B+BTec

PROJECTS

Tunnel Construction
- 2016 Neuchâtel, Switzerland
- 2014 Seelisbergtunnel, Switzerland
- 2010 Tunnel de Bure, Switzerland
- 2009 Vedeggio-Cassarate, Switzerland
- 2009 Gubristtunnel, Switzerland

Railroad Construction
- 2016 Metro Riyadh, Saudi Arabia
- 2015 Rail Anchor Renovation, Netherlands
- 2005 Metrostation Blijdorp, Netherlands

Road & Bridge
- 2014 Galecopper Bridge, Utrecht, Netherlands
- 2007 Flange Plate Lighting Columns, UK

Harbour Construction
- 2015 Zeebrugge, Belgium
- 2005 Fender Installation, Netherlands

Renovation Projects
- 2016 Tension Anchor, Switzerland
- 2015 Cantilevered Gallery Floors, Netherlands
- 2012 Facade Hilton Rotterdam, Netherlands

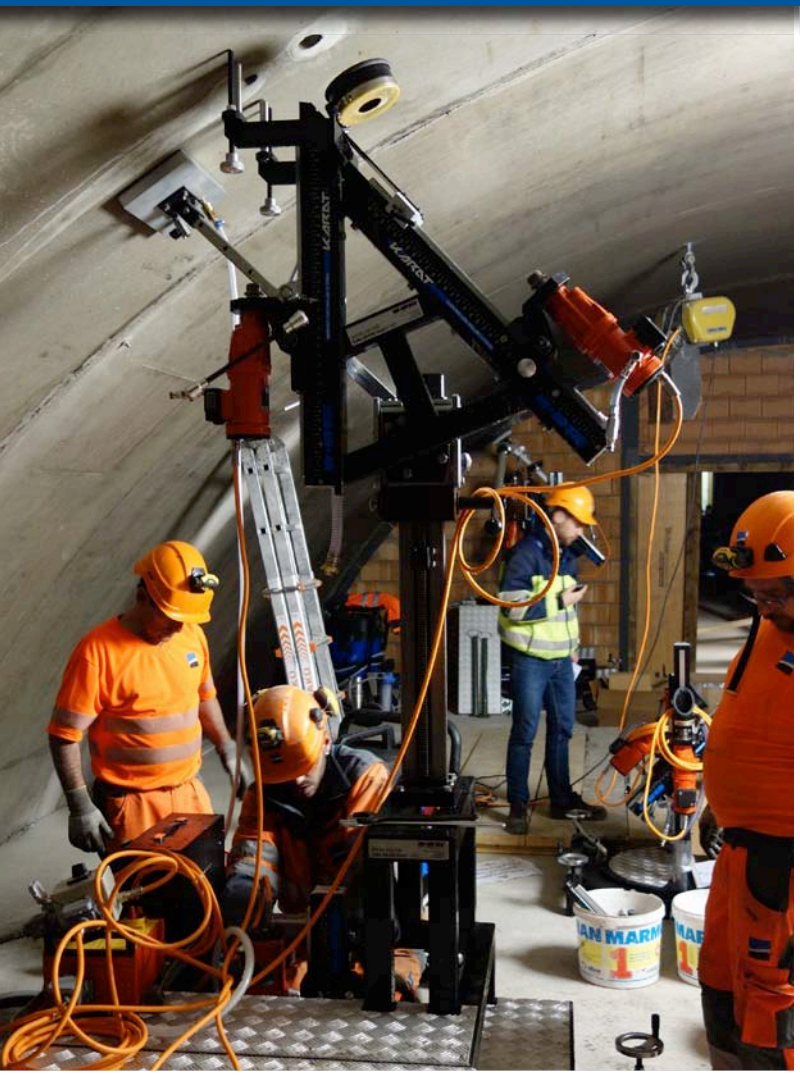
Salvage Projects
- 2015 Bridge Deck A9, Amsterdam Netherlands
- 2015 Baltic Ace, Rotterdam Netherlands

Offshore Industry
- 2015 1500t Steel Cable Test Bench

Tunnel Construction

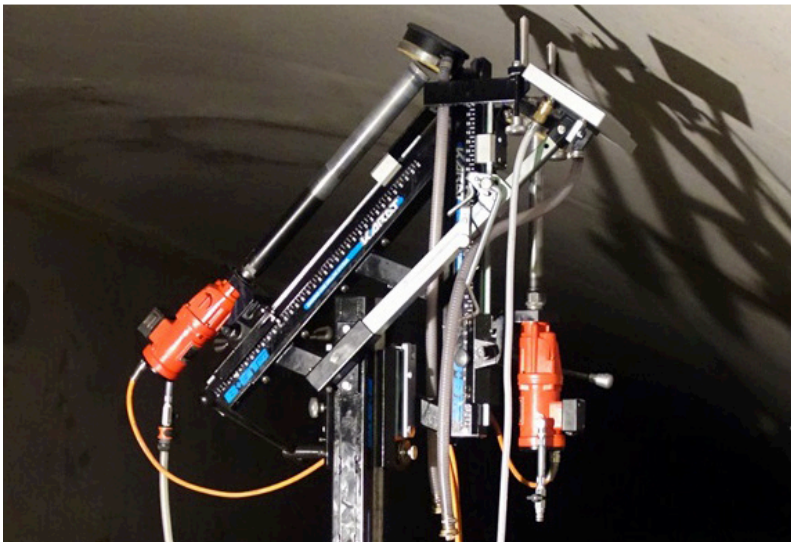
Neuchâtel
Switzerland
2016-2018

Anchor Dimension	:	M30 x 500
Number of Anchors	:	600
Steel Quality	:	8.8 Zinc Plated
Anchor hole	:	Diamond Drilled
Anchor Type	:	BIS-PE Pure-Epoxy 3:1



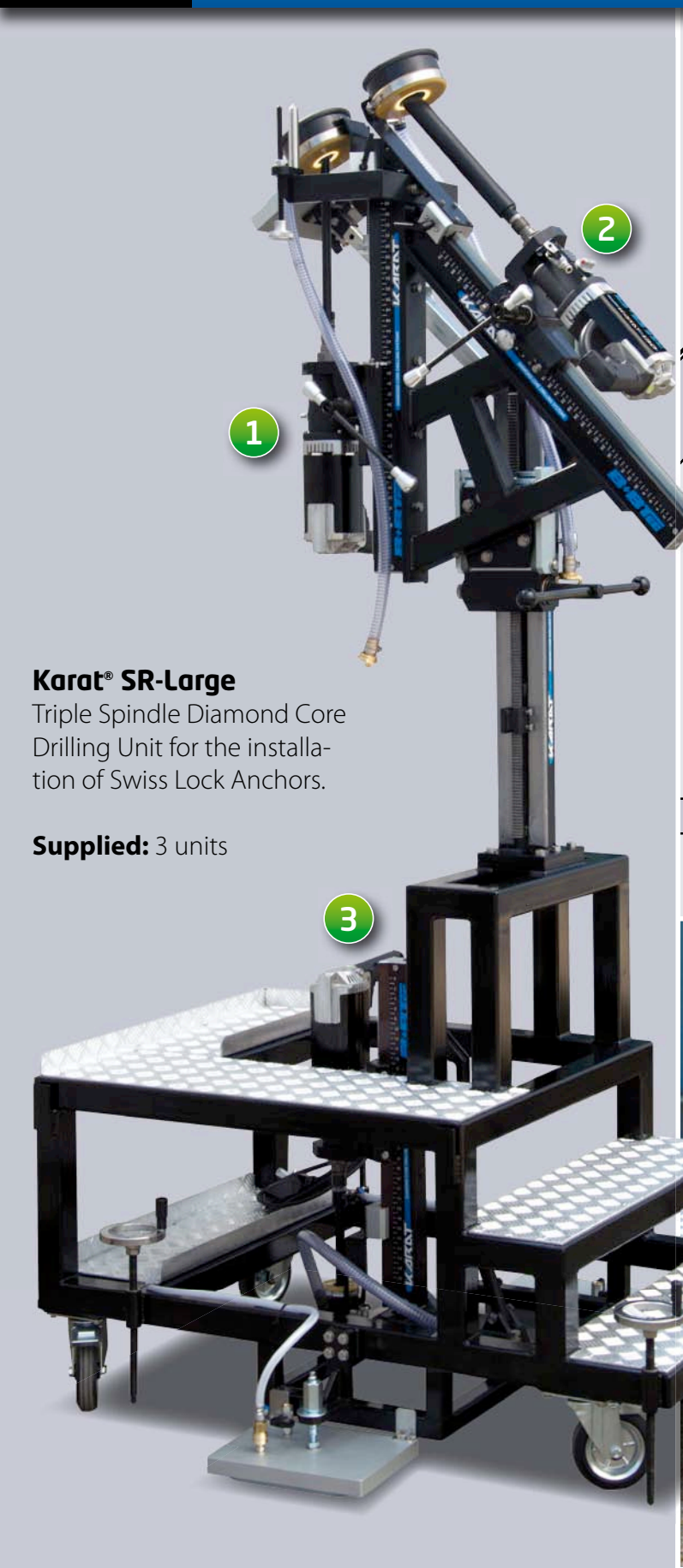
Project Data

Swiss Lock:	SR™ M30
Steel Quality:	HCR 1.4529
Diamond Core Bits:	B+BTec HiSpeed
Bit Diameters:	Ø33 mm
	Ø54 mm



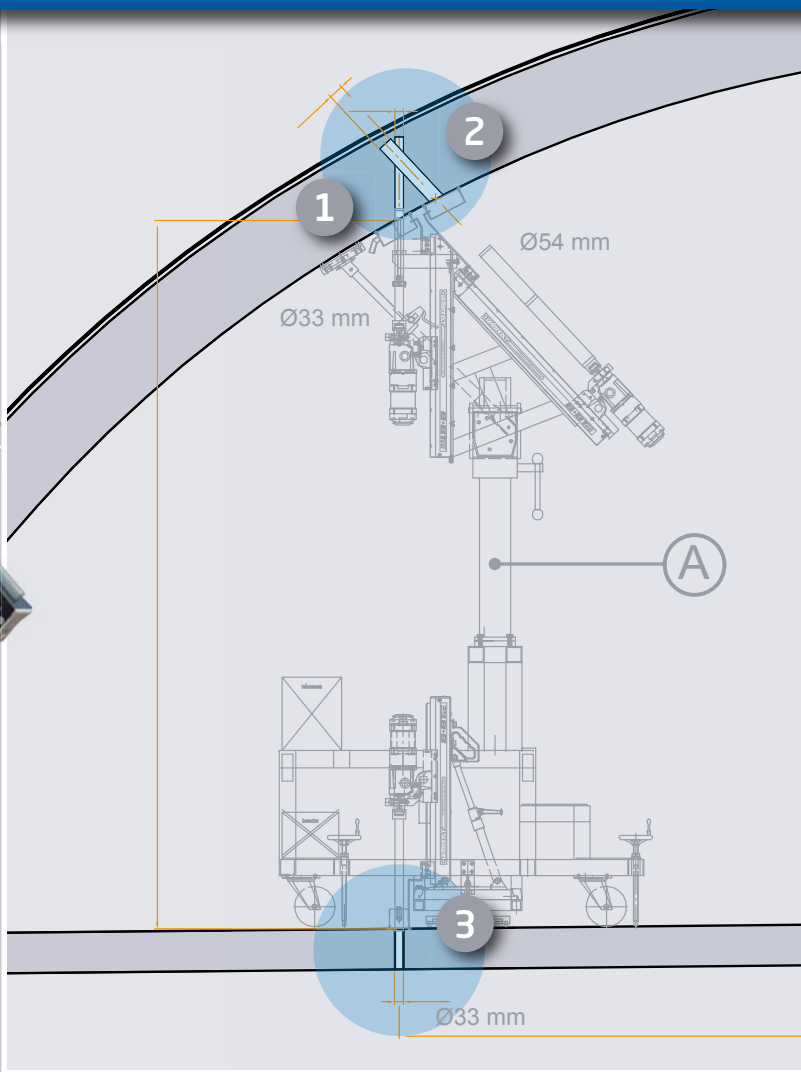
Tunnel Construction

Neuchâtel
Switzerland
2016-2018



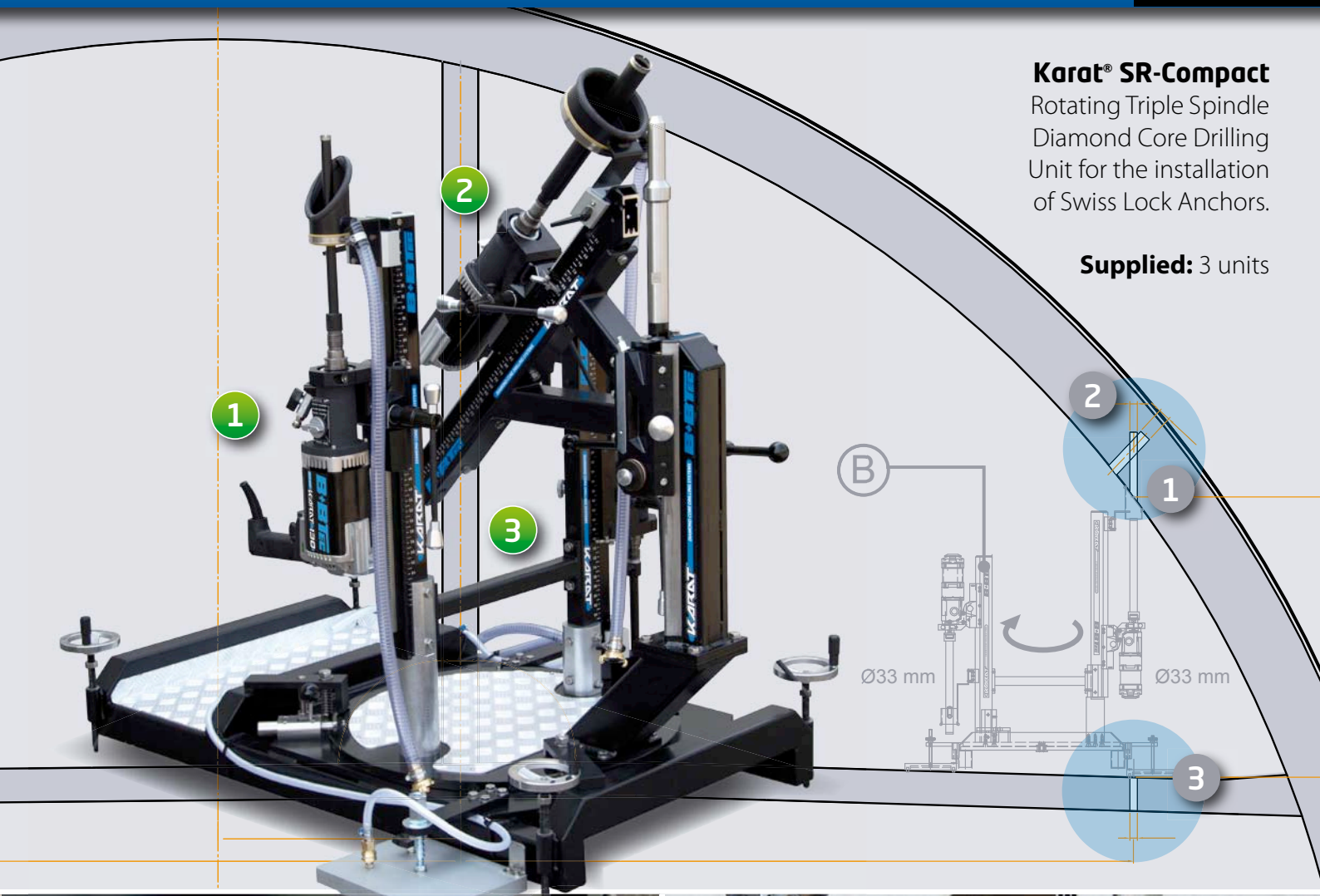
Karat® SR-Large
Triple Spindle Diamond Core Drilling Unit for the installation of Swiss Lock Anchors.

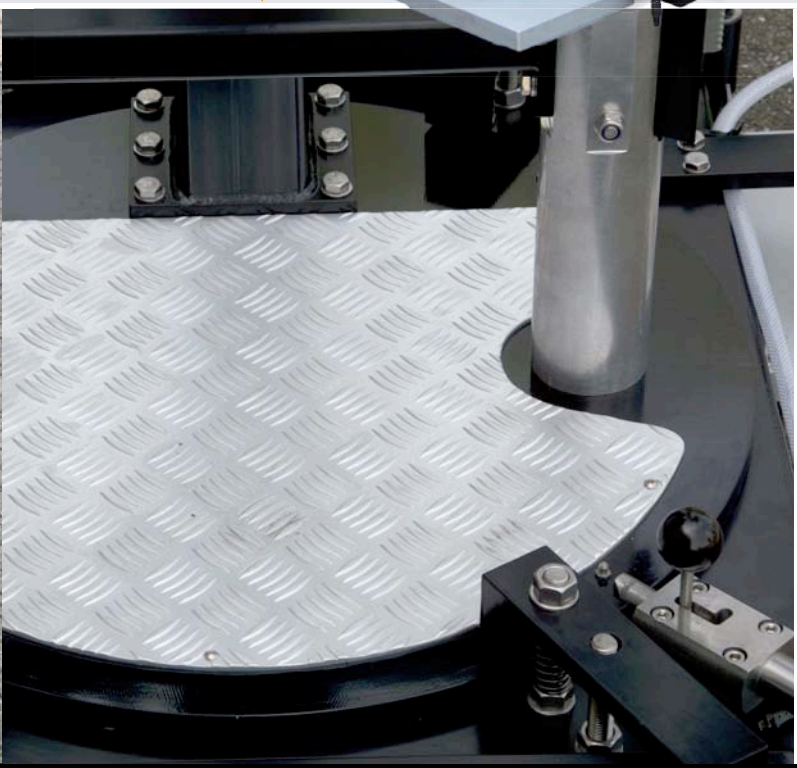
Supplied: 3 units

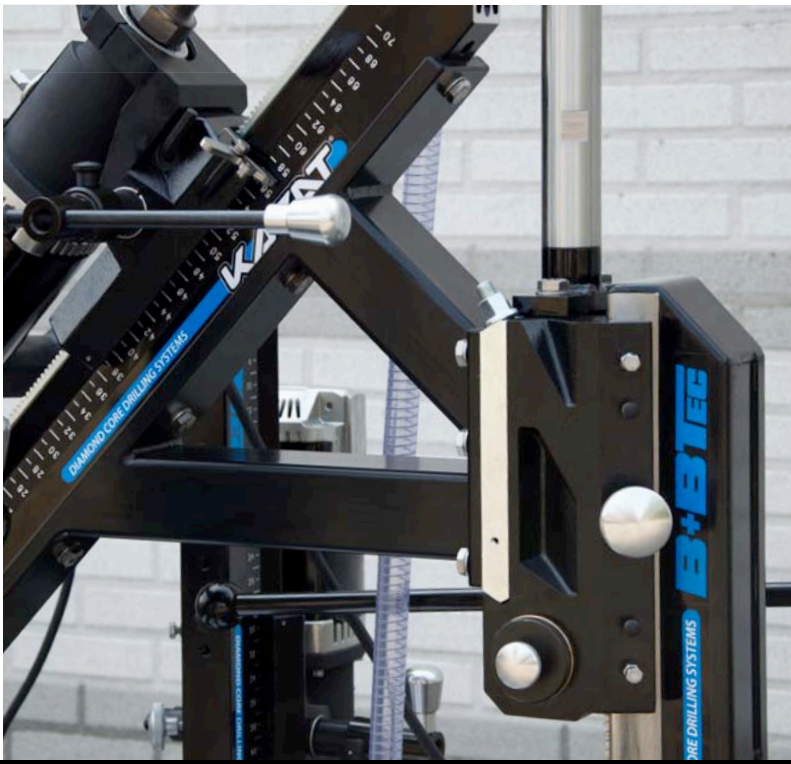


Karat® SR-Compact
Rotating Triple Spindle Diamond Core Drilling Unit for the installation of Swiss Lock Anchors.

