

Standard Sunguards

Direct Imbedment & Surface Mount

INSTALLATION MANUAL

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For further product information or any queries on installations, please contact:

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SAFETY FIRST

For your safety, Apollo Sunguard recommends that you read and comply with all safety instructions:

- Hard hats should be worn at all times.
- Safety goggles must be worn at all times when operating electrical power tools.
- Secure all ladders and work platforms; make sure they are stable at all times.
- When drilling, point drill away from the body or other persons in case of drill breakage, etc.
- Ensure all electrical equipment used is properly grounded.
- During installation, steel posts and beams should be secured to prevent from tipping, deflection or falling.

CAUTIONS

WARNING: While installing the fabric cover watch for the following...

Hip beam pins at the end of hip beams.

Do not pull fabric cover at sharp angles.

If fabric cover binds, do not continue to force pull.

Watch for anything else that might damage the fabric cover.

Do not attempt to install fabric cover when the air temperature is below 50° F. Cold Temperatures stiffens the fabric making it hard to fit.

Do not attempt to install fabric cover when the air temperature is above 85° F. Hotter temperatures can cause the fabric to contract making the fabric hard to fit.

Do not attempt to install fabric cover when high wind conditions, rain, or extreme weather conditions are expected.

ARE YOU PREPARED?

Have your site inspected for underground utilities, irrigation systems, soil conditions and overhead power line restrictions.

BEFORE YOU BEGIN

- Confirm unit size for site location
- Check packaging for damage
- Confirm Packing List contents (report errors/shortages immediately by calling 800-319-1010)
- Read installation manual provided with your unit

Important: When more than one structure is being constructed at the same site, correctly identify each structure with its corresponding layout.

PACKING LIST NOTES & ITEMS SUPPLIED BY APOLLO SUNGUARD

Check the packing list and verify that the shade unit is complete with the correct assembly parts. Each package is labeled for a specific size shade unit. All other structural members are shipped bubble wrapped and labeled according to size of structure.

Rectangular Units

- 4 columns (unless otherwise specified)
- 4 Hip Beams
- Crosspiece
- Ridge Beam assembly with Ridge Insert for Hip Beams
- Fabric Cover (cut to units specifications)
- 2 Tension Cables
- 2 Turnbuckles
- Bolts equal to number of columns in unit
- Washers equal to number of bolts
- Nuts equal to number of bolts
- U-bolts (D-Shackles)
- One (1) can touch up spray paint
- Blueprints/Engineering Plans (custom units only)

Square Units

- 4 columns (unless otherwise specified)
- 4 Hip Beams
- Crosspiece
- Ridge Beam or an X-piece Ridge
- Insert for the Hip Beams.
- Fabric Cover (cut to units specifications)
- 2 Tension Cables
- 2 Turnbuckles
- Bolts equal to number of columns in unit

- Washers equal to number of bolts
- Nuts equal to number of bolts
- U-bolts (D-Shackles)
- One (1) can touch up spray paint
- Blueprints/Engineering Plans (custom units only)

Triangular Units

- 3 columns
- 3 Hip Beams
- Crosspiece
- Ridge Inserts
- Fabric Cover (cut to units specifications)
- 2 Tension Cables
- 2 Turnbuckles
- Bolts equal to number of columns in unit
- Washers equal to number of bolts
- Nuts equal to number of bolts
- U-bolts (D-Shackles)
- One (1) can touch up spray paint
- Blueprints/Engineering Plans (custom units only)

Hexagonal Units

- 6 columns
- 6 Hip Beams
- Crosspiece
- Ridge Inserts

- Fabric Cover (cut to units specifications)
- 2 Tension Cables
- 2 Turnbuckles
- Bolts equal to number of columns in unit
- Washers equal to number of bolts
- Nuts equal to number of bolts
- U-bolts (D-Shackles)
- One (1) can touch up spray paint
- Blueprints/Engineering Plans (custom units only)

