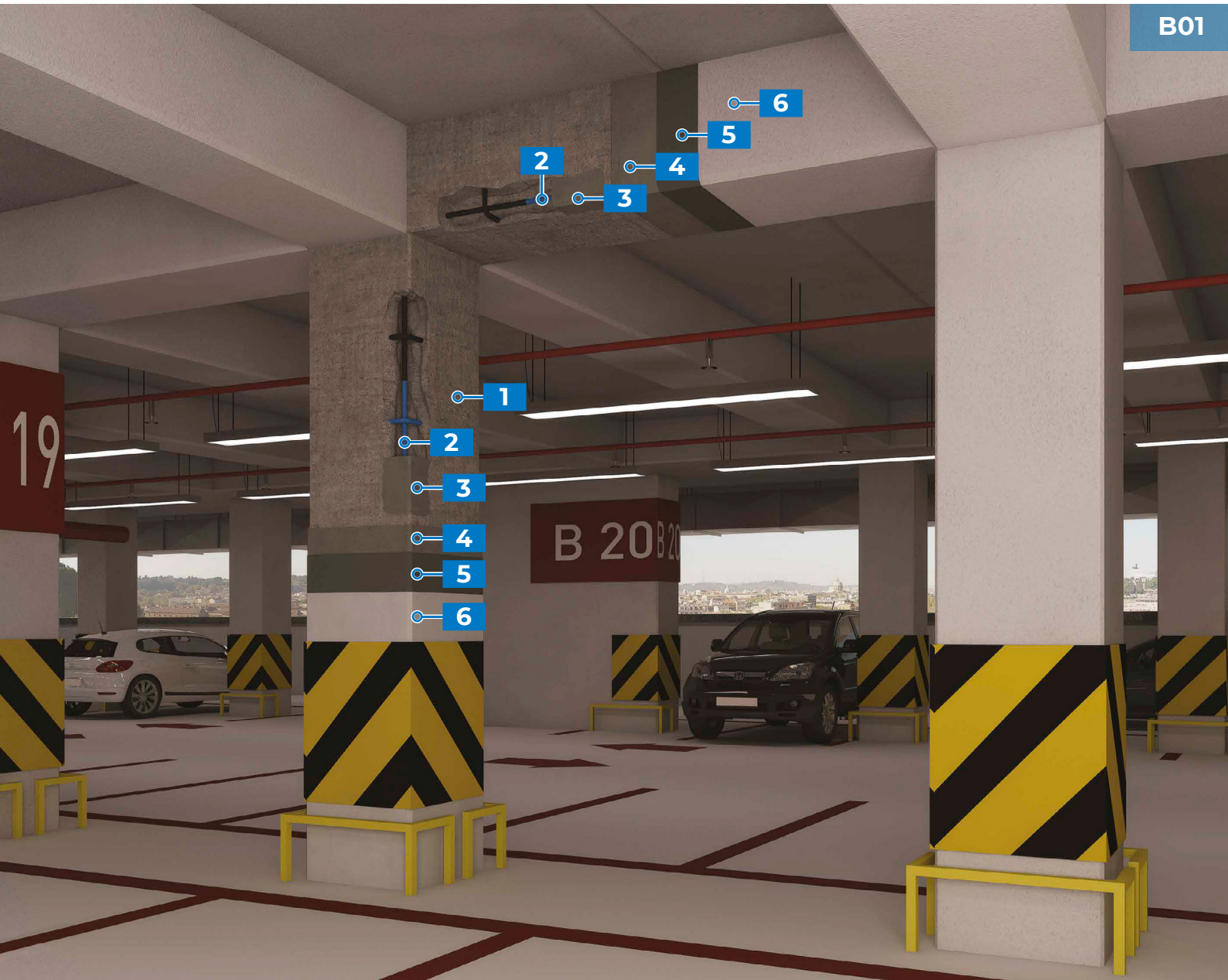


SYSTEM FOR THE REPAIR AND PROTECTION OF STEEL REINFORCED CONCRETE

B01



concrete substrate	corrosion-inhibiting mortar	structural repair mortar	structural repair mortar	structural repair mortar	waterproofing and protective coating	waterproofing and protective coating	painted surface
	Mapefer 1K Zero	Planitop LSN R3	Planitop LSN R4	Planitop Smooth & Repair R4	Mapelastico Smart	Mapelastico Guard	Elastocolor Paint
1	2	3	4	5	6		

PART 1 SCOPE OF WORK

1.1 SYSTEM

The work method statement covers the systems for repair and protection of steel reinforced concrete, in accordance with relevant standards, industry best practice and as per Mapei technical data sheets (TDS).

Numerous products and steps in this work method statement (WMS) are optional with how products can be used individually or in combination. For example, section C and D can be skipped entirely if the project only requires concrete repair and not subsequent protective systems. If applying a combination of products, ensure the products are used in sequential order.

Prior to the removal of any concrete, it is essential to conduct a thorough assessment of the cause and extent of damaged, deteriorated, or defective concrete. Professional advice may be required to determine the severity of the deterioration, the stability of the structure and suitability of repair works.

