

PROJECT REPORT

Augsburg, August 29, 2020

Siegen: PCI provides support for critical concrete repairs, offering the right products and comprehensive advice

Structural safety thanks to rapid concrete repairs

The load-bearing capacity requirements for ceilings and supports in connection with concrete repairs are very stringent. Repair mortars need to dry fast and guarantee structural safety. PCI Nanocret R4 Rapid meets these criteria. This mortar was used for the refurbishment of a former furniture store in Siegen.

When the use of a building is changed, compliance with construction and planning regulations is essential. Among other items, compliance with all the appropriate structural design requirements must be verified. This posed a problem for the architects planning the conversion of a former furniture store in the Weidenau district of Siegen. Only incomplete structural design documents were available. It was therefore necessary to test the concrete on site to determine the quantity and configuration of reinforcement steel.

It was therefore planned to drill cores out of the ceilings and to expose the reinforcement of supports and beams. It was already clear that repair work on these structural members would pose considerable requirements with a view to safeguarding structural safety. The architect therefore contacted PCI adviser Hubertus Dohle. He provided planning support and also supervised the work on site together with PCI application technician Stephan Leistner and PCI service technician Christian Kollmeyer.

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Safe and rapid concrete repairs

Speed and structural safety were the key criteria for product selection. PCI application technician Stephan Leistner recommended PCI Legaran RP for corrosion protection and PCI Nanocret R4 Rapid for reprofiling. The repair mortar ensures long-term stability for concrete elements, even where the reinforcement of supports and beams has been exposed over large areas. It sets fast and can be worked over after a very short time. After the planned procedure had been reviewed by a structural design office, work could start.

Reprofiling with PCI Nanocret R4 Rapid

After the contractor had drilled cores out of the ceilings and exposed the reinforcement of supports and beams in accordance with the plans, the carbonation depth of the concrete was measured and the exposed steel was visually inspected in order to determine the degree of cleaning required. During this stage, PCI service technician Christian Kollmeyer provided advice and support. He then instructed the construction workers concerned in the application of the PCI products.

Following appropriate substrate preparation, PCI Legaran RP was applied. This corrosion protection agent can simply be mixed with water and brushed onto the surface. The processing of PCI Nanocret R4 Rapid is also quick and convenient: thanks to the smooth consistency of this product and its good adhesion to the substrate, exposed areas are easy to model, even when working overhead, and can already be worked over after about two hours. The firmly adhering repair mortar has a high compressive strength, provides active protection against corrosion and carbonation and represents a durable solution without cracking or shrinkage. PCI Nanocret R4 Rapid is certified as a repair mortar for the structural repair of concrete supporting structures in accordance with EN 1504-3 R4.

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Dense mortar structure thanks to nano-cement spiculation

PCI Nanocret R4 Rapid is part of the Nanocret product family, which features the use of special inorganic additives, special cements and selected aggregates. With this combination, PCI achieves highly optimized nano-cement spiculation, producing a very dense mortar structure. The density, flexural tensile strength and compressive strength of the product are enhanced, together with its frost resistance. Key mixing, sag resistance and smoothing properties are also optimized.

PCI Nanocret R4 Rapid was precisely the right repair mortar for repairing ceilings, supports and beams at the former furniture store in Siegen. The work was safely completed in the space of only two days.

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Project data

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| Project title: | Structural safety thanks to rapid concrete repairs |
| Subtitle: | Siegen: PCI provides support for critical concrete repairs, offering the right products and comprehensive advice |
| Location: | Siegen |
| Completion year: | 2020 |
| Objective: | Rapid, structurally safe concrete repairs on large exposed areas of ceilings, supports and beams |
| Products used: | PCI Legaran RP, PCI Nanocret R4 Rapid |
| Contractor: | SPITZ Baubetrieb, Wilnsdorf |
| PCI adviser | Hubertus Dohle |
| PCI application technician | Stephan Leistner |
| PCI service technician | Christian Kollmeyer |
| Contact: | <p>PCI Augsburg GmbH Piccardstraße 11, 86159 Augsburg Phone: +49 821 5901-0, Fax: +49 821 5901-416 E-Mail: pci-info@pci-group.eu www.pci-augsburg.de</p> |

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Photos:

For the conversion of a former furniture store in Siegen, the condition of the structure had to be verified. For this purpose, cores were drilled in ceilings and the reinforcement of supports and beams was exposed.

Link to download:

<https://pics.pci-augsburg.com/php/index.php?database=1&downloadimage=66000&size=3264x2448&format=&time=1627163999&check=747189024e3afcfff5fab66efd35603a>

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In order to ensure the structural safety of large areas with exposed reinforcement, reprofiling had to be completed very rapidly.