Octagonal Units

- 8 columns
- 8 Hip Beams
- Crosspiece
- Ridge Inserts
- Fabric Cover (cut to units specifications)
- 2 Tension Cables
- 2 Turnbuckles
- Bolts equal to number of columns in unit
- Washers equal to number of bolts
- Nuts equal to number of bolts
- U-bolts (D-Shackles)
- One (1) can touch up spray paint
- Blueprints/Engineering Plans (custom units only)

ADDITIONAL INSTALLATION ITEMS REQUIRED

- Electric drill
- 3/8" diameter drill bit (steel)
- 1/2" diameter drill bit (steel)
- 5/8" diameter drill bit (steel)
- Extension cords
- Transit
- Crow Bar
- Two (2) Shovels
- Locking Pliers
- Rubber Mallet
- Metal lubricant spray oil
- Paintable (clear) silicone sealant with caulk gun
- Two (2) 12' heavy-duty ladders (adjustable)
- Rebar (refer to plans for sizes)
- Mini grinder and cut off blades
- Three (3) ropes (minimum of 50' each)
- Man lift for structures 20' tall or larger (extending boom)
- Levels
- Hand wrenches
- Cleanup supplies
- Damp rags

DIRECT IMBEDMENT SITE PREPARATION

If your unit(s) is direct imbedment, follow the site preparation instructions below:

Step 1: Footing Preparation:

- Confirm the precise location for the shade unit.
- Ensure that your site is clear.
- Review footing details that are included in the plans. Check footing details for correct depth, width and length.
- Locate footing positions and mark.
- Layout your unit at the site. (A final inspection of the site is recommended)
- Dig the footings to the required dimensions necessary for the particular unit supplied.
- Check all footings and make depth adjustments for the grade of your site. The depth or height of the footing may vary depending upon the grade of your installation site. Measure columns for centerline and diagonal. These need to correspond with footing layout details in the back of this manual.



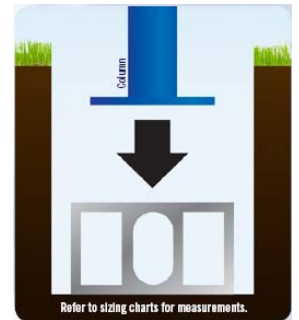
Step 2: Setting the Columns:

- Set each column on the platform ballast in the bottom of the footing. For example, a six inch (6") platform ballast can be provided by using a standard six inch (6") concrete block.



- Before setting the footings in concrete, check all column heights for correct level above and below grade.

Columns must be plumb, level and square. This is critical for proper installation of the shade structure.



Step 3: Pouring the Footings:

- Support the columns to maintain a plumb, level and square setting.
- After pouring concrete, the surface should be gently sloped by troweling all around to allow water to drain away from the column base.



Allow concrete to cure for 24 - 48 hours before proceeding with the installation of the rest of the shade structure.

Step 4: Site Housekeeping:

- You may bring each footing back to original grade.
- Clean concrete splatters and residue from the columns and footings.



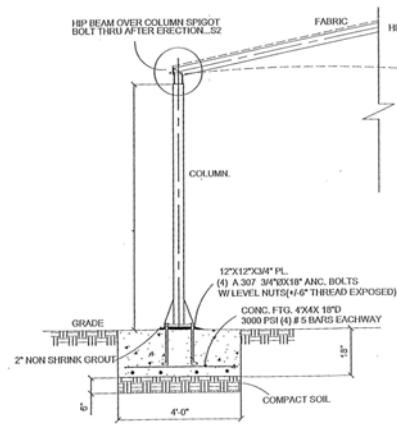
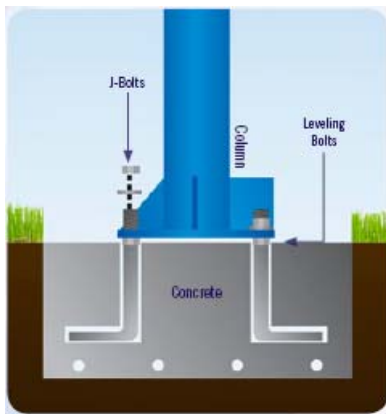
SURFACE MOUNT SITE PREPARATION

