Issue No - 16 *October - December 2018* *(For internal circulation only)*

GOVERNMENT OF TAMIL NADU

HIGHWAYS DEPARTMENT

HIGHWAYS NEWSLETTER

PUBLISHED BY
HIGHWAYS RESEARCH STATION
CHENNAI - 600 025.

மாண்புமிகு தமிழ்நாடு முதலமைச்சர் திரு. எடப்பாடி கே. பழனிசாமி அவர்கள் 12.12.2018 அன்று தலைமைச் செயலகத்தில், நெடுஞ்சாலைகள் மற்றும் சிறு துறைமுகங்கள் துறை சார்பில், தூத்துக்குடி, திருநெல்வேலி, திருச்சிராப்பள்ளி மற்றும் விழுப்புரம் ஆகிய மாவட்டங்களில் மேம்படுத்தப்பட்ட 3 சாலைகள், புதிதாக கட்டப்பட்டுள்ள 2 ஆற்றுப்பாலங்கள் மற்றும் இரயில்வே கடவில் கட்டப்பட்டுள்ள சாலை மேம்பாலம் ஆகியவற்றை பொதுமக்கள் பயன்பாட்டிற்காக திறந்து வைத்தார்கள்.

மாண்புமிகு தமிழ்நாடு முதலமைச்சர் திரு. எடப்பாடி கே. பழனிசாமி அவர்கள் 12.12.2018 அன்று தலைமைச் செயலகத்தில், சென்னை – கன்னியாகுமரி தொழிற்தட திட்டத்திற்கான http://www.ckicp.tnhighways.gov.in என்ற வலைதளத்தை துவக்கி வைத்தார்கள்.

(Source: www.tndipr.gov.in/PhotoGallery_DIPR_UI_English_aspx)

KORATTUR LIMITED USE SUBWAY [LC No.4]

Name of work:

"Construction of Limited Use Subway in lieu of existing Level Crossing No.4 at Railway Km 11/32 – 34 near Korattur Railway Station".

Scheme and Authority:

This work was sanctioned under the **Railways Work Programme 2004-05** on cost sharing basis i.e., 50:50 by both State Government and Railways. Accordingly, the Government of Tamil Nadu has accorded administrative Sanction in G.O.Ms.No. 60, Highways (HQ2) Department, Dated 06.03.2008 for Rs.19.97 Crore.

Location and Classification of road:

The proposed LUS is located near Korattur Railway station on "Railway Station Road". This road connects the Korattur locality with the NH 205 (Chennai – Tirutani – Renigunta road) at Km 80/4 on Southern side and joins at Km 14/6 of Inner Ring Road which is a State Highways [SH 2]. The above road is classified as Collectors Street under Urban category and it is being maintained by the Greater Chennai Corporation. It is in plain Terrain.

The above work comes under Ambattur Assembly Constituency and Sriperumbudur Parliamentary Constituency.

Necessity:

The Level Crossing No.4 is located at Railway Km 11/32 – 34 near Korattur Railway station which is situated in the Chennai Central – Arakkonam Railway line. This road connects the Korattur locality with the Inner Ring Road on Northern side and with Padi on Southern side. The Korattur area is a busy residential area with many commercial activities, Hospitals and Educational Institutions etc., situated around this location. The people living in this locality have to use this Level crossing road to go to Offices, Colleges, Schools, Hospitals etc., Due to frequent closure of this LC gate and at times this gate will be closed even for longer duration i.e., up to 30 minutes, which cause lot of hardship to the people using this road. The Train Vehicle Unit (TVU) of this LC is **5,72,142** as per the traffic census conducted on **04/2001** by the Railways.

This work was initially proposed for a Road Under Bridge with a minimum vertical clearance of 5.50m and Right of Way (RoW) of 29.60m. Since this LC road is fully built up and available width on both the approaches is only 12 to 16m and even narrower at some places which requires huge land acquisition. Due to this, the public in the locality have agitated for reduction in the acquisition width. Hence a meeting with the local resident, elected representative and affected persons was conducted on 24.01.2007 and the people strongly protested for proposals with

29.60m RoW and requested for reduction. To examine the views of the public, a Joint Inspection was made by the Chief Engineer (H), Projects, the Chief Engineer (H), Planning, Designs and Investigation and the Director, HRS on 09.08.2008, it was decided to provide a Limited Use Subway of 4.50m vertical clearance instead of a Road Under Bridge to relieve the hardship of the public and also to complete the work in time.

