

German GreenTec Ecologic



UNDERBOLD® faster. longer durability and environmentally friendly

www.german-greentec.de

German **Green**Tec 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

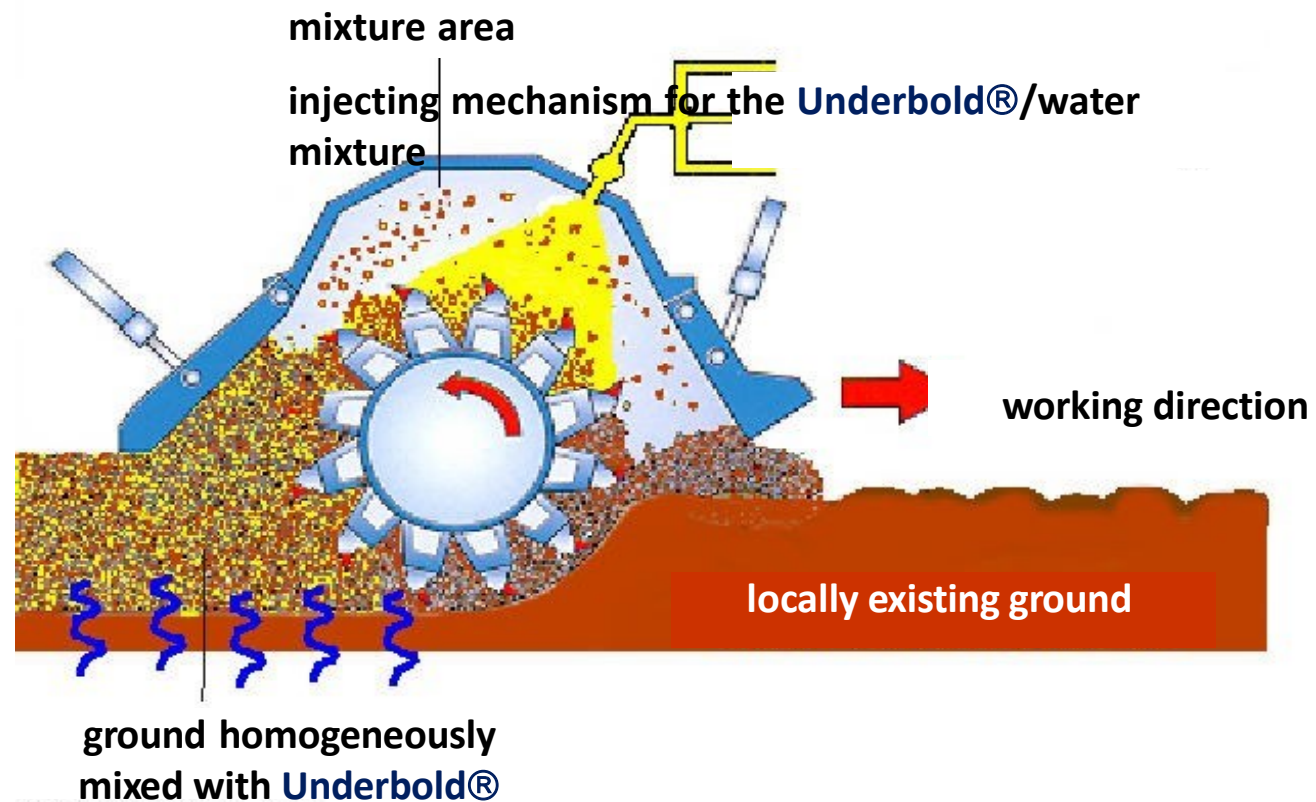
Tanker

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

