

German GreenTec Ecologic



UNDERBOLD® faster. longer durability and environmentally friendly

www.german-greentec.de

German GreenTec Ecologic



Presents:

Underbold-System®

Ground and base course Stabilization

The intelligent Way

UNDERBOLD-POD30®

Environmental compatibility

UNDERBOLD-POD30® is a **purely organic
mixture consisting of waxes and oleine
with **Nanotechlogy****

100% biologically Eco Friendly.

**Environmental sustainability is proven
and meets all relevant requirements.**

And this are benefits of UNDERBOLD-POD30®

Main effects:

- Treated soil become to **hydrophobic** and agglomerated.
- An **enormous compressive strength** through addition of bonding agents (3-5% Cement).
- The **UNDERBOLD-POD30®** mixture increases sustainably & **resilience** of the treated soil against heavy aggressive influences.
- The **water tightness** is almost completely obtained through a fine distribution of wax particles.
- **No capillary formation**, thus **reduced crack formation**
- **Damages** due to ingress water will substantially **reduced**.
- The **lifespan** of the base course is generally **extend**.

And this are benefits of **UNDERBOLD-POD30®**

Cost-saving are:

... no additional construction material such as crushed stones, gravel, bituminous materials and similar

... long logistics for materials are no more needed

... use less of machines and personnel

... Reduce time to Project Execution

... completed surface is more durable

Considering all components (material, time and personnel) it is possible to assume a cost reduction of up to 30 % on site.