As the TVU is more than 1 lakh, it warrants for replacement of the existing level crossing with a ROB/RUB and this road serves as important connectivity for the residents of this locality and a Limited Use Subway is proposed at this location to avoid traffic congestion during closure of LC gate.

Details of Railway proposal:

The proposed alignment of the LUS crosses the Railway line at a skew angle of 6°. The Railway proposal comprises the Railway portion of length **70.003m (skew)**.

The road level proposed in the Railway span was RL (+) 5.451, providing a vertical clearance of 4.5m below the bottom of the box portion. The existing track is at RL (+) 12.323 (top of rail) as mentioned in the Railway GAD. The overall width of superstructure in the Railway portion is 12.00m with carriageway of 7.5m, kerb of 0.25 m on either side and footpath of 2.00 m on either side.

Details of Railway proposal

Overall Width of LUS in Highway portion	:	9.00m (Carriageway 1 x 7.50m + Kerb 2 x 0.25m + 0.50m wide crash barrier on both sides)
Overall Width of LUS in Railway portion	:	12.00m (Carriageway 1 x 7.50m + Kerb 2 x 0.25m + 2.00m wide footpath on both sides)
Length of the LUS	:	366.784m
Gradient	:	1 in 25 on Padi Side 1 in 25 on Redhills side
Highway portion (Padi side)\	:	Length of Ramp = 132.346m Length of Level Portion = 15.631m
Railway portion	:	Length of Railway Portion = 70.003m
Highway portion (Redhills side)	:	Length of Level Portion = 15.631m Length of Ramp = 133.173m

Structural details:

Type of Founding Strata	:	Black/Silty clay.
Type of Foundation	:	Raft Slab – RCC M35
Retaining Wall	:	RCC M35

Service bridge details:

Pedestals	:	RCC M35
Bearing	:	Elastomeric Bearing of size 400mm x 250mm x 48mm
Super Structure	:	RCC T-Beam cum Deck Slab in RCC M35 on Redhills side RCC Solid Slab in RCC M35 on Padi side.
Expansion joint	:	Strip Seal Expansion Joint of 40mm wide on Redhills side PVC Expansion Joint of 20mm wide on Padi side.
Wearing coat	:	75mm thick RCC M30 with Reinforcement of 8mm dia at 150 c/c on both directions
Reinforcement	:	Fe 500D CRS.

Work status:

This LUS work was entrusted to **M/s.Sakthi Engineering Constructions,** Erode vide agreement no CR.No.06/2017-18 dated 27.12.2017 with an agreement period of 18 months. The site was handed over to the contractor on 05.01.2017. As this work being a Limited Use Subway, the work on approaches in Highway portion can be commenced only on completion of Railway portion. The Railways has completed their box portion during 03/2018 and trough portion only during 12/2018. In Highways portion, till date 30 % of the works are completed and the remaining works in all aspects are estimated to be completed within the agreement period.

Challenges involved:

1. Land acquisition is a major task involved in this project. Many cases were filed in the Hon'ble High Court of Madras, challenging the LA proceeding and all the Writ Petition were disposed.

2. Sewer pumping main of 450mm dia. and water line were present on both approaches and they have to be suitably relocated/shifted for commencing the LUS. The above water main & sewer main were shifted by the CMWSSB.

3. The shifting of HT/LT OH line into HT/LT UG cable is taken up departmentally under the supervision of TANGEDCO, to avoid any delay by the TNEB.

4. As deep excavation is involved in this work (about 8m from GL), necessary precautionary measures are to be provided for protecting the abutting structures and public before commencing the earth work operation. Temporary sheet pile with proper bracing was provided on Red Hills side. On Padi side approach, due to presence of huge structures like Kalyanamandapam, residential buildings and shops which are located very close to the deep excavation and hence it requires more protection before commencing the EW operation and it is proposed to provide contiguous pile arrangements for protecting the soil from sliding and to safeguard the abutting structures.