Step 1- Milling Underbald



Step 1- Milling Underbald



1. Milling Underbald



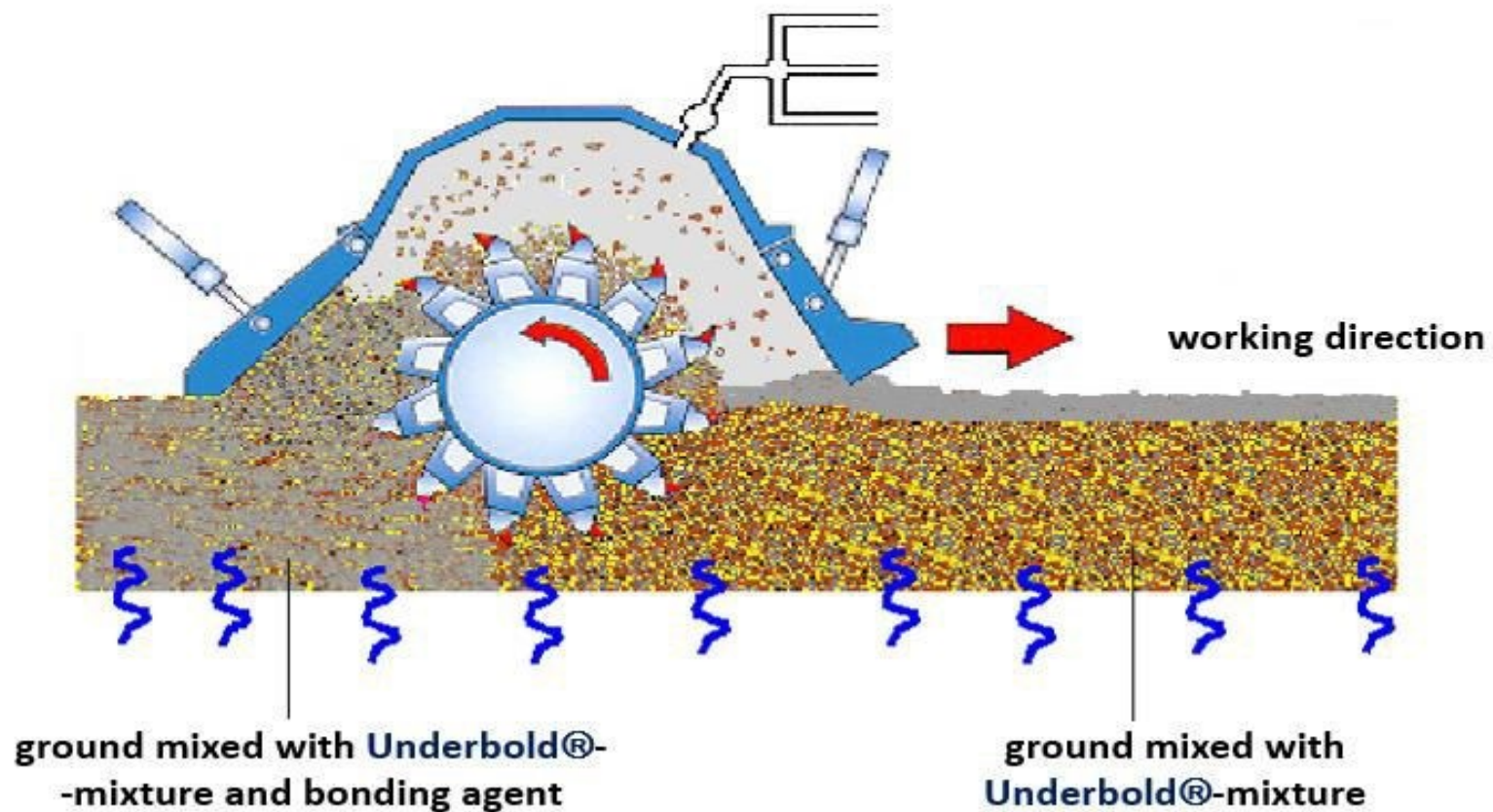


Step 2 - Cement spreading



Operating Principle of **UNDERBOLD®**

Blending homogeneously the
bonding agent into the soil



Step 3- milling cement

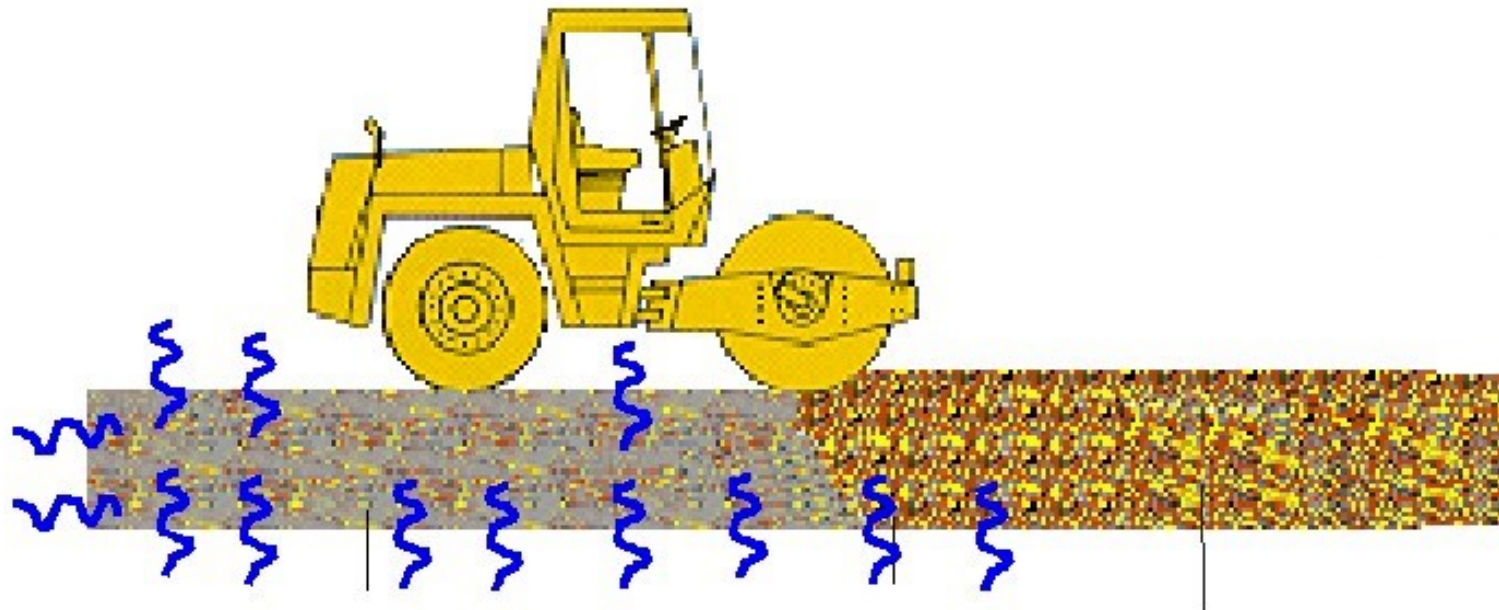


Milling Cement



Step 3 Compression

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



[Demo](#)

compressed ground

uncompressed ground

Step 4 Profile

after the compression process the grader construct the Profile



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 tonns

Compression



Exempels:

