Repair Application
Procedure Bulletin #6

Vertical and Overhead Spall Repair by Hand Application

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Purpose of the Repair

- Replaced spalled or deteriorated concrete
- Approves appearance of structure
- Provides protection to reinforcing steel in the repair area
When to Use the Repair

• This method is commonly use for small, thin or cosmetic repairs

• Appropriate for most vertical and overhead surfaces
  • columns, beams, walls, soffits, building facades

• Larger or structural repairs should consider other methods
  • form and pour/pump
  • shotcrete
  • grouted pre-placed aggregate
Bulk Concrete Removal

• Remove loose concrete with lightweight chipping hammer (15 lb.)

• Create a rough surface for bonding the repair material – approx. ¼ in. amplitude

• Continue bulk removal until clean steel is encountered

• Approximately ¾” or greater clearance behind exposed reinforcement

• Follow material manufacturer requirements
Edge Conditioning and Cleaning

- Repair should be square or rectangular in shape
- Sawcut edges perpendicular to surface ½ in. deep to prevent featheredge
Preparation and Cleaning

• Concrete is cleaned of dust, contaminates and fractured concrete for bonding
  • Abrasive blasting or pressure washing (min. 3000 psi)

• Remove rust and cement paste from steel
  • Abrasive blast, wire wheel, etc.

• Concrete surface should be saturated surface dry (SSD)

Reinforcement Protection

Options

• No Additional Protection
• Reinforcement Coating
• Type 1 Embedded Galvanic Anodes
• Reinforcement Coating and Type 1 Embedded Anodes
Material and Equipment Selection

• Non-sag repair materials
  • Properties should be specified

• Mixing
  • Drill and paddle for small quantities
  • Mortar mixer for larger quantities

• Equipment to measure bag weight and volume of water

• Air compressor, sawcutting equipment, pressure cleaner, abrasive blasters

• Trowels and other finishing tools
Safety Considerations

• Follow OSHA standards
• Review SDS
  • Portland cement is highly alkaline material
  • Silica exposure considerations
• Wear Appropriate PPE
  • Hand, skin and eye protection
  • Respirators
  • Hearing protection
• Equipment in working order
Step-by-Step Procedures

- Apply the repair material
  - Saturated Surface Dry Surface
  - Apply thin layer to make intimate contact
  - Consolidate in corners
Step-by-Step Procedures

• Apply in multiple lifts if required
  • Roughen first lift to promote bond between lifts

• Strike off level with surface and finish

• Cure material per manufacturer’s instructions
  • Moist cure
  • Curing compounds
Checking the Repair

• Inspect concrete surface profile and cleanliness prior to application

• Material testing by qualified laboratory

• In-situ bond testing
  • ICRI Technical Guideline No. 210.3
  • ASTM C1583

• Sounding for delaminations

• Before and after photos
Questions