



DESIGN-MANUFACTURING-BUILD SPECIFICATIONS
FRAMED FABRIC CANOPIES (8/30/2022)
CSI MasterFormat 2020 Division 13-31-33



GENERAL QUALITY ASSURANCES

Single-vendor contractual responsibility for all phases of the design-manufacturing-build process (i.e. design, engineering, fabrication, shipping, unloading, foundation construction, structure erection, & warranty servicing).

- Design & Engineering
 - To current, local building code by Professional Structural Engineer licensed in all 50 U.S. states.
 - PE designed & engineered hundreds of commercial, cable-tensioned fabric structures.
 - Wind design speed: 110+ MPH 3-second wind gusts with fabrics attached (or higher per code).
- In-Plant Fabrication
 - 25+ years of experience exclusively manufacturing tensioned fabric shade structures.
 - Approved fabricator for Cities of Los Angeles, CA; Houston, TX; & Clark County, NV.
 - To ensure fit & finish, the same manufacturer fabricates both the structural steel & sewn fabrics.
 - All materials shall be free of sharp edges, corners, & extremely rough surfaces.
 - All materials shall be new and conform to all specifications as herein stated.
- Construction
 - Licensed California contractor with “B” (Gen’l Building) and “C61-D03” (Awnings) license.
 - 19+ years dedicated experience constructing hundreds of cable-tensioned fabric shade structures.
 - Registered with California Department of Industrial Relations.
 - Accredited safety training in rigging, forklift, scissor lift, & boom lift operations.
 - Building permit will always be obtained when required.
 - Proof of Insurance minimums:
 - Workers Compensation: \$1M Each Accident
 - General Liability: \$2M General Aggregate; \$1M Each Occurrence
 - Automotive Liability: \$1M Each Accident
 - Products: \$2M



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1.0 MATERIALS

1.1 FABRIC

- A. High density polyethylene (HDPE) fabric shall be Alnet Extra Block shade cloth or approved equal specifically manufactured for use on tensioned fabric structures.
 - Weighs 9.6 ounces per square yard for durability (ASTM 3776)
 - Fabric strength: Monofilament & tape construction
 - Tensile Strength (ASTM D 5034) Warp: 278 lbf/ft.; Weft: 340 lbf/ft.
 - Tear Strength (ASTM D 2261) Warp: 33lb; Weft: 36 lb
 - Elongation at Break: (ASTM D 4595-87) Warp: 71%; Weft: 74%
 - Burst Strength (ASTM 3787 Ball) 363 lb
 - Burst Strength (ASTM 3786 Mullen) 460 psi
 - UV stabilized for protection
 - UVR% blocked: 93-98% (color dependent) UV Protection Factor: 13-33 (color dependent)
 - Shade Factor (visual light): 79-98% (color dependent)
 - Stentored to maintain shape under tension and to minimize sag
 - Rachel-knitted to prevent unraveling if cut
 - Temperature stability: -13 to 176 degrees F
 - Life Expectancy: 10 years
- B. Alnet Extra Block fire resistance approvals
 - California State Fire Marshal Section 13115 Registration # F-94501
 - NFPA 701-99 (Test Method 2)
 - ASTM E-84

1.2 THREAD

- A. 100% expanded PTFE fiber that is high density; high strength and low shrinkage.
- B. Shall be abrasion resistant and immune to UV radiation
- C. Shall be unaffected by non-hydrocarbon based cleaning agents, acid rain, mildew, rot, chlorine, saltwater, and industrial pollution.
- D. Lockstitch thread: 1200 Denier or equal. Chain stitch thread: 2400 Denier or equal.

1.3 CARBON STRUCTURAL STEEL

- A. All fabricated steel shall conform to approved shop drawings and calculations.
- B. All hollow structural steel shapes shall be cold formed HSS ASTM A-53 grade C unless otherwise noted. Schedule 40 pipe shall be A500 Grade B or C. Plate steel shall conform to ASTM A-36.
- C. All steel is cleaned, degreased, or etched to ensure proper adhesion of Superdurable powder coat in accordance with manufacturer's specifications.
- D. All steel shall 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.

