F. No. RW/NH-33044/64/2018-S&R(P&B)

GOVERNMENT OF INDIA

MINISTRY OF ROAD TRANSPORT & HIGHWAYS

S&R(P&B) ZONE

Transport Bhawan, 1, Parliament Street, New Delhi-110001

July 16, 2018

To

1. Chief Secretaries of all the State Governments/ UTs
2. Principal Secretaries/ Secretaries of all States/ UTs Public Works Department dealing with National Highways, other centrally sponsored schemes.
3. All Engineers-in-Chief and Chief Engineers of Public Works Department of States/ UTs dealing with National Highways, other centrally sponsored schemes.
4. Director General (Border Roads), Seema Sadak Bhawan, Ring Road, New Delhi-110 010.
5. Chairman, National Highways Authority of India, G-5 & 6, Sector-10, Dwarka, New Delhi-110 075.
6. Managing Director, NHIDCL, PTI Building, New Delhi-110001
7. All ROs and ELOs of the Ministry

Subject: Geo-synthetics and their use in Road Construction.

There are several Guidelines/ Standards published by the Indian Road Congress for use of Geo-synthetics in highway construction. The Ministry's Specifications for Roads and Bridges also contain the Specifications of various Geo-synthetic products for their application in the construction of highways. Even though the Ministry has issued directions/ guidelines on several occasions to promote use of Geo-synthetics in the road construction, yet it has not been receiving encouraging response from the project engineers, designers. Therefore, pro-active steps need to be taken for their incremental adaptation.

2. Geo-synthetics is a general classification for all synthetic materials used in geo-technical engineering applications. It includes geo-texiles, geo-grids, geo-membranes, geo-nets, geo-composites, geo-cell, geo-mats, paving fabric and paving grid etc. The Geo-synthetics are generally used as separation, filtration, drainage, erosion control, reinforcement in pavement and impermeable barriers/ capillary cut off in waterlogged areas.

3. The Geo-synthetics considerably improve the strength of the weak soil strata. The use of Geo-synthetics in pavement layer also reduces the requirement of aggregate especially in the stretches where the soil is weak. As such, use of Geo-synthetics is also beneficial from the point of view of conservation of natural resources and environmental angles.

4. The Indian Roads Congress (IRC) has formulated various Guidelines/ Standards where use of Geo-synthetics for various applications has been prescribed. Some of the IRC Guidelines/ Standards which stipulate use of Geo-synthetics in construction of roads are as follows:

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(i) IRC: SP:48-1998 "Hill Road Manual"

(ii) IRC:SP:59-2002 "Guidelines for use of geotextiles for road pavement and associated works"

(iii) IRC:56:2011 titled "Recommended Practice for Treatment of Embankment and Roadside Slopes for Erosion Control"

(iv) IRC:SP:106-2015 titled "Engineering Guidelines on Landslide Mitigation for Indian Roads"

5. IRC:SP:59, which contains only the use of geo-textiles, has recently been revised/ modified by including various other Geo-synthetics. The revised IRC:SP:59 also contain the design methodology for use of Geo-synthetics as a reinforcement in the pavements.

6. There is adequate capacity in the country for production of various types of Geo-synthetics, which may further be improved to a large extent by promoting more use of Geo-synthetics in various applications of infrastructure. As per the details submitted by the Ministry of Textiles, the details of production of various types of Geo-synthetics in the country are enclosed at **Annexure-I** and list of various types of Geo-synthetics manufacturers are indicated in **Annexure-II.**

7. It has, therefore, been decided by the Competent Authority in the Ministry that all the implementing agencies and State Governments have to use Geo-synthetics in a bigger way as per the existing IRC codes/ guidelines and Ministry's Specification/ Guidelines. All the State Governments are also advised to include various types of Geo-synthetics in their Schedule of Rates so that the estimated cost of the project can be worked out by including Geo-synthetics.

8. The feasibility of using Geo-synthetics in any project should be explored by all the executing agencies/ State Governments at the DPR stage itself and, accordingly, its usage should be included in the Scope of the Work/ Schedule B of the Contract Agreement.

9. All the Project executing agencies/ State Governments are also requested to give their feedback on the use of Geo-synthetics in already implemented/ executed projects and also on the new projects to be taken up in future on a half-yearly basis in the following format:-

Sr. No.	Name of the Project/ NH No. _____	Length of the Project	Quantity of **Geo-systhetics** used in sq.m or other unit	Application of Geo-synthetics	Time of use	Performance

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10. The contents of this Circular may be brought to the notice of all concerned in your organization.

