

EMPOWERING GROWTH WITH INNOVATIVE SOIL STABILIZATION TECHNOLOGIES

We provide unique solutions for constructing flexible pavements that deliver both reduced construction costs and long-term value.



CONSTRUCK
SYSTEMS &
TECHNOLOGY

Slope Stabilization Systems | Value Engineering | Geotechnical Consultancy | Supply Chain





About Us

ConstruckRoads® is an international company that provides unique solutions for constructing flexible pavements, delivering both reduced construction costs and long-term value. Our cost-effective technologies are non-toxic, environmentally safe and engineered to permanently bond soil or pavement particles leading to improved compressive strength, high tensile resilience and water impermeability.

ConstruckRoads® strives to be an industry leader. Research and development is a fundamental part of our business model, supported by robust partnerships with universities, laboratories and research institutes. We work closely with a network of highly skilled and qualified science experts and chemical and civil engineers. This enables us to develop forward-looking technologies and applications that are meticulously tested.

We provide a proven method for durable soil stabilization for all types of pavements as a replacement for expensive and scarce natural aggregates. We service the construction, mining, renewable energy, transportation, agriculture, forestry, military and oil and gas industries as well as public works entities and municipalities.

We provide unique solutions for constructing flexible pavements, delivering both reduced construction costs and long-term value.

Reduces overall construction costs by an average of 20 percent.

20%

Reduces stabilization costs by up to 50 percent.

50%

Reduces capping layer thickness by more than 50 percent.

50%

Achieves savings of up to 50 percent in CO2 emissions.

50%

Reduces construction time by as much as 75 percent.

75%

Our technology has proven effective in providing long term results in terms of strength, durability, environmental awareness and cost





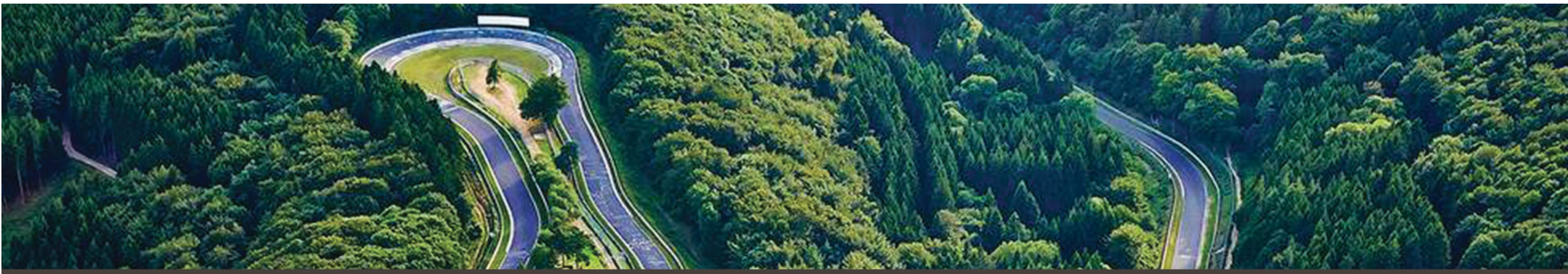
Environmental Commitment

Contrary to most environmentally beneficial products and services, ConstruckRoads® promotes significant short term and long term savings in both cost and time expenditures. Road construction and other infrastructure companies can maximize productivity and profitability on day one. Our approach to soil stabilization provides innovative solutions that substantially diminish the environmental impact by reducing, recycling and reclaiming materials used in our operations.

Environmental Benefits

- /// Conservation of natural resources;
- /// Preservation of the landscape (rivers, mountains, lakes);
- /// Reduced production and disposal of excess material, such as soil, sand and aggregate;
- /// Reduced CO2 emissions and noise as a consequence of limited hauling of material;
- /// Biodegradable, non-toxic and safe for animals, marine life and humans;

Developed and proven through many years of field testing, we provide additional advantages to the environment by being non-toxic, non-corrosive and totally biodegradable.



Our Services

ConstruckRoads® provides support services that are an integral part of every project. Our team of design and application engineers will work with you from the outset to ensure that our products, systems and designs are tailored to your exact requirements, to help you achieve your project objectives on time and to budget.

Site Assessment

Our engineers will assess the soil conditions and perform laboratory testing of the in-situ soil. This will enable us to determine options for appropriate treatments, based on our findings.