1.4 TENSIONING CABLE & HARDWARE

- A. 7x19 strand galvanized steel cable shall conform to ASTM A-603. Cable diameter determined by calculated engineering load. 1/4"-5/16" diameter for small-to-medium loads ; 3/8" diameter for heavy loads
- B. Cable connectors & shackles shall be stainless steel or hot dipped galvanized.
- C. Machine 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.



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1.5 ANCHOR BOLTS

- A. Anchor bolts set in new concrete shall be A36 threaded rod, ASTM A-325, or A-307.
- B. All anchor bolts shall be hot dipped galvanized.

1.6 FOOTING REINFORCEMENT

- A. All reinforcement shall conform to ASTM A-615 grade 60.
- B. All reinforcing steel shall conform to approved shop drawings and calculations.

2.0 PROCESSES

2.1 WELDING

- A. All shop welds shall comply with the latest edition of the American Welding Society Specifications.
- B. Welding procedures shall comply with the AWS D1.1-AWS Structural Welding Code-Steel.
- C. All welds to be performed by a certified welder.
- D. All welds shall be continuous where length is not given, unless otherwise noted on drawings.
- E. All welds shall develop the full strength of the weaker member.
- F. All welds shall be made using E70xx.035 wire.
- G. Shop connections shall be welded unless noted otherwise.
- H. All fillet welds shall be a minimum of 1/4" unless otherwise noted.
- I. All steel shall be welded shut at terminations to prevent leakage.
- J. Field -welded connections are not acceptable.
- K. Internal weld sleeving is not acceptable.

2.2 CORROSION PROTECTION

- A. All non-galvanized steel shall be sand-blasted and primed prior to Superdurable powder coating using reclaimable blast media in a mixture of GL50 & GL80 Steel Grit.
- B. All non-galvanized steel must be coated with rust inhibiting primer prior to applying Superdurable powder coat. Primer shall be Marine Grade Cardinal Industrial Finishes Corp. E396-GR1372 epoxy Superdurable powder coating semi-gloss smooth zinc rich primer.
- C. Welds shall be primed with rust inhibiting primer prior to applying Superdurable powder coat. The primer shall be Marine Grade Cardinal Industrial Finishes Corp E396-GR1372 epoxy Superdurable 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 Superdurable powder coating.
- E. Powder coat tests shall comply with ASTM specifications D2454-91; D3363-92A; D2794-93; D3359-95B; D522-93A; & B117-95.

2.3 SEWING

- A. On-site sewing of fabric will not be accepted.
- B. All corners shall be reinforced with extra non-tear cloth & strap to distribute the load.
- C. Perimeters containing cables shall be double row lock stitched.

2.4 FOOTING CONSTRUCTION

- A. Footings shall conform to approved engineering specifications.
- B. Reinforcement fabricated & placed to latest ACI manuals ("Detailing" & "Standard Practice").
- C. Concrete work shall conform to latest edition of American Concrete Building Code ACI 318.
- D. Concrete specifications shall conform to approved engineering specifications.
- E. 28 Days Strength F'c = 2500 psi or 3000 psi per approved engineering specifications.
- F. Contractor shall not pour concrete when daily ambient temperature is below 55 degrees F.



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2.5 STRUCTURE ERECTION

- A. Erect structures & hardware in compliance with fabricators' instructions.
- B. Securely fasten all parts to be attached.
- C. Ensure all parts interact freely & smoothly without binding.
- D. Install shade structure in a timely manner & coordinate with the work of other trades.

3.0 WARRANTY

- 3.1 The structural integrity of the steel is warranted for twenty (20) years.
- 3.2 The fabric & sewn composite shade covering has a pro-rated warranty of ten (10) years. Fabrics are warranted for winds & gusts up to a specified design. The fabric warranty is void if winds or gusts exceed such design. Fabrics should be removed before wind conditions exceeding design capacity.
- 3.3 When used in its designed capacity, the structure shall be guaranteed for five (5) years from original installation against:
 - A. Steel frame corroding or deteriorating under normal conditions.
 - B. Inappropriate design of supporting structure.
 - C. Excessive loss of fabric color under normal exposure conditions (i.e. sunlight, rot, & normal atmospheric chemicals).
 - D. Wearing or wind blowouts caused by poor installation.
- 3.4 The contractor reserves the right to repair or replace any item covered by the warranty.
- 3.5 Shade structures located in areas where they may be damaged from other construction shall be protected and or removed from the locations until hazardous conditions cease.