Existing ground Mercedes-Benz area



Mercedes Benz area Germany



Finished Subgrade

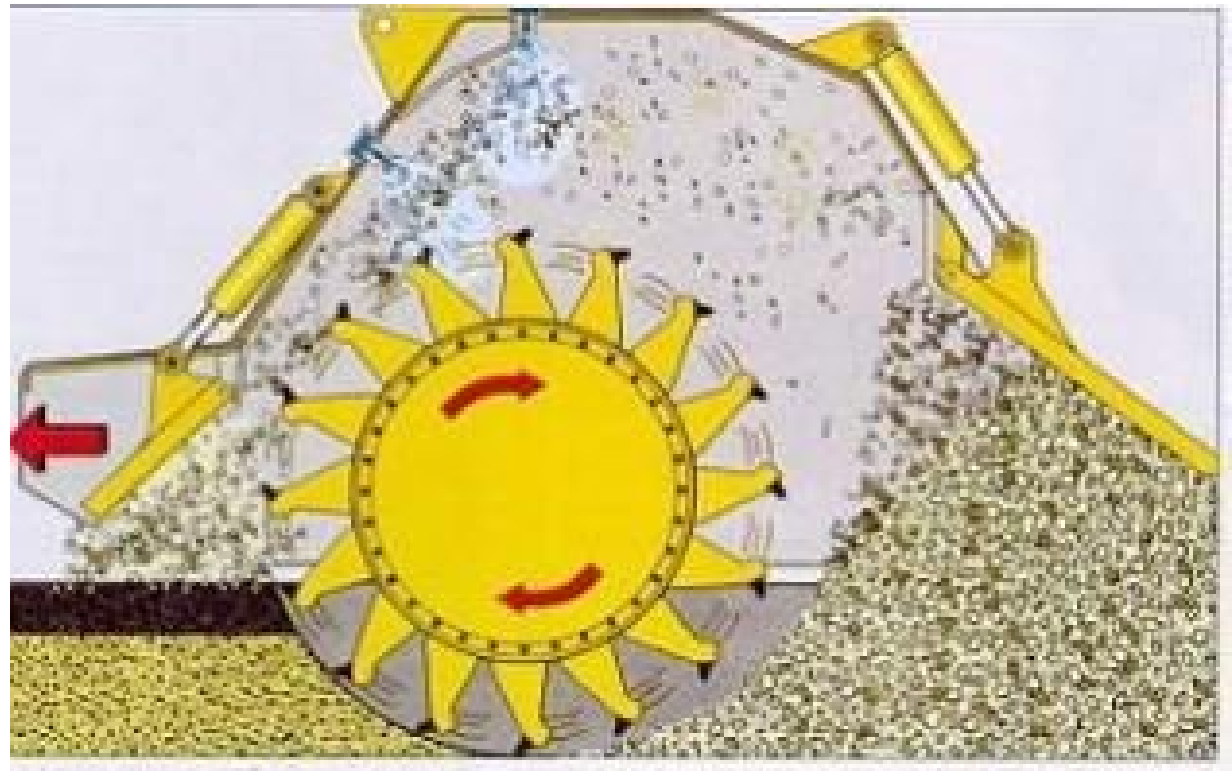
Finished Parking area



UNDERBOLD®

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

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

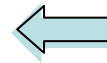