Design Support

Our engineers will suggest the best design and construction drawings for optimal application of our technology and satisfying your project objectives.

On-Site Engineering Support

Our engineers support your project from start to finish in order to achieve optimal results. Our technology is applied with the on-site presence of a dedicated engineer throughout all phases of construction.

We provide the highest level of technical assistance in the field to support the use of our technology.

Our Technology

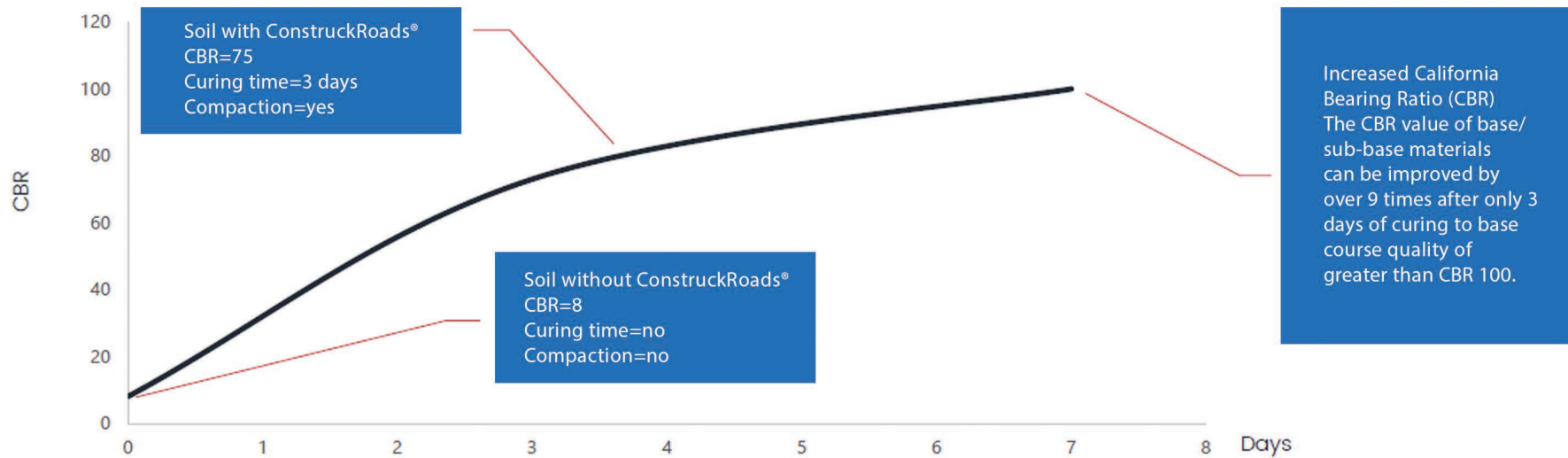
ConstruckRoads® develops and manufactures a proprietary chemical organic formula using a complex, concentrated blend of highly purified proteins that are specifically engineered to accelerate the cohesive bonding of soil particles.

Unlike inorganic or petroleum based products which temporarily hold soil materials together, our technology works by drawing soil particles closer together making it easier for air and water molecules to be expelled during the compaction process. This process results in the formation of a permanent base which resists water penetration, weathering and wear. Typically other soil stabilization technologies require additional binding agents, such as cement or lime in order to trigger a chemical reaction.

Our technology has been tested and proven successful both in the field and in laboratories. In the field our results have proven effective in providing long term results in terms of strength, durability and cost.

