

SPECIFICATIONS FOR PRE-STRESSED TENSILE MEBRANE FABRIC FOR ROOFING

1.0 GENERAL

The scope of work includes Designing, Providing, fabricating, assembling and erection of Tensile Membrane Fabric structure in desired profile as per approved drawing for roofing structure with MS Tubular Frame work/supporting structure including supporting Steel Frame structure connection systems ,civil foundation work complete in all respect at Amity International School, Sec-43, Gurgaon. The detailed scope of work for the above is as under:

I. Designing:

A concept drawing for the proposed structure is provided with the tender document to guide the contractor to know the type and nature of work to be executed however, the agency has to submit the final design and get it approved by the competent authority along with the Structural Drawing. The contractor shall be required to submit in duplicate the following drawings & information for approval of the competent authority before commissioning the work:

- i) 3 sets of final shed design including plan, section, elevation, isometric/ 3-D rendered view etc. per the requirement.
- ii) 3 sets of structural drawings both for civil foundation/ foundation bolt works and tubular support structure duly vetted by the competent authority. Structure Design of foundation and structural steel members duly done by a competent structure engineer and vetted by competent authority.
- iii) Before execution of the work the agency must get the foundation design and design of structural framework from any structural consultant and get the same vetted from any Government Engineering College or other approved competent agency. The work is to be executed strictly as per the approved foundation design and structural design duly vetted by approved authority. All expenses for the above activity shall be borne by the contractor hence the rate quoted should also include such expenses. competent authority,
- iv) 3 Sets of coloured hard copy and soft copy of shop drawing for fabrication work
- v) Shop drawings for fixing, pattern of roofing fabric
- vi) Revised drawings , if any change/modification in design as per site.
- vii) Any other drawing / information not specifically mentioned above but deemed to be necessary for the job by the contractor.
- viii) Contractor shall provide editable soft copies of design and drawings during detailed engineering.

II. Structural Steel Frame work as per approved and vetted structure design

Supplying, Providing, Fabricating, Assembling, hoisting, erecting and placing in position MS Built-up section/Tubular Structure (MS built-up section:-Rolled section & plates confirming to IS 2062 Grade Yst 350 MPA, Tubular Structure:- made from Steel hollow sections, ISI marked from SAIL / RINL/TATA/JINDAL or Equivalent Grade conforming to IS 1161/4923/1239, Minimum Yst 240 MPA) in the profile shape as per drawings (All Column, base Plate, reef portals, purlins, façade frame, canopy steel structure etc. or all other similar works) with special plate connector, pinion joints, Plates, hollow sections etc. including Preparation of detailed fabrication and erection drawings of Structural steel work from design drawings, transportation from fabrication yard, cutting, threading, machining, leads and lifts up to all heights, tools and plants and Necessary scaffolding etc. required for all operations involved to make structure of Tensile Membrane shade.

The structure has to be provided as per conceptual drawings of Tensile fabric profile, including all arch beam, curved lateral beams and bracings, vertical support columns, nodal joints bases of columns and high tensile bolts of grade not less than 8.8 etc. all complete for trusses and framed work, including cutting, hoisting, fixing in position. The complete structure to be with one coat of PU primer and two coats of Polyurethane (PU) paint on steel work at all locations prepared by sand blasting in required minimum 310 micron DFT (dry film thickness) for each coat as specified in particular specification.

III. **Tensile fabric:**-Providing, fabricating, assembling and erection of pre-stressed Tensile Membrane Fabric structure in desired profile including fabric designing and seaming as per conceptual drawing. The fabric structure should have the properties as given below:

Fabric Specification:

	MATERIALS:	
	Membrane shall be PVC/ PVDF coated with following Characteristics:	
	Yarn:	High Tenacity Polyester 1100/1670 Dtex
		Low Wick Treatment for Anicapillarity
	Surface Treatment	S2PVDF Top Coat/ Back PVDF
	Coated fabric Weight:	Not less than 1050 g/m² - EN ISO 2286-2
	Width	267 cm
	Tensile Strength Warp/ Weft:	NOT less than 420/ 400 daN/ 5cm - EN ISO 1421
	Tear Strength Warp/ Weft:	Not less than 55/ 50 daNN - DIN 53.363
	Adhesion	12 daN/5cm - EN ISO 2411
	Thickness	0.78 mm

Elongation 24H – 10daN/ 5cm (Warp/ Weft)	<1.2%/ <1.2% - EN 15977
Residual Elongation	<0.5%/ <0.5% - EN 15977
Flame Retardancy:	B-s2,d0- EN 13501-1 B1- DIN 4102-1
<u>SOLAR OPTICAL VALUES</u>	
Visible Light Transmission (TV)	4% - EN 410/ 8% - NFP 38511
Visible Light Reflection (RV)	90% - EN 410
Solar Transmission (TS)	6% - EN 410
Solar Reflection (RS)	81% - EN 410
Solar Factor (g)	9.5% - EN 410
Solar Reflectance Index (SRI)	90.3% - ASTM E 1980-01 (Approach II)
UV transmission (T uv)	0% - EN 410
Limited Warranty:	15 years

The membrane should confirm to the manufacturing standard of being pre stretched in both weft and waft direction during manufacturing to perform best dynamic stability in both weft and waft direction with approved installers and Manufacturer for Architectural Roofing. The work is to be executed by authorized agency of the manufacturer.