This WMS provides general recommendations only and is not intended to be interpreted as a generic specification for the application/installation of the listed products. As each project differs in exposure and site conditions, specific recommendations may vary from the information contained in this document. For recommendations for specific applications/installations please contact Mapei Australia Pty Ltd.

1.2 USER NOTES

1.3 REFERENCES

A. Product TDS & SDS

MAPEI provides technical data sheets (TDS) and safety data sheets (SDS) for all products which should be read in conjunction with this Work Method Statement (WMS). Where necessary, conduct a chemical risk assessment and SWMS to ensure each product's correct and safe use. These documents can be obtained from www.mapei.com.au, or by clicking directly on the PRODUCT name listed within the PDF.

B. Mapei References

1. Protection and Repair of Concrete in compliance with European Standard UNI EN 1504

C. Other References

1. SA HB 84-2018 – Guide to concrete repair and protection
2. EN 1504 – Products and systems for the protection and repair of concrete structures

1.4 SUBSTRATE PREPARATION

A. Concrete Substrate

Remove any laitance, spalling, loose or deteriorated concrete via means of high-pressure, hydro-scarifying or scabbling. Make sure a surface roughness of at least CSP 5 is achieved in accordance with the International Concrete Repair Institute (ICRI) standards. Clean the surface to remove any contaminants that may inhibit bond, such as dust, grease, oil, paint, or corrosion deposits. The substrate must then be prepared in accordance with relevant Mapei technical data sheets (TDS).

B. Steel Reinforcing

Exposed reinforcing must be cleaned back to a bare metal surface, removing all corrosion. Removal via hydro-sandblasting for large areas or vigorous brushing for small areas is recommended. The rods must be fully exposed with adequate space behind the reinforcement for cleaning, anti-corrosion treatment and repacking with the selected repair mortar. The space should never be less than 2-3 times the size of the largest aggregate in the repair mortar.

PART 2 CONCRETE RESTORATION

2.1 EPOXY CRACK REPAIR

Product to be chosen from the following options:

A. EPOJET

Two-component, super-fluid epoxy resin for injections and anchoring.

B. EPOJET LV

Two-component epoxy resins, with very low viscosity for injection in microcracks, also on wet surfaces.

C. EPORIP

Two component solvent-free epoxy adhesive for construction joints and for monolithic sealing of cracks in concrete and screeds.

APPLICATION:

1. **NOTE:** First assess if the crack is static or live. Static cracks are generally suitable for repair. Whereas cracks that are still moving, require evaluation prior to repair to determine the cause and extent of movement, otherwise the cracks may reform. The application commencement should occur only after the engineers have confirmed the stability of structural cracks.
2. Cracks between 0.2 to 0.5 mm must be opened with a grinder and cleaned of any dust resulting from grinding or job site contamination. Cracks greater than 0.5 mm should also be prepared with a grinder to remove any loose or crumbly parts.
3. Pour component B into component A and mix with a trowel or drill mixer at a low speed.
4. For horizontal applications pour directly into the crack. Then spread **QUARTZ 1.2** over the surface and allow to dry in order to favour bonding of the subsequent product. Ensure any loose sand is removed once the product has cured.
5. For vertical applications use **EPOJET** or **EPOJET LV** via injection. Apply **ADESILEX PGI RAPIDO** or **ADESILEX PG2 SP** to seal injection tubes and the entire working surface. Refer to the TDS for further details.

2.2 CORROSION-INHIBITING MORTAR – (FOR STEEL REINFORCEMENT)

A. MAPEFER 1K ZERO

One-component, anti-corrosion cementitious mortar for steel reinforcement rods.

APPLICATION:

1. Apply the mortar on steel reinforcement in two homogeneous coats with a brush, approximately 2 hours apart but no longer than 24 hours, to ensure a total dry thickness of 2 mm is achieved.
2. Allow to cure before applying a repair mortar (approximately 6-24 hours at 20°C 50% R.H.).

2.3 STRUCTURAL REPAIR MORTAR

Product to be chosen from the following options:

A. PLANITOP LSN R3

Medium strength (40 MPa), low shrinkage, fibre-reinforced, sulphate resistant thixotropic mortar. Applied in layers from 6 to 50 mm. Potable water certified as per AS 4020:2018.

B. PLANITOP LSN R4

Sulphate-resistant, fibre-reinforced shrinkage compensated thixotropic mortar for the repair of concrete. Applied in layers up to 100 mm on vertical and horizontal surface, and 20 mm on ceilings. Potable water certified as per AS 4020:2018.

APPLICATION:

1. **NOTE:** Prior to the application of any repair mortar, ensure the substrate is surface saturated dry (SSD), as per SA HB 84:2018 – Clause 6.7.2. Any excess/free-standing water must then be allowed to evaporate. As an alternative to water, use **EPORIP** as a wet on wet bonding bridge to achieve a monolithic bond, refer to the TDS for further detail.
2. Mix and apply the mortar in accordance with the TDS.
3. Once repair work is complete and the material has hardened (8-12 hours), keep the mortar damp for the first 48 hours, especially in hot and windy environments.