Supplied: 3 units





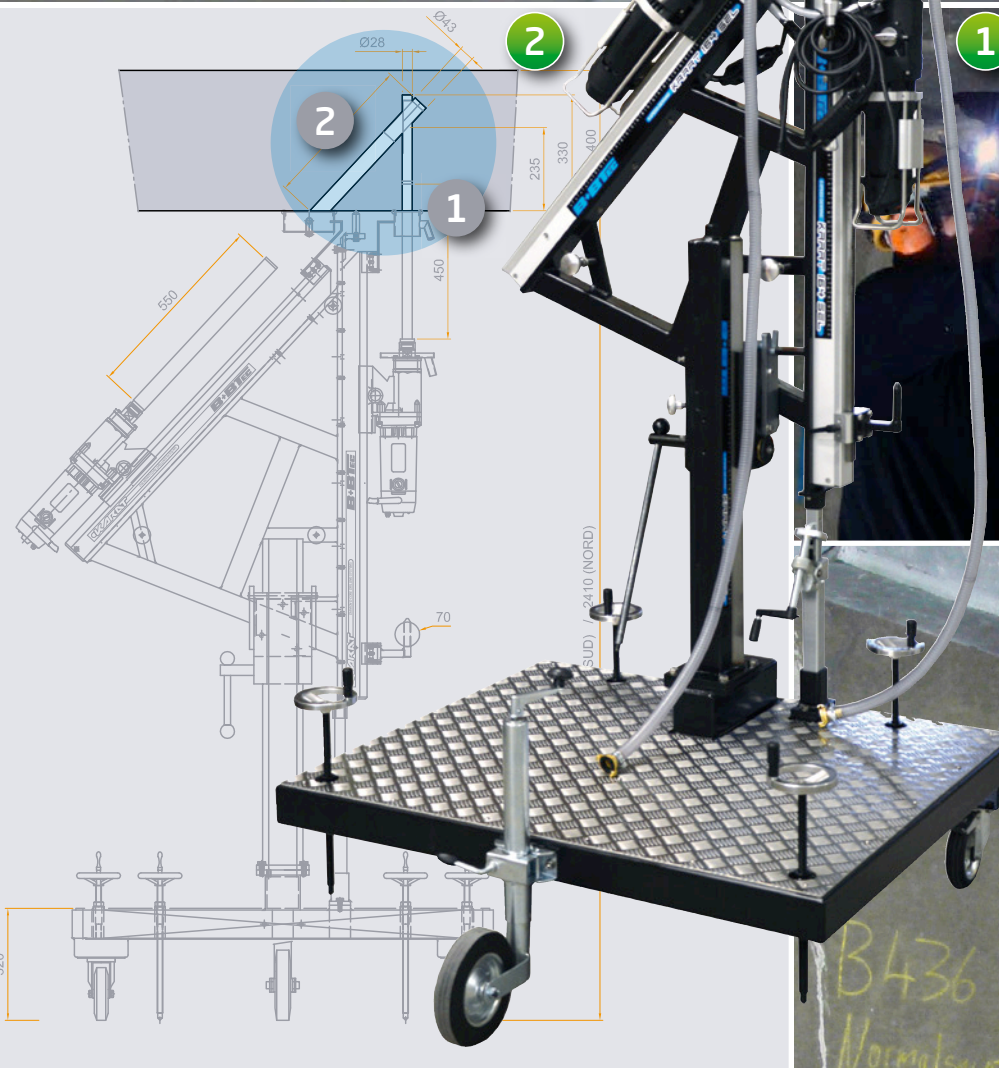


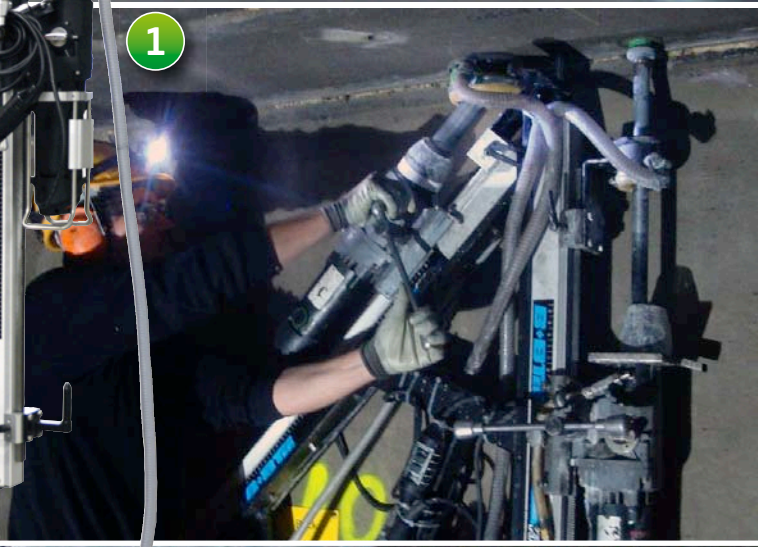
Seelisbergtunnel N02 EP

A double tube, 2 lane (each) tunnel with a total length of 9,3 km.

Installation of new suspension rods for partition wall with SR™ M24ZS 1.4529

Drilling- + Installation
January 2014 - March 2014 and
December 2014 - October 2015



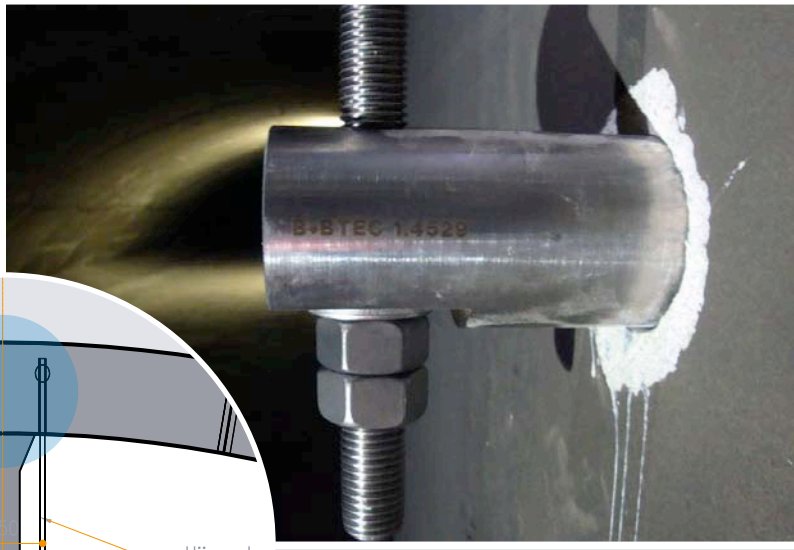


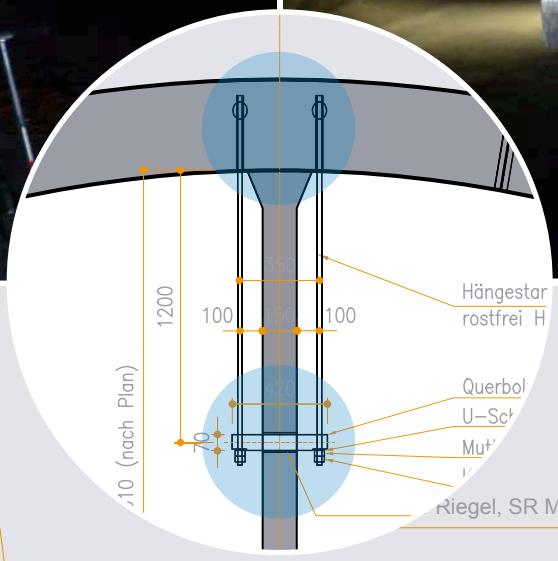
Project Data

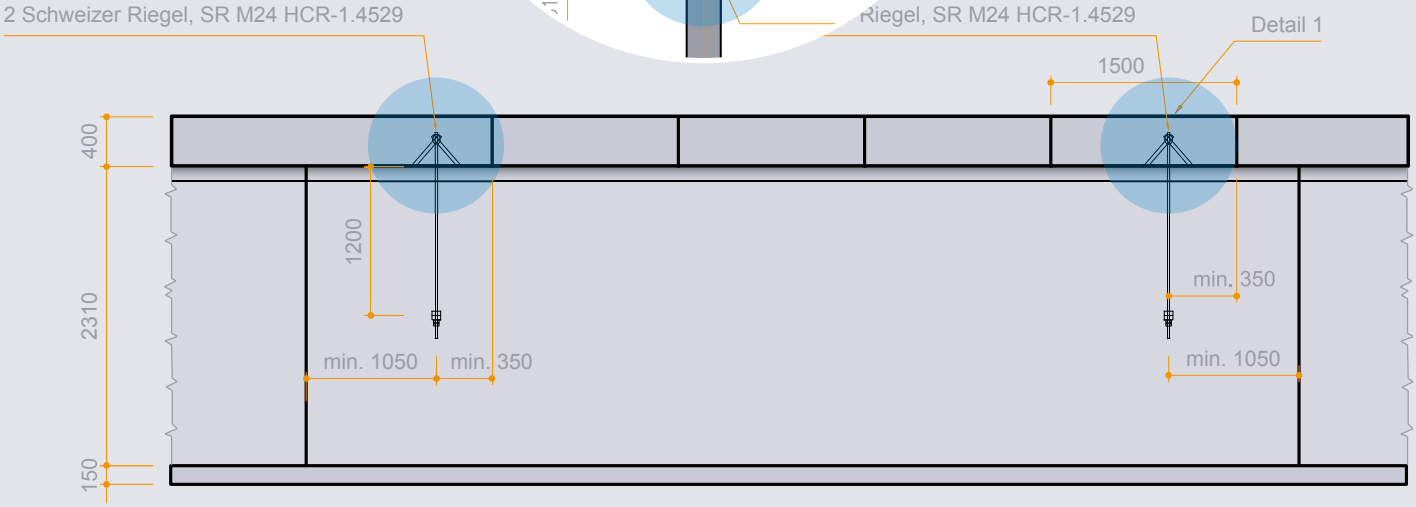
374 Swiss Lock comprised of:

- 2	SR™ M24	HCR 1.4529
- 1	transverse bolt Ø70 mm	HCR 1.4529
- 2	Suspension rods M24	HCR 1.4529

2 Special Swiss Lock Core Drilling Units SR™-SEELIS
60 Diamond Core Bits Ø28 - 43 mm
50 Swiss Lock sets SR™ M24ZS Special Lengths







Tunnel Construction

Tunnel de Bure
Switzerland
2010 - 2011

Tunnel de Bure

Newly constructed 2 lane tunnel with four breakdown bays with a total length of 3059 m.

Installation of the tunnel deck above breakdown bays with Swiss Lock **SR™ M24** 1.4529. Distance between suspension rods 80 - 150 cm

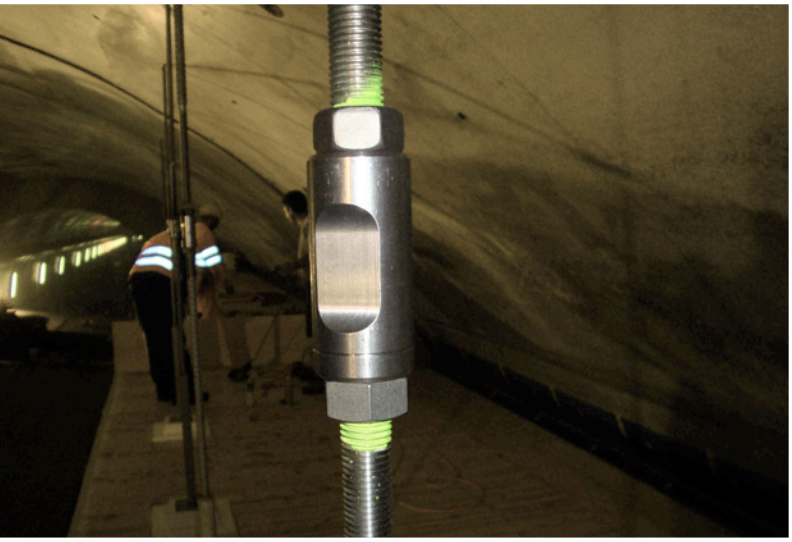
Drilling- + Installation March 2010 - January 2011
Tunnel opening 2014

Project Data

Swiss Lock:	SR™ M24
Steel Quality:	HCR1.4529
Ausstellbuchten EA3 und EA4	88 Sets
Ausstellbuchten EA1 und EA2	52 Sets
Brandschutzplatten	280 Pcs
Brandschutzeinhausung	180 Pcs

Tunnel Construction

Vedeggio-Cassarate
Switzerland
2009

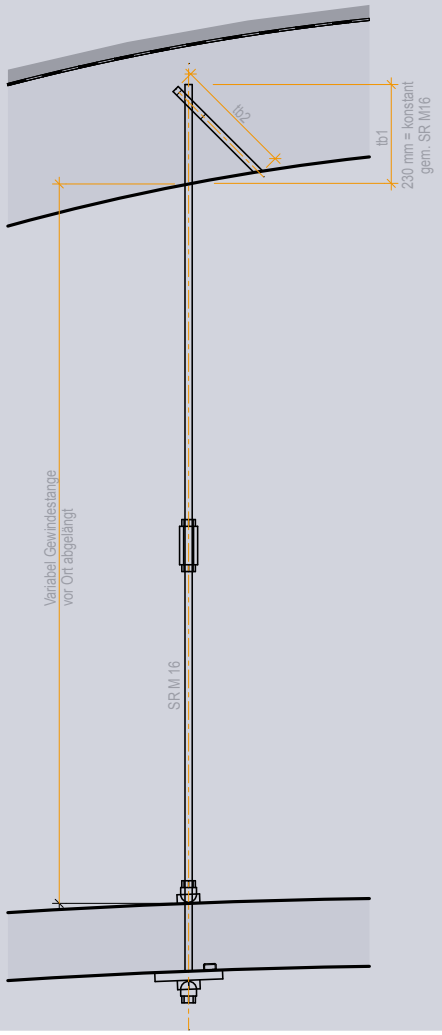


Vedeggio-Cassarate

Newly constructed 2 lane tunnel with four breakdown bays with a total length of 2630 m.

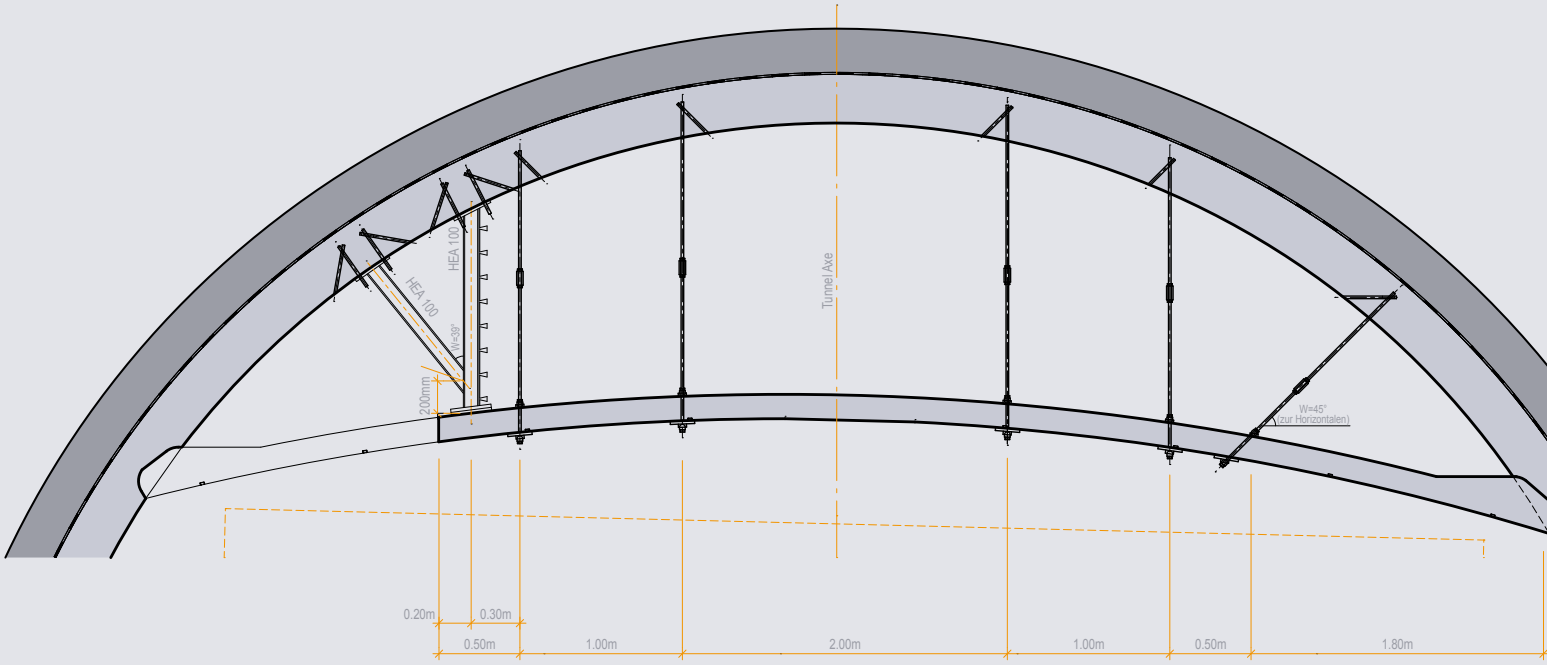
Installation of the tunnel deck above breakdown bays with Swiss Lock **SR™ M20** 1.4529.

Drilling- + Installation May 2009 - October 2010
Tunnel opening July 26, 2012



Project Data

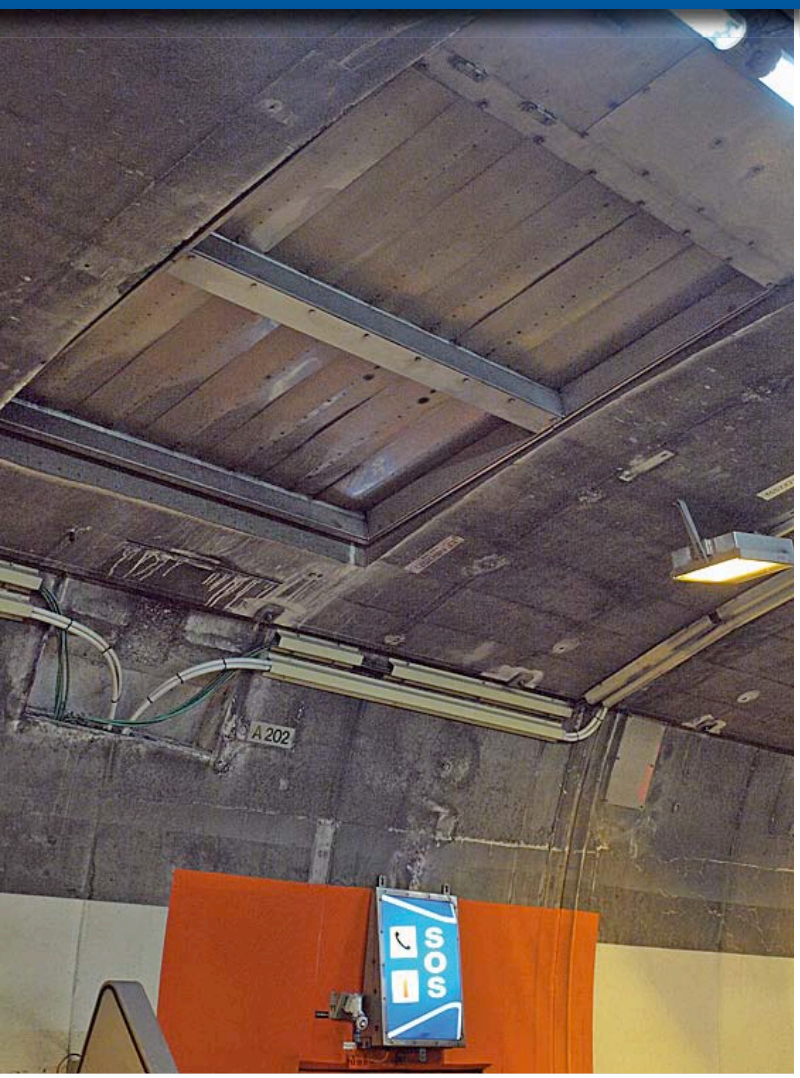
Swiss Lock	:	SR™ M20
Steel Quality	:	HCR 1.4529
Anchor hole	:	Diamond Drilled