Milling machine in progress with asphalt



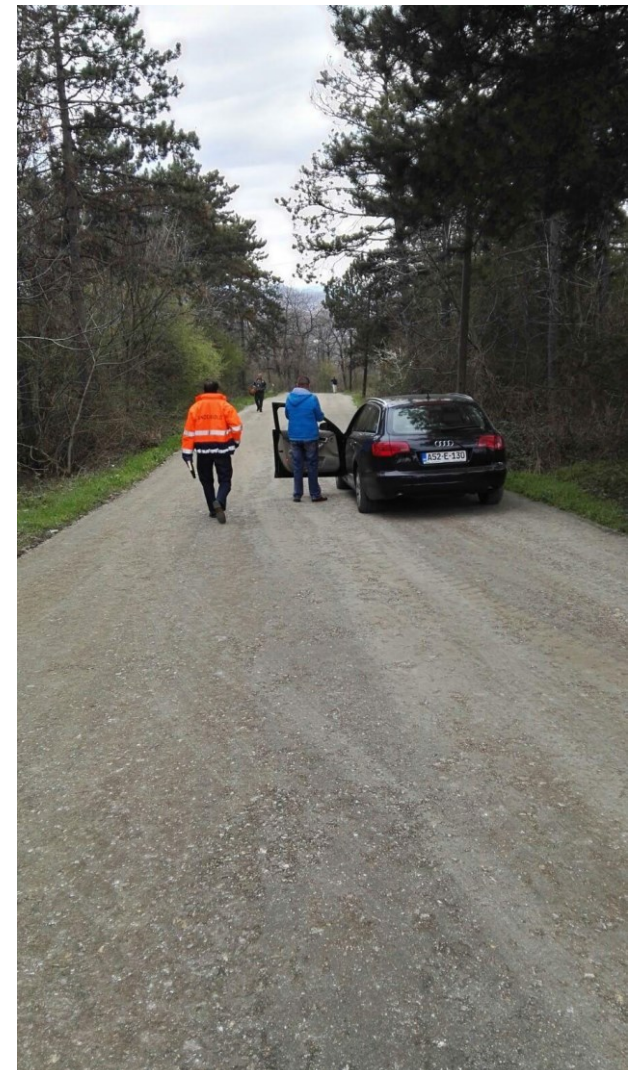
UNDERBOLD- POD30® Result

road before



and

road after
12 hours later

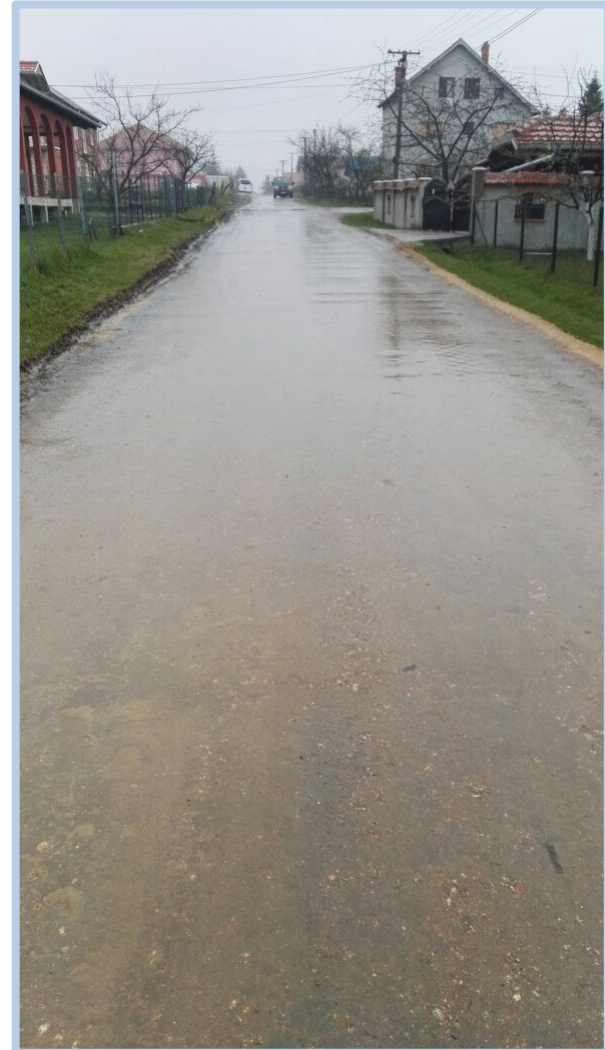


Clay-Subgrade is finished-ready for asphalt



MAXIMUM WATER RESISTANCE

