

VISHWA SAMUDRA ENGINEERING PVT LTD.

An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018

Certified company

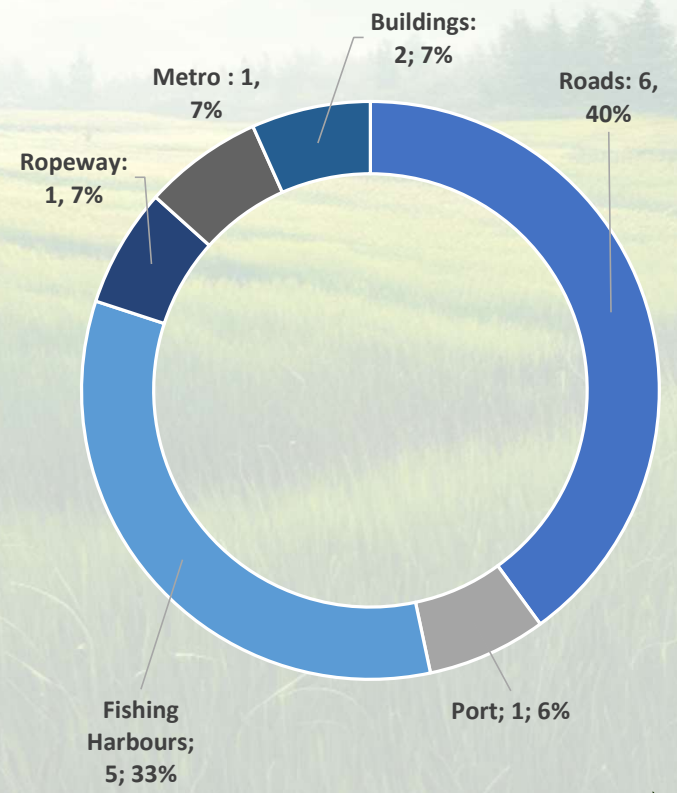
SOIL STABILIZATION /FDR TECHNOLOGY



THE VISHWA SAMUDRA GROUP

**PROJECT MIX AS ON
NOVEMBER 8, 2023**

OUR CORE COMPETENCIES



WITH KEY FOCUS ON SUSTAINABILITY



STABILIZATION TECHNOLOGY



.....An Eco-Friendly Technology



ENCOURAGEMENT FROM INDIAN GOVERNMENT

Ministry of Road Transport and Highways (MoRTH) Recommendations



*MoRTH, under the leadership of Hon'ble Union Minister **Shri. Nitin Jayram Gadkari J.**, regarding the implementation of **Soil Stabilization Technology** in road construction.*

MoRTH recommends to use New/alternate Material and Technology Locally available materials which are suitable and cheaply available in the area in Highway construction for better quality of construction, sustainability and cost and time savings.

MoRTH has taken several initiatives to promote use of state of the art and green technology in construction of National Highways. These include, use for waste materials/by-products/organic materials and processes like recycling, cement treated sub-base/ base, soil stabilization, etc.

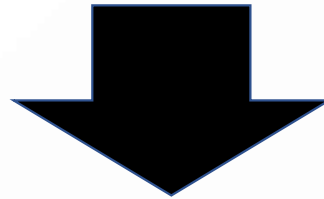
INTRODUCTION

Soil Stabilization

A process in which binders/additives are added to existing soil to improve its engineering properties or to a prepared Base to prepare Cementitious Base.

Full Depth Reclamation (FDR)

A pavement rehabilitation technique in which the full /Part BT layer and a pre-determined portion of the underlying Base materials are blended with the Binder.



In both process, **StabilRoad Additive** is being used in combination with **Cement** to Improve /Rehabilitate New/Existing Base layer.

Brief Properties of **STABILROAD®**

- **StabilRoad®** is a Powder Additive, manufactured by **B&K Industries, Germany** and marketed in **India by Eco Additive India Private Limited.**
- **StabilRoad®** is produced from various harmless **Natural Minerals**, which is added to Cement, for Soil Stabilization /FDR. It enhances binding Properties of Cement by changing the molecular structure of Hydrated Cement Paste.
- During the process of stabilization, the soil/reclaimed in-situ materials, Cement, and StabilRoad are pulverized and compacted, to produce a Strong, Durable, Impermeable and yet flexible Base/Sub-Base Layer.
- The product is already in use for **more than a decade** in several countries like Germany, Estonia, Netherlands, Poland, Austria, Switzerland, Brazil, Russia, South Korea, Spain, France, Norway, Denmark etc. having different climate zones.
- It is in use in India since last Seven Years and has a proven **Track Record of 1000 lane Kms** in Govt/Public/Private Sectors.

Why StabilRoad?



- **Ease of Application & Homogeneous mixing with Cement and Soil.**



- **Fully Mechanized and assured quality controls**

- * Five set of mechanized equipment available



- **Speedy Construction Proven Performances under adverse weather conditions**

- * Execute Approximately 3500 sqm per day



- **Offers higher Unconfined compressive strength, durability and reduced permeability compared to Other Products**

- * Achieved modulus values greater than 5000MPa as per codal requirement and observed enhancement in residual strength



- **Enhancement of pavement life with minimal maintenance costs and reduces the life cycle cost**

- * Near to Nil maintenance in executed projects so far, benefits LCC



- **ECO Friendly & Can be used with all types of local soils with minimum of aggregate**

- Saved 87% of Natural resources

- * Executed projects in different climatic regions in India



IIT Roorkee



IIT BOMBAY



भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad



IIT Madras



APPROVALS & VALIDATIONS

- Indian Roads Congress, New Delhi - Accreditation of New Materials and Techniques – StabilRoad by vide letter No. IRC 24(7)/2018- (ACC -305).
- Central Road Research Institute, New Delhi - Certification and continuous monitoring of selected projects.
- IIT-Chennai - Research on benefits of soil stabilized pavement layers.
- IIT-Roorkee - Monitoring and ongoing research.
- IIT-Lucknow – Approval for toxic free content in StabilRoad®.
- Ongoing research at IIT Hyderabad, IIT Bombay.

ROLE OF STABILROAD ADDITIVE

- On addition of StabilRoad the formation of **shrinkage crack** reduces significantly.
- It helps formation of **C-H-S gel** (Calcium Hydrate Silicate), which aids in densifying the structure and increasing the unconfined compressive strength (UCS) and durability.
- The enhancement in the strength w.r.t time and its sustainability can be ensured with the addition of additive.
- The proportion of weight loss is decreased when an additive is added, indicating that the mixture is extremely resistant to alternating wetting and drying and proving to be more durable.
- Additive attributes the filler effect of fine silica-based stabilizer particles filling the micro and macro pores which acts as impervious material, thus reduce the absorption effect and also making **matrix impermeable**.

1. Unconfined Compressive Strength

- Percentage increase in strength is around **37% and 55% for 7 & 28 days** respectively.

Samples	Cement Content	UCS in Mpa	Cement + Additive	UCS in Mpa
After 7 days of curing				
S1	3%	2.7	4%	3.7
S2	4%	3.4	4%	4.7
After 28 days of curing				
S1	3%	3.1	4%	5.1
S2	4%	4	4%	6.2

Source: Interim report by IIT Roorkee

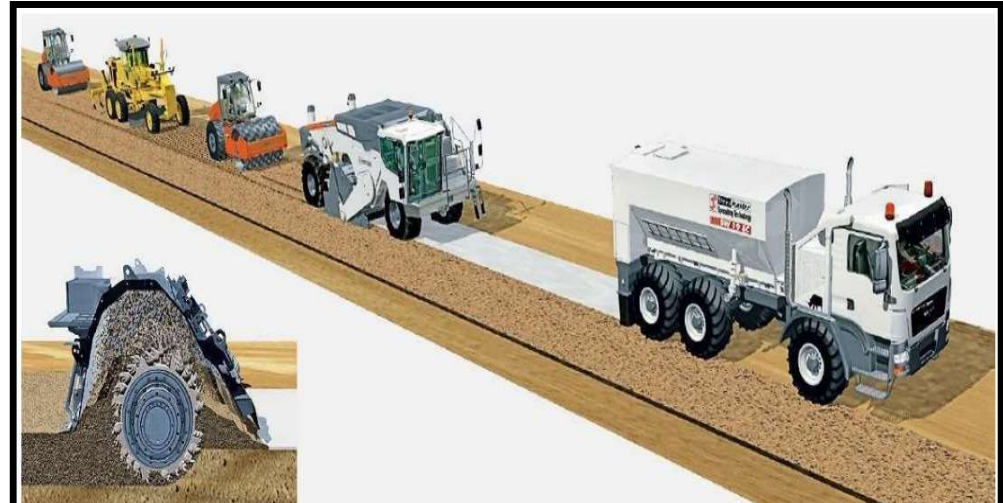
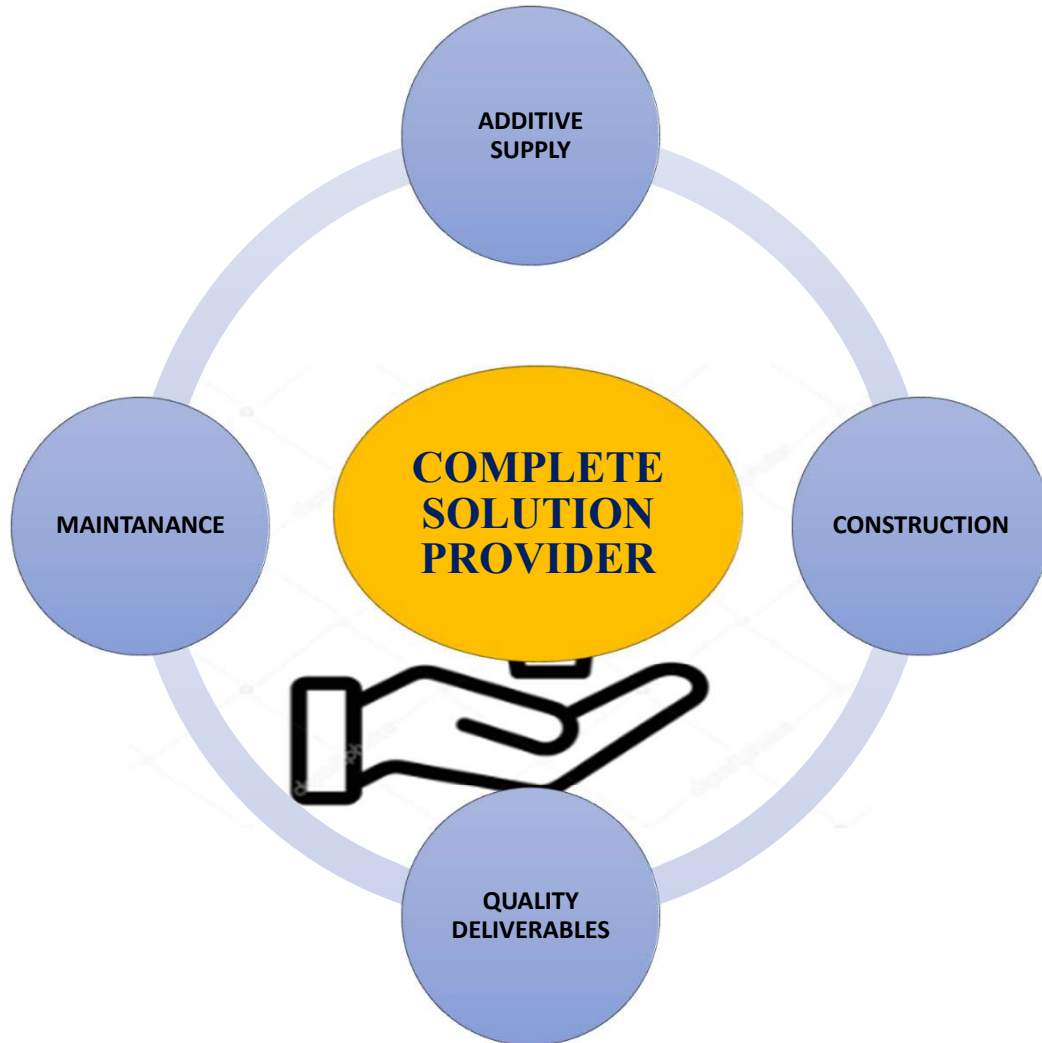
2. Durability

Specimen ID	Initial Weight	Final Weight	Weight Loss (%)	Avg. Weight Loss (%)	Residual Strength (MPa)
Cement 5%	3098	2996	3.29	3.34	4.84
	3140	3035	3.35		
	3133	3023	3.52		
	3140	3040	3.18		
Cement 5% + Additive 4%	3028	2970	1.92	1.14	7.77
	3089	3059	0.97		
	3112	3088	0.76		
	3097	3069	0.89		

Enhancement in residual strength due to additive is **60%**

Source: Laboratory Study at IIT Hyderabad

WHY VISHWA SAMUDRA?



SOME OF THE PROJECTS EXECUTED WITH STABILROAD®

INFRASTRUCTURE

- KRISHNAPATNAM PORT, NELLORE
- KATUPALLI PORT, CHENNAI

AIRPORTS

- GMR INTERNATIONAL AIRPORT, HYDERABAD
- MOPA, INTERNATIONAL AIRPORT, GOA

CITY ROADS

- NTR MARG, HYDERABAD
- ECIL - AS RAO NAGAR ROAD, HYDERABAD

NATIONAL HIGHWAYS

- NH4 - ANDAMAN AND NICOBAR ISLANDS
- NH104/77 - BIHAR

STATE HIGHWAYS

- PURVANCHAL EXPRESSWAY – SERVICE ROADS, UP
- ANAYADI – KOODAL ROAD, KERALA
- LALRU – MALAN ROAD, PUNJAB

RURAL ROADS

- SALIPETA – PORANKI ROAD, VIJAYAWADA, A.P
- AIIB, ANDHRA PRADESH

*A total stabilization of **37,50,000 Sqm (1000 Lane kms – In India)** area has been executed using*

***StabilRoad®** Stabilization.*



A challenge that has been assigned...

OUR CONTRIBUTION TO ENVIRONMENT

- Fresh Soil/Aggregate savings – **13,31,330 CUM**
- **Aggregates saved per lane km – 1463 CUM**
- Total Carbon emission savings – **46,860 tons of CO₂e**
- **Carbon Emission reduction per lane km – 46 tons of CO₂e**

With these approaches of stabilization technology, we can achieve the target of **NET-ZERO carbon emissions by 2070** as per Hon'ble **Prime Minister's vision.**

OUR VALUABLE CLIENTS



PANCHAYAT RAJ & RURAL DEVELOPMENT, GoAP



Public Works Department
(Buildings and Roads) Punjab



KP AGRIWAREHOUSING COMPANY PRIVATE LIMITED



For more details may visit:

www.stabilroad.in
www.vishwasamudra.in






THANK YOU



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