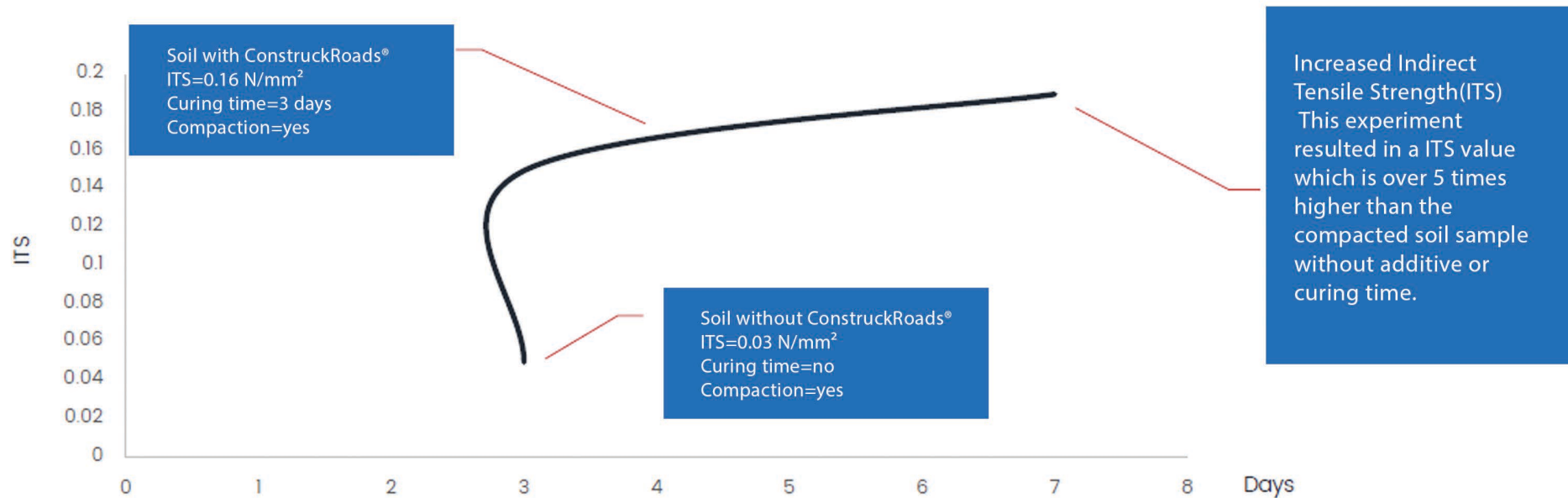
Our highly effective technology improves the structural performance of any pavement.





*Above results were achieved in laboratory trials (AASHTO A7-6). Results in the field will vary depending on soil type and proper application process.

Our technology increases load bearing capacity by transforming previously inferior soils into usable and stable components.



*Above results were achieved in laboratory trials (AASHTO A7-6). Results in the field will vary depending on soil type and proper application process.

Our technology alters the structure of soils permanently to form a strong and durable foundation.

Reducing Constructio Time

Constructing roads using in-situ material requires over 75% less time than conventional methods. With our technology it is possible to stabilize 1 kilometer of road in 1 day.

20+ Days

Conventional Road Construction
1 Kilometer of Road

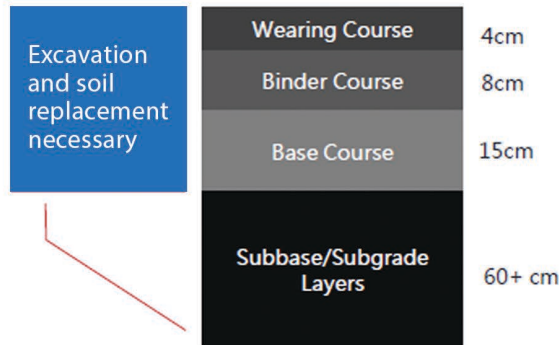
1 Day

ConstruckRoads® Road Construction
1 Kilometer of Road

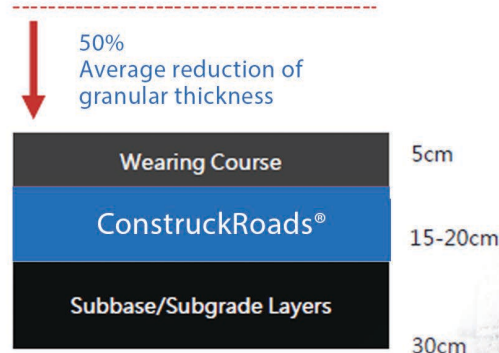
Optimizing Construction Process

ConstruckRoads® eliminates or reduces excavation, material hauling, and additional aggregates. This can reduce road pavement thickness by an average of 50%.

Typical Road Cross Section



ConstruckRoads® Cross Section



ConstruckRoads® reduces risk and maximizes productivity and profitability.



FULL Depth RECLAMATION



WHAT IS FULL DEPTH RECLAMATION (FDR) AND STABILIZATION?

Full Depth Reclamation (FDR) and Stabilization is a pavement rehabilitation process that pulverizes and reuses the existing pavement and subbase materials mixed with our soil stabilization technology to produce a structurally strong pavement base course.

Full Depth Reclamation (FDR) is a process best suited for failed roadways where heavy pot holes, cracking and rutting exist. Even the most severe pavement problems can be solved using Full Depth Reclamation. These roadways deteriorate to a point that conventional maintenance and/or repair and overlay practices become expensive and do not perform well due to the condition of the underlying structure.

