two 1/4" self tapping screws



TWO PIECE SINGLE COLUMN UMBRELLA



ONE PIECE SINGLE COLUMN UMBRELLA

STEP #4:

Attach one strut to each rafter using short hex head bolts at both the column and rafter brackets.

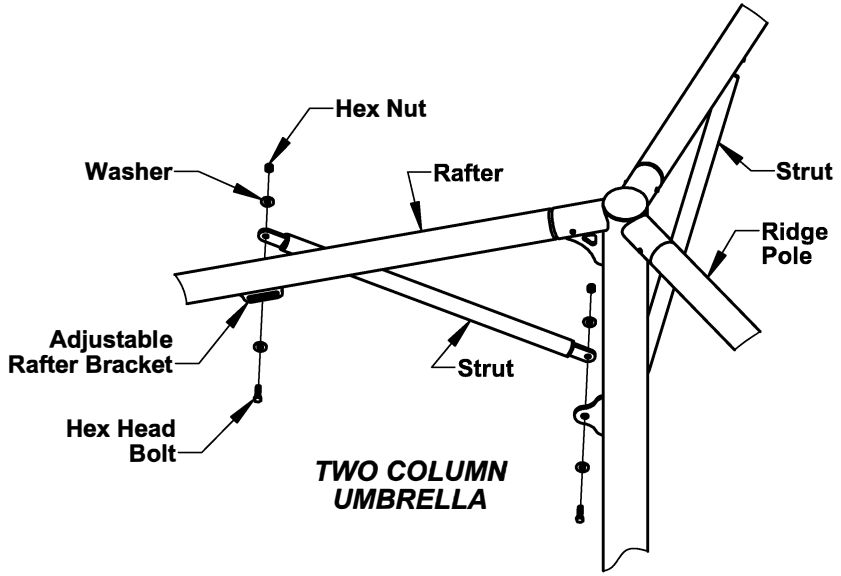
Starting with the rafters, insert a bolt through a washer and the rafter bracket. Hang the strut by inserting it over the bolt end.

Secure the strut by placing a second washer over the bolt against the rafter bracket. Hand tighten a nut against the washer.

Swing the strut bottoms into position aligning the end hole with the hole in the column bracket. Be sure that the strut end is on the same bracket side as the one at the top rafter position.

Secure the bottom end of strut into position against the column using the same hardware procedure used for the top.

Fully tighten all strut attachment hardware.



TWO COLUMN UMBRELLA

STEP #5

Unroll the umbrella fabric on a smooth flat surface with the hem side up.

Starting at one corner, insert the steel cable into the hem that runs along the fabric edge.

Feed the cable through the entire length of the hem until appromimately 24" is left at the starting corner.

Re-insert cable into the adjacent hem at the second corner.

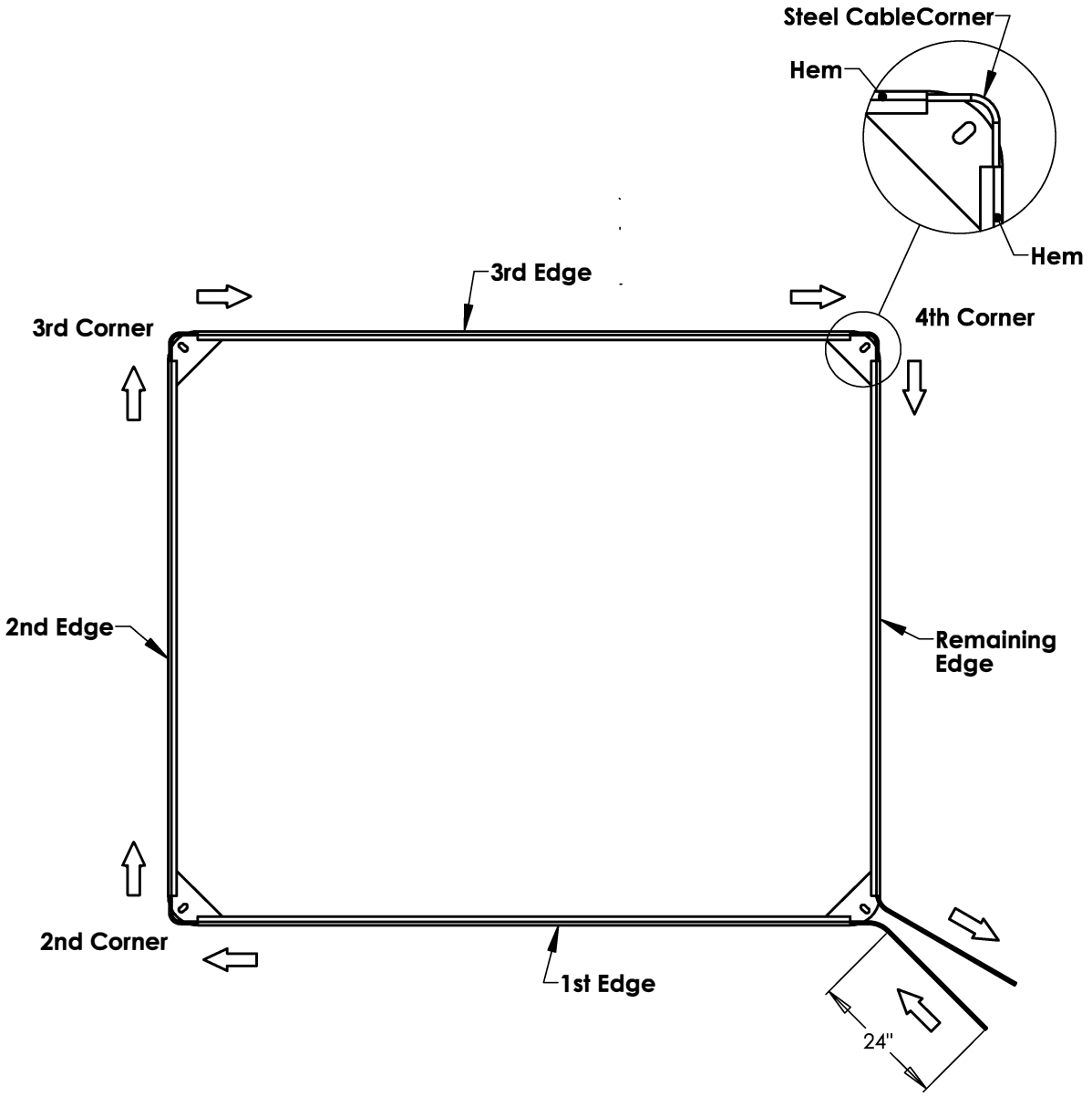
Feed the cable through the entire length of the second edge until only a small corner slightly larger than the fabric corners remains.