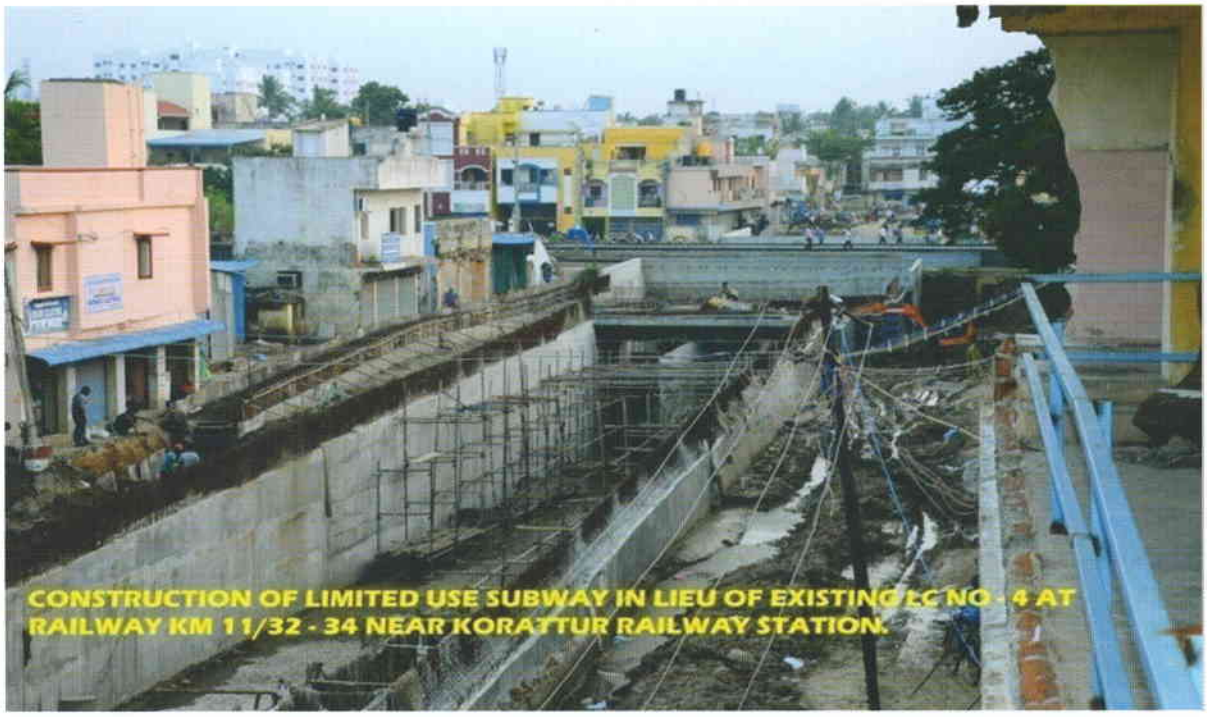
5. As the Ground water table is at shallow depth of 4 feet (1.2 m) below the GL, continuous dewatering arrangements were in place for pumping.

Co-ordination with other departments:

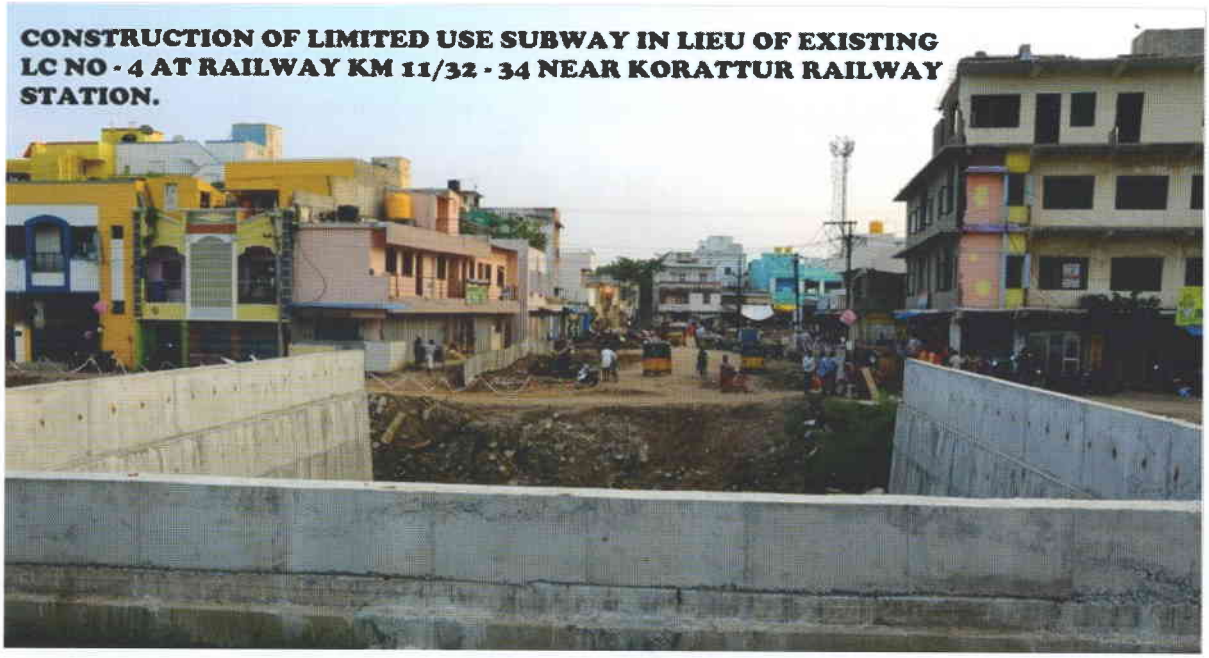
It requires proper follow up/ coordination with some of the Departments to clear the hurdles/ bottlenecks involved in the project. The following departments are involved in the projects;