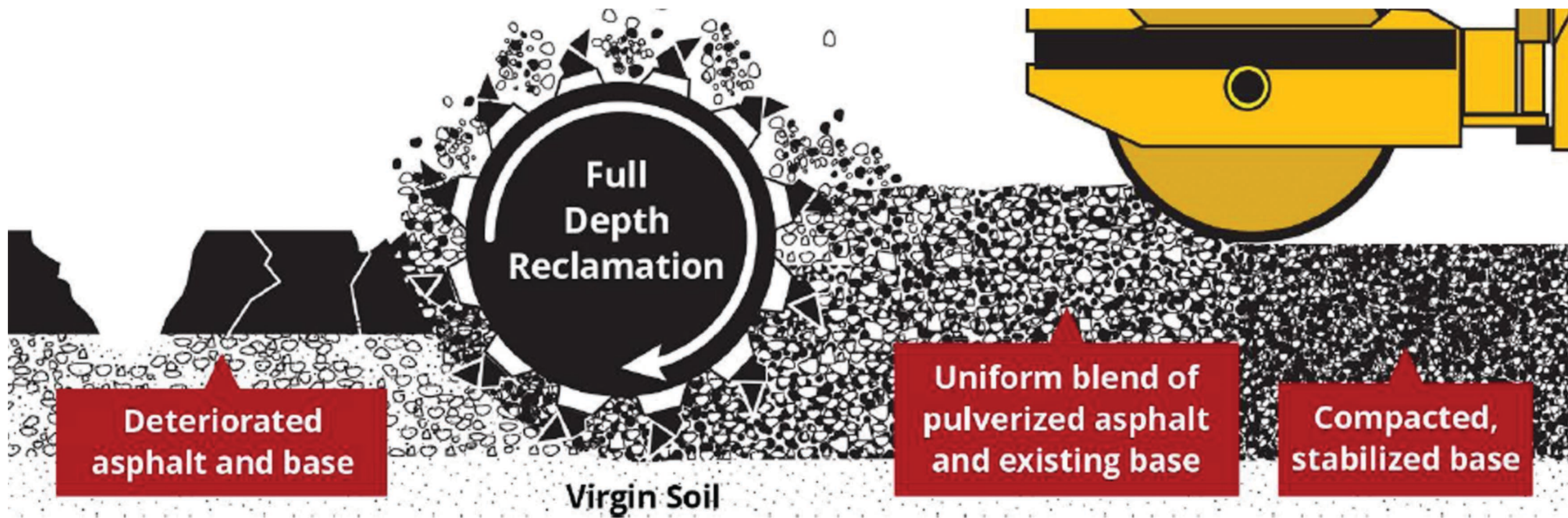
Maintaining a balance between performance and cost, while at the same time satisfying environmental regulations, has become a challenge for building material manufacturers, design engineers, and contractors.

WHAT ARE THE BENEFITS OF IMPLEMENTING A FULL DEPTH RECLAMATION (FDR) AND STABILIZATION APPROACH WITH THE ADDITION OF ConstruckRoads®?

- ❖ Rebuilds a new and stronger foundation
- ❖ Reduces deflections due to traffic loads, resulting in lower strains in an asphalt surface
- ❖ Reduces moisture intrusion significantly
- ❖ Reduces subgrade failures, potholes, surface cracks and road roughness
- ❖ Highly cost effective by recycling existing materials that have already been paid for
- ❖ Increased durability (compared to granular base materials)
- ❖ Eliminates excavation and replacement with new materials expediting construction time
- ❖ Recycles 100% of existing materials

Full-depth reclamation with ConstruckRoads® increases the structural capacity of the new roadway by providing a stronger and more consistent subbase or base layer.





CONSTRUCTION PROCESS



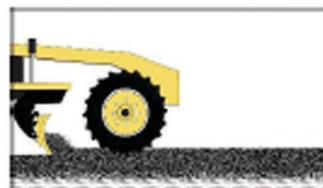
Uniformly spread additional material on the surface of existing asphalt.



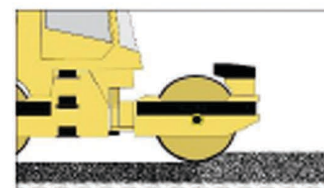
Pulverize additional material with existing asphalt and base/subbase layers.



