GOVERNMENT OF INDIA
MINISTRY OF ROAD TRANSPORT & HIGHWAYS

Parivahan Bhavan,
1, Sansad Marg
New Delhi-110001

No. RW/NH-35075/1/2010- S&R (R) Dated: 6th August, 2014

OFFICE MEMORANDUM

Subject: Use of emerging new materials and techniques in construction of National Highways.

In continuation of SR&T (Roads) Zone's OM of even number dated 08.10.2013, the minutes of the meeting of Coordination Committee dated 22nd May, 2014 in respect of newly accredited materials/ techniques such as Instant road repair cold mix compound – INSSTAPATTCH, Anti stripping additive (Zycosoil) & water proofing compounds – Terrasil, Terraprime and IPPL SS –IX - Soil Stabilizer, containing merits and demerits were circulated to all project zones vide SR&T (Roads) Zone letter of even number dated 30th May, 2014 with the request to incorporate and utilize considering their suitability in different States on trial basis. The list of new accredited materials/ techniques, as on date, is as below:

(i) Geocells,
(ii) Warm Mix Asphalt Technology,
(iii) Water Proofing Membranes,
(iv) Non-woven, Woven Geotextiles & Techglass,
(v) Jarofix,
(vi) Thiopave – Asphalt Modifier,
(vii) Infrared Recycling Pothole Repair System,
(viii) Water proofing for Bridge decks and pavements,
(ix) Copper Slag,
(x) Processed Steel Slag Aggregates,
(xi) RoadstaB Technology,
(xii) Evercrete Deep Penetrating Sealer,
(xiii) RBI Grade-81,
(xiv) Tenax 3D Grids and
(xv) Roadcem
(xvi) Instant road repair cold mix compound - INSSTAPATTCH
(xvii) Anti stripping additive (Zycosoil) and water proofing compounds – Terrasil, Terraprime
(xviii) IPPL SS –IX - Soil Stabilizer

2. It is requested that the status of utilization of the new materials/ techniques along with performance feedback, if any, may be provided to SR&T (Roads) Zone for necessary action. The specific use and suitability of the new materials/ techniques is enclosed at Annex-I.

6/8/14
[Gulshan]
Assistant Executive Engineer (R) (S, R&T)
For Director General (Road Development) & SS

Enclosure: Annex-I

Contd. on P-2/-

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To:

1. CE (P-1)/ CE (P-2)/ CE (P-3)/ CE (P-4)/ CE (P-5)/ CE (P-6)/ CE (P-7)/ CE (NHDP-IV)/ CE (NE)/ CE (EAP)/ CE (LWE)
2. Sr. Tech. Director (NIC) – For uploading on Ministry's website under "Roads & Highways → Circulars/ Notices on National Highways" and "What's New".

Copy for kind information to:

1. PPS to DG (Roads)
2. PPS to ADG-I/ PPS to ADG-II/ PPS to ADG-III

Annex-I

List of new materials/ technologies with their use and benefits on National Highways

S. No.	Name of the New material / Technology	General use and Benefits	Suitability
1.	Geocells	StrataWeb® is a 3D cellular confinement system which confines the infill material and improves the load bearing capacity of the base.	Over weak soils – expansive soils, clays and soils with low CBR values
2.	Warm Mix Asphalt Technology	Allows mix production at about 30°C lower temperatures that conventional hot mix, thus imparting performance benefits, constructability advantages and environmental benefits as well.	For bituminous woks.
3.	Water Proofing Membrane	Super Thermolay APP PI/MT Membranes are ideal for a wide range of water proofing applications including roofs, reservoirs, basements, basement roof, sunken slabs, tunnels, terrace garden and car parking. Advantages: (i) Total impermeability (ii) Excellent resistance to ageing and weathering. (iii) Outstanding bond-ability and seam integrity. (iv) Stability at high temperatures	To prevent the intrusion of corrosive substance into the concrete, which will result in deterioration of the structures, leading to spalling of concrete
4 (i).	Woven geo-textiles	Filtration / Separation and Soil Stabilization	It can be used between granular sub-base / base course and the sub-grade.
4 (ii).	Non-Woven geo-textiles	Filtration / Separation, Paving fabrics / Slope protection	It can be used in side drainage for its functions.
4 (iii).	Techglass	Rehabilitation & Preservation of Pavements	Used to reduce the development of reflection cracks.
5.	Jarofix	It is at par with conventional material and also the material is on OMC.	In embankment and sub-grade construction.
6.	Shell Thiopave	In cold and seasonal climates where thermal cracking is an issue, Shell Thiopave allows the use of softer bitumen with improved low temperature properties without sacrificing high temperature properties. In hot climates, where conventional bitumen often do not deliver the high level of stiffness required, Shell Thiopave improves anti-rutting performance while still allowing the effective use of locally available bitumen.	For bituminous woks
7.	Nu-phalt Infrared Recycling Pothole Repair System	(i) It rejuvenates the existing asphalt, thereby, saving on material and making the process eco-friendly. (iii) This system allows the surface to be heated to about 150 to 160 °C without damaging, destroying or burning the existing asphalt.	Suitable for potholes, failed joints, cracked and undulated road surface.