Tunnel Construction

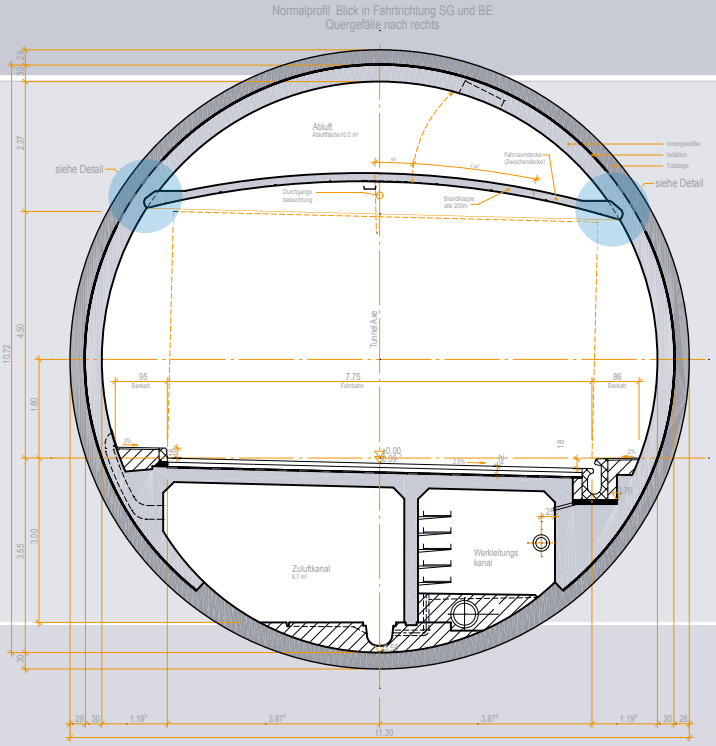
Gubristtunnel
Switzerland
2009

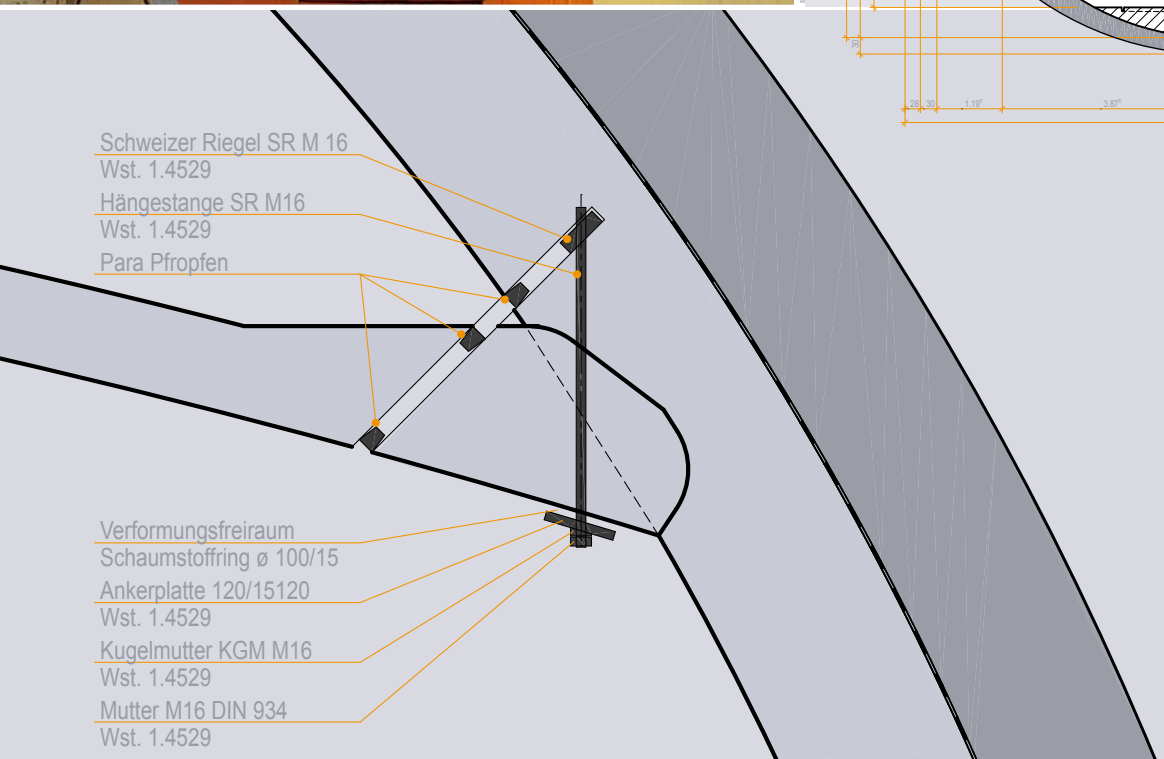
Gubristtunnel



Project Data

Swiss Lock: SR M16
Steel Quality: HCR1.4529
5800 Zugstangen





Stadium Construction

Olympic Stadium
Khartoum, Sudan
2017

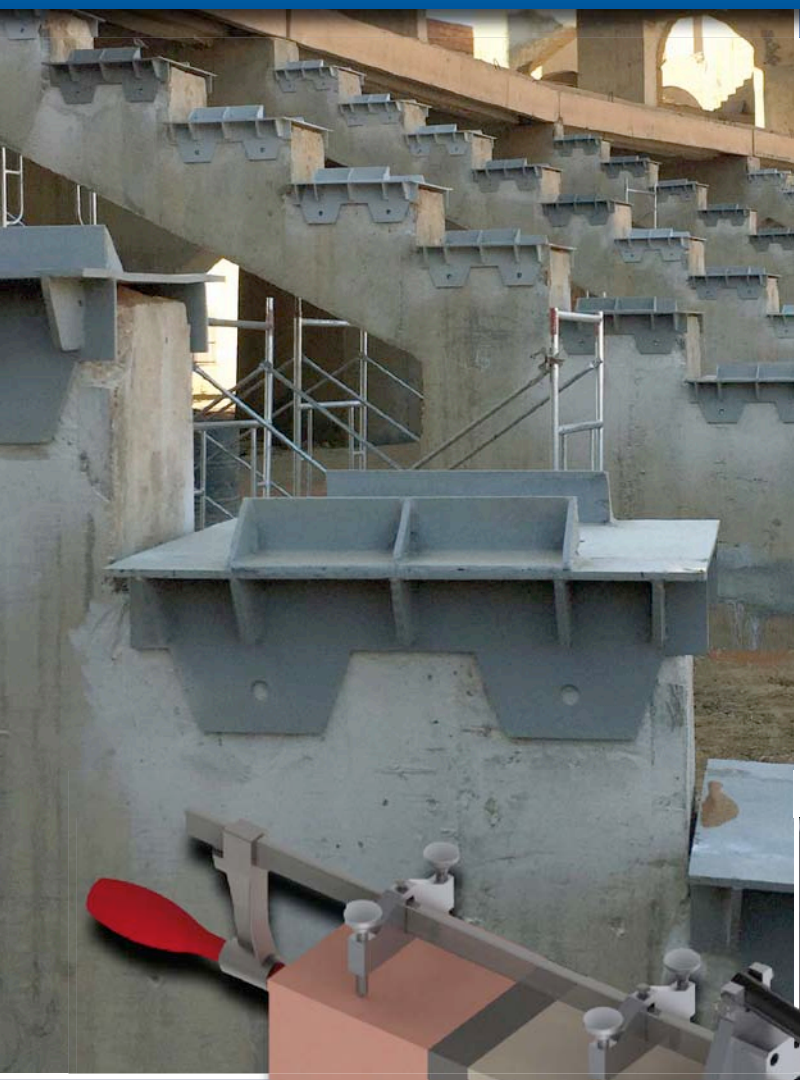
Drillng & Anchoring

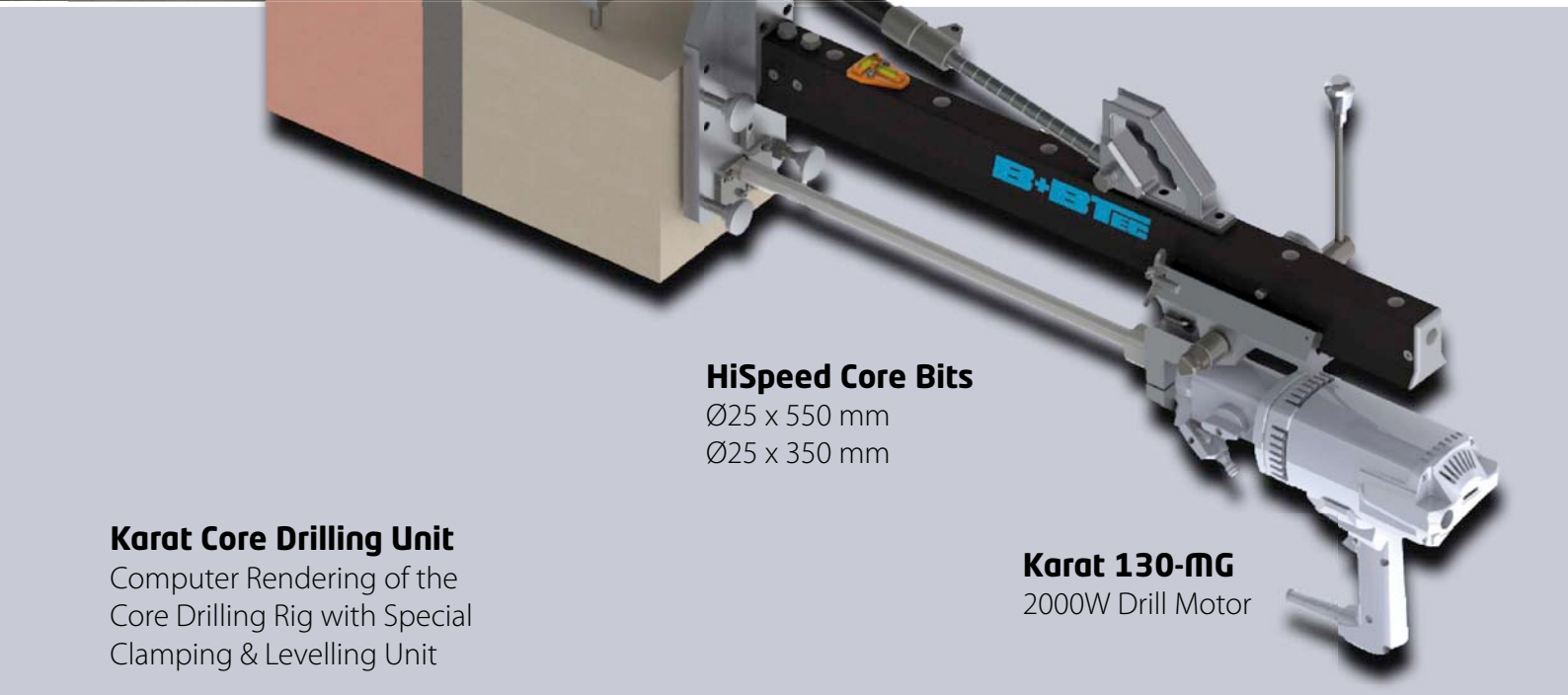
SDNL

Construction of the Khartoum Olympic Stadium was stopped more than 10 years ago.

Currently the project is underway again to finalize the work on the Stadium that will seat 65,000 people once completed.

B+BTec supplied the Core Drilling Units, HiSpeed Diamond Core Bits, Fastening Materials e.g. Threaded Rods, Nuts, Washers & Injection Mortar.





HiSpeed Core Bits
Ø25 x 550 mm
Ø25 x 350 mm

Karat Core Drilling Unit
Computer Rendering of the Core Drilling Rig with Special Clamping & Levelling Unit

Karat 130-MG
2000W Drill Motor

Harbour Construction

Container Handling Terminal
Zeebrugge, Belgium
2013

Crane Rail Installation

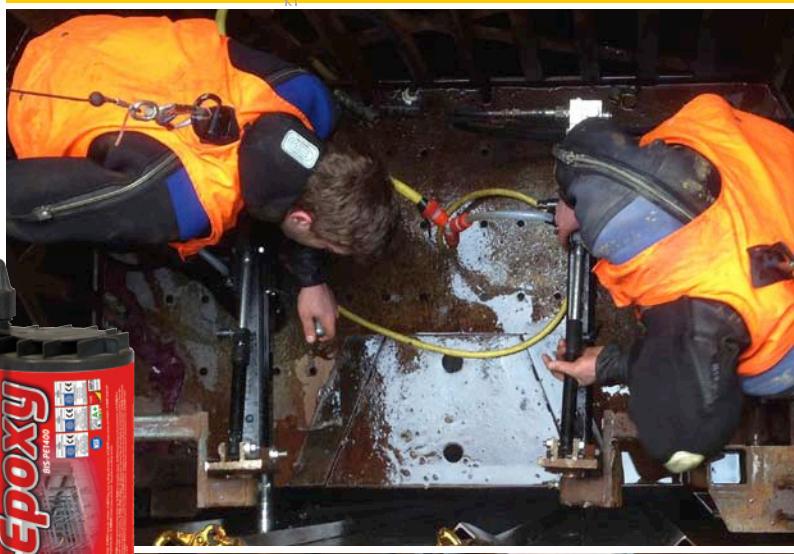
Railsystem for approx. 1.000mtr of Quay renewal. The Crane Rail was anchored using....

alom
Railway engineering & supply

Drilling Crew Work Station
being lowered into the water and pumped dry .

Project Data

Anchor Type:	BIS-PE 3:1 Pure-Epoxy
Anchor Dimension:	M30
Anchor Rod:	ASTA M30 x 360 mm
Steel Quality:	Steel 8.8 Zinc plated
Embedment Depth:	280 mm
Drilling Method:	Diamond
Coring Machines:	Karat 164-Hydr



Karat 164-Hydr

Harbour Construction

Port of Rotterdam
Netherlands
2006

Fender Installation

A number of incorrectly installed and even missing anchors forced port authorities to order the complete re-installation of these fenders.

Installed anchors were drilled out and replaced with VDP-UW M30.

Project Data

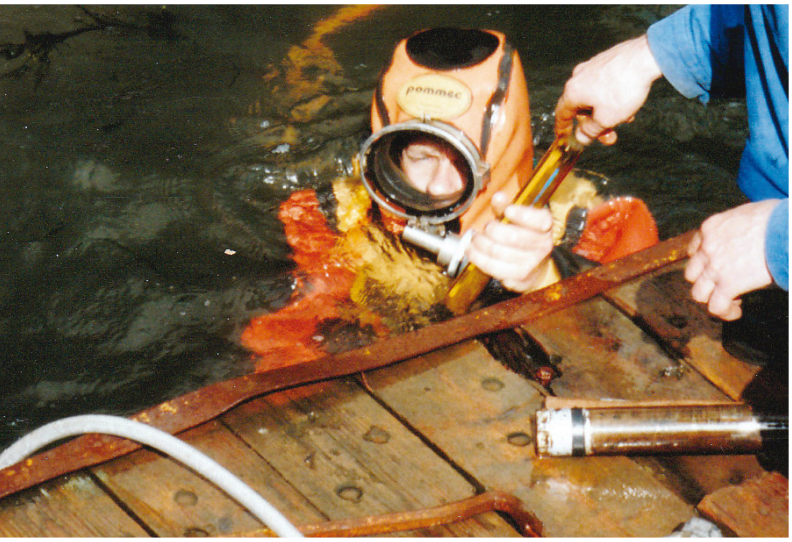
Anchor Type:	VDP-UW
Anchor Dimension:	M30
Anchor Rod:	ASTA M30 x 360 mm
Steel Quality:	Steel 8.8 Zinc plated
Embedment Depth:	280 mm
Drilling Method:	Diamond
Coring Machines:	Karat 164
	Karat 164-Hydr

Karat 164-Hydr
Diamond Core Drilling Unit with Hydraulic Motor for Underwater Drilling

VDP-UW M30
Glass Capsule Anchor designed for Underwater Applications

Harbour Construction

Port of Rotterdam
Netherlands
2007



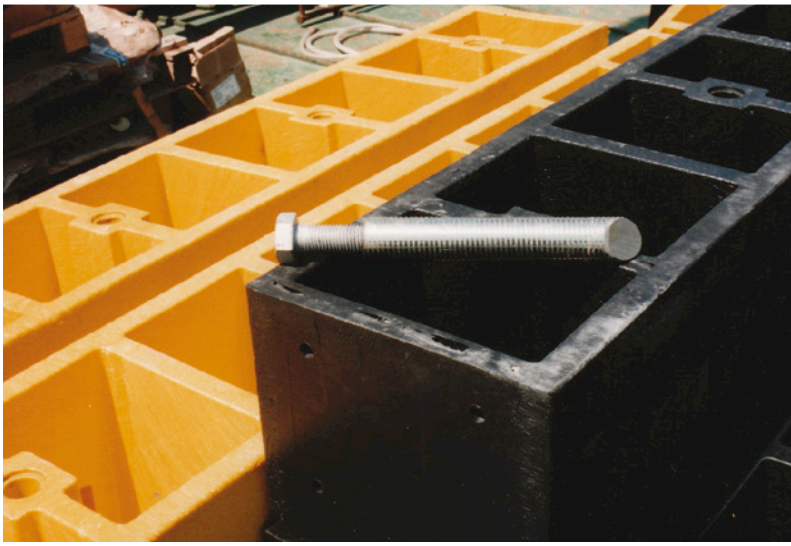
Sliding Beam Installation

Test Section for Low-density poly-ethylene (LDPE) sliding beams and ladders as a possible replacement for traditional tropical hardwood beams.

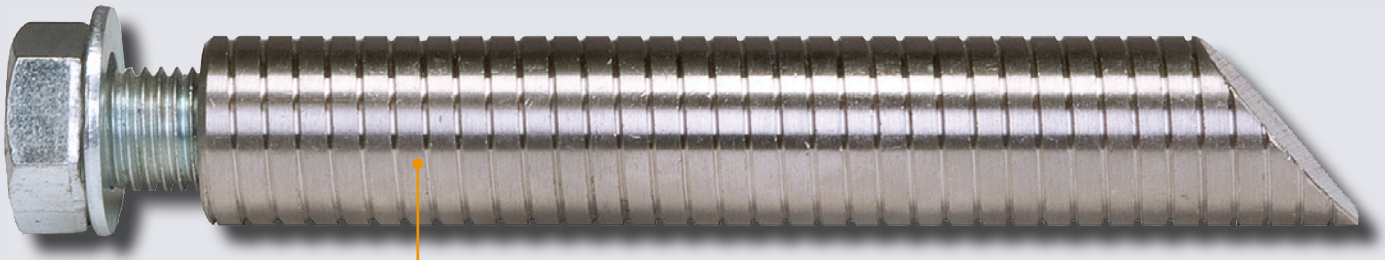
Installed with internally threaded VD-I anchors for easy removal.