finished road in Serbia



Desert sand- Oman



Liberia Buchanan



Russia



GGT
German-GreenTec

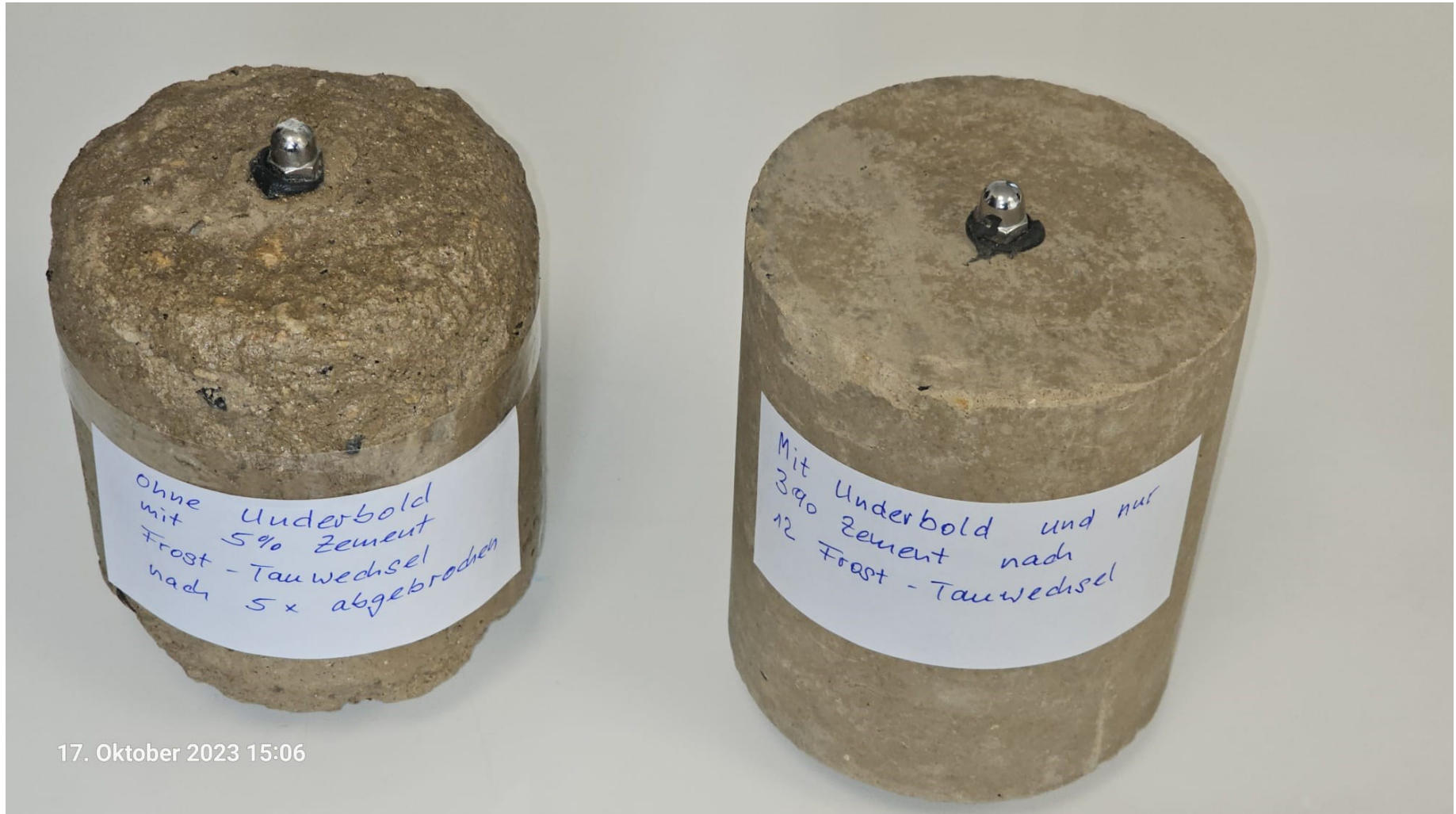


Temperature range



UNDERBOLD-POD30



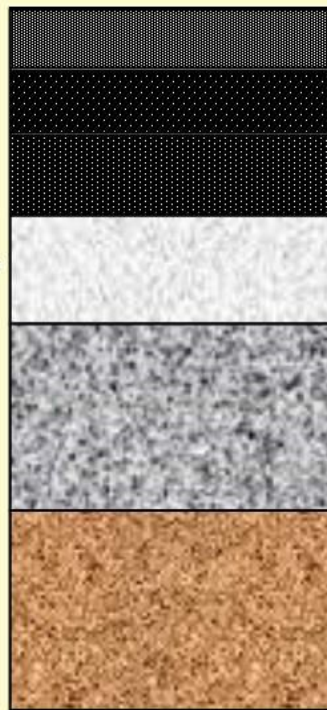


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Pavement Structure in Cross-Section