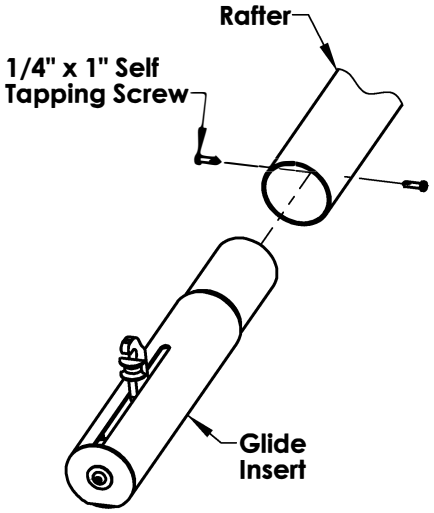
Re-insert the cable into the adjacent hem at the third corner.

Feed the cable through the entire length of the third edge until a small cable corner is formed at the third corner.

Repeat this procedure at the fourth corner feeding the cable through the remaining edge.

At this point you will have two loose ends at the starting corner.





STEP #6

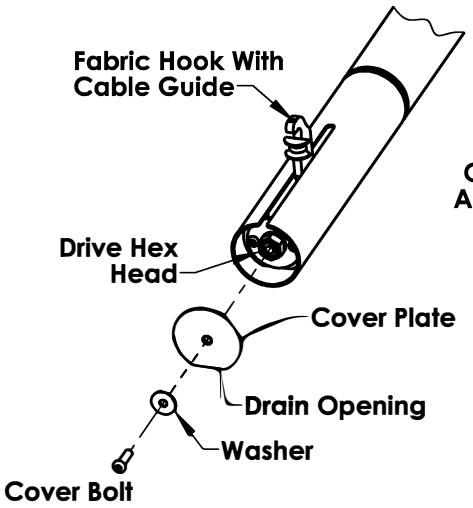
Locate the glide mechanisms that will go on the end of each rafter.

With the fabric hook oriented up away from the ground, insert the tapered end of the glide into the end of the rafter.

Using a ∅3/16" drill bit, drill a hole through both the rafter and glide from opposite sides.

Secure the glide to the rafter using two 1/4" x 1" self tapping screws and the tool provided.

Repeat this procedure at each rafter location.

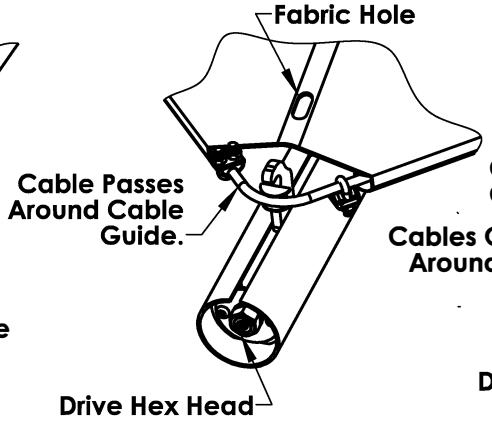


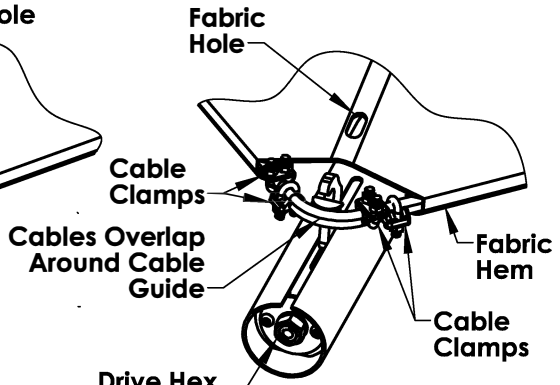
STEP #7

Remove the screw and washer that hold the protective cover on each glide end.