If your unit(s) is surface mounted, follow the site preparation instructions below:

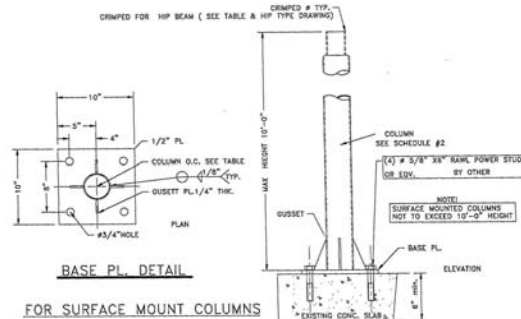
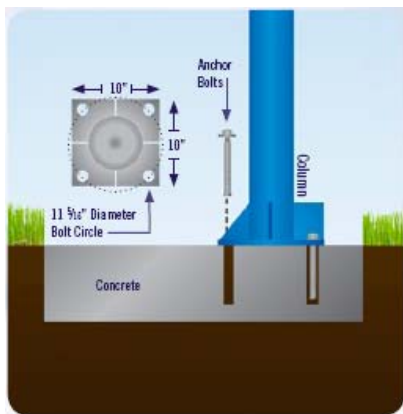
Step 1: Footing Preparation:

- Confirm the precise location for the shade unit.
- Ensure that your site is clear.
- Review footing details that are included in the plans. Check footing details for correct depth, width and length.
- Locate footing positions and mark.
- Layout your unit at the site. (A final inspection of the site is recommended)
- Dig the footings to the required dimensions necessary for the particular unit supplied.
- Check all footings and make depth adjustments for the grade of your site. The depth or height of the footing may vary depending upon the grade of your installation site.

Surface Mount on New Footings



Surface Mount on Existing Footings



J-bolts and anchor bolts are not provided by Apollo Sunguard Systems, Inc.

Step 4: Site Housekeeping:

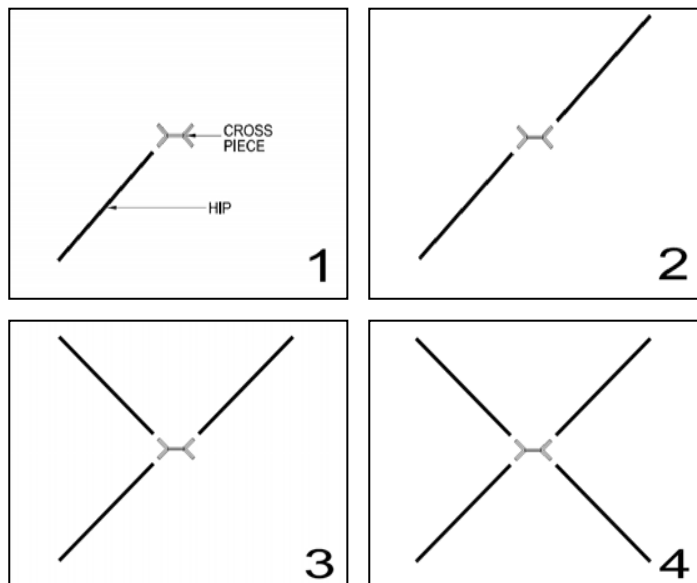
- You may bring each footing back to original grade.
- Clean concrete splatters and residue from the columns and footings.

ERECTING THE STEEL FRAME

Step 5: Attaching the Hip Beams:

- Lubricate each ridge beam insert liberally with silicone lubricant spray.
- Before installing the cross piece section, it is necessary to attach one hip to one of the column extensions. Please refer to Figure 1 for hip installation sequence. It shows four hip beams being attached to the ridge beam in the correct attaching sequence.