Road construction in cross-section

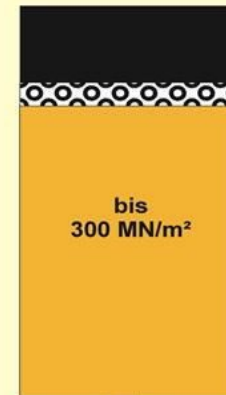
Conventional



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

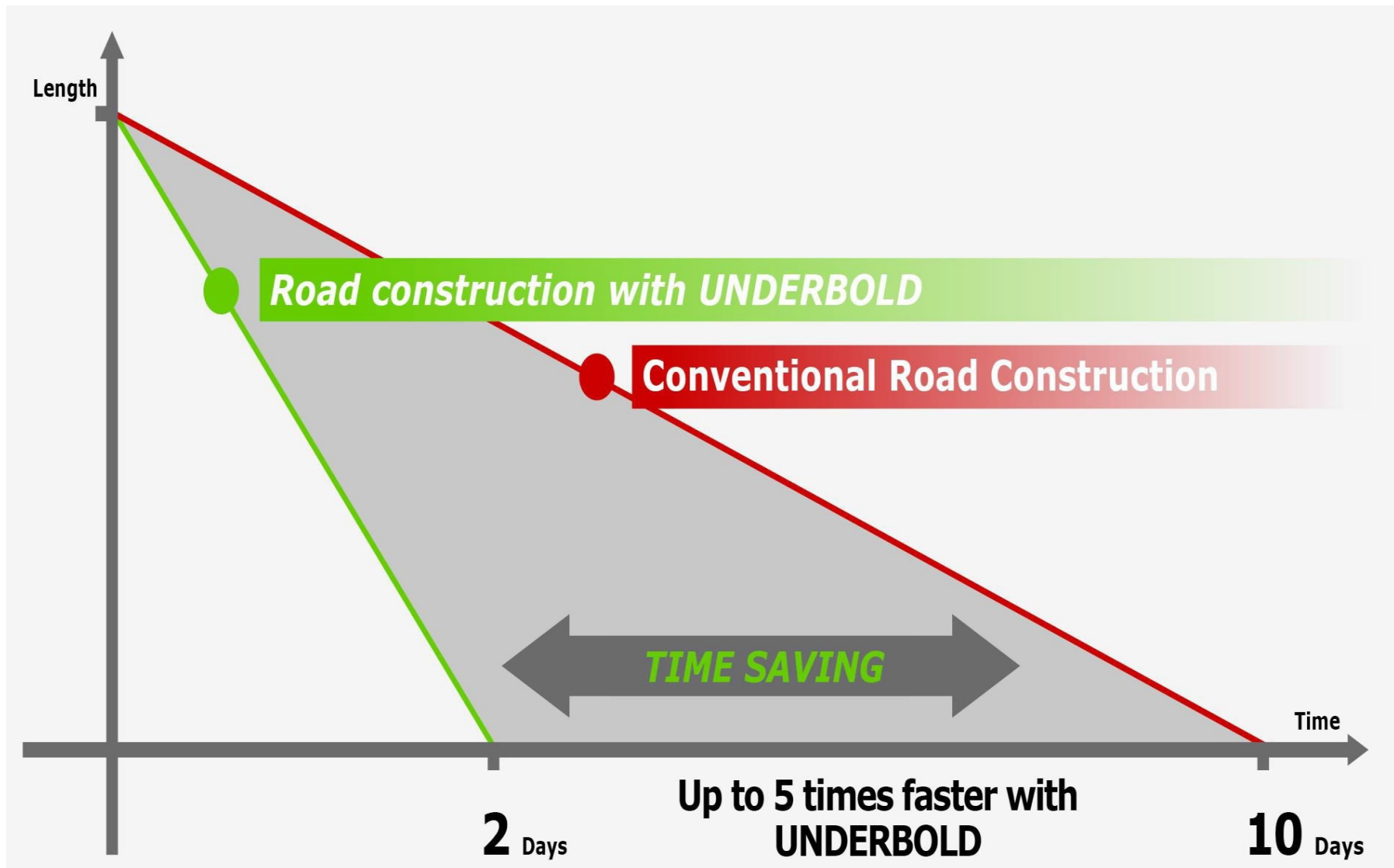