Working Process of **UNDERBOLD®**

Preparation of the to-be-treated surface with Moto Grader



provide a rough and fine slope formation level

UNDERBOLD® Train at work



Cement spreader

16 m³ = 25 t

capacity

Roller

16 t

operating weight

Recycler

2,40 m

working width

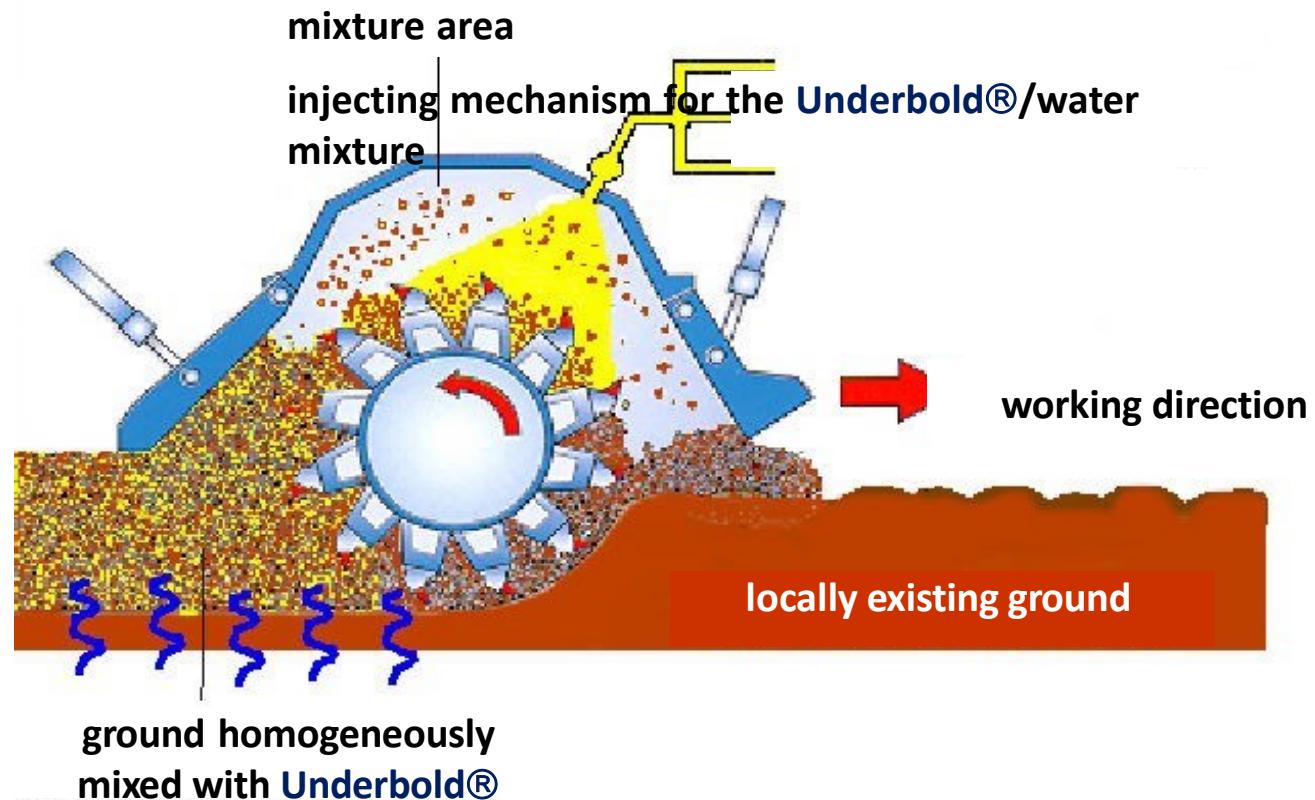
Tanker

10.000 Liter

capacity

Step 1- Operating Principle of **UNDERBOLD®**

Blending the homogeneous Underbold-POD30®-mixture into the soil



Operating Principle of **UNDERBOLD®**

through homogeneously blending

the bonding agent settles around and between