Project Data

Anchor Type	:	VD-I 30
Anchor Dimension	:	45 x 280 mm
Anchor Bolt	:	M30
Steel Quality	:	5.8 Zinc Plated
Anchor Hole Diameter	:	Ø50 mm
Embedment Depth	:	280 mm
Drilling Method	:	Diamond



VDP-UW M30
Glass Capsule Anchor designed for Underwater Applications



VD-I 30
Internally Threaded Socket for Flush Mount Anchoring

Harbour Construction

Rotterdam
Netherlands
1992

Fender Reinforcement

After a collision with a fender protecting a bridge, a second fender was placed in front. The two fenders were connected by a steel construction to be able to withstand the exteme high shear loads resulting from a future collision

Project Data

Anchor Type	:	VDP (4 x M30 per hole)
Anchor Rod	:	ASTA M64 x 700 mm
Steel Quality	:	Steel 8.8 Hot Dip Galvanized
Anchor Hole Diameter	:	Ø70 mm
Embedment Depth	:	600 mm
Drilling Method	:	Diamond

Railroad Construction

Riyadh Metro
Saudi Arabia
2016

Riyadh Metro

The project includes the design and construction of Special Multi Spindle Core Drilling Rigs and the Supply of Pure Epoxy Injection Mortar for three lines: line 4 (yellow), line 5 (green) and line 6 (purple) (see metro map), which will have 25 stations. Construction will include 64.6 kilometres of rail consisting of:

- 29.8 kilometres of viaducts
- 26.6 kilometres of underground tracks
- 8.2 kilometres of overground tracks

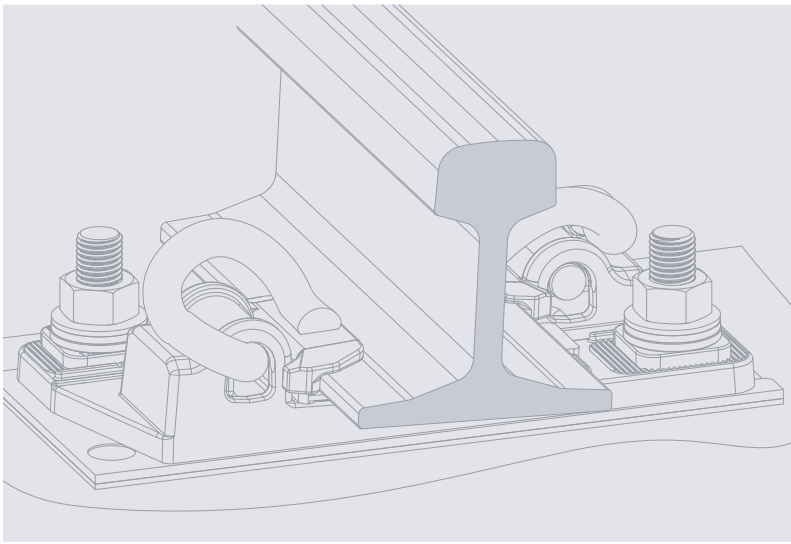
The six lines comprising the Riyadh metro project will span more than 176 kilometres, making it the largest subway under development in the world at present. Construction will require 600,000 tonnes of steel, 4.3 million cubic metres of concrete and will employ over 30,000 people

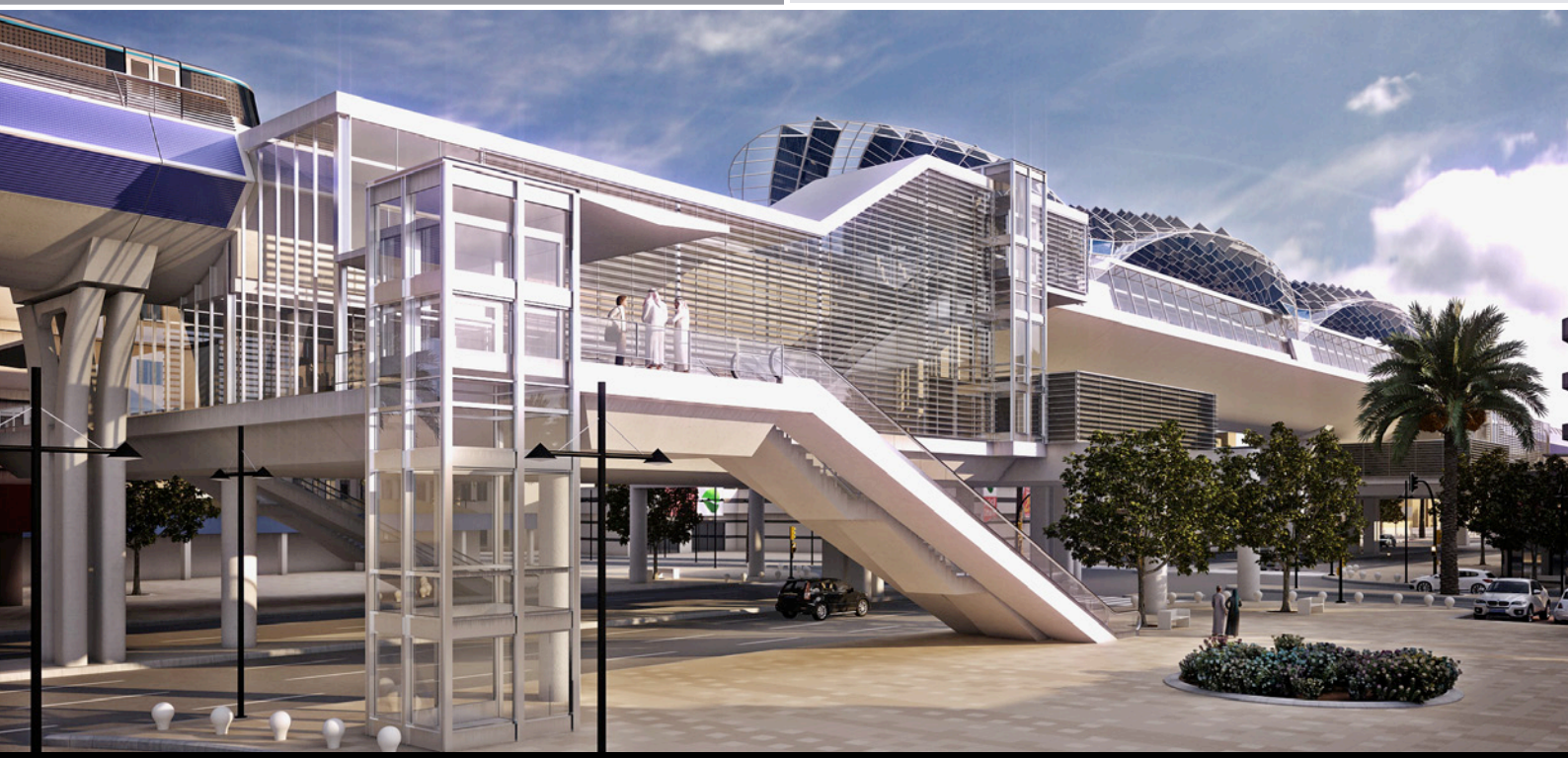
Strukton
Rail

Railroad Construction

Project Data

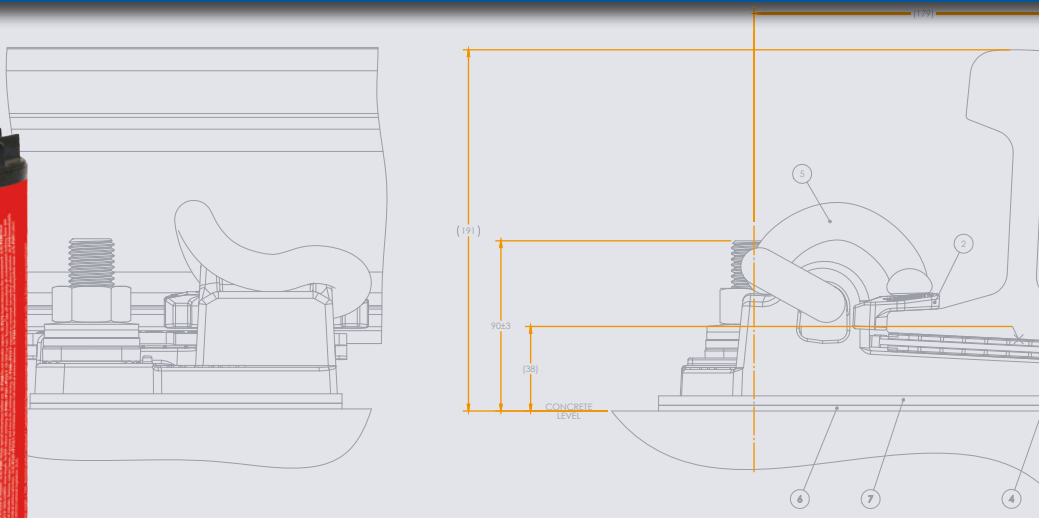
Anchor Type	:	BIS-PE Pure Epoxy 3:1
Anchor Rod	:	M24
Steel Quality	:	Steel 8.8 or 10.9
Anchor Hole Diameter	:	Ø29 mm
Embedment Depth	:	140 mm
Drilling Method	:	Diamond





Railroad Construction

Riyadh Metro
Saudi Arabia
2016

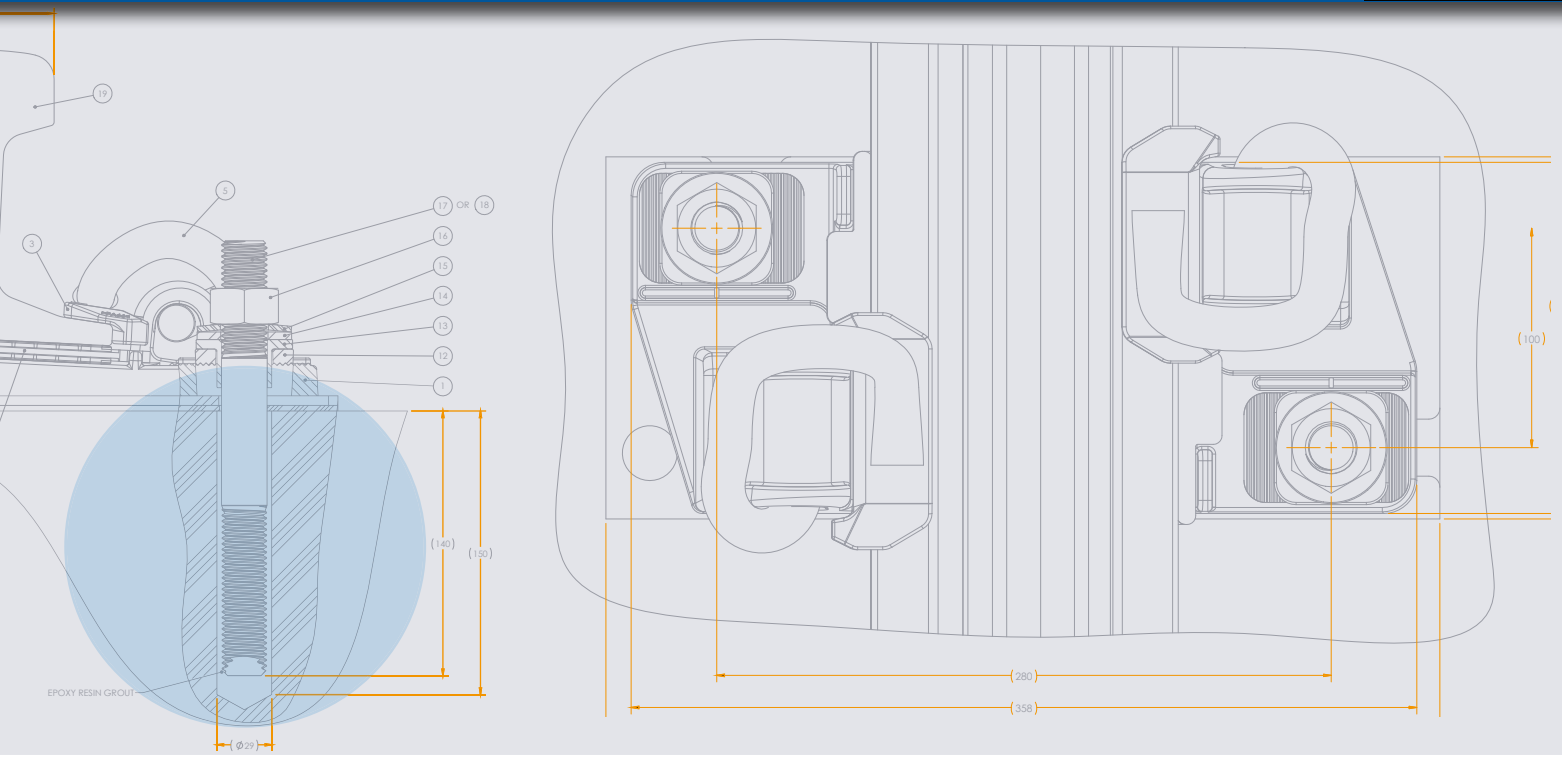


BIS-PE Pure Epoxy 3:1

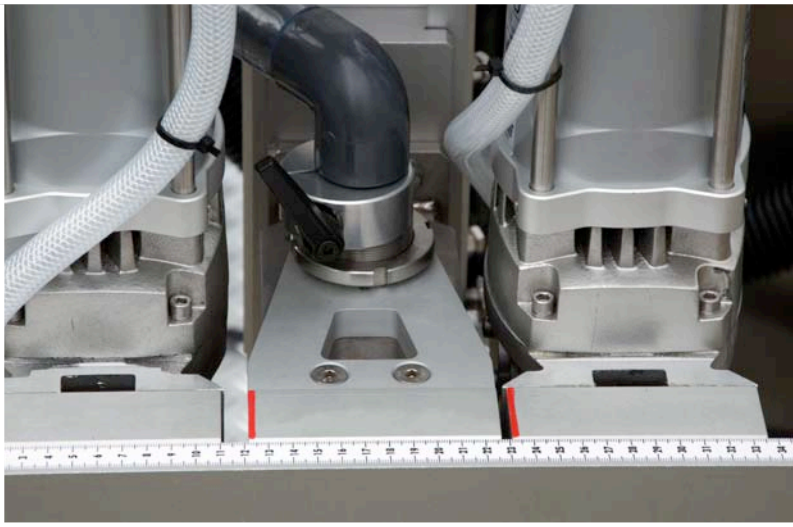
ETA Approved Injection Mortar. The slow curing characteristic of pure epoxy proved to be ideal for the installation of the rail anchors in the hot Saudi climate.

Core Drilling Trolley

Double spindle core drilling unit with integrated coolant water supply & recovery system.

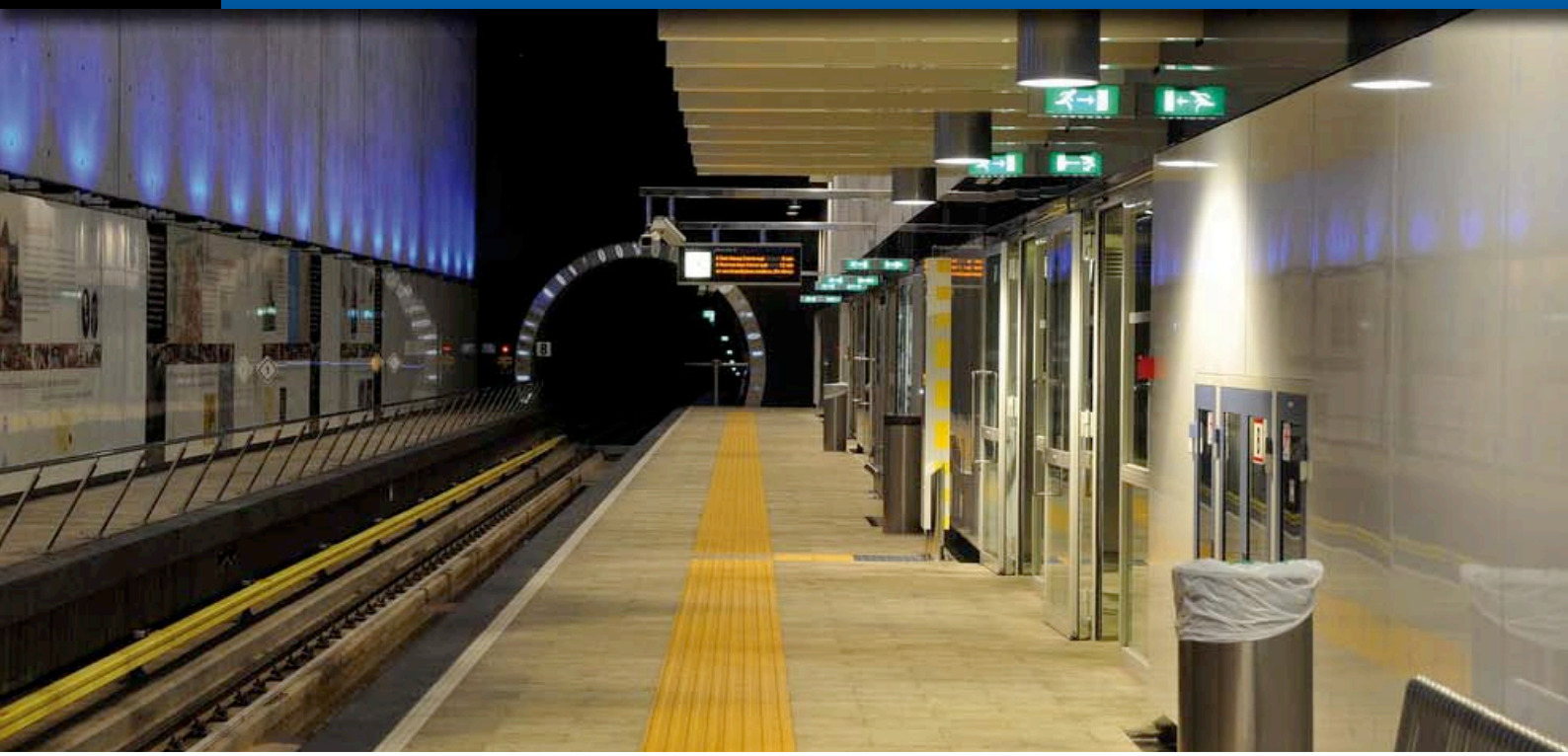

19
5
3
17
OR
18
16
15
14
13
12
1
(140)
(150)
EPOXY RESIN GROUT
(Ø29)
(100)
(280)
(358)


6
7
8



Railroad Construction

Metro Station Blijdorp
Rotterdam, Netherlands
2005



Strut Frame Installation

During the excavation of the underground metro station several strut frames were installed in the 18 mtr deep construction pit to prevent collaps.

The frames were mounted on support brackets anchored with VDP M30 capsules.

Project Data

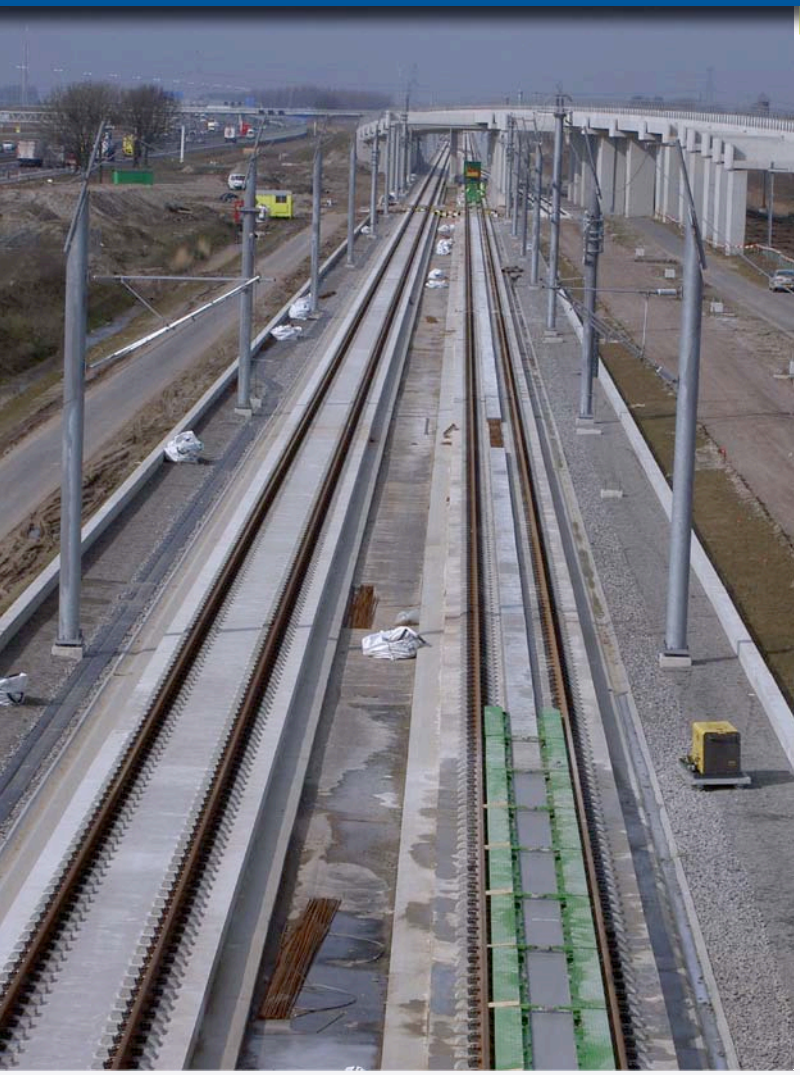
Anchor Type	:	VDP
Anchor Dimension	:	M30
Anchor Rod	:	ASTA M30 x 360 mm
Steel Quality	:	Steel 8.8 Zinc plated
Embedment Depth	:	280 mm
Anchor hole	:	Diamond Drilled

Railroad Construction

HSL HiSpeed Rail
Netherlands
2005

Derailment Safety Barrier

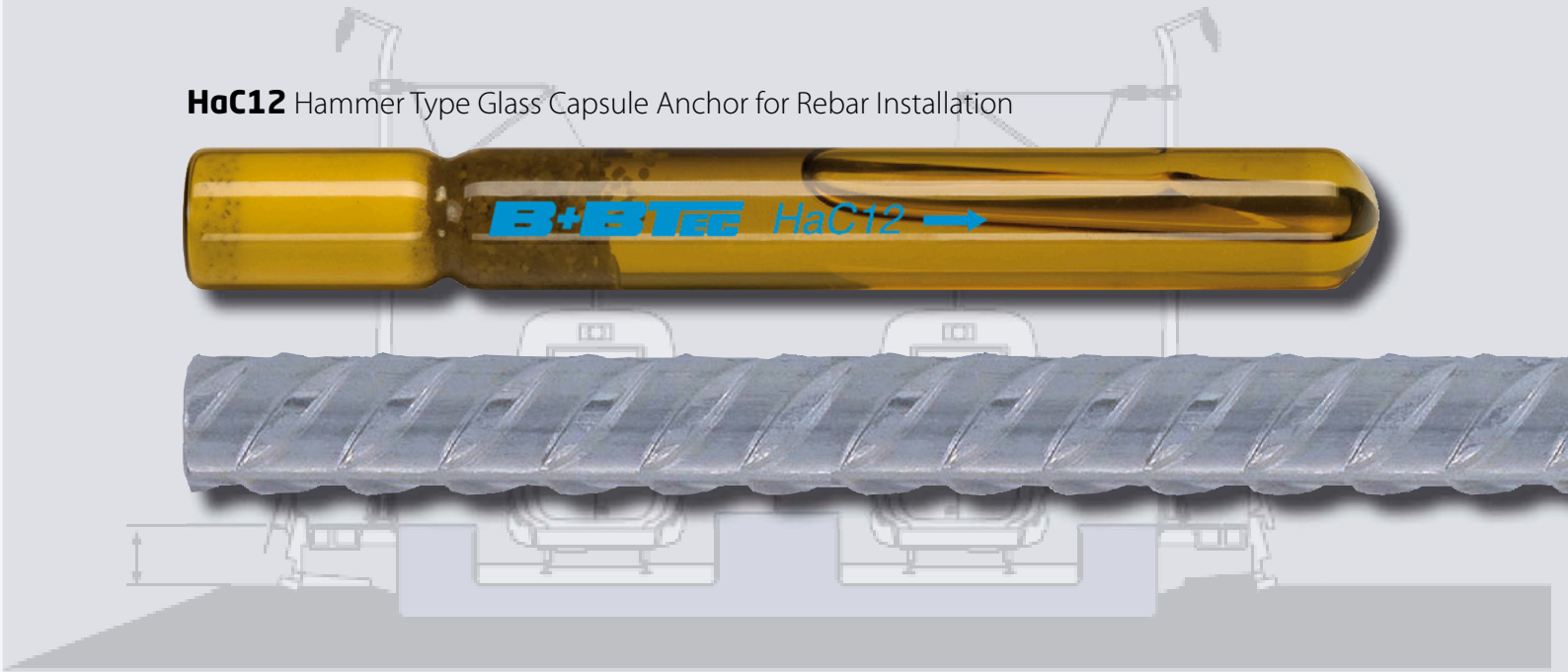
In order to prevent a train from crashing into the adjacent track a derailment safety system consisting of a 50 cm wide 17 cm high concrete barrier is constructed between the rail tracks.



