

Vertical Through Structural Member Replacement

Repair Method:
C1-SC08

Description

Deteriorated, spalling concrete with exposed and / or rusting steel reinforcement.

Identification

- Identify all spalls and delaminations on the horizontal and vertical concrete elements by the use of chain-drag or hammer. Outline areas to be removed with red spray paint.
- Identify any unsound concrete, poor patching, poor concrete or other condition that will adversely affect the installation and/or proper functioning of the coating. Outline areas with red spray paint.
- Obtain project Engineer's approval on those spalls and delaminations which are to be removed and those areas which are to be repaired.



Substrate Preparation

- Where shoring is required the shoring shall provide adequate support and shall remain in place until the repair concrete has reached 70 per cent of its specified 28-day strength.
- Removal all defective and/or delaminated concrete by suitable means, until sound concrete is reached. Avoid the disturbance of the reinforcing steel and minimize the amount of concrete removed.
- Where there is no bond between the concrete and a reinforcing bar, or where more than one-half the perimeter of the bar is exposed, all concrete within 25 mm (1") of the bar shall be removed.
- Where the cross sectional area of a reinforcing bar has corroded so that the existing cross sectional area is less than 60% of the original the corroded section it shall be removed.
- Remove concrete along all reinforcing steel until the bars appear rust-free. (This may not be practical for project in Cuba)
- Replace damaged and/or severely corroded reinforcement as recommended by project structural engineer.
- Saw-cut just outside the perimeter of the removed concrete to a depth of 12.7-mm (1/2"), wherever possible. Do not cut or damage the reinforcement.
- Remove sound concrete between the previously removed concrete and the sawcuts.
- Check for and remove any additional delaminations caused by previous removal.
- Maximum hammer size to be used for removal of delaminations shall be 30 lb. Maximum hammer size for all other removal including final chipping and removal of sound concrete shall be 15 lb.

Repair Steps

1. For Reinforcing steel treatment refer to procedure # RS-01 Treatment of corroded steel reinforcing bars.
2. The repair area shall be sandblasted; including any reinforcing that is uncovers, until the area is free of loose concrete, dirt and/or corrosion products. The reinforcement shall be sandblasted to bare metal.
3. Apply the specified corrosion protection to all exposed steel.
4. The prepared surface shall be thoroughly wetted down for a period of not less than ½ hour prior to placement of repair material.
5. Apply the cement slurry-bonding coat in accordance with good practice.
6. Apply repair material while the bonding agent is still wet.
7. The repair material should be cured by covering with wet burlap covered with polyethylene sheets, as soon as the surface will support it.
8. Formwork shall remain in place until the repair concrete has reached 70 per cent of its specified 28-day strength.

Steps	Products	Mix Design	Coverage
1	Cement Slurry-bonding coat	<ul style="list-style-type: none"> • 2 parts Durex Acrylic Resin Bond to; • 1 part Portland Cement Type 10 (P350) 	2 m ² /liter depending on surface conditions
2	Dur-A-Patch Durex Acrylic Resin Bond structural concrete replacement	<ul style="list-style-type: none"> • 1 bag Dur-A-Patch • 12 Kgs Pea Gravel Aggregate (max.10 mm) • 5-6 ltrs Durex Acrylic Resin Bond 	1 bag mix yields approx .018 m ³ of mortar (use as req'd)
3	Durex Dur-A-Patch Durex Acrylic Resin Bond top coat finish mortar	<ul style="list-style-type: none"> • 1 Bag Dur-A-Patch • 5 Ltrs Durex Acrylic Resin Bond 	1.0 m ² @ 15 mm thick
4	Durex Architectural Coatings	Not Required (ready mixed) (see Finishes)	Refer to data sheet of selected coating

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