

RELAST

STRUCTURAL REINFORCEMENT SYSTEM

The most efficient system with a national technical approval for reinforcing existing bridges, underpasses, concrete slabs and beams of buildings



Italy's crumbling infrastructure under scrutiny after bridge collapse

Construction boom of 1960s led to mafia involvement and use of cheap materials to boost profits



▲ The buildings beneath the collapsed Morandi Bridge. Photograph: Laura Lezza/Getty Images

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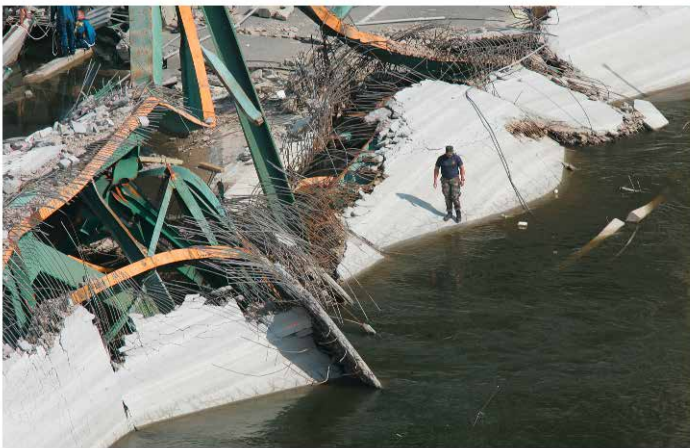
Fields of application for RELAST

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All from one source:
products and accessories

The New York Times

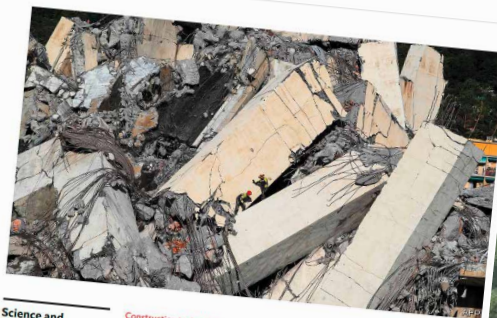
Human Cost Rises as Old Bridges, Dams and Roads Go Unrepaired



On Aug. 1, 2007, an Interstate 35W bridge fell into the Mississippi River in Minneapolis during the evening rush. Thirteen people were killed and 145 injured. Ruth Fremson/The New York Times

The Economist

Today Weekly edition Menu



Science and technology
Aug 18th 2018 edition

Construction technology

Crumbling infrastructure is a worldwide problem

A bridge too far

THE REINFORCEMENT SYSTEM WITH APPROVAL FROM THE GERMAN INSTITUTE FOR CONSTRUCTION



The topic of bridge retrofitting and strengthening has received wide media coverage in recent years. For planners, building owners and building contractors, the reinforcement of existing structures is becoming one of the greatest challenges of our time. The phenomenon of bridges, tunnels and other existing structures failing to meet modern building codes can be attributed to two main factors:

- **Traffic has increased on all main roads along with more and more heavy vehicles.**
- **Building design standards are increasingly restrictive.**

Due to the enormous costs involved in demolishing and reconstructing existing pieces of infrastructure and the resulting obstructions for infrastructure users, it is economically sensible to pursue the reinforcement of existing structures instead. In addition, retrofitting existing structures is more environmentally friendly compared to completely rebuilding them, as this helps to avoid considerable CO₂ emissions.

The RELAST reinforcement system by Würth is a technically innovative, resource-friendly and very efficient process to increase the shear and punching shear strength of existing buildings. RELAST helps make even complex renovation projects easy, quick and efficient.

ALL BENEFITS OF RELAST AT A GLANCE

1. Most efficient reinforcement system with a German national technical approval
2. Quick and easy installation while keeping structures in service
3. Significant improvements in shear (up to 100 %) and punching shear strength (up to 40 %) with only a few reinforcing elements
4. Significant increase in the structure's service life
5. Suitable for structures subjected to dynamic loads
6. Immediate load bearing capacity



The RELAST System by Würth is currently the most efficient reinforcement system with a technical approval. The approvals can be downloaded at www.wuerth.de/relast

National technical approval / General construction technique permit

Deutsches Institut für Bautechnik
DIBt

Zulassungsstelle für Bauprodukte und Bauarten
Bautechnisches Prüfamt
Eine vom Bund und den Ländern
gemeinsam getragene Anstalt des öffentlichen Rechts
Mitglied der EOTA, der UEAtc und der WFTAO

Date: 28 Oct 2019 Reference: 125-1.15.1-34/19

Number:
Z-15.1-344

Applicant:
Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12-17
74653 Künzelsau, Germany

Validity
from: 28 October 2019
to: 28 October 2024

Subject of decision:
Würth RELAST bonded screw anchor with a diameter of 16 mm and 22 mm for use as post-installed shear reinforcement

The subject named above is herewith granted a national technical approval (allgemeine bauaufsichtliche Zulassung)/general construction technique permit (allgemeine Bauartgenehmigung). This decision contains nine pages and 16 annexes.