1. Railways Department
2. Revenue Department for Land Acquisition
3. Chennai Metropolitan Water Supply and Sewerage Board [CMWSSB]
4. Tamil Nadu Electricity Board
5. Greater Chennai Corporation

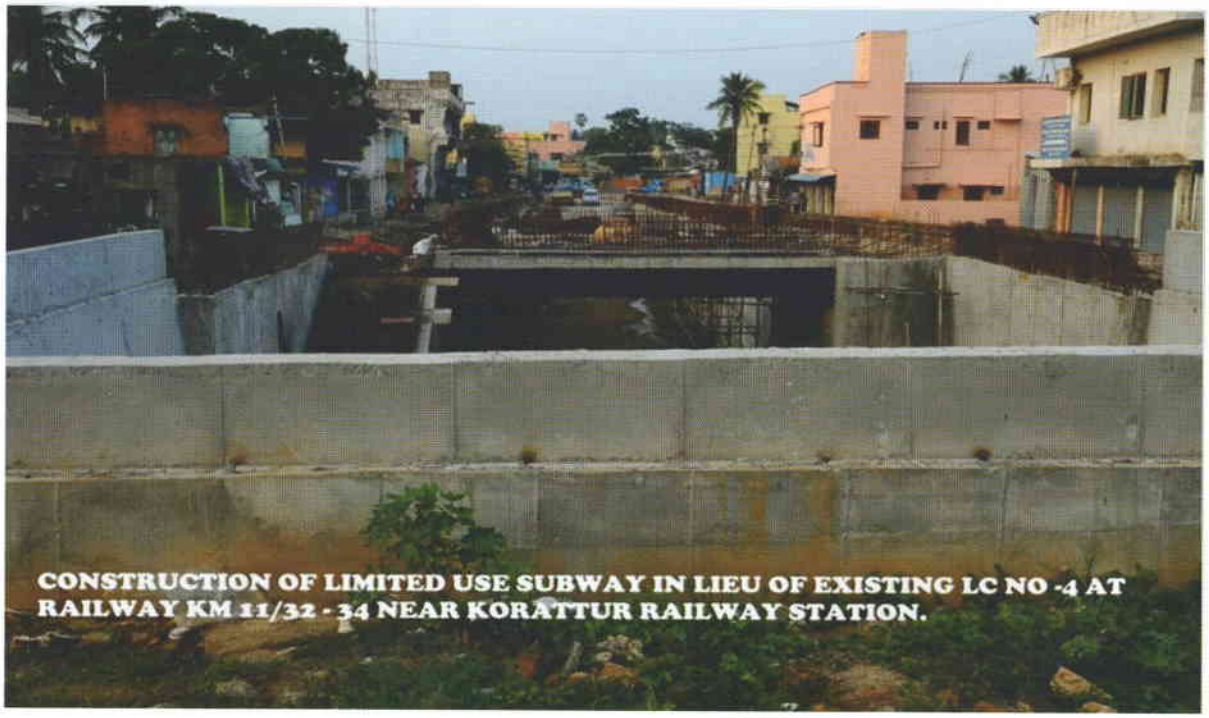
SHORING TO RETAIN SOIL



REDHILLS SIDE APPROACH (WORK IN PROGRESS)



VIEW OF PADI SIDE APPROACH (WORK TO BE STARTED)



VIEW OF REDHILLS SIDE APPROACH

COLLECTION WELL (WORK IN PROGRESS))

(Source: Metro Wing)

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BRIDGE WORKS INAUGURATED BY HON'BLE CHIEF MINISTER OF TAMILNADU ON 12.12.2018

In NABARD and Rural Roads wing, 2 works were inaugurated by the Hon'ble Chief Minister of Tamilnadu on 12.12.2018. The details are given below:

Sl. No.	District / Constituency	Details of Schemes/ Works	Amount (Rs. in Crore)
1	Tirunelveli Tirunelveli	Construction of High level Bridge across Chittar river at km 0/6 of Seethaikurichi – Valveechurastha road **(Seethaikurichi - Valveechurastha)**	4.240
2	Villupuram Villupuram	**RWP-2010-11** Construction of ROB at Km 158/8 of old NH-45 road passing through Villupuram town in lieu of existing LC No.2 in Railway Km 2/2-3 between Villupuram and Venkatesapuram Railway stations in Villupuram – Katpadi line **(Old NH road Villupuram town)**	34.750
		TOTAL (2 Works)	**38.990**

New Sanctions During 2018-19

1. Under State Fund :

The Government have sanctioned for the upgradation of 516 nos. of important Panchayat Union roads / Panchayat Roads to a length of 1538.984 km at a cost of Rs. 882.62 Crore under State Fund for the year 2018-19 vide G.O. (2D) No.85 / Highways & Minor Ports (HF1) Department, dated 27.11.2018. After finalization of tender process, works will be commenced soon.

2. Under NABARD loan assistance :

The Government have sanctioned for the Construction / Reconstruction of 79 Bridge works at a cost of Rs. 210.343 Crore under NABARD loan assistance scheme for the year 2018-19 vide G.O. Ms. No. 184 / Highways & Minor Ports (HW1) Department, dated 14.11.2018. After finalization of tender process, works will be commenced soon.

(Source: N&RR Wing)

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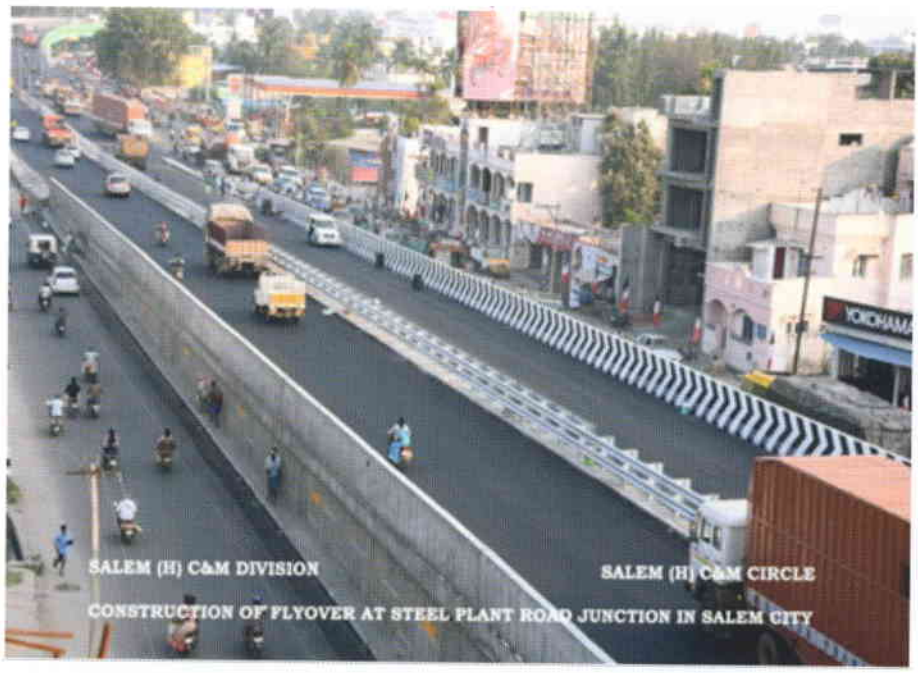
CONSTRUCTION OF FLYOVER AT STEEL PLANT ROAD JUNCTION IN SALEM CITY



Salem Steel plant road junction is a three legged intersection located at Km.198/6 of Bangalore – Namakkal National Highways (NH-44) in Salem City. This road junction is located near by the Steel Plant, Sago factory, Salem railway station and bus stand. Traffic at this junction is heavy and during peak hours, traffic congestion occurs regularly. This results in frequent accidents at this place. Hence, NHAI have identified this intersection as one of the severe accident prone zone among the 25 Black spots where frequent accidents take place in Tamilnadu.

Considering the importance of relieving traffic congestion at this location, as per the instruction of the Hon'ble Puratchi Thalaivi Amma, the Hon'ble Chief Minister has announced that a flyover will be constructed at steel plant road junction. Accordingly, the Government have accorded administrative sanction for Rs.21.97crore vide G.O. Ms. No. 48 / Highways and Minor Ports (HP1) department, dated 04.07.2017 and the same was technically sanctioned for Rs.21.97crore. Necessary NOC has been obtained from National Highways Authority of India (NHAI).

This work was entrusted to M/s RR Infraa Construction, Madurai to a value of Rs.20.68crore at 9.48% above estimate rate on 12.01.2018. The agreement period for the work was 18 months. The bridge is proposed to construct with 8 spans of 25m each. The length of bridge proper is 200m and the overall length of this flyover is 610m including both sides of Approaches (Namakkal side 124m and Bangalore side 286m = 410m (total)). The width of flyover is 17.250m and is designed for four lane traffic. The width of Service road on either side is 7.50m.

Open foundation with symmetric section is adopted. The substructures are RCC Piers, Abutments and Pier caps. The superstructure is **Prestressed concrete I girder** with RCC slab. The PSC girders are monolithically connected with RCC end beam/diaphragm wall, each span having **7 nos. of Prestressed concrete I girders**. Totally 56 numbers of Prestressed concrete I girders are involved in this flyover. The RE wall is RCC panel type, to a length of 410m on both sides. This flyover was opened on 18.11.2018 by the Hon'ble Chief Minister of Tamilnadu for the road users.

This flyover was completed on 18.11.2018 within a period of 11 months (309 days) as against 18 months. This project was completed well in advance with a saving of agreement period of 237 days due to the following reasons.

1. The Casting of Prestressed concrete I girder and RCC RE panel were programmed earlier and parallely executed.
2. All Prestressed concrete I girders were casted and pre stressed before the structure attained sub structure level.
3. Placing of RCC RE wall panels and forming of approaches on both sides were parallely executed along with sub structure and super structure works.
4. All the balance activities of works were completed well in advance.

So, the total project was completed in 11 months only instead of 18 months period which is a remarkable one.

(Source: C&M Wing)

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GEOSYNTHETICS

Geosynthetics are synthetic products used to stabilize terrain. They are generally polymeric products used to solve civil engineering problems.

Product categories: geotextiles, geogrids, geonets, geomembranes, geosynthetic clay liners, geofoam, geocells and geocomposites. The polymeric nature of the products makes them suitable for use in the ground where high levels of durability are required. They can also be used in exposed applications.

Geosynthetics are available in a wide range of forms and materials. These products have a wide range of applications and are currently used in many civil, geotechnical, transportation, hydraulic, and private development applications including roads, airfields, railroads, embankments, retaining structures, reservoirs, canals, dams, erosion control, sediment control, landfill liners, landfill covers, mining, aquaculture and agriculture.

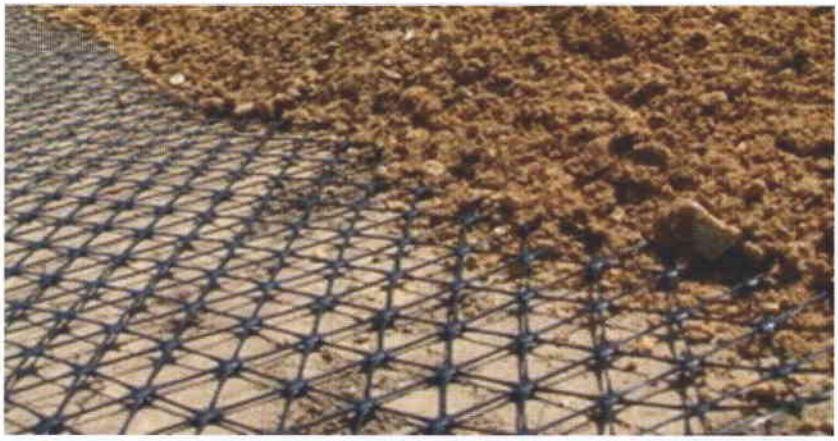
Geotextiles:

Geo textiles form one of the two largest groups of geosynthetics. They are textiles consisting of synthetic fibers rather than natural ones such as cotton, wool, or silk. This makes them less susceptible to bio-degradation. These synthetic fibers are made into flexible, porous fabrics by standard weaving machinery or are matted together in a random non woven manner.

1. Geogrids:

Geogrids are used to prevent sliding on long and steep slopes during installation and use of a landfill capping system

Geogrids represent a rapidly growing segment within geosynthetics. Rather than being a woven, nonwoven or knitted textile fabric, geogrids are polymers formed into a very open, gridlike configuration, i.e., they have large apertures between individual ribs in the transverse and longitudinal directions. Geogrids are (a) either stretched in one, two or three directions for improved physical properties, (b) made on weaving or knitting machinery by standard textile manufacturing methods, or (c) by laser or ultrasonically bonding rods or straps together. There are many specific application areas; however, geogrids function almost exclusively as reinforcement materials.