Figure 1: Hip Installation Sequence



Note: The use of mechanical equipment such as a cherry picker or a forklift is recommended for units over 1,000 sq feet to assemble and raise the ridge and hip beams up to installation height. Place ridge beam (the center support) on a lifting device, make sure the ridge beam is centrally located within the site and raise the ridge beam to a comfortable working height to attach the hip beams.

Step 6: Attaching to Columns:

- Raise the assembled ridge and hip beams up to the connection height with the columns.
- Before mounting hip beams onto columns, be sure to spray silicone lubricant on the tenon (last 4" of column) at the top of each column.
- Mount the first hip beam onto the column and use rubber mallet to help seat hip beam if necessary.
- Make sure hip beams are fully seated.
- Attach the hip beams to columns in the same sequence that the hip beams were attached to the ridge beam.
- After completing the assembly, slowly lower the lifting device to ensure hip beams remain seated on columns.

Note” Ridge beam may not fully seat until the fabric cover has been installed, that is normal!

WARNING: Do not stand under the ridge and hip beams while they are being raised. Wear your hard hat at all times.

Step 7: Securing the Structure:

- Drill the hip beams for bolting to the columns.
- Each hip beam has two (2) 3/8” pilot holes.
- Use a 1/4” drill bit to drill through each pilot hole into the tenon (top of column).
- Drill the bolt holes (through the pilot holes) using the recommended drill bit size.
Warning: Always wear safety glasses and drill away from yourself!
- Apply a thin bead of silicone sealant to the inner face of the bolt head and slide the bolt through the mounting holes.
- Apply another bead of silicone sealant at the exit point.
- Apply washer and nut.
- Hand tighten washer and nut to fit (do not over-tighten).
- Repeat the drilling and bolting procedures for each hip beam on your unit. *Some structures require bolts at the hip and ridge connection.*
- Apply silicone sealant to the hip beam joints and ridge beam joints.
Note: Ridge beam may not fully seat until the fabric cover has been installed. You may need to seal the ridge beam joints again after the fabric cover is fitted. Use spacers to keep fabric off ridge beams while sealant sets.