2.4 SMOOTHING MORTAR

A. PLANITOP SMOOTH & REPAIR R4 (1136-02-2024 AUS)

Structural R4-class, rapid setting, shrinkage-compensated, thixotropic, fibre-reinforced, cementitious mortar, applied in a single layer from 3 to 40 mm thick, for repairing and smoothing concrete. Potable water certified as per AS 4020:2018.

APPLICATION:

1. Prior to the application of the smoothing mortar ensure the substrate is saturated (SSD), as per SA HB 84:2018. Any excess/free standing water must then be allowed to evaporate.
2. Once repair work is complete and the material has hardened, keep the mortar damp for at least 24 hours using a water spray, especially in hot and windy environments.
3. To extend the pot life, add a canister of **MAPETARD ES** to the mixing water in accordance with the **PLANITOP SMOOTH & REPAIR R4** TDS. Otherwise **PLANITOP SMOOTH & REPAIR R4** can also be mixed with water only, in accordance with the TDS.
4. Add the powder slowly to the water or water mixed with **MAPETARD ES** while mixing in accordance with the TDS.
5. Apply the mortar and finish the surface with a trowel or a damp sponge float a few minutes after the application.

PART 3 OPTION 1: PROTECTIVE COATING SYSTEM

3.1 PROTECTION COATING AGAINST CORROSION

A. MAPESHIELD CI 110

Surface-applied corrosion inhibitor with integrated water repellent.

APPLICATION:

1. **MAPESHIELD CI 110** requires no pre-mixing, blending or dilution. Shake and use directly from the container.
2. Apply **MAPESHIELD CI 110** to the concrete surface with a conventional low-pressure, airless sprayer or by brushing or rolling onto the surface.
3. Apply at least two coats for maximum effectiveness. Allow at least 1 hour between coats.
4. For the application of successive concrete overlays, coatings or sealers, pressure-wash horizontal surfaces (at a minimum of 2000 psi) and rinse or pressure-wash vertical/overhead surfaces to remove any **MAPESHIELD CI 110** residue prior to subsequent application.

3.2 PROTECTIVE COATING SYSTEM

Product to be chosen from the following options:

A. MAPELASTIC SMART

Two-component, high-flexibility cementitious mortar (with crack-bridging capacity up to 2 mm) applied by trowel or roller for waterproofing balconies, terraces, bathrooms, and swimming pools. Potable water certified as per AS 4020:2018.

B. MAPELASTIC GUARD

Two-component, flexible cementitious mortar for protecting large concrete structures subjected to high stress.

APPLICATION:

1. Ensure the substrate is not highly burnished. Achieve a surface profile of CSP 1-3.
2. Lightly dampen the substrate with water prior to application.
3. Mix components A & B in strict accordance with the TDS.
4. For **MAPELASTIC SMART**: Membrane must be applied in at least two coats by trowel or roller within 60 minutes of it being mixed. Waterproofing membrane applied at a thickness of at least 1 mm per coat.
5. For **MAPELASTIC GUARD**: Skim the damp, prepared surface with **MAPELASTIC GUARD** to a feather edge with a smooth trowel, then while still fresh, apply **MAPELASTIC GUARD** to a thickness of at least 2 mm.
6. In areas with hairline cracks or which are highly stressed, insertion of **MAPENET 150** in the first layer of fresh applied first coat is recommended.

3.3 PROTECTIVE ACRYLIC PAINT

A. ELASTOCOLOR PAINT

Elastomeric paint for crack-bridging protection, long lasting elasticity, and high chemical resistance.

APPLICATION:

1. Dilute **ELASTOCOLOR PAINT** with 10-15% of water and mix using a low-speed drill until it is completely blended.
2. Apply in two coats with brush or roller. Under normal humidity and temperature conditions, wait 12-24 hours between each coat, and in all cases, only when the previous coat is completely dry.

PART 4 OPTION 2: HYDROPHOBIC SEALER COATING

4.1 HYDROPHOBIC SEALER COATING

Product to be chosen from the following options:

A. PLANISEAL WR 100

Ready-mixed pure silane-based, hydrophobising, protective, migrating liquid applied on the surface of reinforced concrete structures.

B. PLANISEAL WR 85 GEL

Ready-mixed silane-based hydrophobising protective in migrating gel consistency, to be applied to the surface of reinforced concrete structures.

APPLICATION:

1. Make sure the surface of the concrete is not frozen and that rain or a drop in temperature to below +5°C is forecast for at least 12 hours after application.
2. For **PLANISEAL WR 100**, application should be by low-pressure airless spray on large surfaces or with a roller for smaller areas. It is recommended to apply two coats of product to get a more uniform distribution. The second coat may be applied while the first coat is still wet, as long as it has penetrated into the substrate.
3. For **PLANISEAL WR 85 GEL**, application should be in a single coat with a roller or by high-pressure airless spray (maximum 60-80 bar). When applying by airless spraying, do not reuse recovered material that has already been sprayed.