Geogrid

2. Geonets/Geospacers:

Geonets, and the related *geospacers* by some, constitute another specialized segment within the geosynthetics area. They are formed by a continuous extrusion of parallel sets of polymeric ribs at acute angles to one another. When the ribs are opened, relatively large apertures are formed into a netlike configuration. They consist of nubbed, dimpled or cuspated polymer sheets, three-dimensional networks of stiff polymer fibers in different configurations and small drainage pipes or spacers within geotextiles. Their design function is completely within the drainage area where they are used to convey liquids or gases of all types.

Geonet

3. Geomembranes:

Geomembranes represent the other largest group of geosynthetics. The materials themselves are relatively thin, impervious sheets of polymeric material used primarily for linings and covers of liquids- or solid-storage facilities. This includes all types of landfills, surface impoundments, canals, and other containment facilities. Thus the primary function is always containment as a liquid or vapor barrier or both. The range of applications, however, is great, and in addition to the environmental area, applications are rapidly growing in geotechnical,

transportation, hydraulic, and private development engineering (such as aquaculture, agriculture, heap leach mining, etc.).

Geomembrane

4. Geosynthetic Clay Liners:

Geosynthetic clay liners, or GCLs, are an interesting juxtaposition of polymeric materials and natural soils. They are rolls of factory fabricated thin layers of bentonite clay sandwiched between two geotextiles or bonded to a geomembrane and impermeable to water. Structural integrity of the subsequent composite is obtained by needle-punching, stitching or adhesive bonding. GCLs are used as a composite component beneath a geomembrane or by themselves in geoenvironmental and containment applications as well as in transportation, geotechnical, hydraulic, and many private development applications.

Geosynthetic clay liners

5. Geofoam:

Geofoam is a product created by a polymeric expansion process of polystyrene resulting in a "foam" consisting of many closed, but gas-filled, cells. The skeletal nature of the cell walls is the unexpanded polymeric material. The resulting product is generally in the form of large, but extremely light, blocks which are stacked side-by-side providing lightweight fill in numerous applications.

Geofoam

6. Geocells:

Geocells (also known as Cellular Confinement Systems) are three-dimensional honeycombed cellular structures that form a confinement system when infilled with compacted soil. Extruded from polymeric materials into strips welded together ultrasonically in series, the strips are expanded to form the stiff (and typically textured and perforated) walls of a flexible 3D cellular mattress. Infilled with soil, a new composite entity is created from the cell-soil interactions. The cellular confinement reduces the lateral movement of soil particles, thereby maintaining compaction and forms a stiffened mattress that distributes loads over a wider area. Traditionally used in slope protection and earth retention applications, geocells made from advanced polymers are being increasingly adopted for long-term road and rail load support. Much larger geocells are also made from stiff geotextiles sewn into similar, but larger, unit cells that are used for protection bunkers and walls.

Geocells

7. Geocomposites:

Installation of a geocomposite drain. Geocomposite drains are often used on steep slopes of landfill capping systems.

A geocomposite consists of a combination of geotextiles, geogrids, geonets and/or geomembranes in a factory fabricated unit. Also, any one of these four materials can be combined with another synthetic material (e.g., deformed plastic sheets or steel cables) or even with soil.

Geocomposite

Functions of Geocomposite:

- Separation
- Reinforcement
- Filtration
- Drainage
- Containment

(Source: HRS)

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"Creativity Leads to Thinking, Thinking Provides Knowledge,
Knowledge Makes You Great"

- Dr.A.P.J. Abdul Kalam

GREEN CONCRETE

Concrete which is made from concrete wastes that are eco-friendly are called as **"Green concrete"**. Green Concrete is a term given to a concrete that has had extra steps taken in the mix design and placement to insure a sustainable structure and a long life cycle with a low maintenance surface.

e.g. Energy saving, CO_2 emissions, wastewater.

Today the word green is not just limited to colour, it represents the environment, which is surrounding us.

"Green concrete" is a revolutionary topic in the history of concrete industry. This was first invented in Denmark in the year 1998 by Dr.WG.

Concrete wastes like slag, power plant wastes, recycled concrete, mining and quarrying wastes, waste glass, incinerator residue, red mud, burnt clay, sawdust, combustor ash and foundry sand.

The goal of the **Centre for Green Concrete** is to reduce the environmental impact of concrete. To enable this, new technology is developed. The technology considers all phases of a concrete construction's life cycle, i.e. structural design, specification, manufacturing and maintenance, and it includes all aspects of performance, i.e.

- Mechanical properties (strength, shrinkage, creep, static behaviour etc.)
- Fire resistance (spalling, heat transfer etc.)
- Workmanship (workability, strength development, curing etc.)
- Durability (corrosion protection, frost, new deterioration mechanisms etc.)
- Environmental aspects (CO_2-emission, energy, recycling etc.)