Blend additional material with existing asphalt and base/subbase layers with ConstruckRoads® additive.



Compact with vibratory sheep foot roller and grade and reshape road as needed.



Compact with vibratory flat drum roller.



Allow new base/subbase to cure and apply prime coat and asphalt or concrete surface.



Machinery Requirements

Full-depth reclamation with ConstructRoads® increases the structural capacity of the new roadway by providing a stronger and more consistent subbase or base layer.



2 (two) Road Reclaimers: Caterpillar RM300/350/500 or similar.



2 (two) Motor graders with rear scarifiers.



2 (two) Compactors with vibratory smooth roller drum.
15-20 Tons



2 (two) Compactors with vibratory padfoot drum.
15-20Tons



2 (two) Water trucks with rear spray pump.
Minimum 12,000 Liters

ConstruckRoads® can be adopted to a broad range of proven applications.

Construction

By treating in-situ material, we transform previously inferior soils into usable and stable components for use in major roads, highways and foundations. Asphalt or cement surfacing can then be laid directly on top of the stabilized material.

Military

ConstruckRoads® provides military installations with rapid solutions for the construction and rehabilitation of landing pads, runways, and access roads while suppressing the damaging effects of dust.

Airports

ConstruckRoads® can strengthen weak subgrades and build a stabilized layer for taxiways and runways, absorbing the intense loads from aircraft movements.

Railway

ConstruckRoads® can strengthen weak subgrades in order to support the track structure above it. We provide solutions to reduce or eliminate numerous problems with track substructure failures that are attributed to a poorly engineered subgrade.

Oil and Gas

Oil and gas sites require access road stabilization to reinforce unbound subsurface layers. The newly stabilized layer increases the bearing capacity of the site. The end result is an access road or worksite that can handle heavier equipment, and costs less time and money to install.

Mining

The mining industry depends on cost effective and efficient solutions for constructing access and hauling roads. A stabilized road translates to substantial savings and reduced vehicle maintenance costs.

Renewable Energy

Stabilized foundations increase the load bearing capacity of working platforms for heavy-duty generators, cranes and piling rigs. Dust control and road stabilization solutions are employed to create instant access roads.

Forestry

Forestry roads easily deteriorate and produce harmful dust. Stabilizing these roads will increase the bearing capacity, reduce on-going maintenance and increase productivity.



Benefits at a Glance

Time Efficient

- Simplifies the building process and reduces overall construction time by at least 75%

Environmentally Friendly

- Reduces CO2 emissions
- Non-hazardous, non-toxic, biodegradable, and environmentally safe

Cost Effective

- Reduces stabilization costs by up to 50%
- Reduces overall construction costs by an average of 30%
- Reduces or eliminates the need for importing of aggregates
- Reduces or eliminates the need for excavation and export of waste material to landfills
- Reducing pavement thickness by an average of 50% with no performance loss
- Reduces need for maintenance and overall maintenance costs

Performance Driven

- Strengthens weak subgrades and aggregate base
- Promotes a waterproof bonding process which protects soil from moisture penetration for longer lasting results
- Reduces soil particles, air, and water with less compaction effort
- Alters the structure of soils permanently rather than acting as a temporary glue
- Enables surfacing material to be applied directly on top of stabilized soil or without surface course on rural roads
- Enhances durability, resisting rutting, buckling, and potholes
- Repels water, minimizing the effects of freeze/thaw cycles
- Locks in soil particles to aid in dust control

APPENDIX



PROJECT SAMPLE: ALBANIA 2018

Client: Municipality

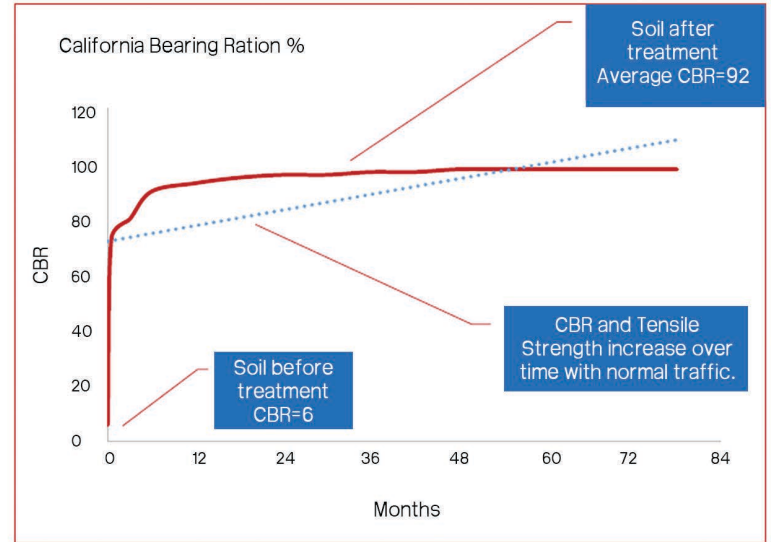
Background: Rural road rehabilitation project.