the soil grains pre-treated with **UnderboldPOD30®-mixture**

Underbold-POD30®-mixture



soil grains

E

Step 1- Milling Underbold



Step 1- Milling Underbold



1. Milling Underbold



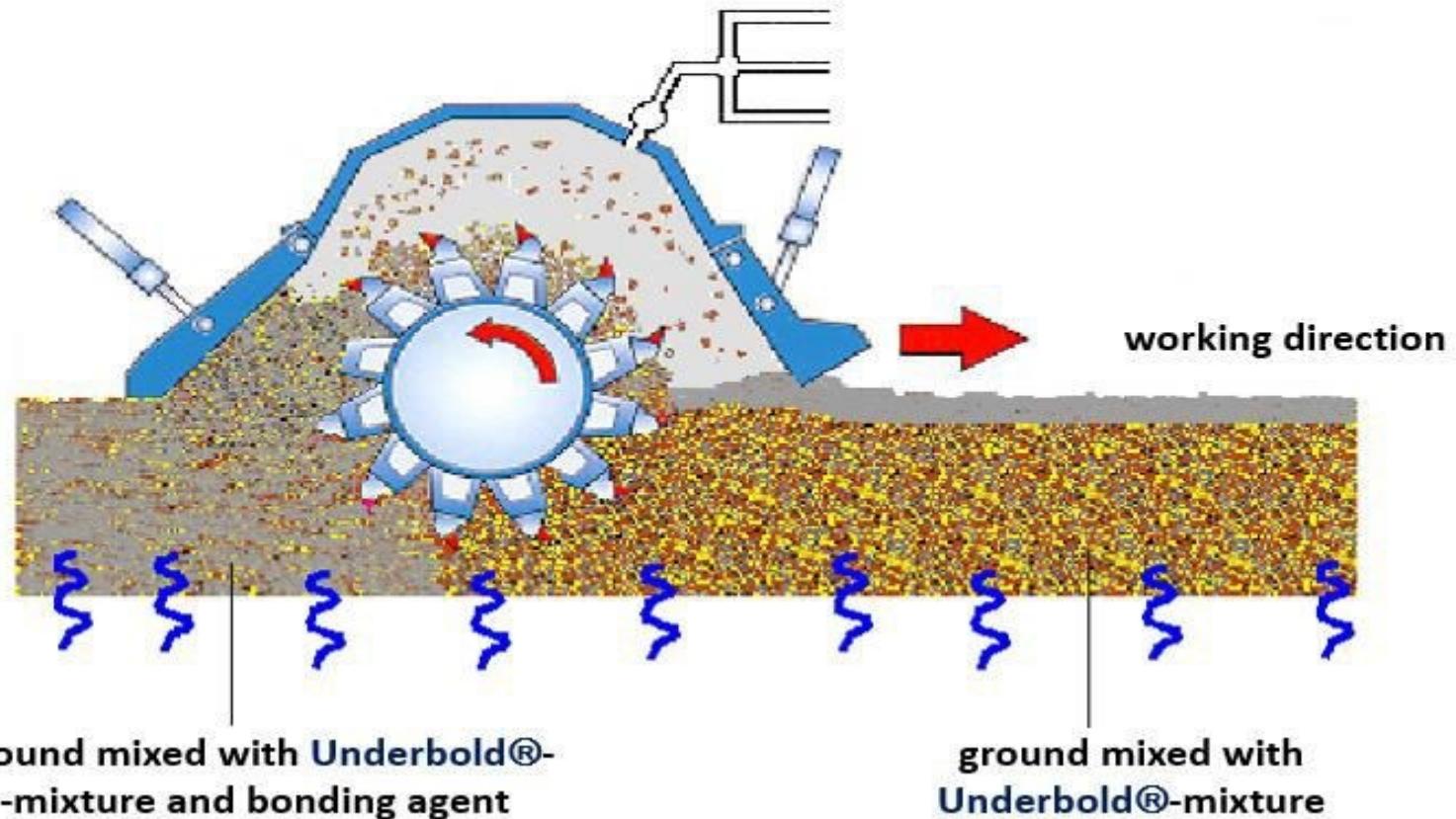


Step 2 - Cement spreading



Operating Principle of **UNDERBOLD®**

**Blending homogeneously the
bonding agent into the soil**



Step 3- milling cement

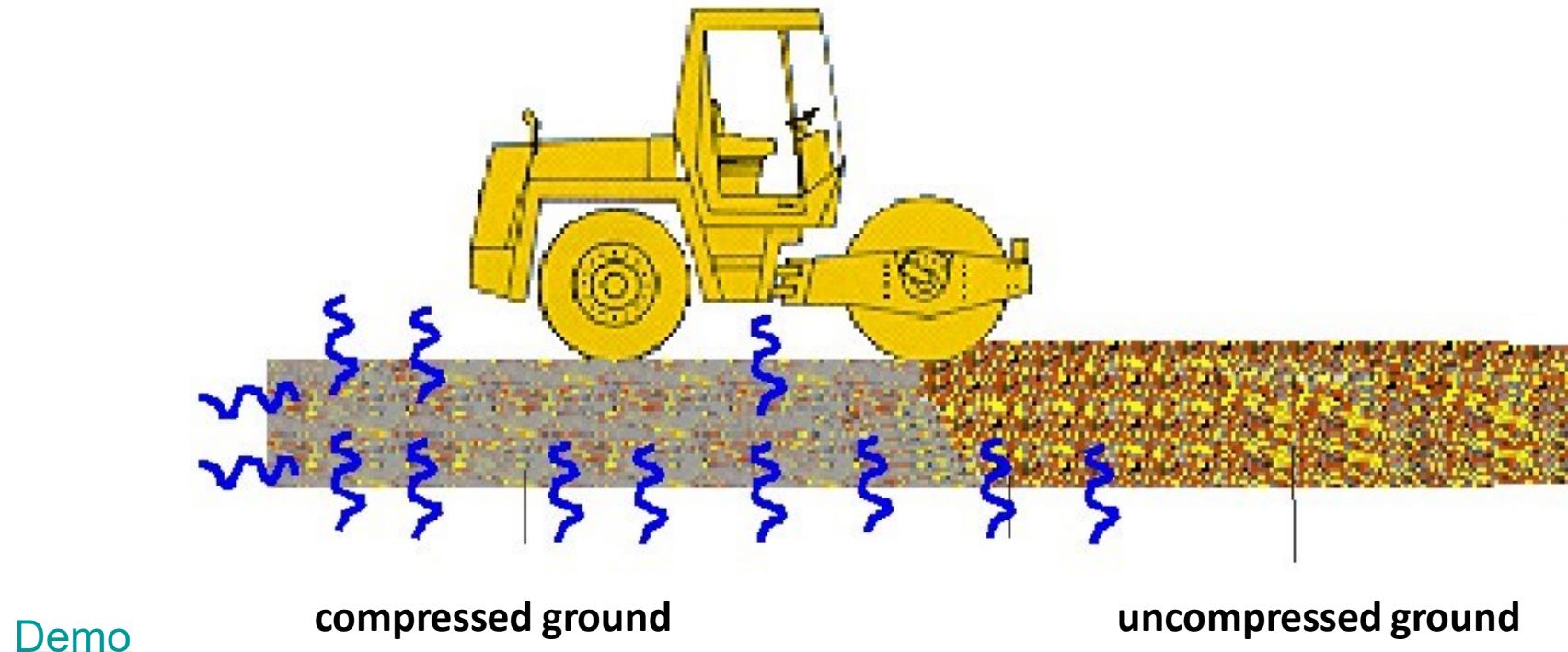


Milling Cement



Step 3 Compression

after the compression process the remaining humidity is
delivered into the air and soil (hydrophobicity)