Project Data

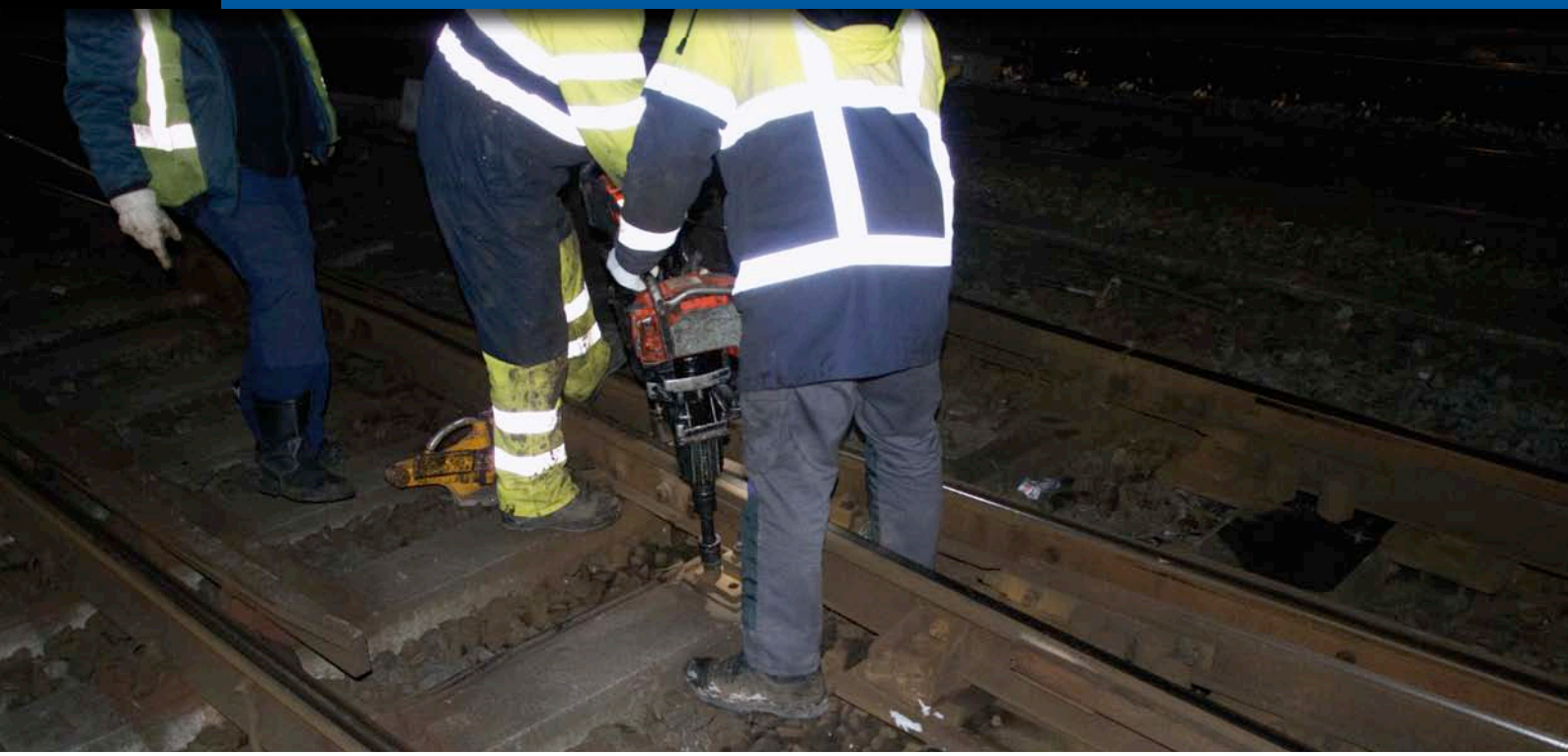
Anchor Type	:	HaC12
Rebar	:	Ø12 mm
		FEB 500.
Embedment Depth	:	150 mm
Drilling Method	:	Air
Number of Capsules weekly	:	25.000
Number of Capsules total	:	400.000

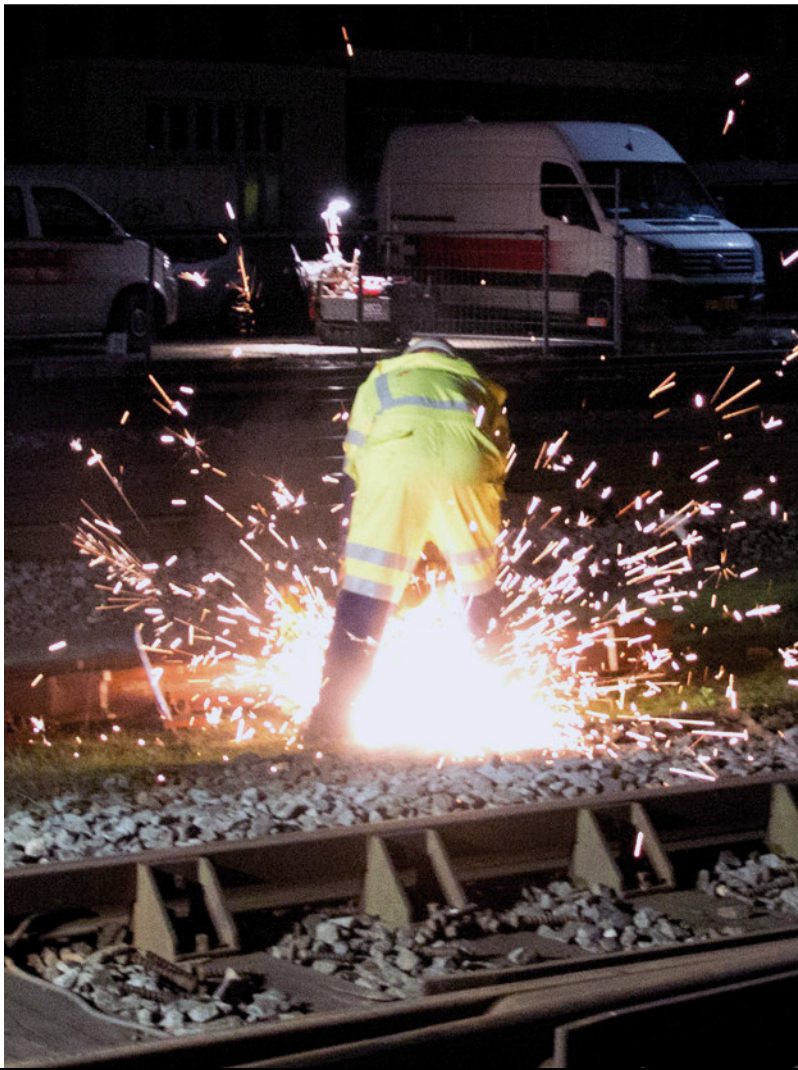
HaC12 Hammer Type Glass Capsule Anchor for Rebar Installation



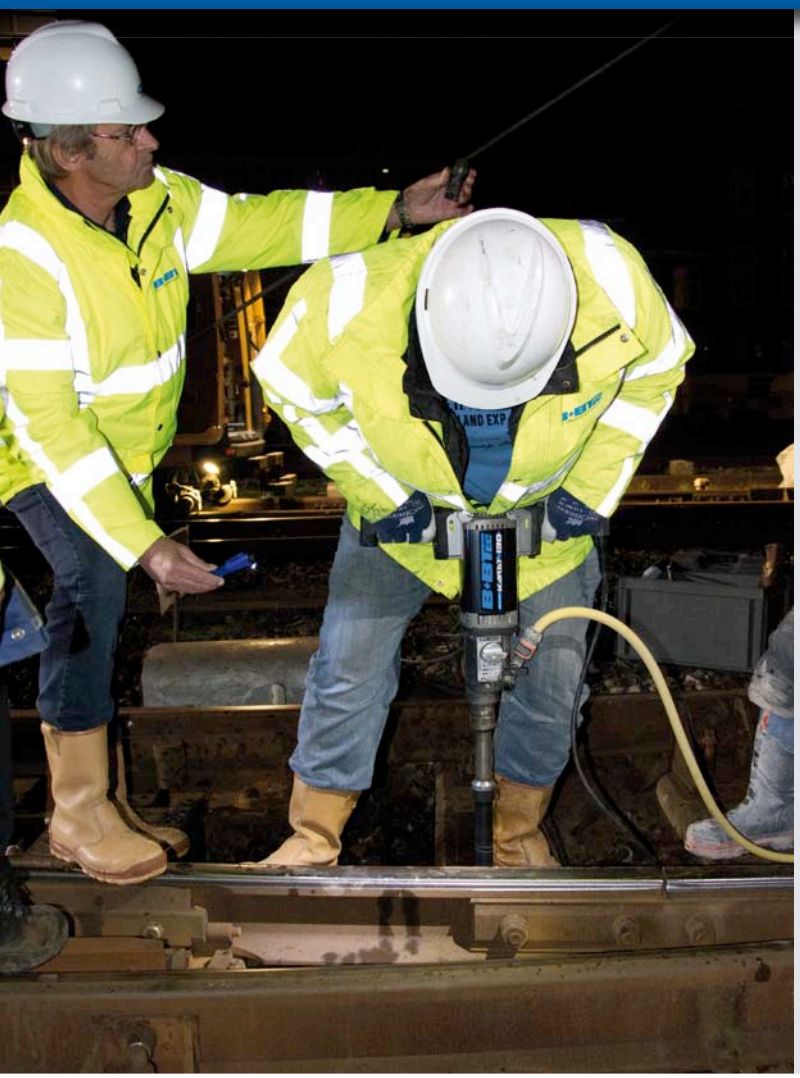
Railroad Construction

Steel Cable Test Bench Netherlands 2015





Anchor Dimension	:	M30 x 500
Steel Quality	:	8.8 Zinc Plated
Anchor hole	:	Diamond Drilled
Anchor Type	:	BIS-RAIL 410



Road & Bridge Construction

A12 Highway
United Kingdom
2007

12 mtr Lighting Columns

Although the Britpave barrier is essentially un-reinforced it was still imperative that the load resistance of the anchor system met the stringent requirements detailed in the Highways Agency Design Document BD26/04.

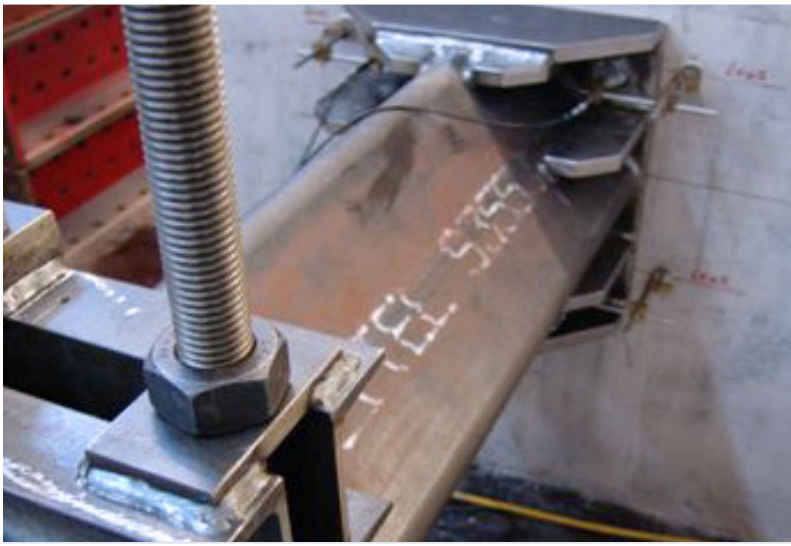
FCL FIXING CENTRE LIMITED

TNO Fatigue Test

A comprehensive test programme provided reliable performance data and the SSR-128 was approved for use to fit 12 metre high columns to the barrier on the recently completed A12 Stanway to Spring Lane central reservation improvements project.

TNO innovation for life

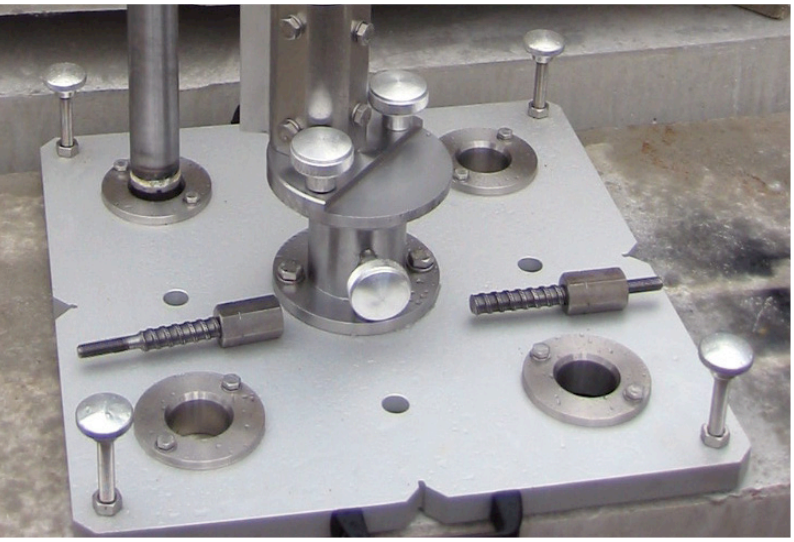
Fatigue loading of resin anchors
Report nr. 25.5-07-07



Road & Bridge Construction

A12 Highway
United Kingdom
2007

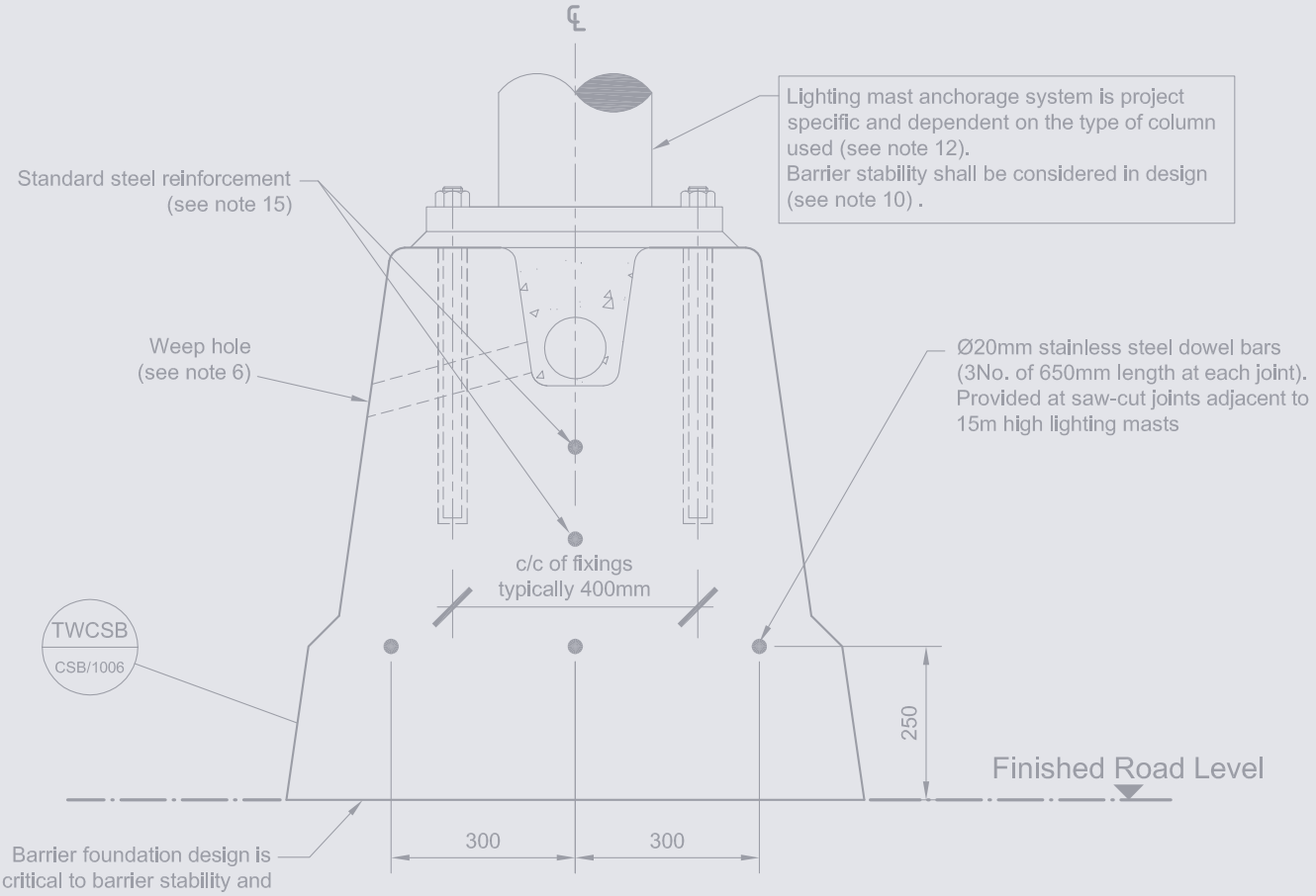
Concrete Slip Form Safety Barrier



Karat 164 CSB

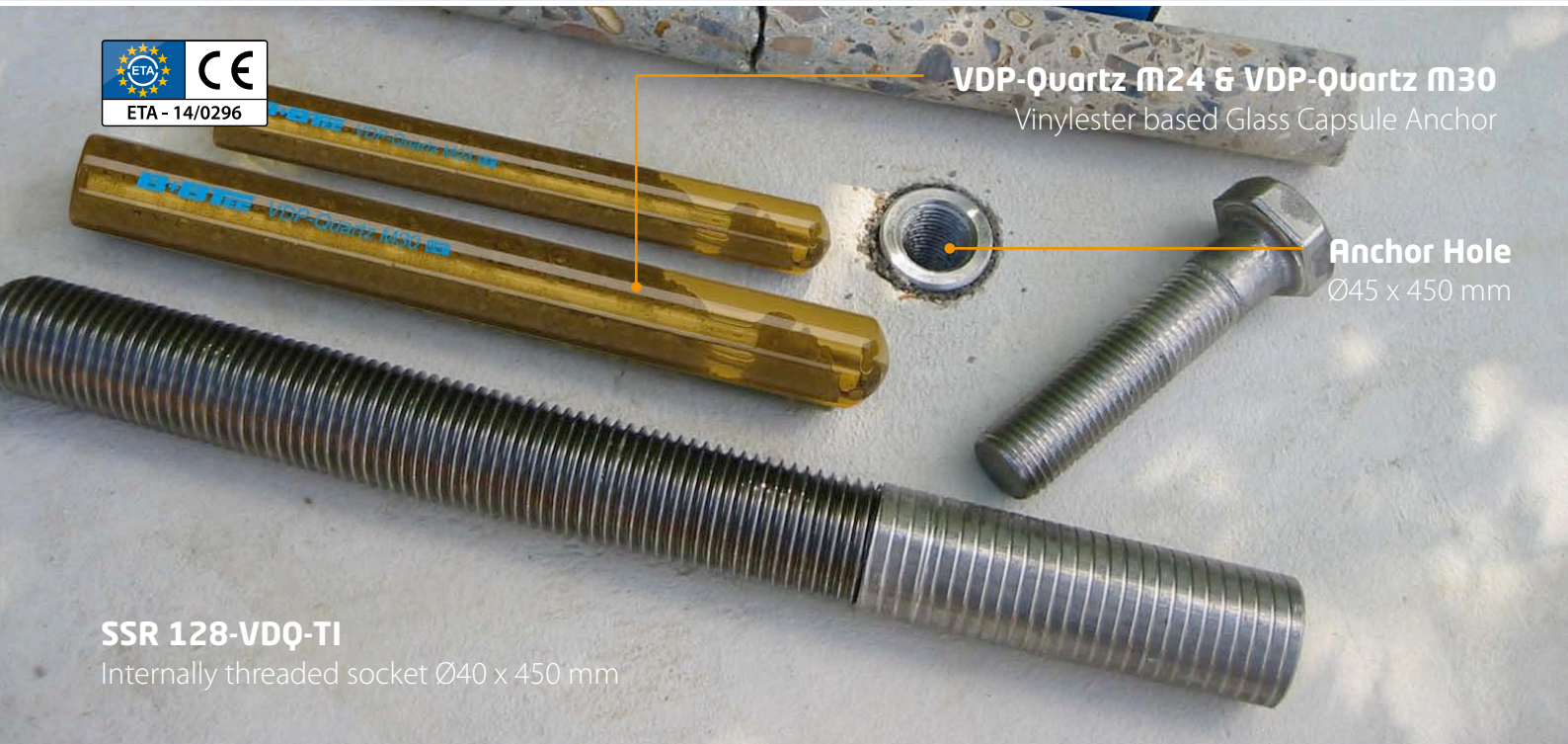
Diamond Core Drilling Rig specially designed for very precise drilling of the anchor holes for the installation of Flange Plate Lighting Poles.

