CONCRETE PRESERVATION PROCESS

PROBLEM EVALUATION CAUSE REPAIR STRATEGY ANALYSIS REPAIR OPERATIONS QUALITY CONTROL

- Cracks
- Spalls
- Delaminations
- Corrosive Environment
- Water Leakage
- Change of Use
- Age
- Deflection
- Hazardous Event
- Life Extension
- Wear

- Visual Inspection
  - Photographic Logs
  - Quantity Estimation
- Non-Destructive Testing
  - GPR
  - Sonic / Ultrasonic
  - Remnant Magnetism
  - Sounding
  - Corrosion Potentials
  - Corrosion Rate
- