

Sefre Architects + Research Group Infrastructure + Building Design solutions With Modern Technologies

- The lack of modern roads, power networks and other infrastructure hampers a countries development. It has not made economic sense for the private sector to become involved in projects where access to remote areas has hindered trade, tourism, farming and generally created a no go area for business.
- Poor infrastructure makes the high costs of transporting goods a deciding factor once goods are to be traded on the international market.
- Areas with poor subsoil and soft ground are traditionally considered incapable of withstanding structures. Soil management in existing waterways and marshland require stabilizing. Flood damaged roads and structures are in urgent need of repair. The supply, storage and cost of materials have rendered projects commercially unviable.
- A technology is required where the management and amendment of soil can be applied in a safe and cost effective way to various infrastructure projects such as road building, slope stabilization, airport runways, surface solidification, irrigation channels, reservoirs, canal improvement, foundations for structures as well as farm land and surfaces for sport such as golf courses, tennis courts etc.
- **Sefre Architects and Research Group** offers a solution in its **Sand to Stone Technology (STST)** to alleviate the financial pressure and time constraints on government projects and encourage the private sector to have confidence in schemes that would not be viable with existing technologies. **A true Breakthrough In Construction**

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- STST is an inorganic agent which once applied can be used in general soil amendment, formation of a non permeable layer and **high strength solidification on par with cement concrete**.
- **STST effectively transforms soils previously considered unsuitable for roadbed material into stable, solid ground**. This includes silts and clays and soils containing large amounts of organic elements. What is more, the improved soil is eminently suitable for vegetation.
- The extraordinary penetration ability of the STST agent takes the cement hydrates to the deepest soil particle layers. This results in firm setting and solidification to a uniform strength.
- The solidified soil is capable of withstanding vastly larger repetitive loading compared with that formed with conventional methods, and it also displays exceptional stability over time.
- **This can be formed with a smaller quantity of cement (less than 200 kg/m³)** has continuous porous structure, giving it superior water permeability and elasticity.
- As the treated soil is used in the construction there is no need to replace soil or haul in aggregate **vastly reducing material, transport and labour costs**.
- STST hardens over time; it provides improved soil that is subject to less weathering and has long-term stability. **It also hardens in water**, as it is not eroded by acids or alkalis.
- STST protects the natural environment because it is composed mainly of **pollution-free inorganic elements**. It also hardens without changing the natural color of soils.
- Compared with the conventional soil-cement method, compressive, bending and **tensile strength properties are approximately 30% greater**.
- STST is transported and stored in a condensed powder form, making it easy to handle and reducing overhead. (It is applied in a water solution at the site.)
- STST can also be used in the remediation of contaminated sites because it renders pollutants in the soil insoluble.

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- Construction costs are reduced by minimizing the use of specialist equipment, reduction in construction time due to a shorter curing time and the ease of application.
- At Sefre Architects + Research Group, we design and project manage the construction from the beginning to the hand over of the keys to the client. We reduce the cost of construction for the client and will go to tender for the client for the Sub-Contractors under the Royal Institute of British Architects guidelines for stage tendering.
- By STST technology we are able to eliminate the role of the main contractor, thus saving the client a great deal of money.

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Flow Chart of STST Soft soil amendment Process



1 Soil test
A soil test is conducted according to your country's national standards.



2 Mix design
The mix is designed on the basis of the test results



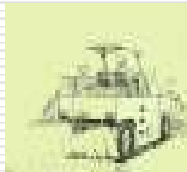
4 Spreading of cement
Cement is spread over the site according to the mix design using a small bulldozer or the like



3 Site preparation
The site is excavated to the design level.

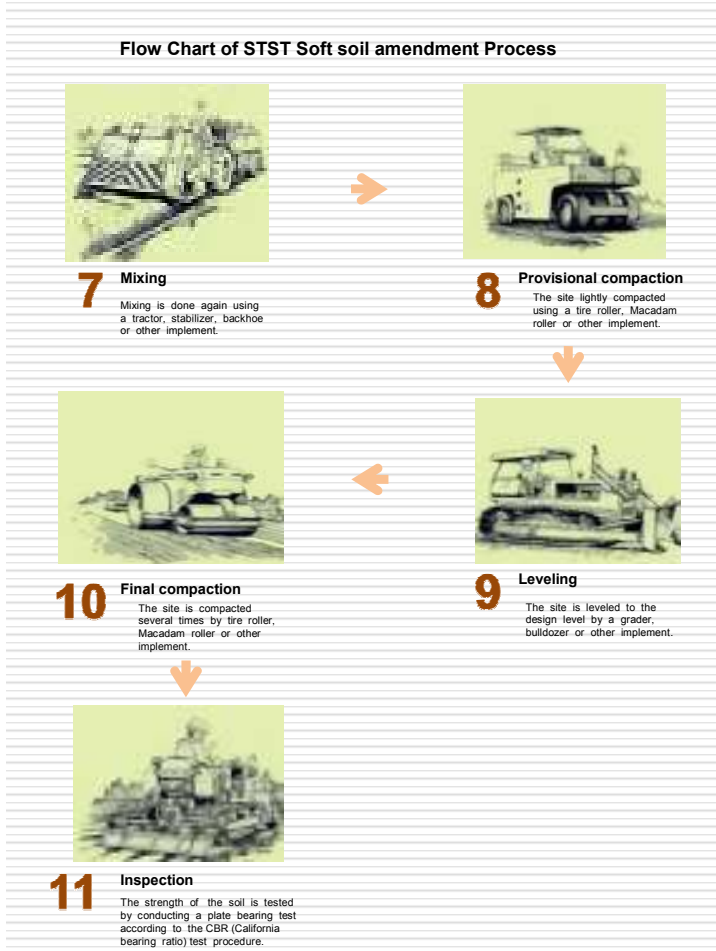


5 Mixing of cement
The cement is mixed into the soil using a tractor, stabilizer, backhoe or other similar implement.



6 Spreading of STST
STST powder is dissolved in water and spread on the site.

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STST (Sand To Stone Technology) A Break through in roads and building Construction

Developed for countries with vast Infrastructure programmes

Sefre Architects + Research Group (SA+RG) would invite Governments with major infrastructure and development programmes to a JV partnership where SA+RG provide the technologies and design services and the Government provides funds for the JV. Shares of such JV partnership can be placed in the stock markets with first option for the Government to recover their investment.

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SA+RG proposal has 3 winning sides for the Government,

Firstly they build their projects faster hence developing their communities faster, at an unbelievable speed.

Secondly they save huge costs, therefore good for the government budget, diverting the savings from construction costs to social needs of people.

Thirdly they recover all investment they make plus interest, which makes the JV partnership self funding.

Sefre Architects +Research group (SA+RG)

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