Base Plate Design allows for very fast set-up and drilling while maintaining the highest level of accuracy.



Typical Section

Scale 1:10



Road & Bridge Construction

A12 Galecopper Bridge
Utrecht, Netherlands
2013

Foundation Reinforcement

For the reinforcement and raising of the Galecopperbrug (A12), one of the bussiest viaducts in the Netherlands, 270 new foundation piles needed to be installed.

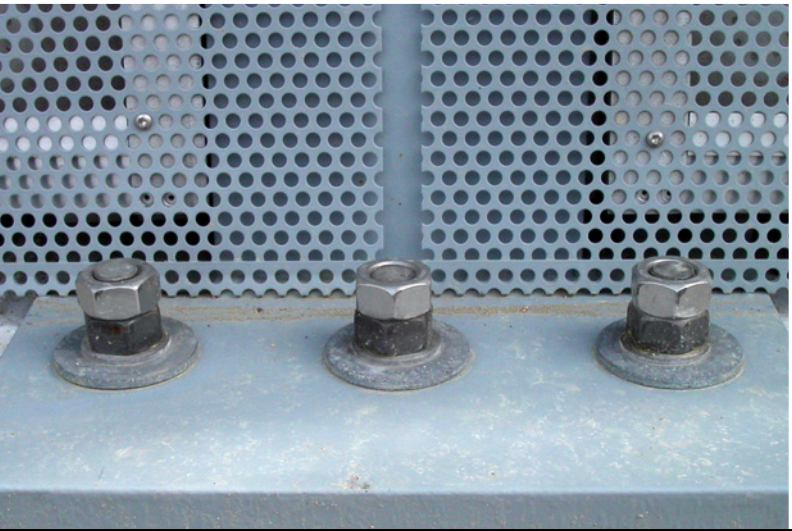
For about 60 piles situated in 5 segments under the bridge deck, holes had to be drilled through the concrete foundation.

Project Data

Drilling Depth	:	3 mtr.
Drilling Diameters	:	Ø710 mm (28 holes)
		Ø655 mm (33 holes)
Total Number of holes	:	61
Diamond Core Bits	:	B+BTec HiSpeed

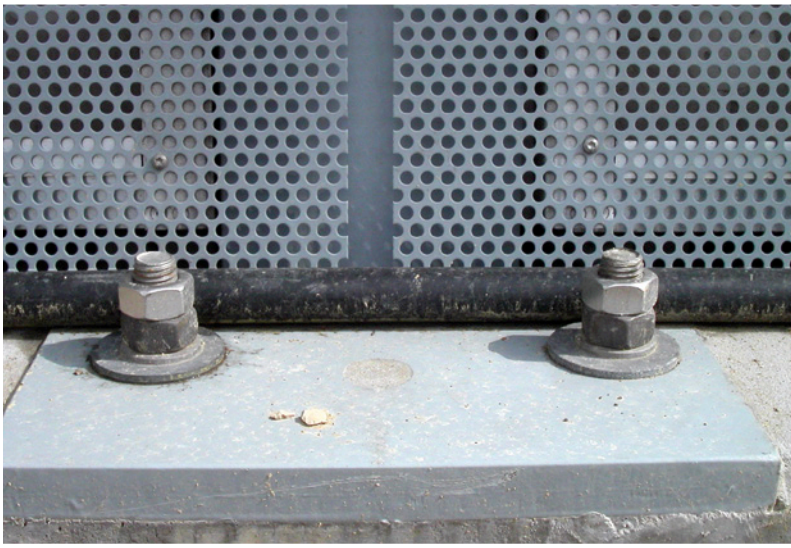
Road & Bridge Construction

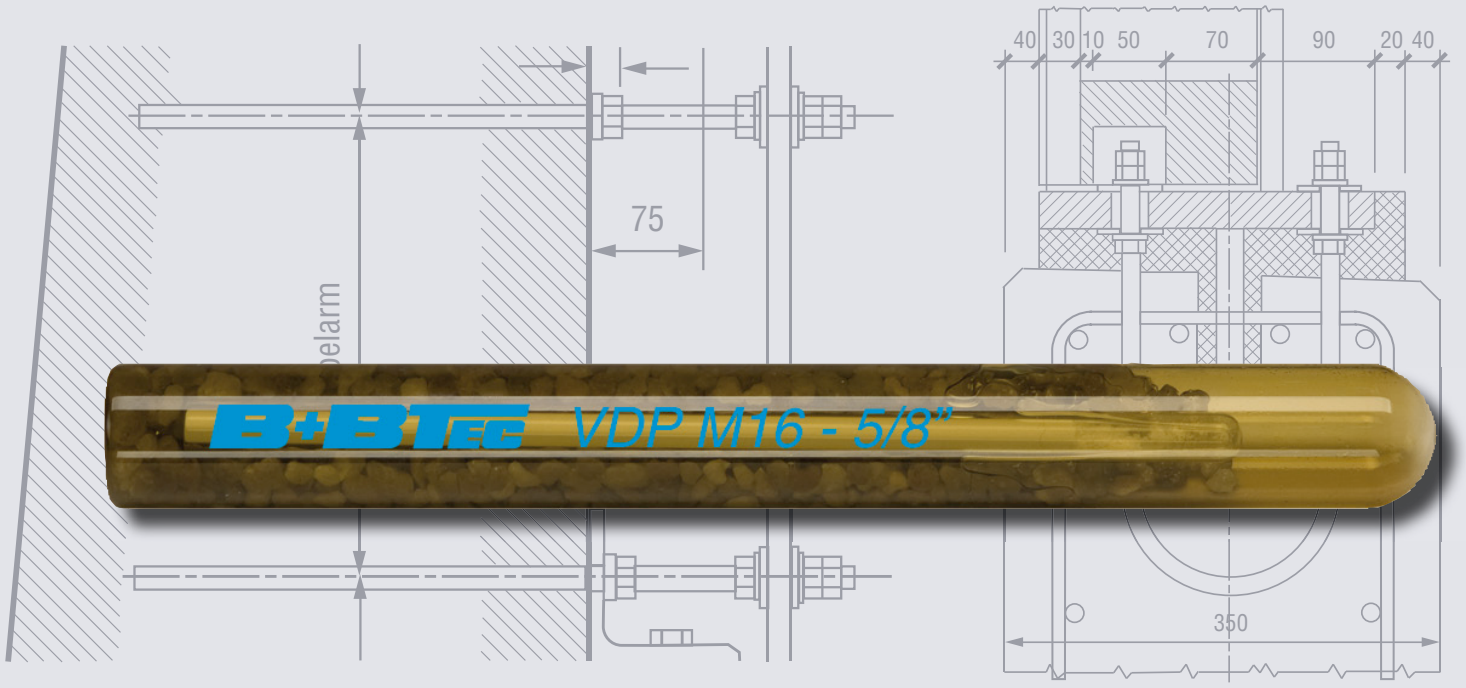
Noise Barrier A1
Zurich, Switzerland
2006



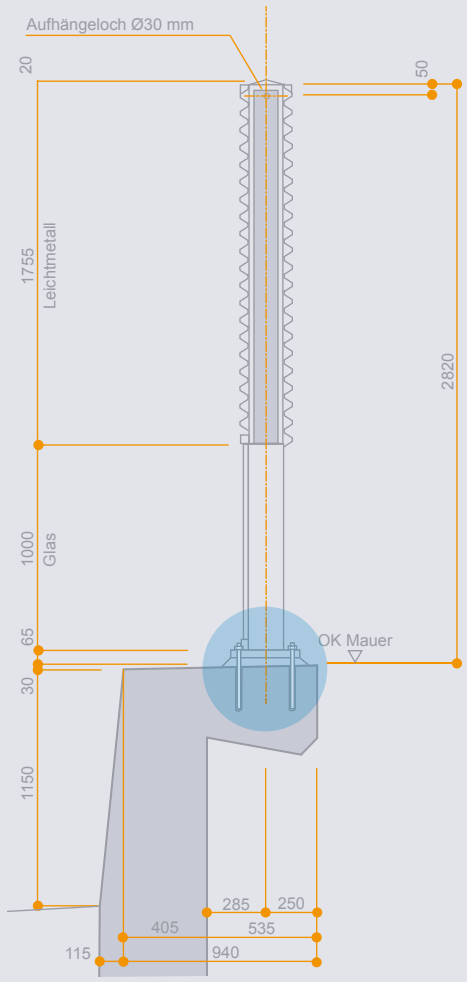
Project Data

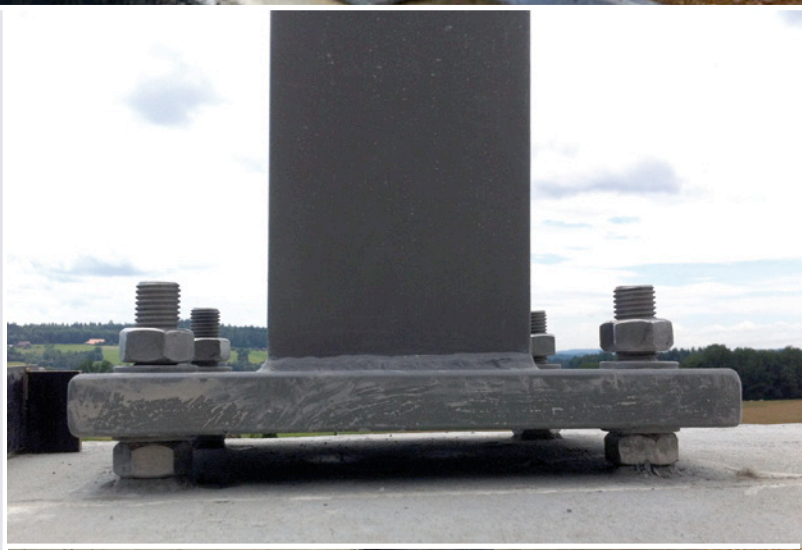
Anchor Type	Anchor Rod	Steel Quality
VD 16	M16 x 225 mm	HCR 1.4529
VD 16/2t	M16 x 350 mm	HCR 1.4529
VD 20/1.5t	M20 x 360 mm	HCR 1.4529
VD 20/1.5t	M20 x 380 mm	HCR 1.4529
VD 20/2t	M20 x 480 mm	HCR 1.4529
VD 24/1.5t	M24 x 460 mm	HCR 1.4529
VD 24/2t	M24 x 540 mm	HCR 1.4529

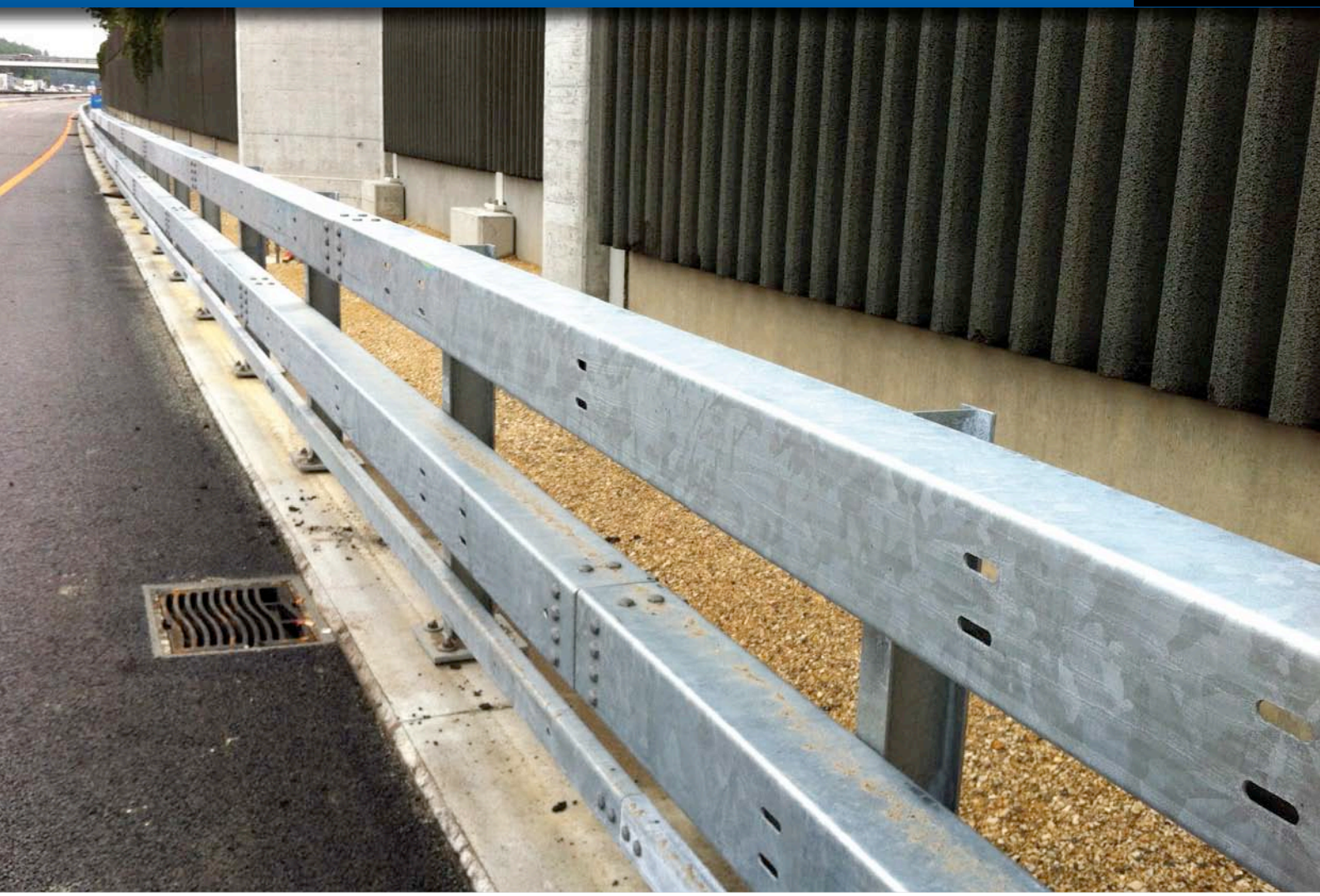




Installation of Noise & Safety Barriers after Highway expansion to 6 lanes







Project Data

Capsule Type	Anchor Rod Ø x L	Stainless Steel	Quantity
VDP-Quartz M16	M16 x 195 mm	1.4401	12,000
VDP-Quartz M20/1.5t	M20 x 370 mm	1.4362	450
VDP-Quartz M20/1.5t	M20 x 380 mm	1.4362	590
VDP-Quartz M24/1.5t	M24 x 380 mm	1.4362	2,020

ETA - 14/0296

Road & Bridge Construction

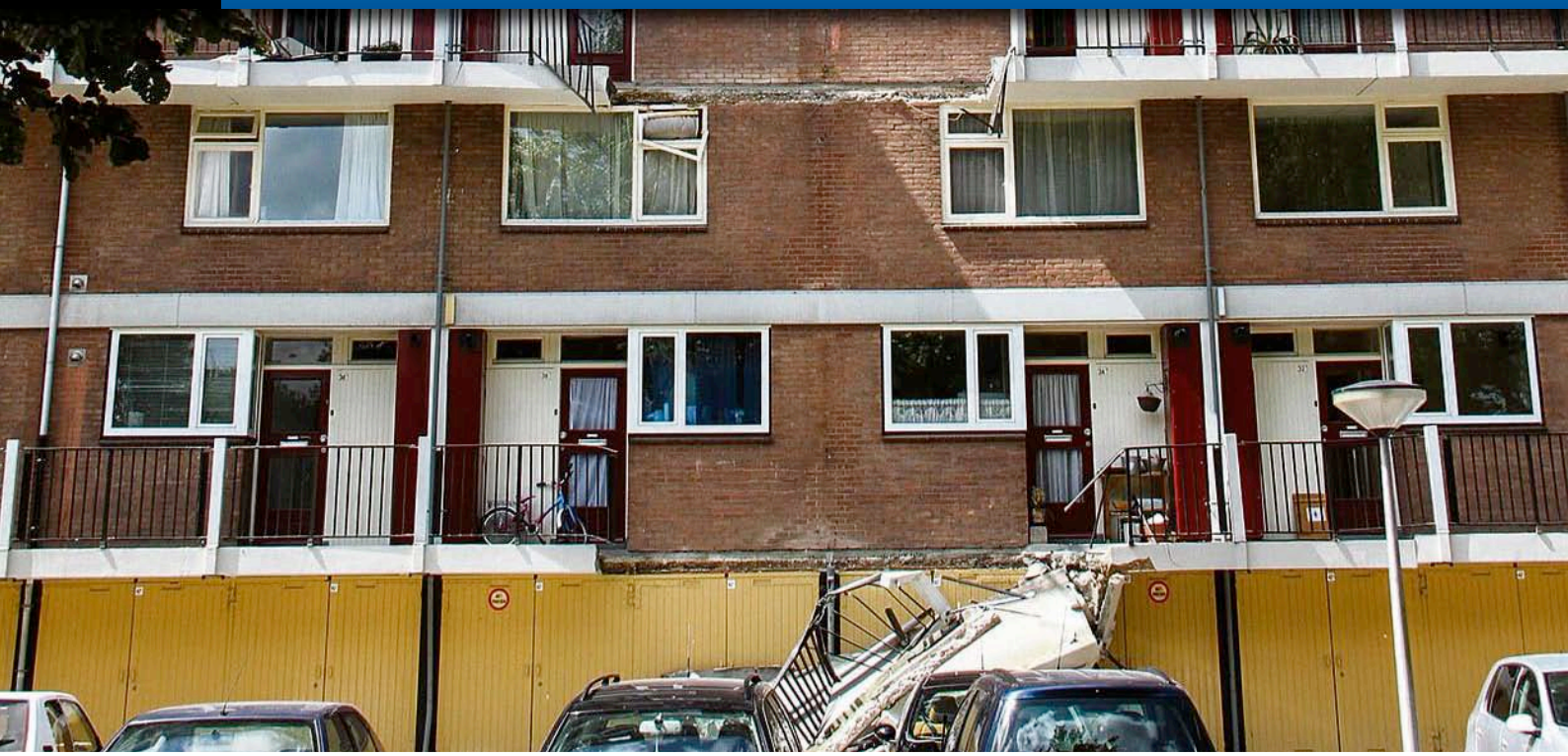
Retaining Barrier A9
Haselkehr, Switzerland
2007

Project Data

Capsule Type:	VDP
Anchor Dimension:	M20/2t
Anchor Rod:	M20 x 480 mm
Anchor Dimension:	M24/1,5t
Anchor Rod:	M24 x 540 mm
Steel Quality:	A4 Wst. 1.4462

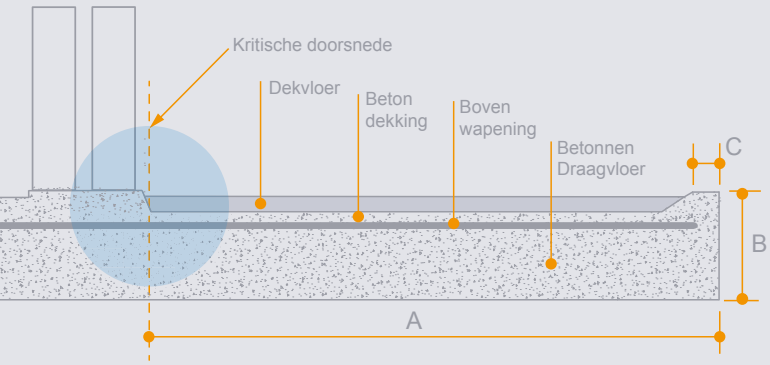
Project Data

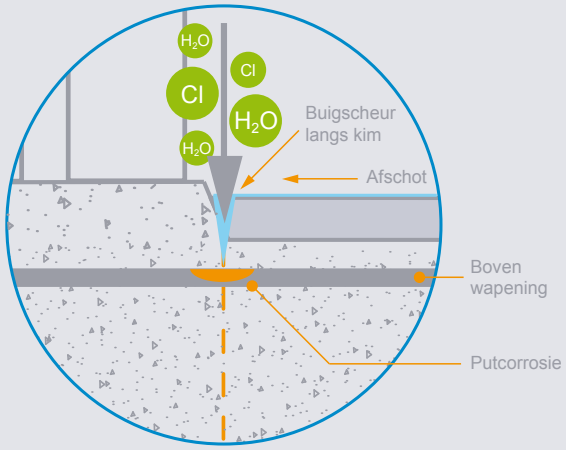
Anchor Dimension	:	M20
Anchor hole	:	Diamond Drilled
Anchor Type	:	BIS-PE Pure-Epoxy



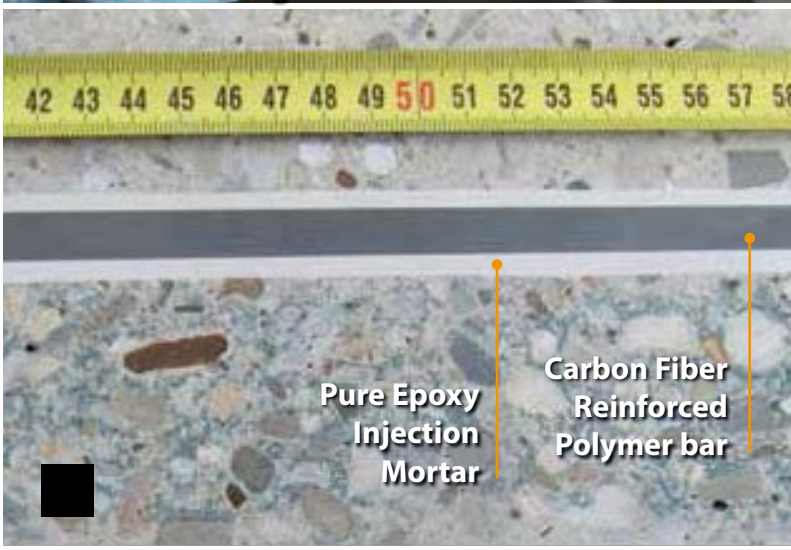
Balcony Renovation

After the collaps of a series of balconies in Leeuwarden, a system was developed to reinforce these old balconies using Carbon Fiber reinforcing bars. The system required the drilling of holes Ø20 mm and appr. 2 mtrs deep through the balconies into the main concrete structure.