Translation authorised by DIBt

DIBt

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National technical approval / General construction technique permit

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Würth RELAST bonded screw anchor with a diameter of 16 mm and 22 mm for use as post-installed punching shear reinforcement

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RELAST STRUCTURAL REINFORCEMENT SYSTEM

The most efficient system for the reinforcement of existing bridges, tunnels, underpasses, car parks and buildings

The RELAST bonded concrete screw anchor features a cutting thread for concrete on the one end and an ISO thread on the other. The system is completed by a load distribution washer, a wedge-lock washer, a hex nut as well as the RELAST composite mortar.

The RELAST concrete screw anchor is custom-made for each project and therefore only available as a complete system, including all other components. For more information, go to: www.wuerth.de/relast → Contact Form



Installation instructions: creating a stepped drill hole



CREATING AND CLEANING THE DRILL HOLE

Notes on use: Stepped drill holes are required for the 16 mm RELAST concrete screw anchor for drill hole depths greater than 160 mm and for the 22 mm RELAST concrete screw anchor for drill hole depths greater than 200 mm.

Standard drill holes are sufficient for any drill hole depths below the above values.

Installation instructions: cleaning the stepped drill hole



INSTALLING THE CONCRETE SCREW ANCHOR

Installation instructions: injecting the mortar and installing the bolt in the drill hole

The cutting thread of the RELAST concrete screw anchor cuts a thread into the concrete walls of the pilot hole. The resulting positive connection is further reinforced by a substance-to-substance connection created by the injection mortar used to fill up the space between the drill hole and the RELAST concrete screw anchor.



BRACING

The RELAST concrete screw anchor is braced against the concrete surface with the help of a load distribution washer, a wedge-lock washer and a hex nut.



AREAS OF APPLICATION

RELAST

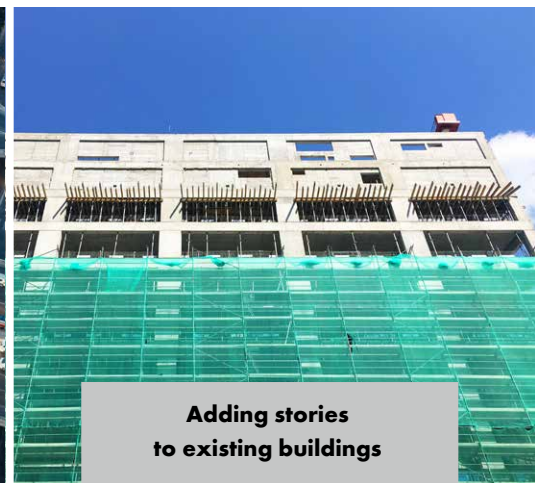
RELAST increases the shear and punching shear strength, thereby reinforcing the overall structural strength of existing buildings. RELAST can be used in the following applications:



Strengthening to meet requirements of new standards



Adapting to increased traffic



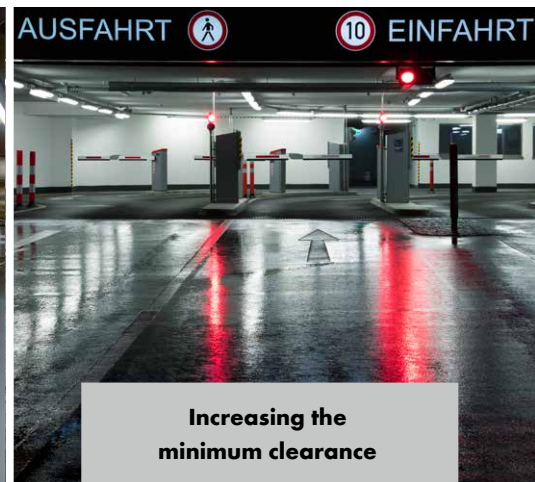
Adding stories to existing buildings



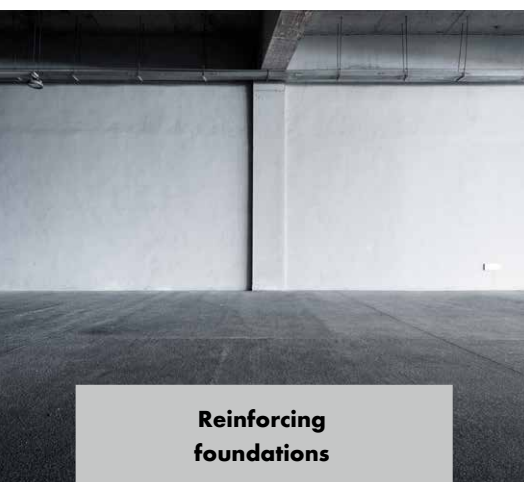
Changing the intended use of a building



Moving support beams



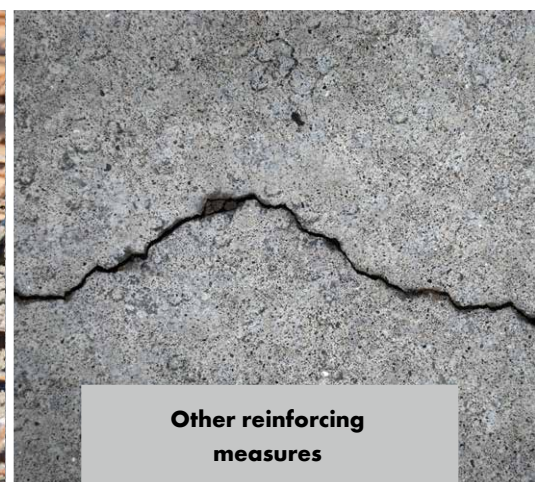
Increasing the minimum clearance



Reinforcing foundations



Replacing missing reinforcement bars



Other reinforcing measures

ALL FROM ONE SOURCE

Würth offers an entire product range for structural reinforcements



ISS 40-M automatic industrial wet & dry vacuum cleaner

Item no.	Air stream	Container capacity	PU
0701 143 0	74 l/s	39 l	1



Plastic cable drum, 250 V

Item no.	Cable length	Version	PU
0774 125 315	25 m	3 earthing-contact electrical outlets, 16 A, 250 V	1



Solid compressor, 24 l, oil-free

Item no.	Motor output	Max. pressure	Tank capacity	PU
0701 223 0	1,5 kW	8 bar	24 l	1

DRILL HOLE CLEANING

Extension for cleaning brush with M8 connecting thread

Item no.	Connecting thread	Length	PU
0903 489 111	M8	354 mm	1

Pneumatic hose WIT-SDD

Item no.	Outer diameter	Suitable for nominal drill bit diameters	PU
0699 903 7	10 mm	16 mm, 20 mm, 22 mm und 25 mm	1

Extension nozzle for blow-out gun

Item no.	Pipe length	Thread type x nominal diameter x pitch	Nozzle hole diameter	PU
0714 92 14	100 mm	M12 x 1.25	3 mm	1
0714 92 15	150 mm	M12 x 1.25	3 mm	1
0714 92 16	250 mm	M12 x 1.25	3 mm	1

Compressed-air nozzle thread connection

Item no.	Suitable for pneumatic hose	Suitable threads	PU
0903 489 291	WIT-SDD 10	M8	1

Blow-out gun

Item no.	Nozzle hole diameter	PU
0714 921 13	1,5 mm	1

Compressed air nozzle

Item no.	Nominal drill hole diameter	Diameter	Max. drill hole depth	VE
0905 499 201	18 - 40 mm	16 mm	240 mm	1

Compressed air nozzle WIT-DD

Item no.	Type	Outer diameter	Suitable for nominal drill bit diameters	PU
0903 489 214	WIT-DD 12-14	14 mm	16 mm	1
0903 489 217	WIT-DD 16-20	17 mm	20 mm, 22 mm und 25 mm	1

Cleaning brush WIT-RB

Item no.	Diameter	Length	Bristle length	PU
0903 489 516	16 mm	150 mm	80 mm	1
0903 489 520	20 mm	150 mm	80 mm	1
0903 489 522	22 mm	150 mm	80 mm	1
0903 489 525	25 mm	150 mm	80 mm	1