savings through

UNDERBOLD

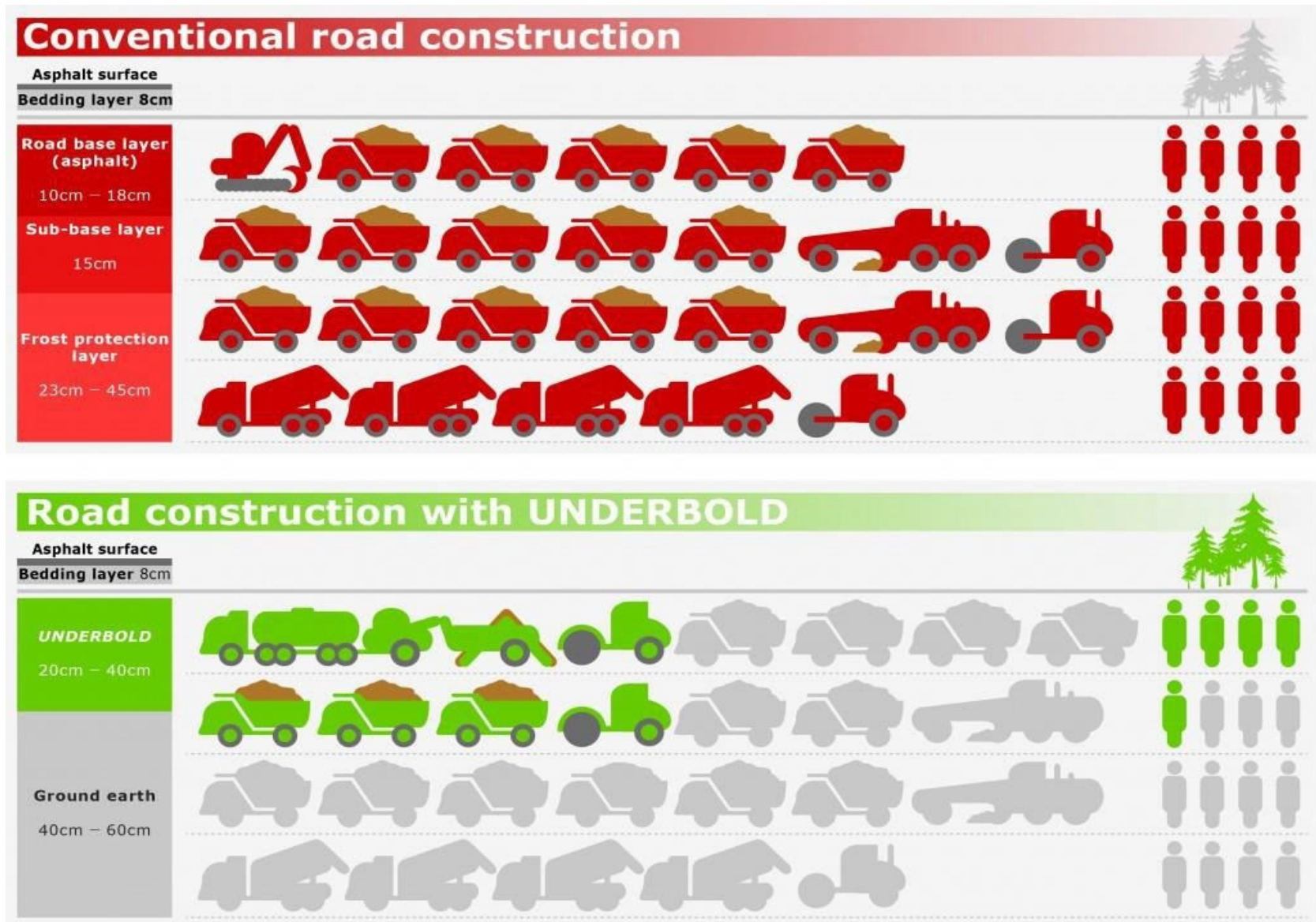
time and material

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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