Advantage of Green Concrete:

- Optimized mix designs mean easier handling, better consistency and easier finishing.
- Reduction in shrinkage & creep.
- Green Concrete uses local and recycled materials in concrete.
- The heat of hydration of green concrete is significantly lower than traditional concrete.
- This result in a lower temperature rise in large concrete pours which is a distinct advantage for green concrete.

Suitability of Green Concrete in structures:

Several factors which enhance the suitability of green concrete in structures include:

- Reduce the dead weight of a structure and reduce crane age load; allow handling, lifting flexibility with lighter weight.
- Good thermal and fire resistance, sound insulation than the traditional granite rock.
- Improve damping resistance of building.
- Reduction of the concrete industry's CO_2-emission by 30 %.
- Increased concrete industry's use of waste products by 20%.
- No environmental pollution and sustainable development.
- Green concrete requires less maintenance and repairs.
- Compressive strength behavior of concrete with water cement ratio is more than that of conventional concrete.
- Flexural strength of green concrete is almost equal to that of conventional concrete.

(Source: www.researchgate.net)

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திருக்குறள்

பால் : பொருட்பால் **அதிகாரம் : வினை செயல்வகை**

ஒல்லும்வா யெல்லாம் வினைநன்றே ஒல்லாக்கால்
செல்லும்வாய் நோக்கிச் செயல்.

குறள் எண் : 673

விளக்கம் :

செய்யக்கூடிய இடங்களில் எல்லாம் செயலைச் செய்வது நன்மையே. செய்ய இயலாதபோது, அதை முடிப்பதற்கேற்ற வழிகளை ஆராய்ந்தபின்பே செய்தல் வேண்டும்.

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மாண்புமிகு தமிழ்நாடு முதலமைச்சர் திரு. எடப்பாடி கே. பழனிசாமி அவர்கள் 12.12.2018 அன்று தலைமைச் செயலகத்தில், தமிழ்நாடு அரசுப் பணியாளர் தேர்வாணையம் மூலம் தெரிவு செய்யப்பட்ட நெடுஞ்சாலைத் துறைக்கான 164 உதவிப் பொறியாளர்கள் மற்றும் 222 உதவியாளர்களுக்கு பணி நியமன ஆணைகளை வழங்கிடும் அடையாளமாக 4 உதவி பொறியாளர்கள் மற்றும் 3 உதவியாளர்களுக்கு பணி நியமன ஆணைகளை வழங்கினார்கள்.

மாண்புமிகு தமிழ்நாடு முதலமைச்சர் திரு. எடப்பாடி கே. பழனிசாமி அவர்கள் 12.12.2018 அன்று தலைமைச் செயலகத்தில், சென்னை - கன்னியாகுமரி தொழிற்தட திட்டத்தினை செயல்படுத்திடவும், கண்காணித்திடவும், கள ஆய்வுகளை மேற்கொள்ளும் திட்ட செயலாக்க அதிகாரிகளுக்கு 26 வாகனங்களை வழங்கிடும் அடையாளமாக, 5 அதிகாரிகளுக்கு வாகனங்களுக்கான சாவிகளை வழங்கினார்கள்.

(Source: www.tndipr.gov.in/PhotoGallery_DIPR_UI_English_aspx)

RECENTLY INAUGURATED WORKS OF THE DEPARTMENT

விழுப்புரம் இரயில்வே காட்பாடி பிரிவில் விழுப்புரம் வெங்கடேசபுரம் இரயில்வே நிலையங்களுக்கு இடையில் இரயில்வே கி.மீ. 2/2-3ல் அமைந்துள்ள இரயில்வே கடிவு எண். 2 பதிலாக பழைய தேசிய நெடுஞ்சாலை விழுப்புரம் டவுனில் வெங்கடேசபுரம் சாலை மேம்பாலம் பணி ரூ. 34.75 கோடி.

சீதைக்குறிச்சி - வாள்வீச்சு ரஸ்தா சாலையில் சிற்றாற்றின் குறுக்கே சீதைக்குறிச்சி - வாள்வீச்சு ரஸ்தா உயர் மட்ட பாலம் - ரூ. 4.24 கோடி.

An Appeal. . .

The readers are requested to contribute their articles on recent activities, news of technical significance, and latest innovation in the field of Highway Engineering, to be published in the Newsletter. The authors are requested to send scanned copy / image of pass-port size photograph, with their name & designation. The contribution may please be mailed to *tnhighwaysnewsletter@gmail.com*

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