Step 4 Profile

after the compression process the grader construct the Profile



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Working Process of UNDERBOLD®

3. Processing step

sufficient compression of the treated surface



optimal (sufficient) compression of the treated surface with a roller of minimum 16-20 tons

Compression



Exempels: Existing ground Mercedes-Benz area



Mercedes Benz area Germany



Finished Subgrade

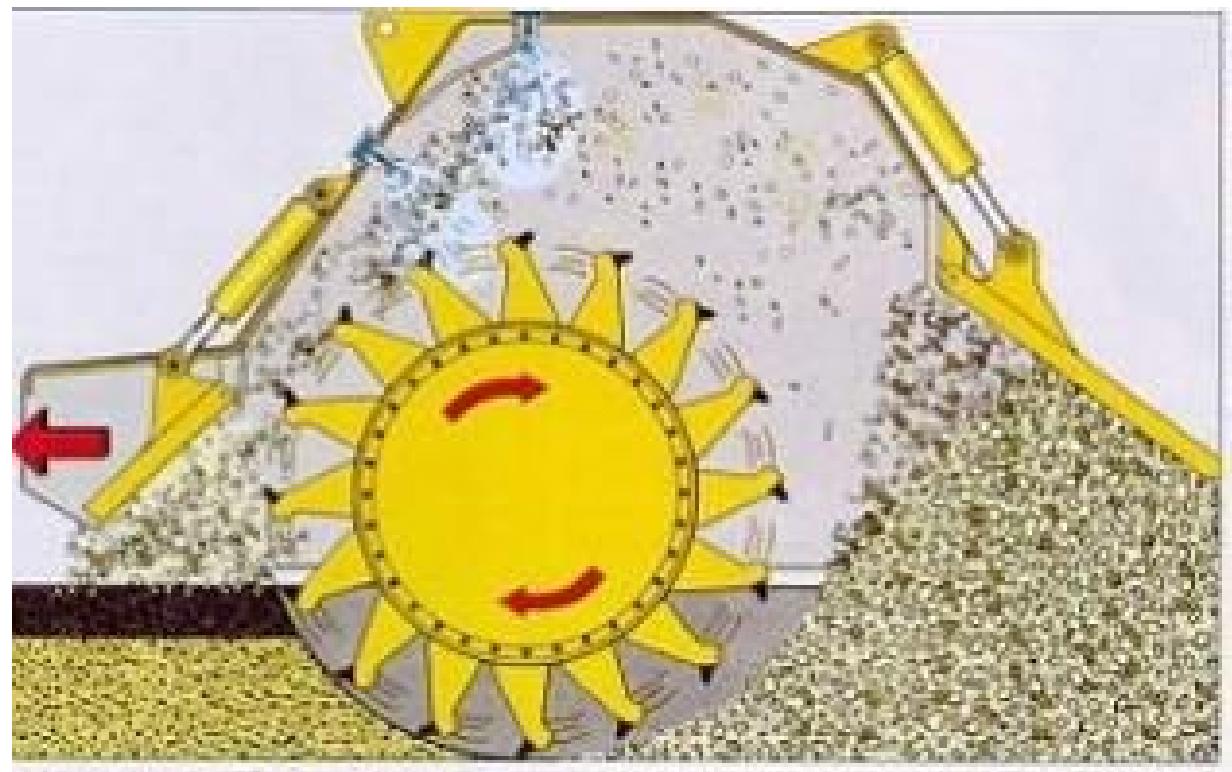
Finished Parking area



UNDERBOLD®

**One main feature is to recycle roads
without removing the existing asphalt**

**... with asphalt
up to 10 cm !!**



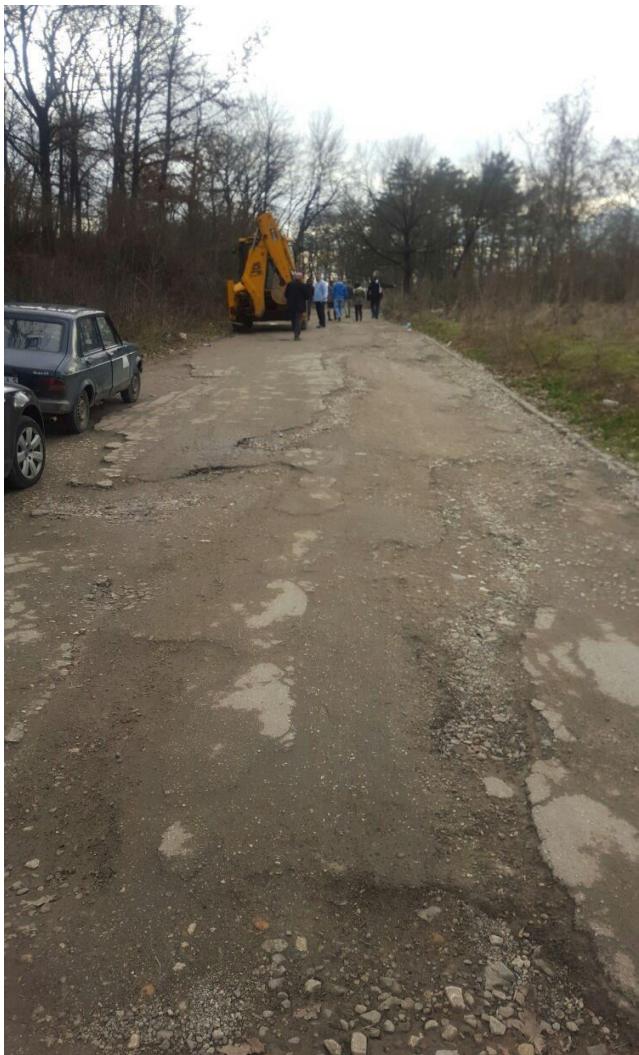
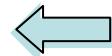
Milling machine in progress with asphalt



UNDERBOLD- POD30®

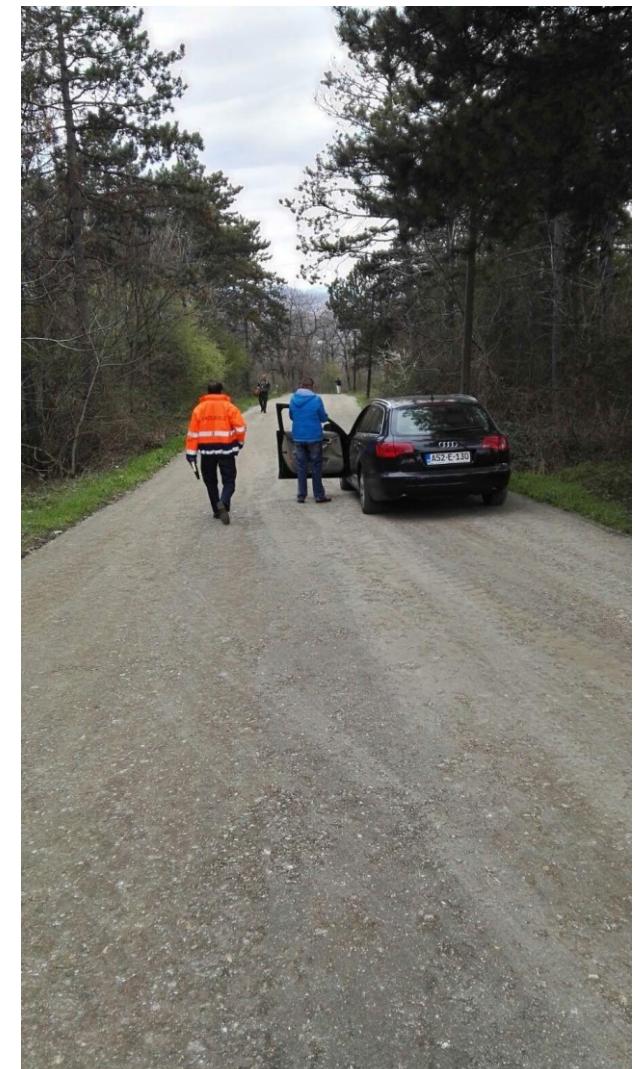
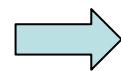
Result