Link to download:

<https://pics.pci-augsburg.com/php/index.php?database=1&downloadimage=65998&size=3264x2448&format=&time=1627163999&check=15267dac9e8b4b766f61ef813695529e>

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The contractor measured the carbonation depth of the concrete and inspected the exposed reinforcement steel to determine the degree of cleaning required.

Link to download:

<https://pics.pci-augsburg.com/php/index.php?database=1&downloadimage=66004&size=3264x2448&format=&time=1627163999&check=867c70fb03275c3a22008d8e3f821b8a>

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PCI Legaran RP was applied for corrosion protection. Carbonation was identified by spraying phenolphthalein indicator solution onto the structure.

Link to download:

<https://pics.pci-augsburg.com/php/index.php?database=1&downloadimage=66007&size=3264x2448&format=&time=1627163999&check=4cae66e0550c02236093dc13ae2902d4>

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For the fast and reliable repointing of all the exposed areas, PCI application technician Stephan Leistner recommended the fast-setting repair mortar PCI Nanocret R4 Rapid.

Link to download:

<https://pics.pci-augsburg.com/php/index.php?database=1&downloadimage=66008&size=3264x2448&format=&time=1627163999&check=10b30929f7a077badd76db852f22b399>

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The fiber reinforcement of PCI Nanocret R4 Rapid ensures sustainable stability. The repair mortar can already be worked over after two hours.

Link to download:

<https://pics.pci-augsburg.com/php/index.php?database=1&downloadimage=65999&size=4608x2592&format=&time=1627163999&check=fa22740f72de4b1c15f5c55b0f241bfc>

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Thanks to its smooth consistency and secure adhesion, PCI Nanocret R4 Rapid can be applied quickly and easily – even when working overhead.

Link to download:

<https://pics.pci-augsburg.com/php/index.php?database=1&downloadimage=66006&size=3264x2448&format=&time=1627163999&check=ca76f3e1ed1974341829ce990e0a838c>

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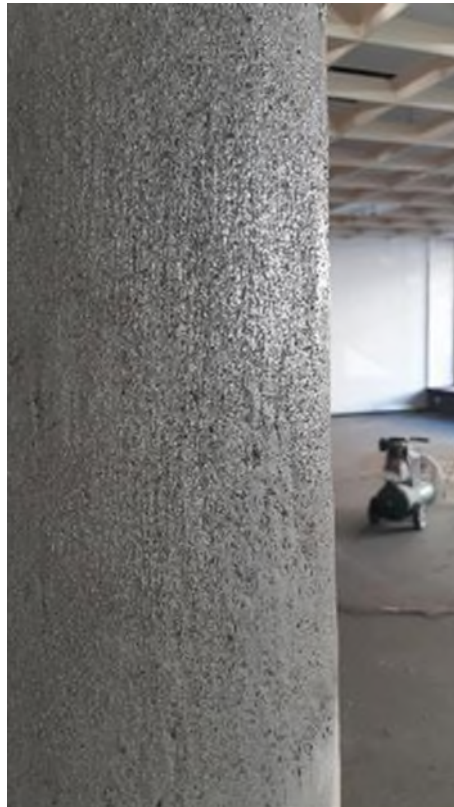
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The freshly applied reprofiling with PCI Nanocret R4 Rapid meets all the compressive and adhesive tensile strength requirements as well as safeguarding structural safety.



Links to downloads:

[https://pics.pci-](https://pics.pci-augsburg.com/php/index.php?database=1&downloadimage=66005&size=4608x2592&format=&time=1627163999&check=7a76d115268654bb251ee0c429cd7ef4)

[augsburg.com/php/index.php?database=1&downloadimage=66005&size=4608x2592&format=&time=1627163999&check=7a76d115268654bb251ee0c429cd7ef4](https://pics.pci-augsburg.com/php/index.php?database=1&downloadimage=66005&size=4608x2592&format=&time=1627163999&check=7a76d115268654bb251ee0c429cd7ef4)

[https://pics.pci-](https://pics.pci-augsburg.com/php/index.php?database=1&downloadimage=66003&size=4608x2592&format=&time=1627163999&check=c072f42b74e872e0424c8e93138e0518)

[augsburg.com/php/index.php?database=1&downloadimage=66003&size=4608x2592&format=&time=1627163999&check=c072f42b74e872e0424c8e93138e0518](https://pics.pci-augsburg.com/php/index.php?database=1&downloadimage=66003&size=4608x2592&format=&time=1627163999&check=c072f42b74e872e0424c8e93138e0518)

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Following reprofiling with PCI Nanocret R4 Rapid, the surface was treated using foil.

Link to download:

<https://pics.pci->

[augsburg.com/php/index.php?database=1&downloadimage=66069&size=4608x2592&format=&time=1627423199&check=b0d148724da869305459bb3ee50d892d](https://pics.pci-augsburg.com/php/index.php?database=1&downloadimage=66069&size=4608x2592&format=&time=1627423199&check=b0d148724da869305459bb3ee50d892d)

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