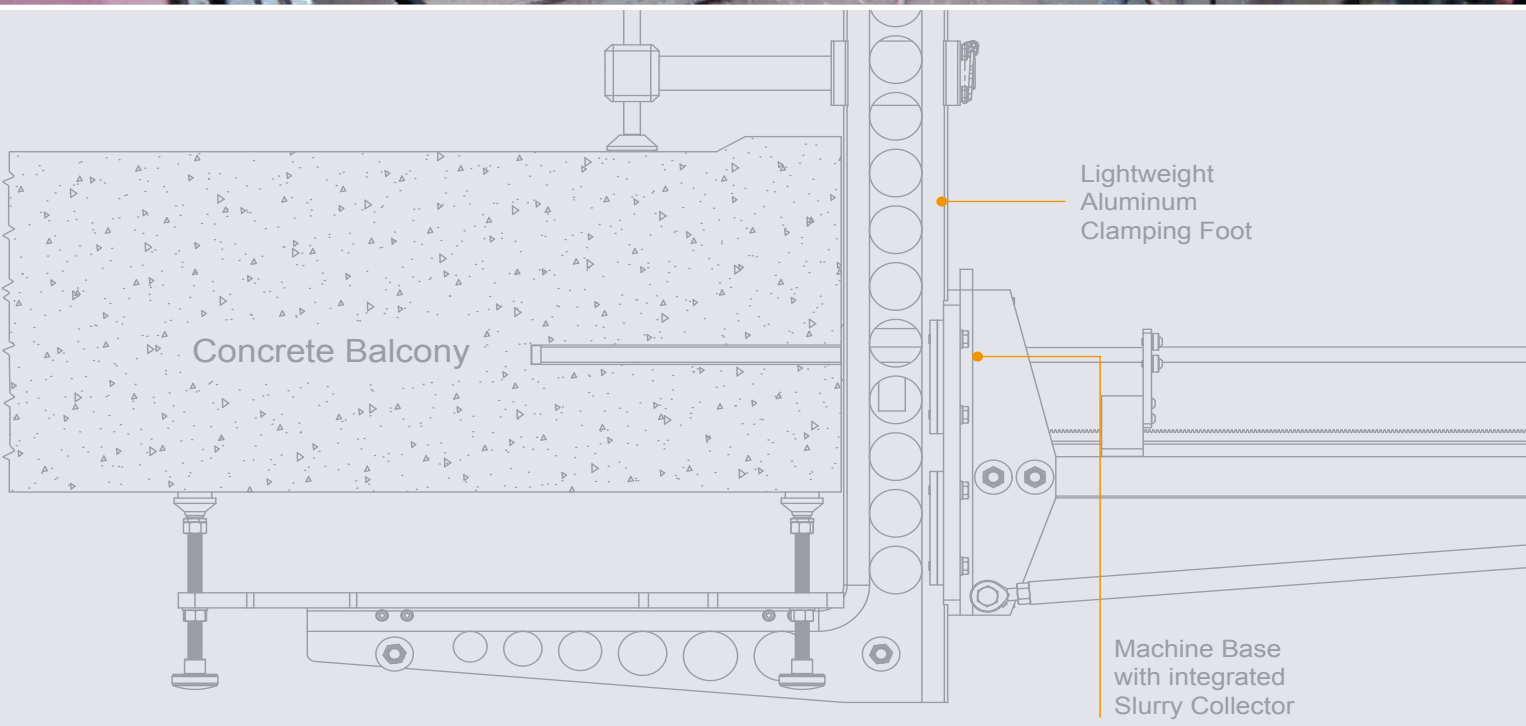
1 Installation Carbon Fiber reinforcing bar.

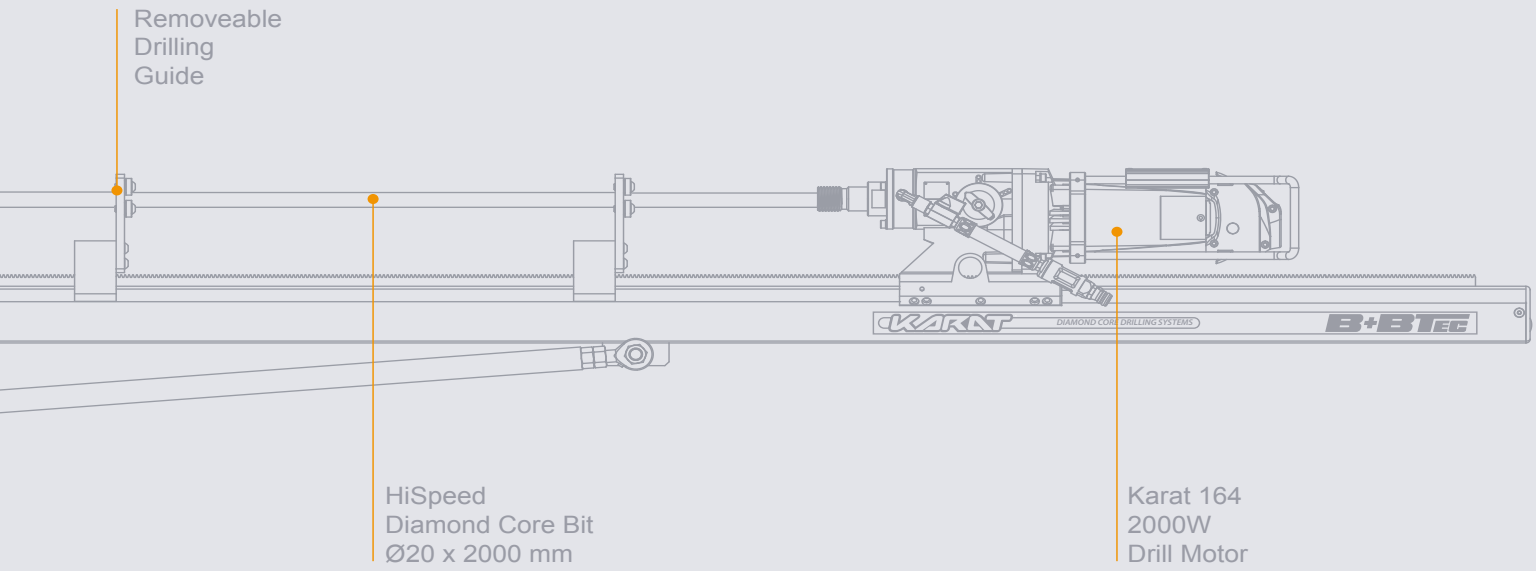


3 Load Test Set up.

Renovation Projects

Cantilevered Balconies
Netherlands
2015




Removeable
Drilling
Guide
HiSpeed
Diamond Core Bit
Ø20 x 2000 mm
Karat 164
2000W
Drill Motor
KARAT
DIAMOND CORE DRILLING SYSTEMS
B+BTec

Renovation Projects

Hilton Facade
Rotterdam, Netherlands
2012

Facade Renovation

In the early hours of Sunday the 22nd of may 2005 four 500 kg travertine panels fell from the East facade of the Hilton hotel in Rotterdam. After investigation corroded anchors turned out to be the cause.

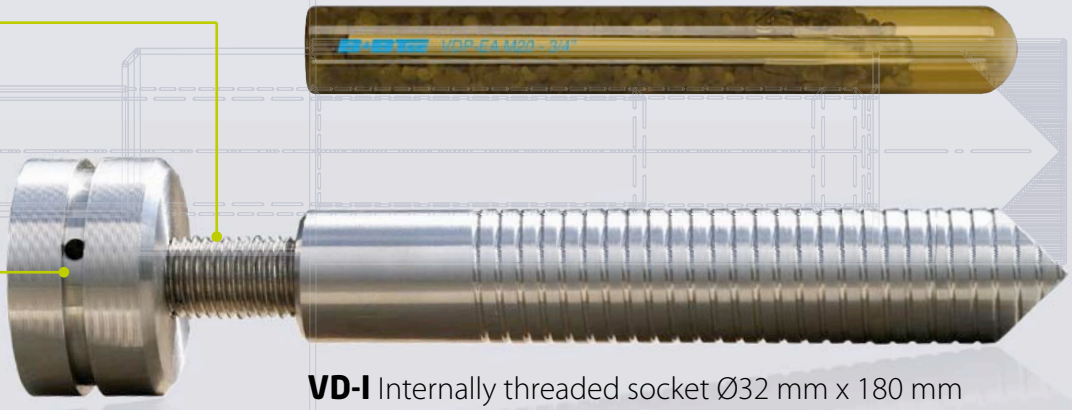
B+BTec developed an anchoring system that allowed for the virtually invisible renovation of the facades.

1. Existing anchor showing corrosion and deformation.
2. Diamond core drilling of the hole Ø60 mm through the facade panel.
3. The travertine cores are saved and labeled to serve as a covers for the anchor head.

ASTA M20
Threaded Rod.
M20 x 200 mm
Steel: A4-70 (316)

Anchor Head
Ø60 mm
Steel: A4-70 (316)

VDP-EA M20 Vinylester based Glass Capsule Anchor



VD-I Internally threaded socket Ø32 mm x 180 mm
Steel Quality: A4-70 (316)

Renovation Projects

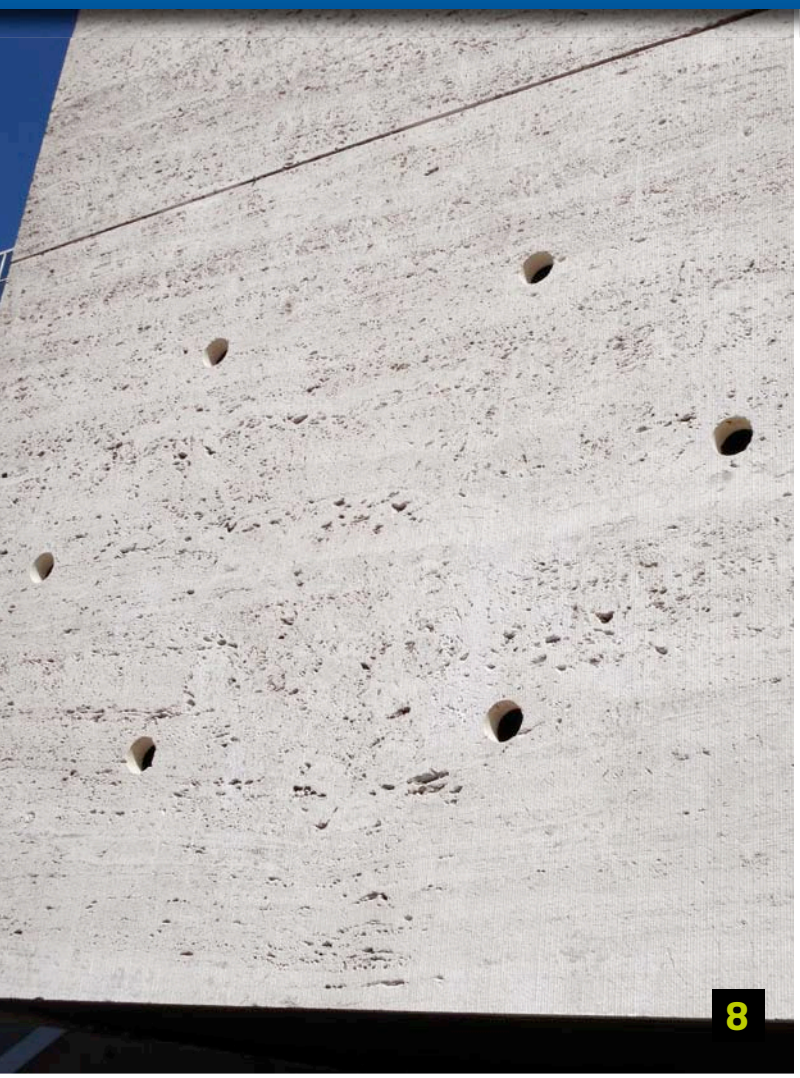
Hilton Facade
Rotterdam, Netherlands
2012

4


5


6


7



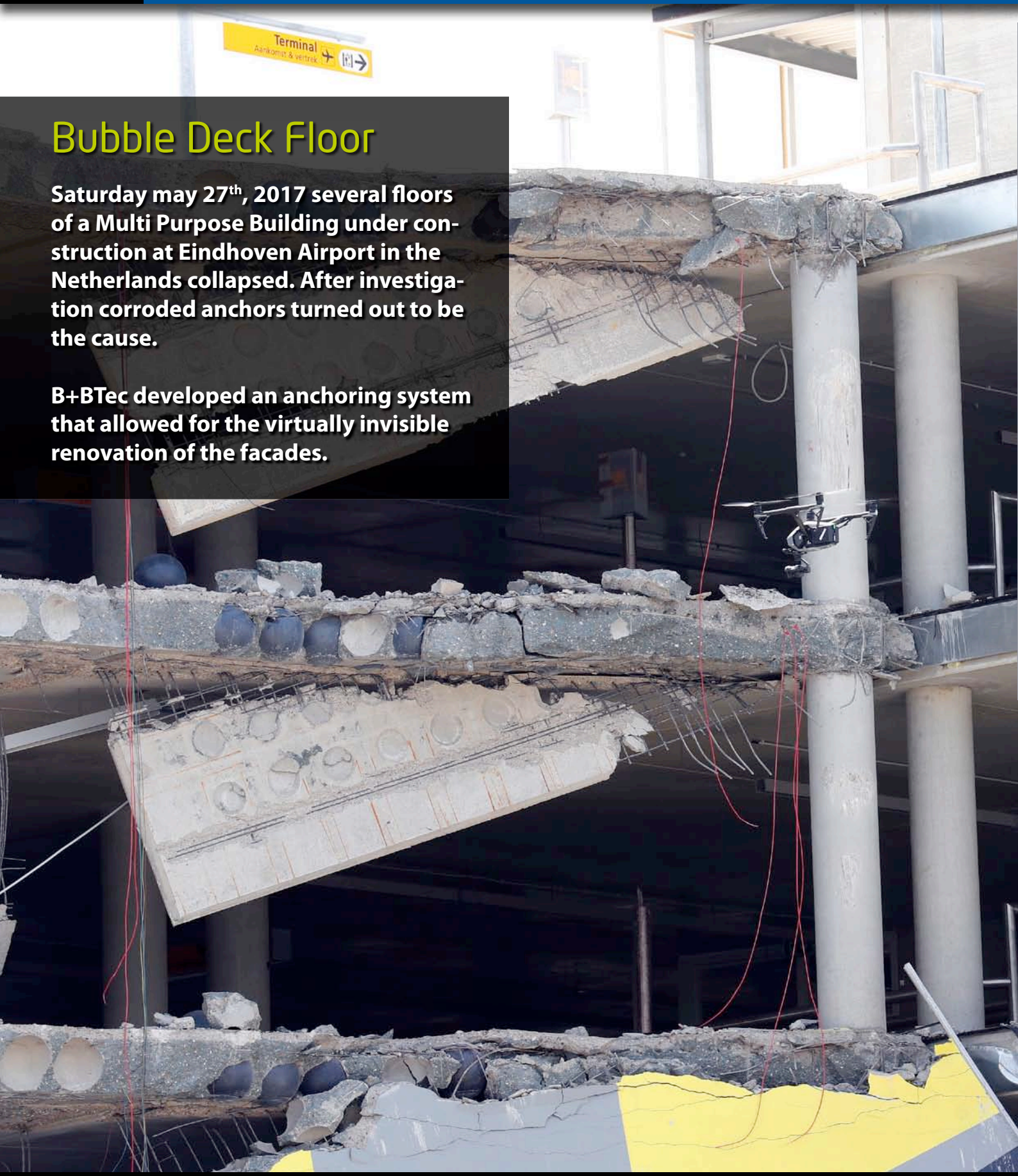
8

9

10

4. Diamond core drilling of the anchor hole Ø35 x 120 mm in the concrete structure.
5. Installation of the VD-I Internally Threaded Socket.
6. Load Testing of the installed anchor.
7. Installation of the anchor head
8. Number of anchors per Facade Panel depends upon the weight and position of the panel.
9. Injection of the anchor head using .....
10. The injection mortar is left to cure
11. After the anchor has cured, the travertine core is placed in the hole covering the anchor , making the installation virtually invisible.

