TENDER SPECIFICATION

FOR SUPPLY OF PP BIAXIAL GEOGRID

(REINFORCEMENT APPLICATION TO UNBOUND SUB BASE / BASE COURSES OF FLEXIBLE PAVEMENT / RAILWAYS SOIL AND TRACK-BED STABILIZATION)

1.0 GENERAL

This work comprises supply of Polypropylene Biaxial GeoGrid (TechGrid PP Biaxial GeoGrid) as Reinforcement of the unbound granular sub base / base courses of Flexible Pavements as well as Railways for Track-Bed Stabilization conforming to the material specifications stated herein, as per the bill of quantity and schedule of supplies enclosed.

2.0 MATERIALS

2.1 General Requirements

The TechGrid PP Biaxial Geogrid should be manufactured from superior grades of polypropylene using a precisely controlled punching and drawing process. Stringent controls on raw material and manufacturing process enhances a high-quality product with consistent geometry, integral junctions and superior mechanical properties.

TechGrid PP's aperture dimensions and rib geometry ensures extremely efficient interlocking with a wide range of soils and granular materials including sands, gravel, crushed stone, murum, granular subbases and bases in roads, and blanket and ballast in railway tracks. The monolithic nodes with very high junction strength enable full load transfer between the ribs in both machine and transverse directions.

TechGrid PP Biaxial Geogrid with its high tensile strength and modulus, high junction strength and aperture rigidity mobilizes high tensile loads at small strains and is extremely efficient in reinforcing soils and granular materials.

The TechGrid PP Biaxial Geogrid shall be resistant to the chemicals and microorganisms normally found in soils and shall be 100% stabilized against short-term exposure to solar radiation

Indigenously manufactured TechGrid PP Biaxial Geogrid should be preferred, considering advantages of shorter delivery periods, no inventory pile-up and rates being not affected by fluctuation of exchange rate of foreign currency.

A plant visit by the Engineer's representative to verify the manufacturer's quality control procedures and witness testing of products is also required prior to the dispatch of material.

2.2 Transportation, Storage and Handling

All rolls shall have a protective cover with a label or tag specifying name of the product, name of the manufacturer, roll number, date of manufacture and roll dimension.

Material shall be protected from mud, dirt, debris, any other harmful substances or mechanical damage during transportation.

Rolls shall be stored in a secured area sufficiently elevated above the ground and adequately covered to protect them from the following: site construction damage, precipitation, prolonged exposure to ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, flames including welding sparks, high temperatures, and any other environmental conditions that may damage the physical property values of the Geogrid.

Any material, which is damaged during transportation, handling or storage and do not meet the minimum requirements of the specifications is liable for rejection by the Engineer.

2.3 Quality Control & testing

The quality management system of the manufacturer shall conform to the requirements of ISO 9001:2015 and In-house Laboratory should be certified with GAI-LAP and ISO/IEC 17025:2005 (NABL)

Manufacturer should have well equipped testing facility and must provide the list of In-house laboratory equipment,

Following method should perform In-house laboratory during witness test…ASTM D 6637, ASTM D 7737, ASTM D 7748, ASTM D 4218, ASTM, ASTM D1238, ASTM D 4355, ENISO 10319, ENISO 12224.

Manufacturer shall issue a test report stating minimum average roll values of material properties, at the time of shipment is made.

CE-certification (BTTG certification) should be required for supply of material. Manufacturer shall submit the proof of supply for the quantity of 100000 Sqmt at least, for projects in India.

Contractor shall furnish proof of all above and it is mandatory.

2.4 Physical and Mechanical Properties

The Mechanical properties of Polypropylene Biaxial GeoGrid (TechGrid PP) shall conform to Table-1 below:

Table-1

Product Code	**Mechanical Properties**							**Geometrical Dimensions Properties**					
	Unit Tension (kN/m)						Junction Strength (kN/m	Rib Width (mm) min.		Rib Thickness (mm) min.		Aperture Size (mm) ±3.0	
	Ultimate		Load @ 2.0%		Load @ 5.0%								
	MD	TD	MD	TD	MD	TD		MD	CD	MD	CD	MD	CD
TechGrid PP2020	20	20	7.5	7.5	15	15	≥18.0	2.1	2.90	1.70	1.0	38	38
TechGrid PP2020L	20	20	7.5	7.5	15	15	≥18.0	4.0	4.8	1.70	1.10	65	65
TechGrid PP3030	30	30	11	11	21.6	21.6	≥28.5	2.50	3.2	2.80	1.50	38	38
TechGrid PP3030L	30	30	11	11	21.6	21.6	≥28.5	4.0	5.0	2.90	1.60	65	65

MD – Machine Direction, TD-Transverse Direction, Min. Average rolls value.

3 INSTALLATION

3.1 Site Preparation

The site shall be prepared by clearing, grubbing, and excavation or filling the area to the design grade. This includes removal of topsoil and vegetation.

3.2 Laying of Geogrid (TechGrid PP)

The TechGrid PP Biaxial Geogrid shall be laid smooth without wrinkles or folds on the prepared subgrade (or within the granular subbase / base course) if shown in the drawings.

Adjacent geogrid rolls shall be overlapped as shown on the drawings. Unless otherwise shown on the drawings or directed by the Engineer, the minimum overlap shall be 300mm. All roll ends shall be overlapped as per same.

On curves, the geogrid may be folded or cut to conform to the curves. The fold or overlap shall be in the direction of construction and held in place by pins, staples, or piles of fill or rock.

Prior to placing subbase / base course material the installed geogrid shall be inspected and approved by the Engineer. Any damages shall be repaired by covering the damaged location with a geogrid patch, which extends an amount equal to the required overlap beyond the damaged area, as directed by the Engineer.

3.3 Placing and Compacting Subbase/base course

The subbase or base shall be placed by end dumping onto the TechGrid PP Biaxial Geogrid from the edge of the geogrid or over previously placed subbase or base aggregate.

Movement of construction equipment directly over the TechGrid PP Biaxial Geogrid shall not be permitted.

Sudden breaking and sharp turning of construction equipment shall be avoided on the first lift of subbase/base over the geogrid.

Any ruts occurring during construction shall be filled with additional subbase or base material, and compacted to the specified density

4 APPROVED MANUFACTURERS

4.1 Approved Manufacturers

(1) Techfab (India) Industries Ltd.
712 Embassy Centre,
Nariman Point, Mumbai – 400021
Phone: 022 – 2287 6224/6225
Fax: 022 – 2287 6218

5 DELIVERY

Delivery of TechGrid PP Biaxial Geogrids shall be done according to the delivery schedule.

6 PAYMENT

6.1 Method of Measurement

TechGrid PP Biaxial Geogrid will be measured by the Square Meter of material received at the owner's / contractor's store.

6.2 Basis of Payment

Payment for the supply of TechGrid PP Biaxial Geogrid shall be made at the contract unit price per Square Meter, which shall be full compensation for the cost of materials, transportation, duties and taxes.

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