Machine chuck SDS Plus M8

Item no.	Connecting thread	Tool chuck	PU
0903 489 101	M8	SDS-plus	1

Hand slide valve

Item no.	PU
0699 903 38	1

DRILLING

**Diamond core drilling set
DS 130-T Compact**

Item no.	PU
5709112200	1



Hammer drill/chipping hammer BMH 45-XE

Item no.	Nominal voltage	Frequency	Power input	PU
5709 112 200	230 V/AC	50 Hz	1500 W	1



Hammer drill bit MAX QUADRO-L VARIO

Item no.	Diameter	Length	Working length	PU
0647 051 634	16 mm	340 mm	200 mm	1
0647 051 654	16 mm	540 mm	400 mm	1
0647 051 674	16 mm	740 mm	600 mm	1
0647 051 694	16 mm	940 mm	800 mm	1
0647 051 613	16 mm	1320 mm	1200 mm	1
0647 052 032	20 mm	320 mm	200 mm	1
0647 052 052	20 mm	520 mm	400 mm	1
0647 052 072	20 mm	720 mm	600 mm	1
0647 052 092	20 mm	920 mm	800 mm	1
0647 052 013	20 mm	1320 mm	1200 mm	1
0647 052 017	20 mm	1720 mm	1600 mm	1
0647 052 021	20 mm	2120 mm	2000 mm	1
0647 052 232	22 mm	320 mm	200 mm	1
0647 052 252	22 mm	520 mm	400 mm	1
0647 052 272	22 mm	720 mm	600 mm	1
0647 052 292	22 mm	920 mm	800 mm	1
0647 052 213	22 mm	1320 mm	1200 mm	1
0647 052 532	25 mm	320 mm	200 mm	1
0647 052 552	25 mm	520 mm	400 mm	1
0647 052 572	25 mm	720 mm	600 mm	1
0647 052 592	25 mm	920 mm	800 mm	1
0647 052 513	25 mm	1320 mm	1200 mm	1
0647 052 521	25 mm	2120 mm	2000 mm	1



Longlife & Speed diamond wet core bit, 1/2 inch

Item no.	Dia-meter	Working length	Length	Segment thickness	PU
5456 060 016	16 mm	300 mm	355 mm	2,2 mm	1
5456 060 020	20 mm	300 mm	355 mm	2,2 mm	1
5456 060 022	22 mm	300 mm	355 mm	2,2 mm	1
5456 060 025	25 mm	300 mm	355 mm	2,2 mm	1



Extraction drill bit Max M

Item no.	Diameter	Length	Working length	PU
0647 401 660	16 mm	600 mm	400 mm	1
0647 402 060	20 mm	600 mm	400 mm	1
0647 402 260	22 mm	600 mm	400 mm	1
0647 402 560	25 mm	600 mm	400 mm	1

INJECTING OF MORTAR



Dispensing gun WIT

Item no.	Suitable cartridges	PU
0891 038 0	420 ml	1



Cordless dispenser gun

Item no.	Suitable cartridges	PU
0891 003 420	420 ml	1
0891 003 825	825 ml	1

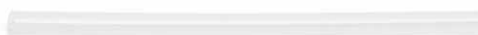


Mixer nozzle

Item no.	PU/Qty.
0903420001	10

Mixing extension MV, flexible

Item no.	PU/Qty.
0903 488 123	10



Mixer nozzle extension WIT-MV

Item no.	PU/Qty.
0903 420 003	10



Piston plug WIT-VS

Item no.	Nominal drill hole diameter	PU/Qty.
0903 488 056	16 mm	10
0903 488 058	20 mm	10
0903 488 062	22 mm	10
0903 488 059	25 mm	10

INSTALLING THE CONCRETE SCREW ANCHOR



Cordless tangential impact screwdriver
ASS 18-1/2 inch HT

Item no.	Nominal voltage	Hard torque	PU
07007255	18 V/DC	610 Nm	1



1/2-inch torque wrench

Item no.	Min./max. torque measuring range	Length	PU
0714 71 22	20-100 Nm	350 mm	1



Impact socket wrench insert, 1/2 inch

Item no.	Nominal drill hole diameter	Connecting thread	SW	Fas-tener	PU
0714 13 04	16 mm	M16	12	Anchor	1
0714 13 17	16 mm	M16	24	Nut	1
0714 13 05	16 mm	M18	13	Anchor	1
0714 13 18	16 mm	M18	27	Nut	1
0714 13 06	22 mm	M20	14	Anchor	1
0714 13 194	22 mm	M20	30	Nut	1
0714 13 08	22 mm	M24	17	Anchor	1
0714 13 36	22 mm	M24	36	Nut	1