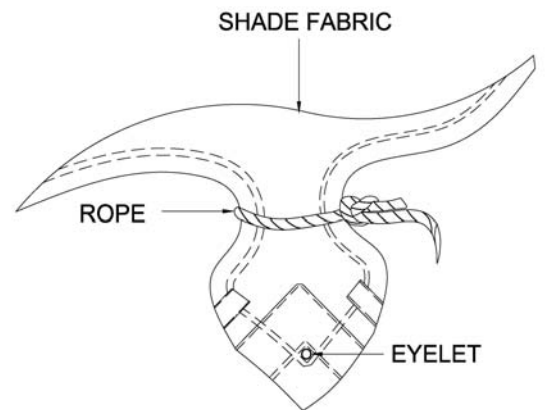


INSTALLING THE COVER

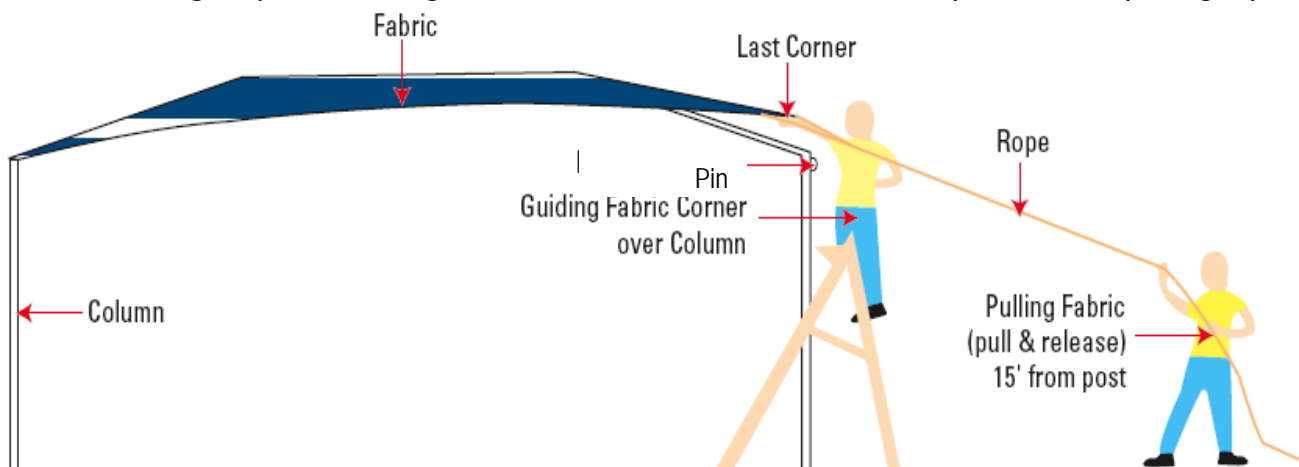
Step 9: Setting Up the Cover:

- Carry the fabric cover to the installation site. **WARNING: Do Not Drag The Fabric Cover On The Ground. It Will Damage The Material.**
- Unfold the fabric cover (label side down) and slip nose rope around fabric corner above reinforcements on the fabric cover corners. See Figure 2.
- Throw one (1) of the pulling ropes over the highest point of the steel frame and carefully pull cover over the frame.
- Gently pull the fabric cover until it is spread over the hips and then temporarily tie off the pull ropes to a secure fixture to hold the fabric cover in place.
- Locate an eyelet diagonally opposite of one of the tied-off pulling ropes. Attach one eyelet of the fabric to the pin at the end of one hip, proceed diagonally to the opposite hip and repeat the process using the pull ropes to gently tension the fabric cover and place fabric eyelet onto the pin.
- Move to an adjacent hip and repeat the previous step.
- The last fabric eyelet requires the most fitting tension (particularly on units with six (6) or more columns). To make this last corner easier, have a person pull the rope from 10 to 15 feet away from the hip with a rocking motion. A second person should be on a ladder and as the fabric is gently stretched, guide the fabric hole over and onto the pin. Remove pulling ropes.

Figure 2: Rope Around Fabric Details



ATTENTION: DO NOT THREAD ROPE THRU EYELET



Hint: Pull tautly then release, pull tautly then release again. Doing this allows the fabric cover to stretch slowly without deforming or breaking the stitching or fabric weave. **Warning!!! Do not pull the cover with one continuous motion otherwise the cover may be damaged.**