road before



and

road after
12 hours later

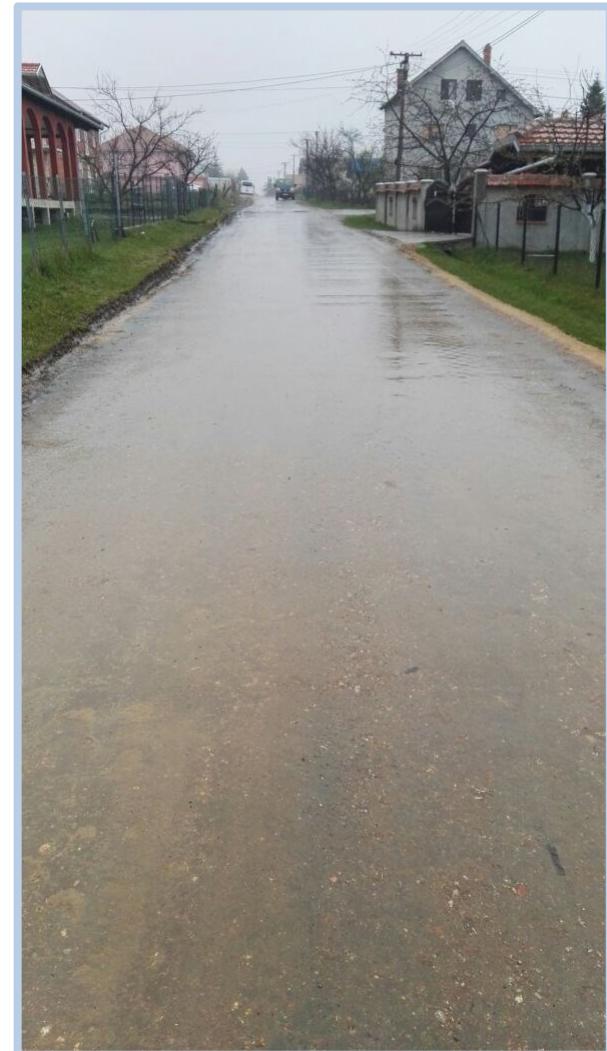
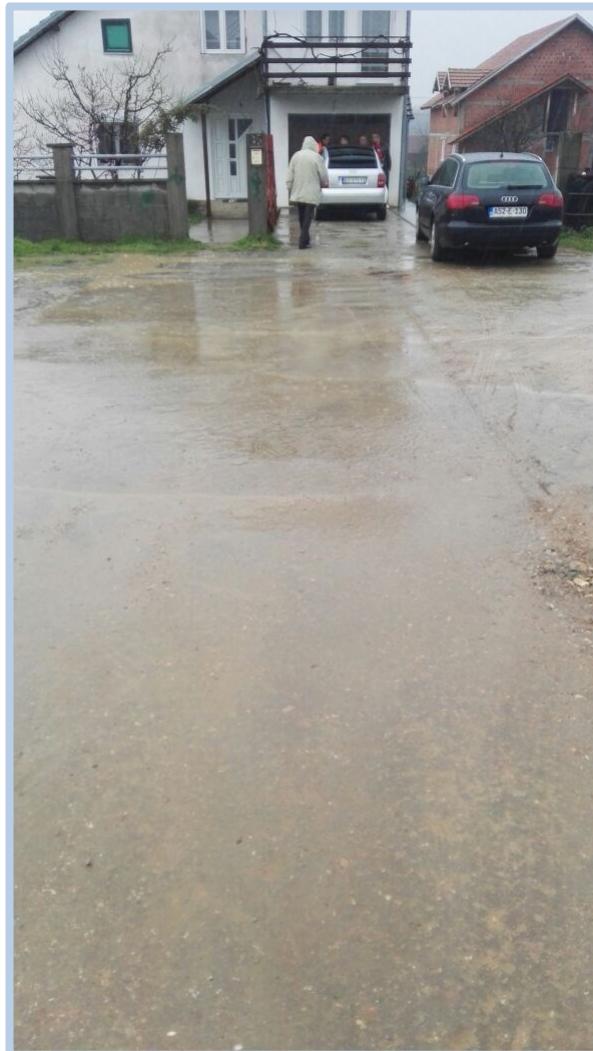