Problem: Narrow rural dirt road presented an unstable foundation with potholes, erosion and puddles.

Solution: Widening from 2m to 6m. New subgrade and granular subbase was installed. Soil based material fill was used to create a base layer. Base material was scarified at depth of 20cm with fill material and treatment.

Outcome: Strong base was achieved with average strength of 150MPa and over 98% compaction. A surface layer of asphalt was placed directly on top of the finished base, without the need for binder.

30% average savings was achieved.



PROJECT SAMPLE: PARAGUAY 2008

Client: Municipality

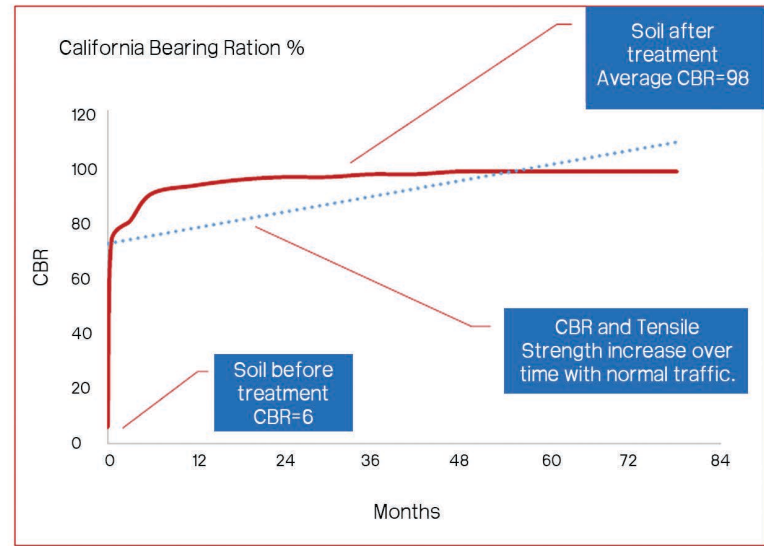
Background: Rural road rehabilitation project.

Problem: Rural dirt road presented an unstabilized surface with potholes, erosion and puddles. Soil plasticity index average was 20%.

Solution: Scarification at depth of 20cm with treatment and compaction with sheep's foot and flat rollers.

Outcome: Strong base was achieved. 3cm of asphalt surface was placed directly on top of the finished base, without the need for binder. Currently the road is in excellent condition with no major maintenance requirements.

30% savings on soil stabilization budget was achieved.



PROJECT SAMPLE: BRAZIL2010

Client: Local Construction Company

Background: 15 km of new city road with asphalt surface.

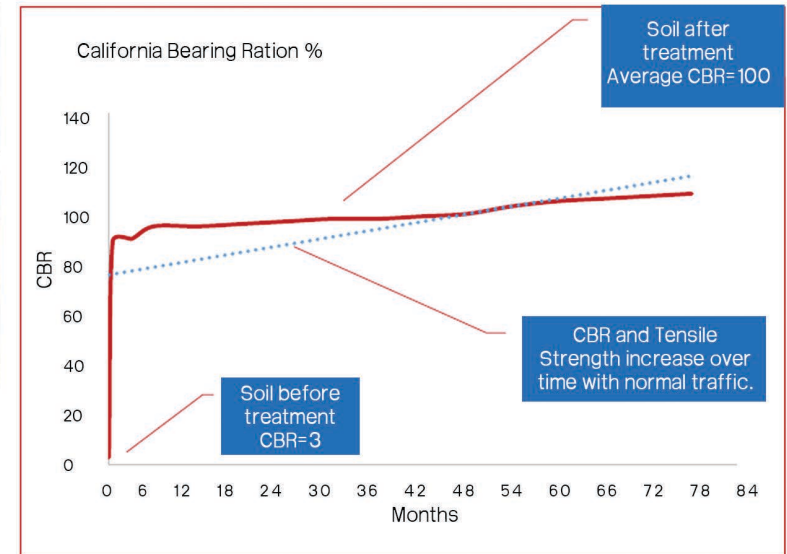
Problem: Unstable soil with very low CBR values and average plasticity index of 30%.