Yours faithfully,

Raj Kumar 16/07/2018

(Raj Kumar)
Assistant Executive Engineer, S&R (P&B)
For Director General (RD) & Special Secretary

Copy to:

1. Secretary, Ministry of Textiles, with reference to discussions held with the Secretary (RT&H) on 02.07.2018. It is requested to direct the manufacturers of Geo-synthetic to contact with various implementing agencies/ State Governments in this regard.
2. All CEs in the Ministry of Road Transport & Highways
3. The Secretary General, Indian Roads Congress
4. Technical circular file of S&R (R) Section
5. NIC-for uploading on Ministry's website under "What's new"

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ANNEXURE- I

Some Production Figures of Geosynthetics

Sl. No	Company Name	Production in Sq. M/Annum					Installed Capacity in Sq. M/Annum
		Geogrid (Uniaxial)	Woven Geo textiles (Polyester /Polypropylene)	Nonwoven Geo textiles	Bi-axial Geogrid	Total	
1.	Texfab India Ltd	71428571	123216000	48000000	6857142.9	249501714	299402057
2.	Strata Geo systems	1000000	-	-	-	1000000	1200000
3.	Maruti Rub Plast	71428571	-	-	-	71428571	85714285
4.	Flextuff	-	144000000	48000000	-	192000000	230400000
5.	Sravya Textiles Plast	-	7200000	-	-	7200000	8640000
6.	Technofab	-	7200000	-	-	7200000	8640000
7.	Hi-Tech Speciaility	-	2400000	-	-	2400000	2880000
8.	Kusumgar Corporates	-	600000	-	-	600000	720000
9.	Jeevan Nonwovens	-	-	12000000	-	12000000	14400000
10	Manas GeoTech	-	-	11520000	-	11520000	13824000
11	Parishudh	-	-	12000000	-	12000000	14400000
12	Maccaferri	-	-	-	3600000	3600000	4320000
		14,38,57,142	**28,46,16,000**	**13,15,20,000**	**1,04,57,143**	**57,04,50,285**	**68,45,40,342**

Source: BTRA, Mumbai

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ANNEXURE – II

List of Geosynthetics Manufacturers

Sr. No.	Product	Manufacturer Name
1	Geo Grid Geo Cell	STRATA Geosystems (India) Pvt Ltd.
2	Woven Non-Woven Geo Grid PVD steel Gabion Geotextile Tubes and Bags Geocomposite	Techfab India
3	Woven Non-Woven Geo Bags GEOFIL B3-444 B4-444 G6-444 Paving Fabrics	Flexituff International Limited
4	Woven Non-Woven GEONET, GEO Composite	SkapsIndustires
5	Geogrid	CTM Technical Textiles Ltd.
6	Non-Woven Composite	TerramGeosynthetics Pvt. Ltd
7	Woven Multifilament, Geomat , PP Gabion, MetalGabion,	Gareware Wall Ropes Ltd
8	High strength woven	Kusumgar Corporation Pvt Ltd.
9	Non-woven	Khator Technical Textiles Pvt. Ltd.
10	Glass Grid/Geogrid	MontexFibre Industries pv ltd
11	Geo bags, Geo tubes, Sand Mattress, Rope Gabion, Geo container	M/S Geo Source
12	Glassfibre Grid, Glassfibre Composite Grid, Glass fibre paving mat	M/S GiridharTechfab Private Limited
13	HDPE Geomembrane	M/S Meghaplast Packaging Pvt Ltd.
14	PP Woven Material	Jai Corp Limited
15	PET NonWoven	Capitol Nonwovens Pvt. Ltd.
16	HDPE, LDPE, LLDPE Geomembrane, Geocomposite/Woven Geotextile/Geonet	Maharshee Geomembrane India Pvt. Ltd.
17	Geotextile, Geogrid, Geostrap, Drainage Composite, Erosion control mat, Rainforced Slope Facia, Gabions	Maccaferri Environmental Solutions
18	Coir Geotextile, Jute Geotextile, Jute nonwoven, Concrecells	K K Enviro Tech Pvt Ltd
19	Woven Geotextile	Techno Fabrics
20	Non-Woven Geo Grid	Fibretex Nonwovens
21	Woven Geotextile	SRAVYA Textiles Limited
22	Non-Woven Geotextile	SVM NonWovens Pvt Ltd.
23	HDPE Geomembrane	TEXEL INDUSTRIES Limited
24	Geotextile	NEO CORP INTERNATIONAL LTD