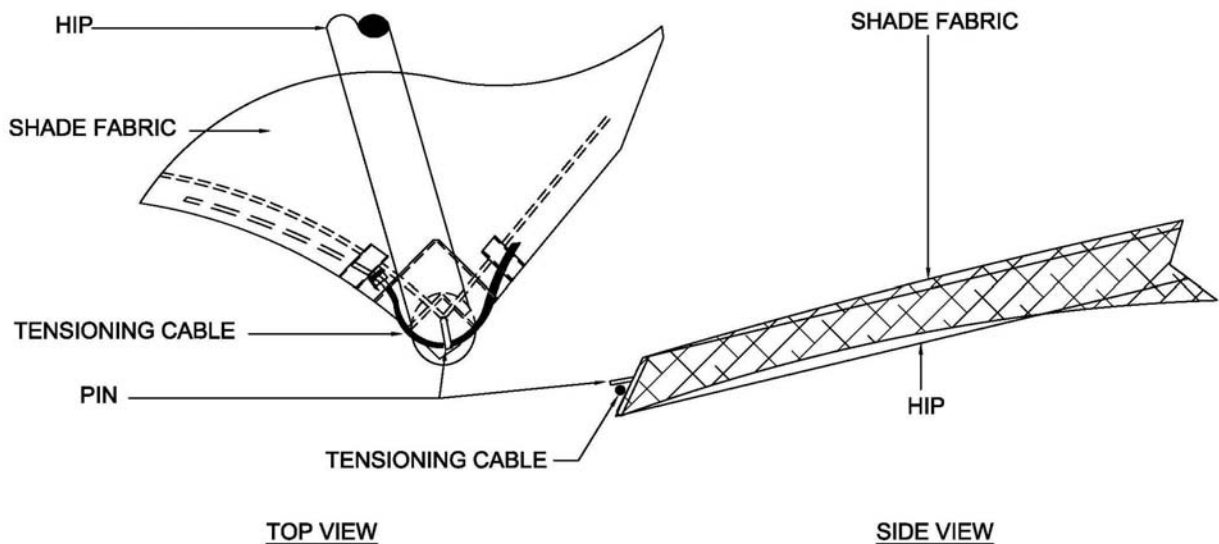
Note: Do not install the fabric cover in temperatures below 50°F or above 85°F. Although it may seem difficult to insert over pins, the cover will fit. Keep in mind that the fabric cover is designed for a snug, tight roof line.

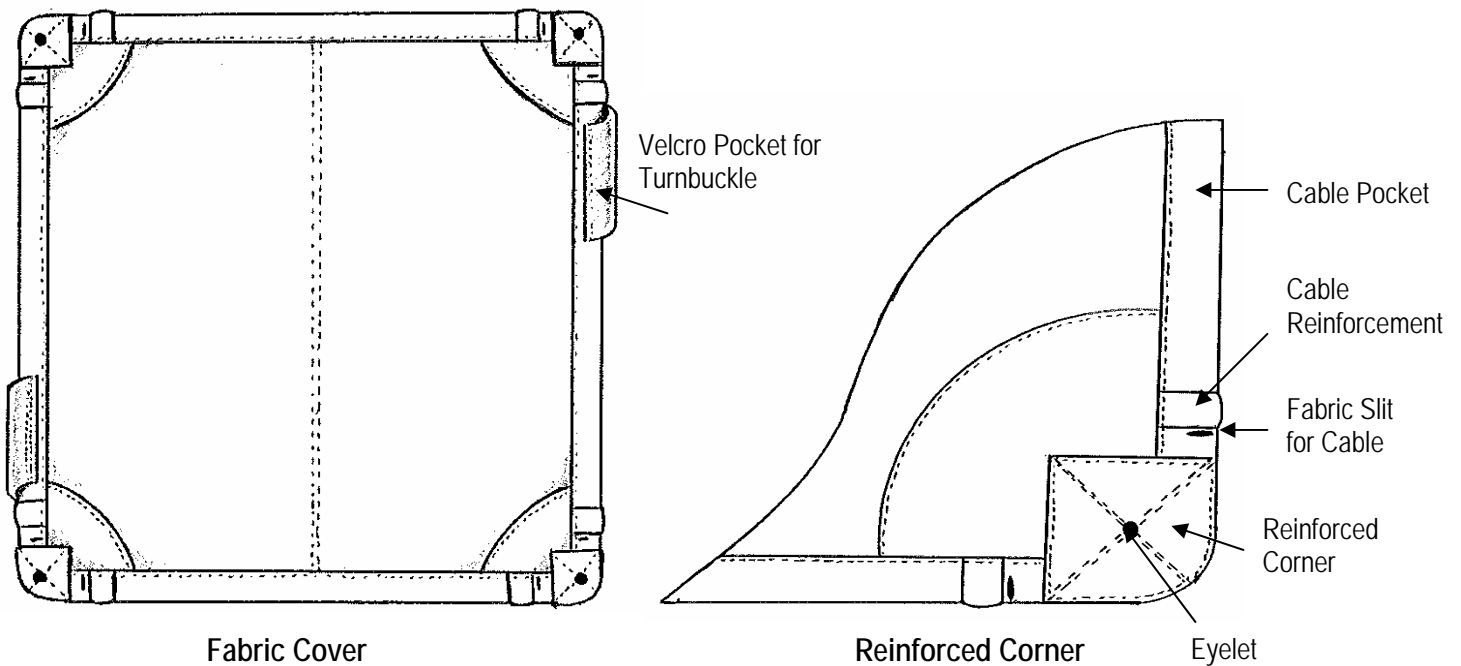
Step 10: Fitting the Tension Cables:

The fabric covers are made with cable sleeves located along the outer perimeter edge. At the end of each cable sleeve is a cable access hole, protected by a fabric loop.

- Unwind the (2) tension cables but *DO NOT remove the tape from the end of the tension cable.*
- Spray each cable sleeve access hole on the cover with a thin film of silicone lubricant. Spray the tension cable end to help feed the cable through the sleeve.
- Thread one end of the cable into a sleeve access hole. This will become your starting point (column).
- Feed the cable along the edge of the cover, threading under the pin. Check the cable feed to ensure that binding during threading does not occur. Feed the tension cable into the next access hole and continue as before, exiting and passing under each pin on each hip.
- Take the second cable and starting at the opposite access hole repeat the process until both cables are threaded through the cover and under the pin. Fabric tension cable threading is complete when the leading cable end returns to the first starting point (column).

Figure 3: Shade Fabric Details

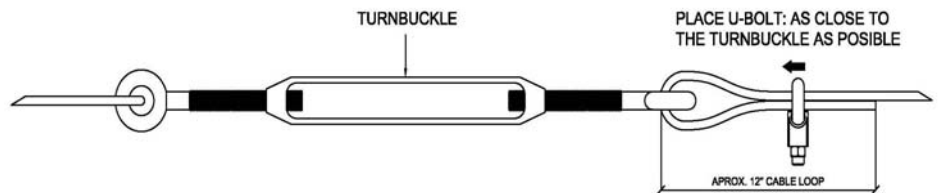




Step 11: Tensioning the Cable with U-Bolts and Turnbuckles:

- Take (1) turnbuckle and extend it to the maximum. Take one end of the tension cable, insert it through one eye of the turnbuckle and form a small loop approximately 12 inches long.
- Attach (1) U-bolt to the cable and tighten closing the formed loop near the turnbuckle eye. Ensure that the U-bolt is tight on the cable so that it will not slip when it is tensioned. See Figure 4.

Figure 4: Shade Fabric & Turnbuckle Details



- Take the end of the other cable and repeat the previous step at the other eye of the turnbuckle.
- Proceed to the opposite side and pull both ends of the cables to take up the slack.
- Lift cable off pin left of the turnbuckle.
- Take the second turnbuckle and extend it to the maximum. Attach the cables to it as previously described. *Pull the cables tight by hand before fastening the last U-bolt. This will ensure that there is no slack in the cables.* Lever cable back under the pin. This ensures proper tension.
- Tighten both turnbuckles gradually to tension the cables around the cover until they are taut. It is important to leave the turnbuckles 1 - 2 inches open for future tensioning.

The correct tension is achieved when the cable at the center of any edge can be deflected downward by approximately 6 inches using finger pressure only.

- Once the correct tension has been reached, tuck the loose ends of the cable inside the fabric sleeve, hiding the turnbuckles and U-bolts.
- If needed, touch up the powder coat using the supplied touch-up paint.
- Remove all the equipment and clean the site before leaving.

Note: Tensioning should be checked and adjusted 3 - 6 months after installation.

WARNING!!! Do not cut the cable ends, otherwise it may not be possible to remove or re-tension the fabric in the future without ordering a replacement cable.