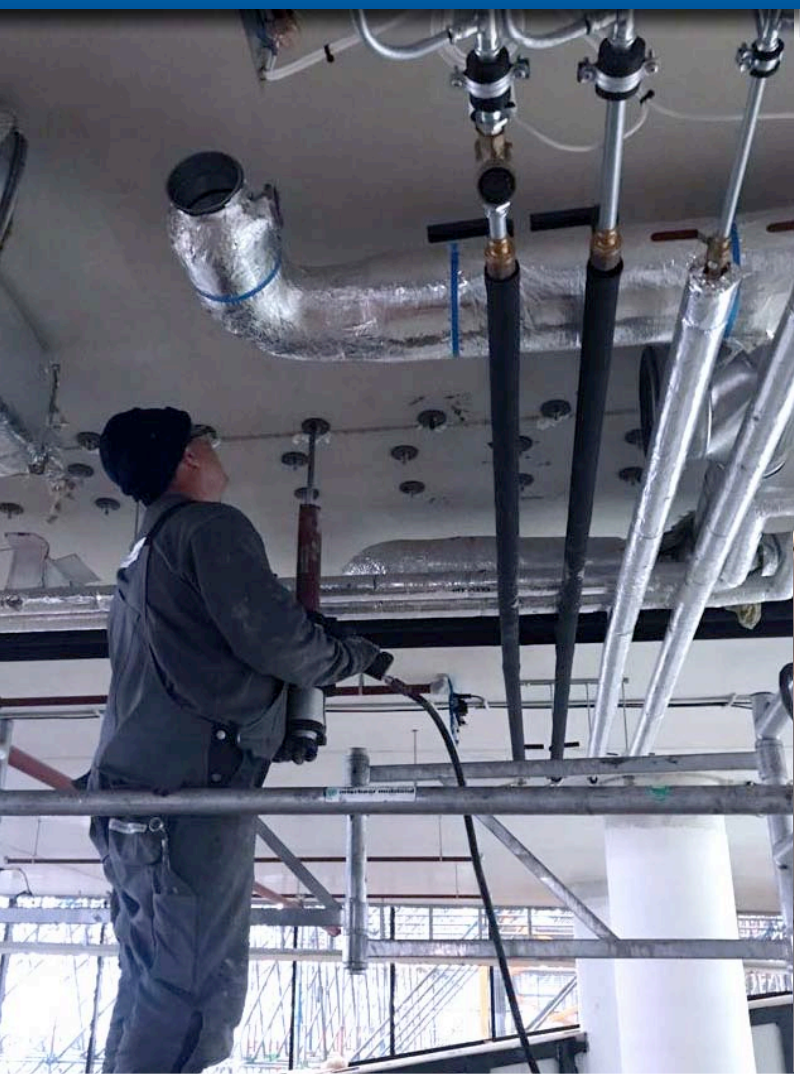
11

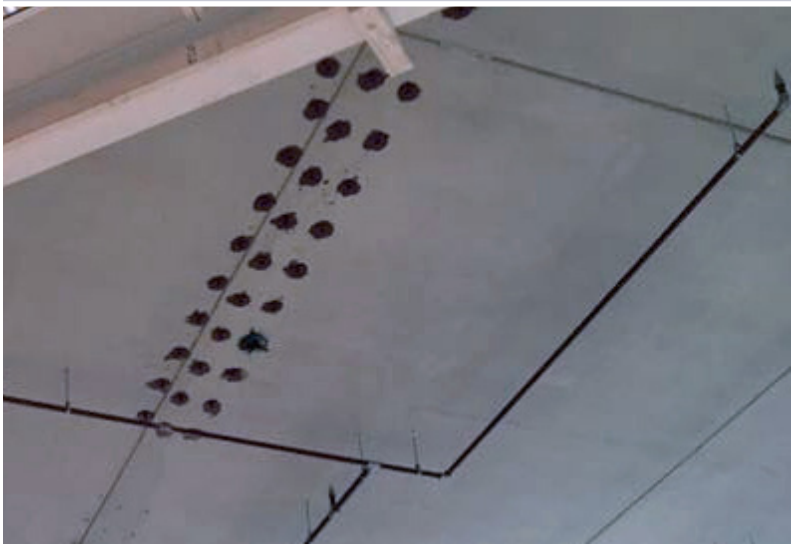


Bubble Deck Floor

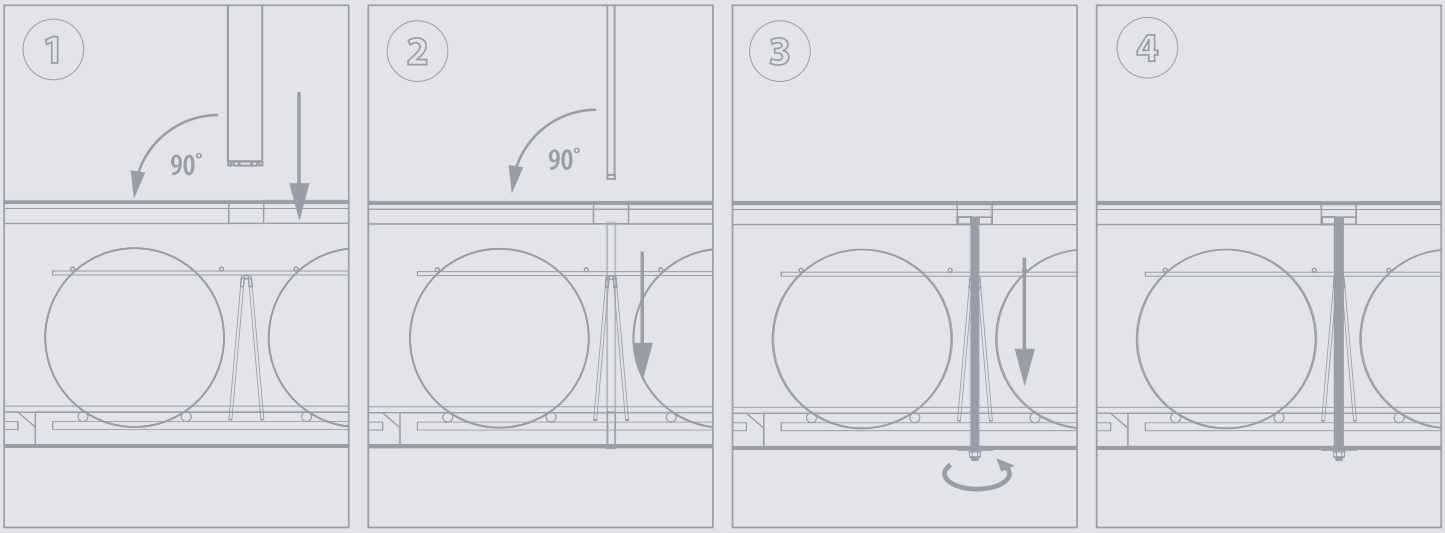
Saturday may 27th, 2017 several floors of a Multi Purpose Building under construction at Eindhoven Airport in the Netherlands collapsed. After investigation corroded anchors turned out to be the cause.

B+BTec developed an anchoring system that allowed for the virtually invisible renovation of the facades.





4. Diamond core drilling of the anchor hole Ø35 x 120 mm in the concrete structure. 5. Installation of the VD-I Internally Threaded Socket. 6. Load Testing of the installed anchor. 7. Installation of the anchor head 8. umber of anchors per Facade Panel depends upon the weight and position of the panel. 9.Injection of the anchor head using .....10.The injection mortar is left to cure



Salvage Projects

Metro A9
Amsterdam
Netherlands 2015

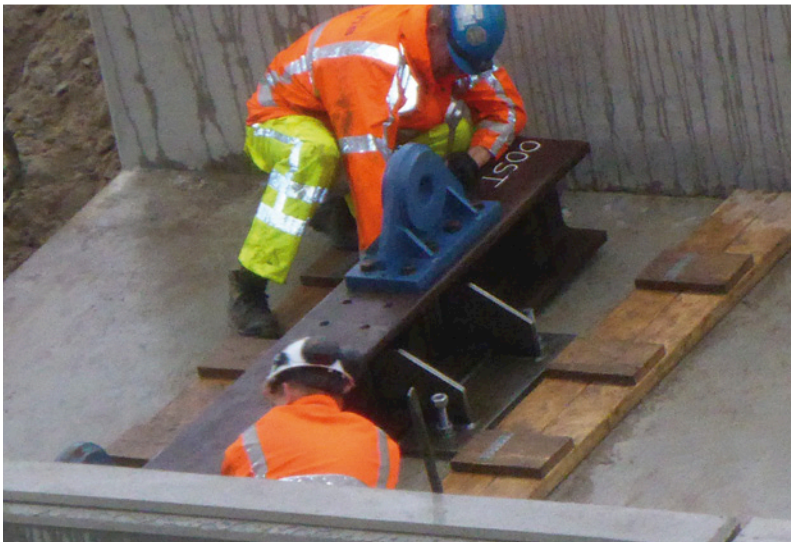
Bridge Deck Incident

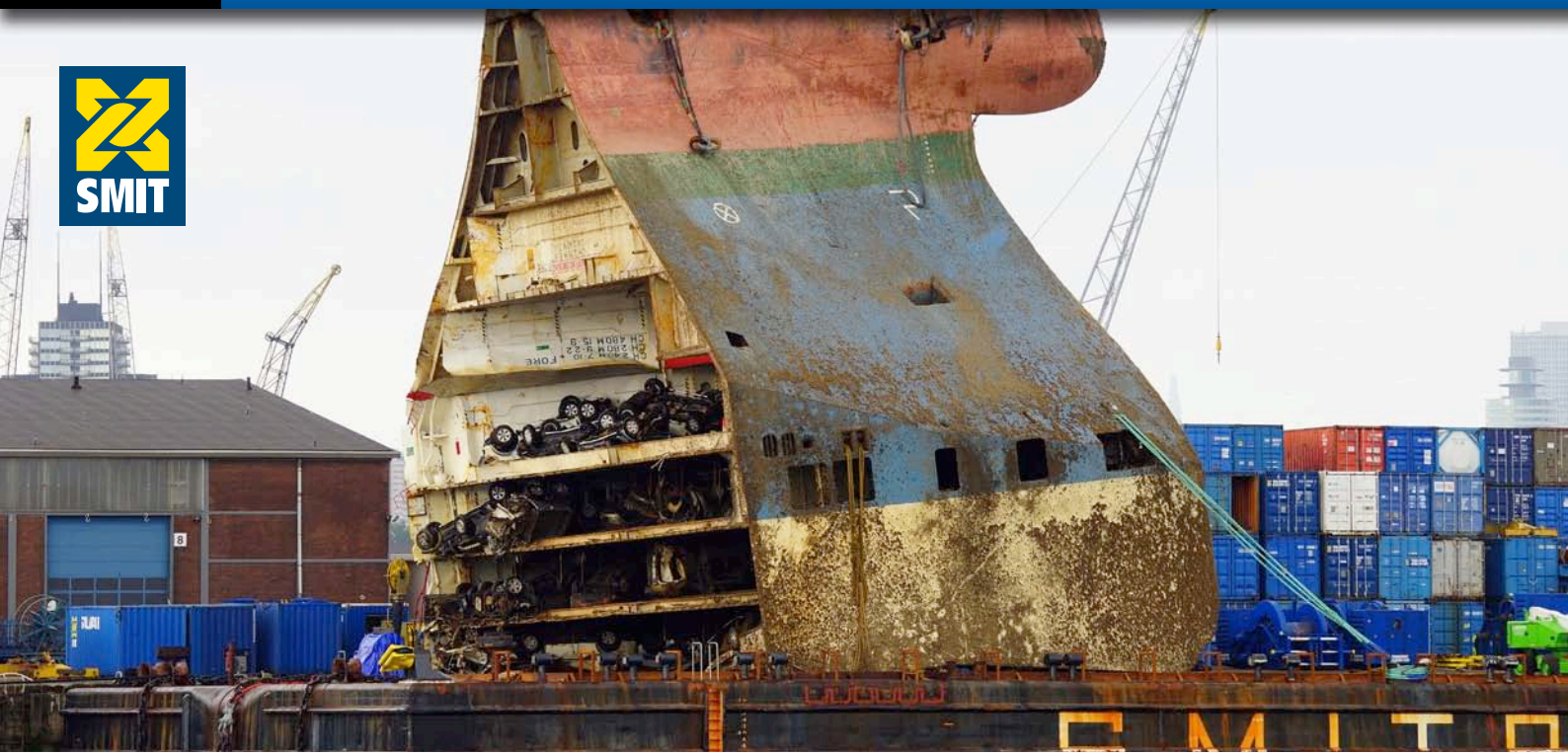
During Construction on a cross road of the Metro Line Gaasperplas and A9 Gaasperdammerweg, Amsterdam an accident occured: 1 out of 3 required 210t Bridge Decks slid of a Low Loader and ended up in a canal.

The Bridge Deck was salvaged using 16 B+BTec VDP M30 Anchors.

Project Data

Weight Bridge Deck	:	210 tons
Anchor Type	:	VDP M30
Number of Anchors	:	16
Embedment Depth	:	550 mm





Baltic Ace

On 5 December 2012, Baltic Ace collided with the container ship Corvus J in the North Sea with a cargo of about 1,400 Mitsubishi cars. The incident took place some 40–50 kilometres off the Dutch coast south of Rotterdam on one of the busiest shipping lanes in the world.

In March 2014, Rijkswaterstaat awarded contract for the complete removal of the sunken car carrier. Once all remaining oil had been removed from the wreck, the vessel was cut into 8 separate pieces using a cutting wire and raised from the seabed.

The recovery of the wreck was completed in September 2015.

B+BTec was asked to design an underwater drilling system to penetrate the hull of the Baltic Ace.

Requirements

On 5 December 2012, Baltic Ace collided with the container ship Corvus J in the North Sea with a cargo of about 1,400 Mitsubishi cars. The incident took place some 40–50 kilometres off the Dutch coast south of Rotterdam on one of the busiest shipping lanes in the world.

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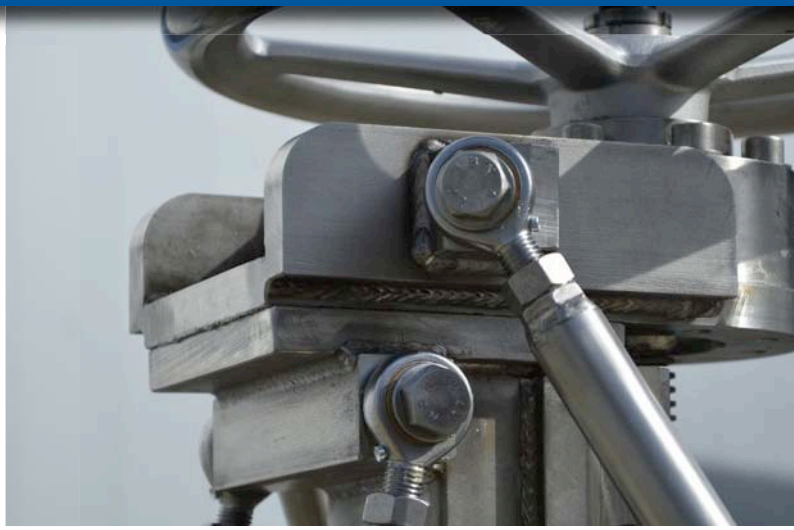
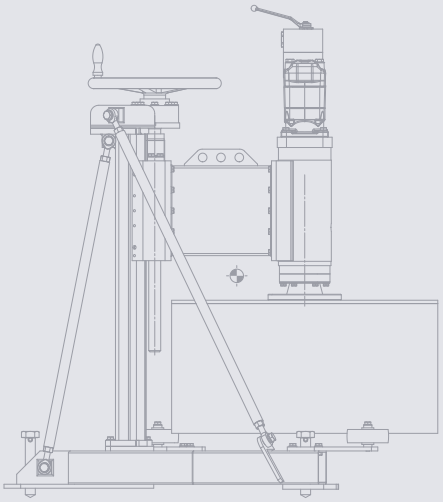


Machine Specifications

Machine Dimensions (L x W x H):	[mm]	1160 x 1130 x 1415
Machine Weight:	[kg]	280
Max. Stroke:	[mm]	500
Machine Spindle:	[--]	DV
Max. Length Drill Bit:	[mm]	500
Max. Drill Bit Diameter:	[mm]	800
Min. Drill Bit Diameter:	[mm]	600
Max. RPM Motor:	[rpm]	240
Max. Short Term Pressure(peak):	[bar]	210
Max. Continuous Pressure:	[bar]	160



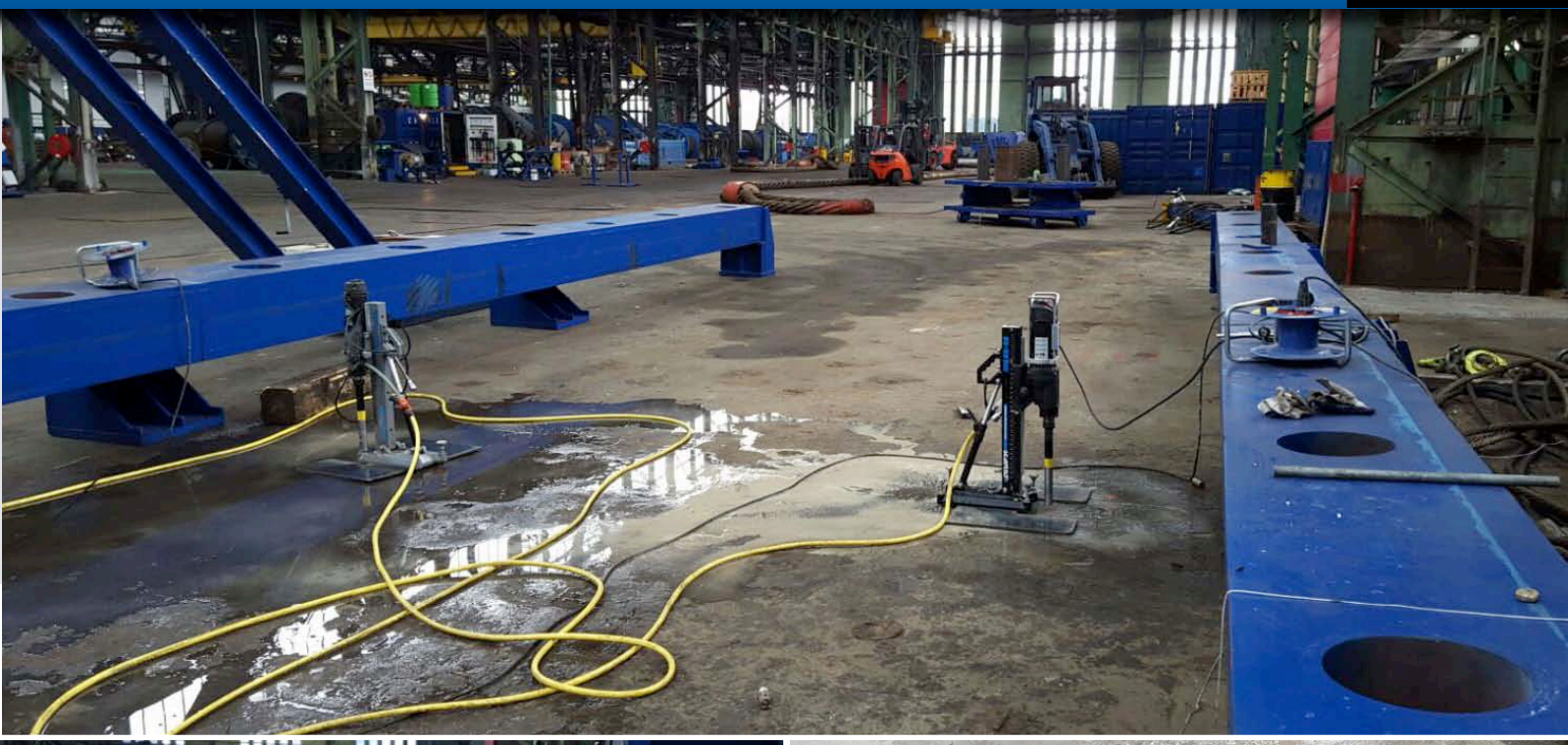
Tanker Gelso M ran aground at Pointe Santa Panagia, off Siracusa town, Sicily, on Mar 10, 2012.

B+BTec supplied the Drilling Units and Diamond Bits to drill through the hull to allow the installation of the Lifting Bollards.

Drilling Diameter	:	Ø330 mm
Steel Thickness	:	22 mm

Offshore & Salvage

1500t Steel Cable Test Bench
Rotterdam, Netherlands
2015



Project Data

Anchor Dimension	:	M30 x 500
Number of Anchors	:	600
Steel Quality	:	8.8 Zinc Plated
Anchor hole	:	Diamond Drilled
Anchor Type	:	BIS-PE Pure-Epoxy 3:1

Offshore & Salvage

120mT Test Bench
Rotterdam, Netherlands
2017

FRONT: Two bracing supports

BACK: Bracket to prevent lifting of the test bench

VD-I M30 x 280
Steel: 8.8 Galvanized
Number of Anchors: 16

VD-I M24 x 210
Steel: 8.8 Galvanized
Number of Anchors: 8

Diamond Drilling of Anchor Holes

Karat® 164 with vacuum unit allows for fast repositioning of the core rig

VD-I Installed

Flat Surface allows for easy Positioning and Fastening of the Support Brackets

BIS-PE

Pure-Epoxy based Injection Adhesive with ETA Assessment for the Installation in Diamond Drilled Holes

ETA - 14/0350

VD-I

Internally Threaded Socket for Flush Mount Anchoring

Allseas

Sur the Texas

During work on the Sur the Texas Project a storm forced the crew of the pipelay vessel to disconnect and sink the pipeline.

An operation was started to recover the lost pipeline now laying on the seabed at a depth of 60 meters.

B+BTec was commissioned to supply Hydraulic Core Drilling Systems to drill 253 mm holes in the steel pipe .....some 60 mtrs below the surface.

The photos on these pages show the final testing of the Wet Buckle Recovery Frame (WBRF) on a 2 mtr section of pipe before shipping the equipment to the Gulf of Mexico.

Hole Diameter	:	Ø253 mm
Pipe Dlameter	:	42"
Pipe Thickness	:	35 mm


B+BTEC
DIAMOND CORE DRILLING SYSTEMS