Solution: Scarification at depth of 20cm with treatment and compaction with sheep's foot and flat rollers.

Outcome: Strong base and subbase was achieved. 5cm of asphalt surface was placed directly on top of the finished base, without the need for binder.

No maintenance has been required since date of completion.

35% savings on soil stabilization budget was achieved.



PROJECT SAMPLE: ANGOLA 2009

Client: Odebrecht

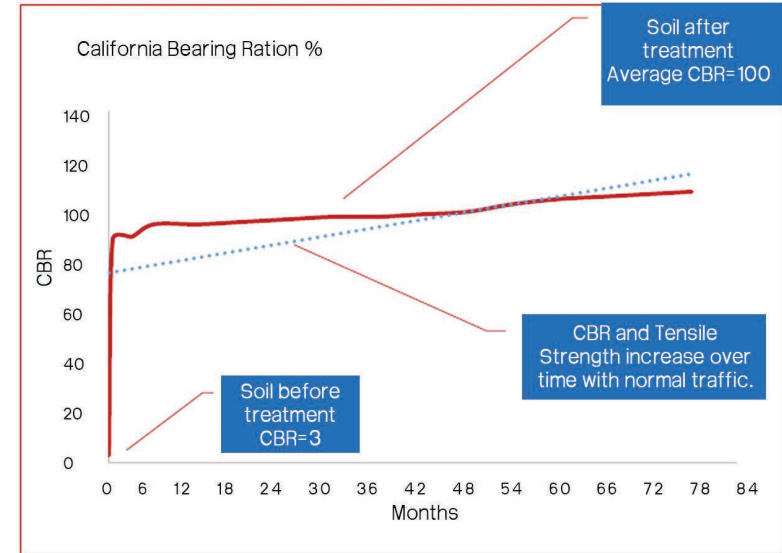
Background: Road rehabilitation project.

Problem: Failure of base and subbase responsible for surface layer rutting and potholes. Soil plasticity index of averaging 25%.

Solution: Removal of poor quality asphalt. Scarification at depth of 20cm with treatment and compaction with sheep's foot and flat rollers.

Outcome: Strong base and subbase was achieved. 5cm of asphalt surface was placed directly on top of the finished base, without the need for binder.

35% savings on soil stabilization budget was achieved.



PROJECT SAMPLE: : CHILE2013

Client: Mining Company

Background: This 75 km road is used to transport iron ore from the mines to the sea port for shipping. The road operates 24/7 with trucks hauling payloads greater than 150 tons.

Problem: Unstable base and subbase with very low CBR values.

Solution: Scarification at depth of 20cm with treatment.

Outcome: Flat reinforced surface with increased load bearing capacity and decreased roll resistance. Hauling delays have been eliminated and productivity is at maximum output. No maintenance has been required since date of completion.

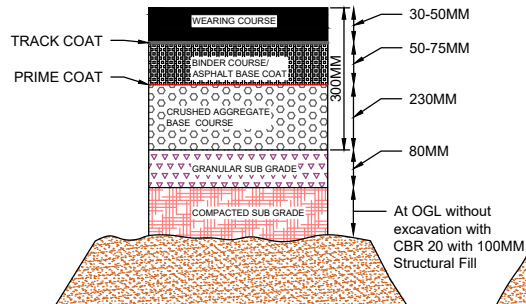
40% savings on soil stabilization budget was achieved.

