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**Part 1      General**

**1.1          RELATED REQUIREMENTS**

- .1 Section 01 33 00 – Submittal procedures
- .2 Section 01 45 00 – Quality control
- .3 Section 01 52 00 – Construction facilities.
- .4 Section 01 56 00 – Temporary access and enclosures.
- .5 Section 01 74 21 – Construction/demolition waste management and disposal.

**1.2          REFERENCES**

- .1 American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA).
  - .1 ANSI/BHMA A156.20-2001, Strap and Tee Hinges and Hasps.
- .2 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM D-2261-96(2002), Standard Test Method for Tearing Strength of Fabrics by the Tongue (Single Rip) Procedure (Constant-Rate-of-Extension Tensile Testing Machine).
  - .2 ASTM D3786-01, Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method.
  - .3 ASTM D4533-04, Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
  - .4 ASTM D5034-95(2001), Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test).
  - .5 ASTM D5035-06, Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method).
  - .6 ASTM G154-06 Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials.
- .3 Canadian General Standards Board (CGSB):
  - .1 CAN/CGSB-4.2 Textile tests methods:
    - .1 9.2-M90(R2004), Textile Test Methods Breaking Strength of Fabrics - Grab Method - Constant-Time-to-Break Principle
    - .2 9.4-M91(R2004), Thread Resistance to rupture— Simple thread Method.
    - .3 11.1-94(R2000), Bursting Resistance— Membrane bursting test.
- .4 Canadian Standards Association (CSA International).
  - .1 CSA B35.3-1962, Tapping and Drive Screws (Slotted and Recessed Head, Thread Forming and Thread Cutting Screws and Metallic Drive Screws).
- .5 Factory Mutual (FM Global).
  - .1 FM Approval Standard # 4470-86, Class 1 Roof Covers.
- .6 Underwriter's Laboratories of Canada (ULC).
  - .1 CAN/ULC-S109-03, Flame tests of flame resistant fabrics and films

- .7 Loi sur la santé et la sécurité au travail (CSST).

### **1.3 PREFORMANCE REQUIREMENTS**

- .1 Conceive the scaffolding covering as a system without tension to form an enclosure around the scaffoldings. The enclosure must be sealed during the whole duration of the construction works. Breaches in the canvas must be sealed to prevent penetration of rain, wind and cold air inside for the whole duration of the construction works.
- .2 Temporary openings for material and equipment deliveries are permitted, but must not compromise the scaffolding capacity to support indicated loads and must permit effective heating in winter without compromising quality of works.
- .3 Conceive and dimension the scaffolding covering so that it can resist the following loads:
- .1 Wind Loads 1/10 : 0,30 kPa.
  - .2 Wind Loads 1/50 : 0,41 kPa
  - .3 Wind gust factor :  $C_g = 2,5$ .
  - .4 Snow load 1/50 :  $S_s = 2,4$  kPa.
  - .5 Rain 1/50 :  $S_r = 0,4$  kPa.
- .4 Conceive accessories, supports and fastenings to be compatible with design parameters of the scaffolding structure.

### **1.4 DATA SHEETS AND SHOP DRAWINGS**

- .1 Submit data sheets and shop drawings in conformance to section 01 33 00 – Submittal procedures.
- .2 Indicate dimensions, orientation and installation of covering sections, required additional supports, spacing of eyelets and methods of anchoring.

### **1.5 WORK SAMPLES**

- .1 Submit samples of fastenings of the covering in conformance to section 01 45 00 – Quality Control.

## **Part 2 Products**

### **2.1 COVERING MATERIAL**

- .1 Covering fabric: canvas specially conceived to be installed on scaffoldings.
- .1 High density polyolefin weaved canvas, containing fireproofing and a UV resistant stabilizing agent, free of plasticizing agent and chlorine; color. The color sample must be submitted to Departmental Representative for approval.
  - .2 Canvas coating: coating conceived to resist to tearing, to perforations, to ultraviolet rays and low temperatures and inert to chemical agents and liquids.