8.	Polyguard NW-75 for Bridge Decks or pavement waterproofing	It can be applied to highways, bridge decks, parking garages etc. prior to overlay, Polyguard under seal provides an impermeable layer protecting seal rebar from moisture and corrosion.	For highways, bridge decks, parking garages
9.	Copper slag	Copper slag is non hazardous and best suited for (i) Land reclamation. (ii) Cement & concrete application. Benefits: (i) Huge saving on natural resources. (ii) Non-toxic and non leachable in nature.	It can be used as sub-base layer after mixing with pond ash. It can also be used in different bituminous mixes.
10.	Processed Steel Slag Aggregate	1. Intended use: As a replacement for natural aggregates in Bitumen roads. 2. Benefits: (i) Better bonding with Bitumen (ii) High abrasion resistance (iii) Improved skid resistance (iv) Cost effective alternative to natural aggregate (v) Safe / Non-hazardous recycled material.	In bituminous roads
11.	RoadstaB Technology	RoadstaB Technology can be used in bases and sub-bases of the road crust.	For soil stabilization.
12.	Evercrete Deep penetrating Sealer	Evercrete Deep Penetrating Sealer (DPS), is water based, ready to use, concrete sealer that strengthens, preserves and enhances life of concrete structures.	It prevents concrete from chlorides ion ingress, corrosion and hence enhances the life of concrete structures.
13.	RBI Grade 81 – Soil Stabilizer	It reduces requirement construction materials like aggregates; borrow pit soil etc. thus reducing the transportation cost. It also reduces Life Cycle Cost.	It can be used in various pavement layers i.e. for sub-grade, sub-base and base layers.
14.	Tenax 3D Grids	To increase the interlocking and bearing capacity of the unbound layers within Indian Highway Road Construction Layers (Sub-grade, GSB, WMM and DBM). Benefits: (1) Reduce the thickness of WMM and DBM thereby reducing the overall cost of the road pavement (2) Improve bearing capacity of soil.	It can be used in Sub-grade, GSB, WMM and DBM layers.
15.	RoadCem	It is used in combination with cement and sometimes fly-ash to form a base for a road with the soil available on site. Benefits: (1) No damage from water (2) High quality road with a low maintenance cycle (3) Faster construction (4) Stabilization of Black Cotton Soil (5) Environmental feasibility	
16.	Instant road repair cold mix compound - INSSTAPATTCH	INSSTAPATTCH can be used for Instant repairs of Potholes and Patches on city roads and Highways. Potholes repaired by INSSTAPATTCH are time saving, cost saving, does not cause any traffic hindrance and is environmental friendly.	For road repairs

17.	Zycosoil Nano Technology Terrasil Terraprime	Reactive anti-strip additive in hot mix bnder and Soil & aggregate waterproofing Sub-grade multilayer waterproofing to eliminate capillary rise Penetrative waterproofed prime coat	Reactive anti-strip additive for asphalt layers Waterproofing of in-situ soil Waterproofing of soil/ stone base of WMM/ WBM
18.	IPPL SS – IX (SoilTech MK-III) Soil Stabilizer	The product is used for stabilizing the base and sub-base layers of roads, Mine Haul Roads, Parking lots, hard stands and Container Depots. Benefit: The product intends to substantially reduce the quantity of aggregates from quarries / borrow pits. Due to the flexible nature of the Polymers, the pavement surface allows a certain amount of flexibility on the road and does not become brittle which dramatically reduces the maintenance of the stabilized roads.	The IPPL SS – IX Polymer stabilizer is water based which can be used extensively for stabilizing the base and sub-base layers of road. The product gains excellent strength from mechanical compaction and is an excellent solution for heavily trafficked roads and hard stands.