TYPICAL CROSS SECTION OF ROAD LAYERS AND COMPARABLE ALTERNATIVE ROAD SYSTEM FROM CONSTRUCK

SYSTEM-1 INTERNAL/NORMAL ROADS

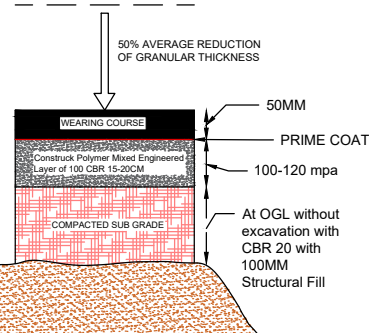
TRADITIONAL METHOD

TYPICAL CROSS SECTION



CONSTRUCK METHOD

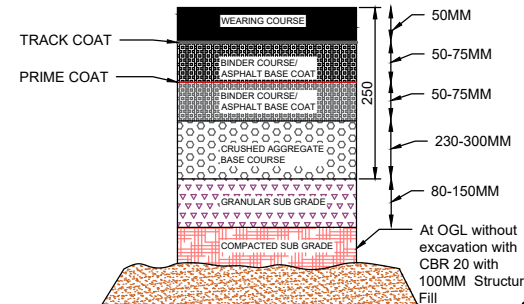
ConstruckRoads® CROSS SECTION



SYSTEM-2 HIGHWAYS/HEAVY TRAFFIC ROADS

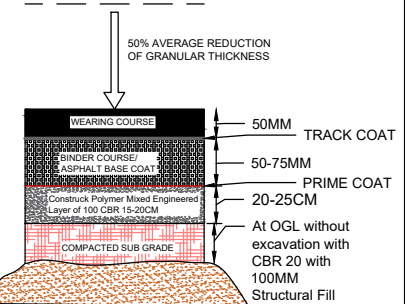
TRADITIONAL METHOD

TYPICAL CROSS SECTION



CONSTRUCK METHOD

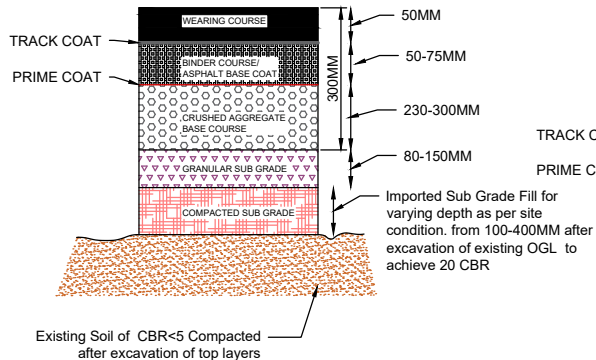
ConstruckRoads® CROSS SECTION



SYSTEM-3 HIGH PI/HIGH CLAY/VERY SOFT SABKHA AREA

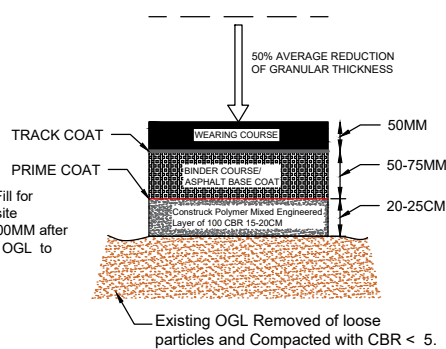
TRADITIONAL METHOD

TYPICAL CROSS SECTION



CONSTRUCK METHOD

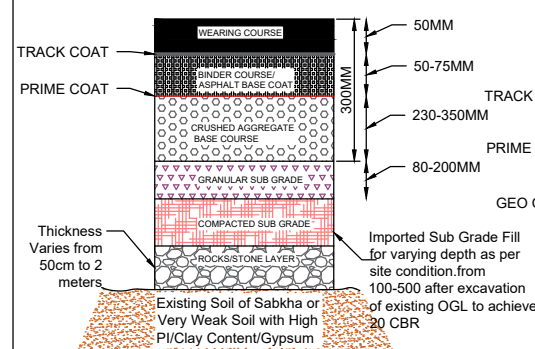
ConstruckRoads® CROSS SECTION



SYSTEM-4 HIGH PI/HIGH CLAY/VERY SOFT SABKHA AREA

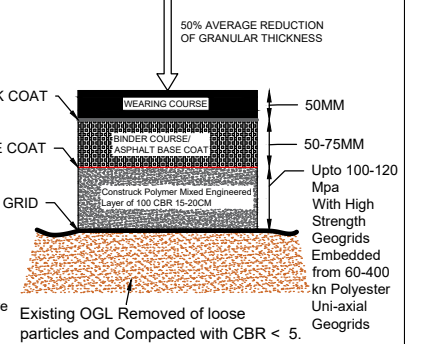
TRADITIONAL METHOD

TYPICAL CROSS SECTION



CONSTRUCK METHOD

ConstruckRoads® CROSS SECTION





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Design and Development of Innovative Road Construction Products from Construck Labs

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