Promax corrosion protection

Item no.	Content	PU
0893 214 400	400 ml	1
0893 214 400	400 ml	12

PERSONAL PROTECTIVE EQUIPMENT



Cup-shaped mask
CM 3000 FFP2 NR D

Item no.	PU/Qty.
0899 110 502	20



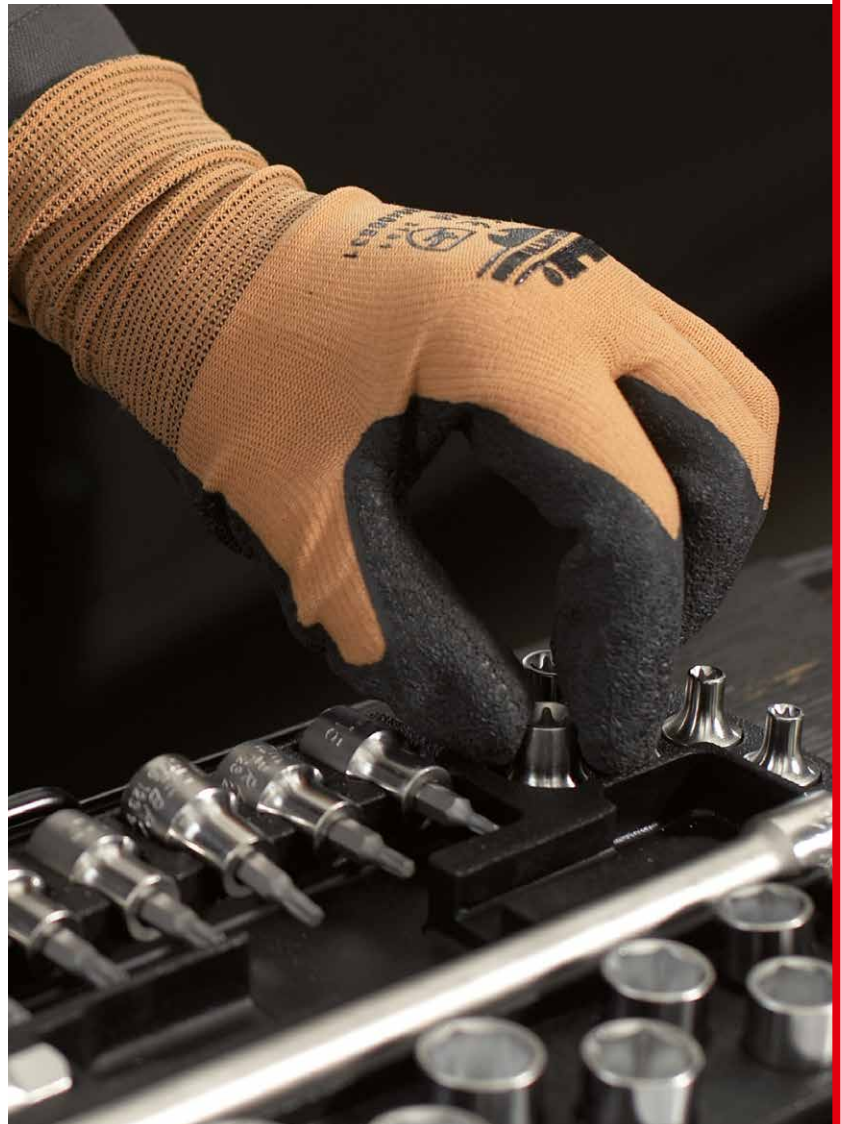
Safety goggles

Item no.	Color of lens	Lens material	UV protection	EN std.	PU
0899 102 115	Clear	Polycarbonat	400 nm	166, 170	1



Ear plug band X-300

Item no.	SNR value	L value	M value	H value	PU
0899 300 339	24 dB	18 dB	19 dB	27 dB	3



Mechanic's glove

Item no.	Size	Gauge	Liner material	Coating material	PU
0899 400 528	7	15	Polyamide	Natural rubber with crinkle finish	6
0899 400 529	8	15	Polyamide	Natural rubber with crinkle finish	6
0899 400 530	9	15	Polyamide	Natural rubber with crinkle finish	6
0899 400 531	10	15	Polyamide	Natural rubber with crinkle finish	6
0899 400 532	11	15	Polyamide	Natural rubber with crinkle finish	6

YOUR RELIABLE PARTNER!

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