Clay-Subgrade is finished-ready for asphalt



MAXIMUM WATER RESISTANCE

finished road in Serbia



Desert sand- Oman



Liberia Buchanan



Russia



GGT
German-GreenTec



Temperature range



UNDERBOLD-POD30



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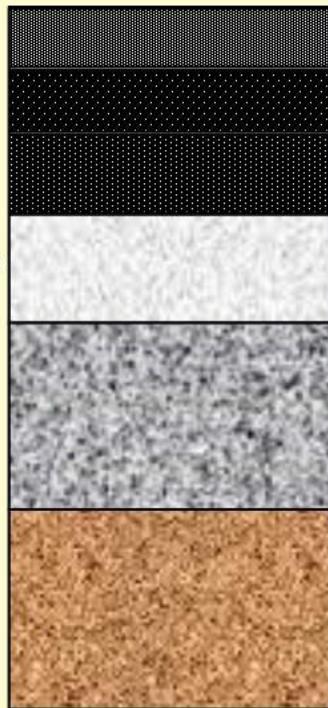
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Pavement Structure in Cross-Section

Road construction in cross-section

Conventional



5 cm Asphalt – wearing course

7,5 cm Asphalt – base course

7,5 cm Asphalt – base course

15 cm (Sub base)

Road base Type "A"

30 cm (Sub base)

Hard Fill Type "B" Desert Fill

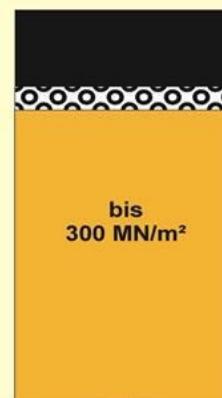
or

Dredged Sand

(Sub base)

existing or Dredged Sand

with **UNDERBOLD**



5 - 10 cm toplayer with PR-Plast

1 - 2 cm primer and split

40 cm
UNDERBOLD

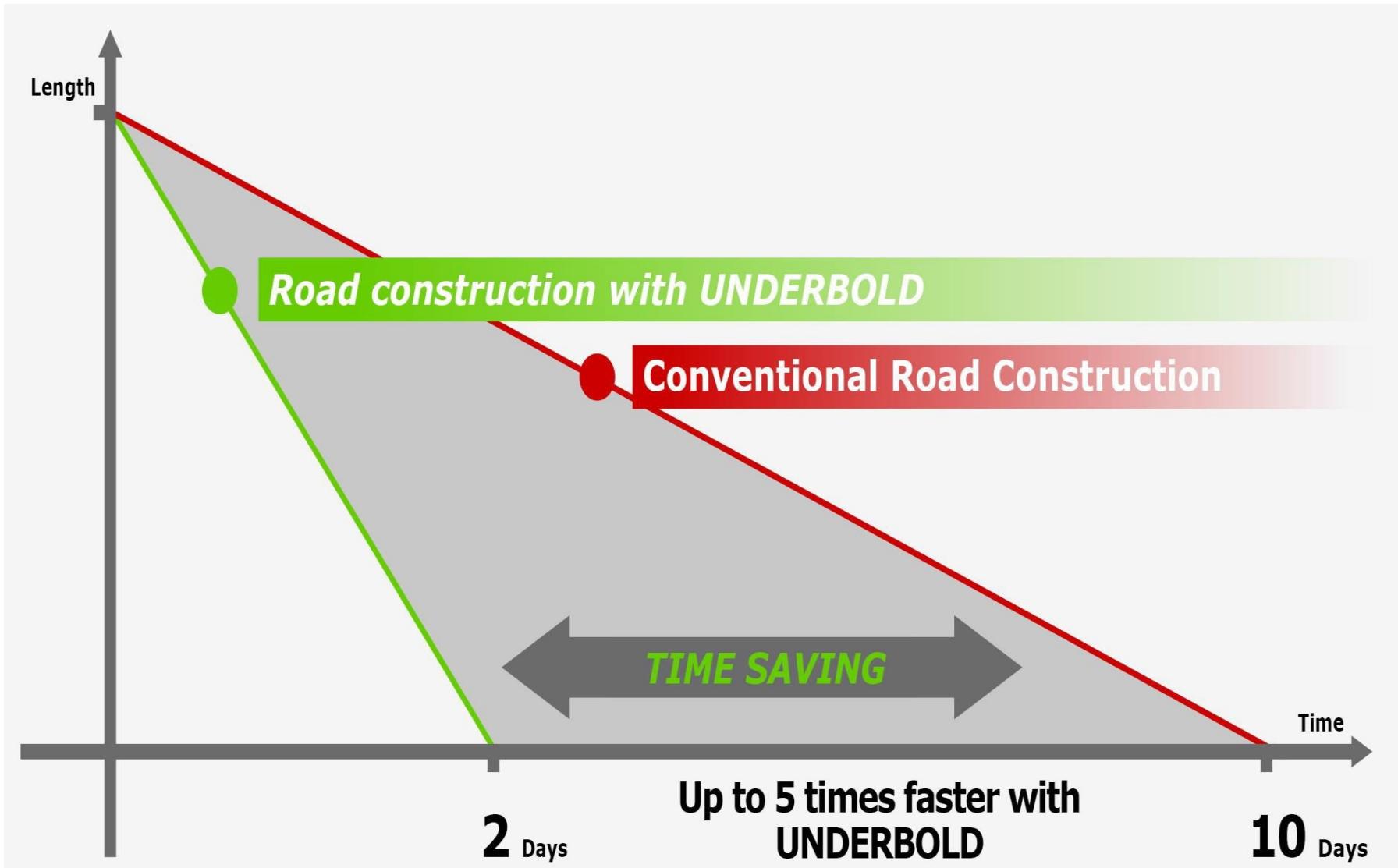
savings through

UNDERBOLD

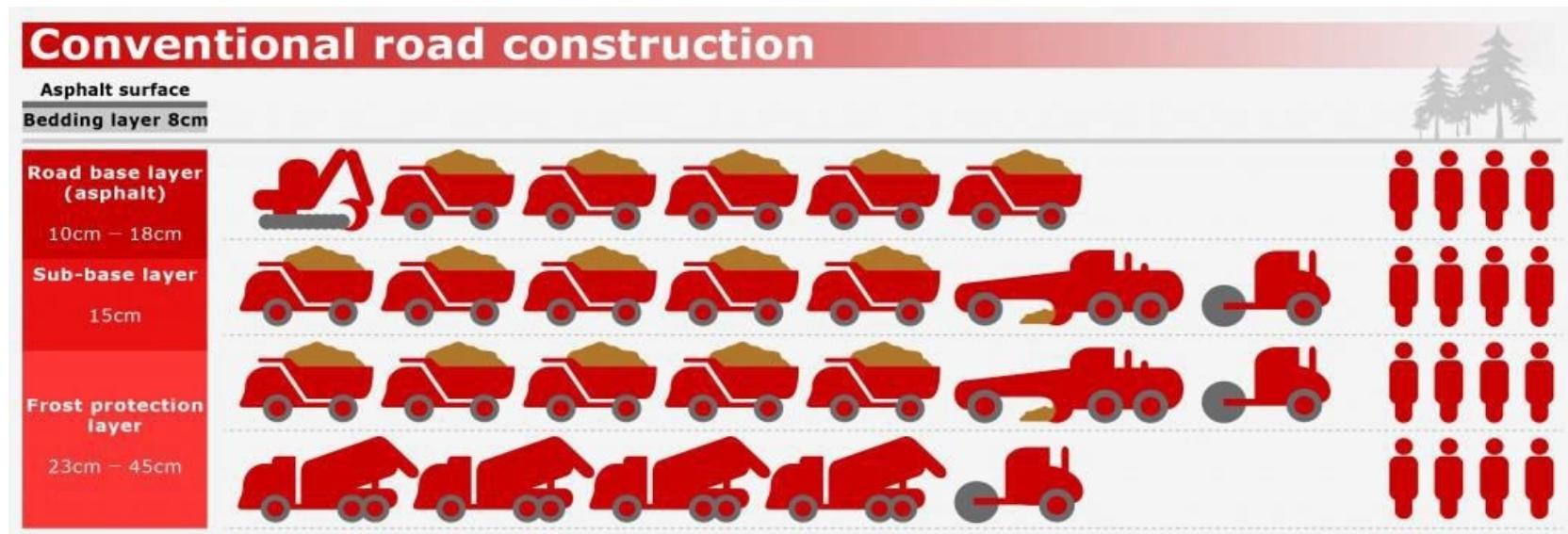
time and material

Norm:
45 MN/m²

Time saving



Cost savings + environmental impact through less logistics





Finished
road
after
starting
our
work 2
weeks
ago



Thank you for your attention

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