IV. CIVIL FOUNDATION WORK:

The proposed structure is to be erected in front of Amity International school ,Sec-43, Gurgaon building on the skating ground and passage from Ground to Building Gate. The scope of work includes providing and executing requisite civil/ structural work for the foundation and grouting of foundation bolts as per the design including supply of all material, labours, water and taxes all completes as per direction of Engineer-in-Charge.

V. RATE: The quoted rate of BOQ item no-01 shall include the designing, providing, fabricating, assembling and erection of canopy / shed, including supporting steel frame structure, base plates and foundation bolt/ Chemical Anchor fastener foundation bolts, and shall include cost of all the materials, labour and accessories lifts up to all heights with necessary lifting arrangement, tools, plants and necessary scaffolding etc. required for all operations in all respect and should include all wastage involved in fabrication and erection of tensile membrane canopy like tensile fabric, MS membrane/ end plate, shackles, rigging screws, turnbuckles, swedge, fork, keder rod & MS strands/ cables with stainless steel and terminals, installation with G.I. cables hardware, Aluminium flats, EPDM gasket and required accessories wherever required to complete including support steel frame consisting of MS plates, tubular hollow sections, primer cum intermediate coat and finish PU paint, welding material etc. including wastage, all tools & plants, scaffolding and labour involved in all the operations like shifting of materials, straightening, cutting, fabrication, welding, grinding, machining, threading, assembling, fixing in position/erection, hoisting the structure by crane/ lifting arrangement, bending, transportation etc. and all leads & lifts complete including charges for necessary tests & preparation of shop drawings. The design of foundation is also deemed to be included in this item rate.

The civil foundation work shall be payable as per relevant item of BPS.

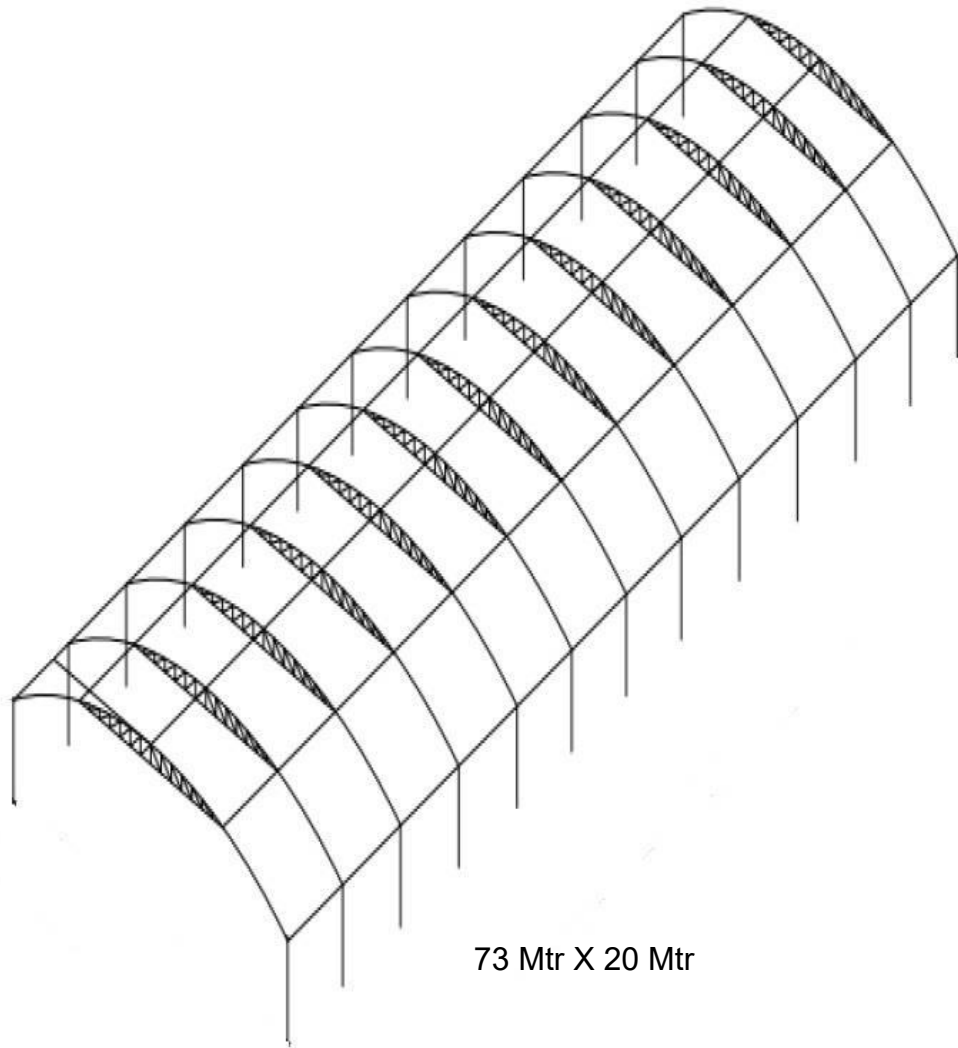
VI. MEASUREMENT:

Roofing system including support structure, roofing support, base plate, foundation bolts etc.
- Length and width to be measured as surface area of canopy and area calculated in square meter correct to two places of decimal for complete roofing system.. Agency has to quote their rate accordingly.

Civil works like excavation, all types of concrete and reinforcement steel shall be measured as per CPWD specification. The rate of shuttering is included in concrete item rate. Agency has to quote their rate accordingly.

VII. WARRANTY

The tensile fabric roofing system shall have warranty for minimum 15 years as per fabric manufacturer. The contractor shall provide original warranty certificate issued by manufacturer. The contractor should submit accreditation letter from applicable tensile fabric manufacturer.



73 Mtr X 20 Mtr