With the hem side down, gently lift the fabric up over the framework. Orient each fabric corner over a glide insert.

With a rachet and socket, rotate the drive hex head at each location until the fabric hook moves up the rafter as far as it will go.





FINAL CORNER

STEP #8

Start at one of the fabric corners with the cable running completely through.

Pull the cable over the hook and into the 180˚ cable guide. Push the hole in the fabric corner down over the hook portion.

Move to the next corner with the cable running completely through. Repeat the procedure.
NOTE: You will have to pull hard and stretch the fabric over the hooks, this is normal and ensures a tight fit.

At the final corner you will attach the loose cable ends by crossing them over each other and securing them with two cable clamps on each side of hook. Pull to remove any slack in cables before tigthening clamps. Insert fabric corner over hook.

Tuck the loose cable ends back into the adjacent fabric hem.

Rotate the hex drive head on each glide the same number of turns until fabric is completely tight over frame.

Replace protective covers on glide ends making sure that the drain opening is oriented st the bottom.

SHADE STRUCTURE MATERIAL 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 828 lbf (ASTM 3786).

E. Cloth meets fire resistance tests as follows:

Alnet Extra Block:	California State Fire Marshall Reg. #F-93501
Others:	NFPA 701-99 (Test Method 2)
	ASTM E-84

F. Fabric Properties:

STRETCH	STENTORED
Tear Tests (lbs/ft)	WARP 44.8 WEFT 44
Burst Tests (lbs ft)	828
Fabric Weight (oz/sqFT) avg	1.02 to 1.07
Fabric Width	9'-10"
Roll Length	150'
Roll Size	63" x 16.5"
Weight	120 lbs.
Life Expectancy	10 years
Fading Note	Minimum fading after 6 years. 3 years for Red and Yellow.
Temperature	- 77 degrees
Maximum Temperature	+167 degrees

1.02 THREAD

A. Shall be 100% expanded PTFE fiber which carries a 10 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. Chain stitch 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"-7 Gage 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 brown fused aluminum oxide grit and the following primer.

B. All non-galvanized steel must be coated with rust inhibiting primer prior to applying the powder coat. Primer shall be Marine Grade Cardinal Industrial Finishes Corp. E396 – GR1372 epoxy powder coating semi-gloss smooth zinc rich primer.

C. Welds shall be primed with rust inhibiting primer prior to applying the powder coat. Primer shall be Marine Grade Cardinal Industrial Finishes Corp E396-GR1372 epoxy powder coating semi-gloss smooth zinc rich primer.

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:

N.3.1	Specific gravity	1.68+/-0.05
N.3.2	Theoretical coverage	114+/- 4 ft 2/lb/mil
N.3.3	Mass loss during cure	< 1%
N.3.4	Maximum storage temperature	75 degrees F

F. Powder-coating shall meet the following tests:

ASTM	Gloss at 60 degree	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

G. Application Criteria:

N.5.1	Electrostatic spray cold	Substrate:0.032 in. CRS
N.5.2	Cure Schedule	10 minutes at 400 degrees F
N.5.3	Pretreatment	Bonderite 1000
N.5.4	Film Thickness	3.5 Mils

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. Upon request, Stainless Steel hardware shall comply with ASTM A-304.

D. 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.

E. 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 = 2500 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.

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

1.09 FOOTINGS

A. All anchor bolts set in new concrete shall be ASTM A-307, or ASTM F-1554 if specified by engineer.

B. All anchor bolts shall be zinc plated unless specified otherwise.

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

PROPER CARE, MAINTENANCE AND SAFE REMOVAL OF THE SHADE CANOPY

THINGS TO AVOID

SNOW, ICE and HIGH WINDS: Remove the canopy in winter conditions, ice and snow load 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, bushes, etc. trimmed back and away from fabric at least three to four feet.
SOURCES OF HEAT: Also avoid contact with heat sources such as hot lights, torches, and avoid using grilles, etc. under the fabric.

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 may. Residues such as tree sap, leaves, bird droppings, dust & dirt, etc. 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 if corrosion is visible, or every 3 to 4 years whichever comes first. 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 retightened by a qualified person. The cable should not be slack.

GLIDE ELBOWS

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 clean dry place free from snags, sharp edges, etc. The storage area must be rodent-free. Wrap all hardware fittings with rags, etc. 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 things 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.**

INSTALLATION IN REVERSE
Refer to the **Installation Instructions**. In general, uninstalling the canopy means following the steps in reverse. **Do not attempt to remove the canopy in strong or gusty winds.**

1. 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 cables 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. NOTE: 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.

IMPORTANT HINT: 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.

2. 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. NOTE: 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.

IMPORTANT HINT: 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.

3. 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 cables 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 hooked 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.**