- .3 Minimal Properties of the canvas:
  - .1 Weave: 63 x 63 threads/10 cm.
  - .2 Weight: 224 g/m<sup>2</sup>.
  - .3 Thickness of covering: 102 microns on each side.
  - .4 Total thickness of the canvas: 0, 59 mm.
  - .5 Resistance to wrenching (according to ASTM D5034) : 1624 x 1491 N.
  - .6 Resistance to traction (according to ASTM D5035): 2280 x 2104 N.
  - .7 Resistance to tearing of the strap (according to ASTM D2261): 534 x 534 N.
  - .8 Résistance to trapezoidal tearing (according to ASTM D4533) : 401 x 378 N.
  - .9 Resistance to Mullen Bursting (according to ASTM D3786): 4692 kPa.
  - .10 Temperature service range : -50 °C à +70 °C.
  - .11 Resistance to UV rays (according to ASTM G154) : >90 %.
  - .12 Resistance to flame (in conformance to CAN/ULC-S109) : conforming.
  - .13 Opacity of canvas: 100 %.
  - .14 Color of scaffolding covering: white.

## 2.2 ACCESSORIES

- .1 Canvas fastenings:
  - .1 Sealing tape to join rolls and fasten canvas to surface : water repellent polyethylene, with synthetic rubber adhesive on one face, color matching canvas, as recommended by manufacturers of net and canvas.
  - .2 Fastenings for cables: UV resistant, with zipper, 280 mm long, color matching canvas or net, as case may be.
  - .3 Mobile Fastenings: Elastic with stretching of 205 mm to 460 mm.
  - .4 Fastening Cord: 12 mm diameter in rolls of 220 m long.
  - .5 Tarpaulin Fastenings: Secure tarpaulins in the support rail with nylon cables continuously inserted in the refolds sewed or welded on the length of the tarpaulins.
  - .6 Support Materials: appropriate type materials for the application and as recommended by the tarpaulin manufacturer..
  - .7 Provide manufacturer's recommendations for anchoring and fastening materials.
- .2 Plywood fastenings for work platforms of scaffoldings and lightweight steel structures : flat head crews, galvanized, self tapping, n° 12 type A or AB according to CSA B35.3 and Factory Mutual 4470 for corrosion resistance and lifting under wind resistance.
- .3 Hasp with padlock: according to ANSI/BHMA A156.20, category 2, hot-dipped galvanized.
- .4 Spacing wedges: rubber or neoprene, at least 12 mm thick.
- .5 Finishing tape to join loose extremities of non load-bearing covering: water repellent polyethylene, with synthetic rubber adhesive on one face, color matching canvas.

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**Part 3 Execution**

**3.1 INSTALLATION**

- .1 Installation of covering:
  - .1 Do not start installing covering when it is windy.
  - .2 Fasten covering to structure of scaffolding according to frequency indicated on the scaffolding drawings and recommendations of covering manufacturer.
  - .3 At adjacent edges of rolls, overlap the straps and pass the fastenings through the two eyelets.
- .2 Install supports to conform to performance requirements prescribed and to minimize flapping of the covering caused by the wind to the approval of Departmental Representative.
- .3 Cut and shape openings for accesses, services and materials as indicated and in conformance to manufacturer's instructions. Include entrances and exits of a door size easily closeable.
- .4 To prevent tearing, shift rail supports from the structure of the scaffoldings and projections.
- .5 Install the system to maintain the covering adequately tight and in a secure fashion as relating to the design requirements of the structure of the scaffoldings.
- .6 Maintain, move and repair the covering during the works as needed. Carry out immediately required repairs.
- .7 Remove the covering from the site as the project is completed, when asked to do so by the Departmental Representative.

**3.2 MAINTENANCE AND REPAIR OF THE CANVAS**

- .1 The general contractor is responsible for the maintenance and repair of the scaffolding covering.
- .2 If the scaffolding covering tears, the general contractor is responsible to repair it in less than 2 days.
- .3 If the covering requires repairs according to the Departmental Representative, the general contractor is responsible to repair it in less than 2 days.

### **3.3 TEMPORARY AND PARTIAL REMOVAL OF SCAFFOLDING COVERING**

- .1 The Departmental Representative may require from the Contractor to remove partially and temporarily the scaffolding covering in certain zones which will be specified during the execution of the works. The objective of the temporary removal of the covering is to appreciate the colors of certain samples of works under daylight (Mortar colors, window colors, etc...). The contractor must proceed without extra charges. Provide for 12 partial removals and reinstallations of the scaffolding covering of 5mx5m at places which will be determined by the Departmental Representative.

**END OF SECTION**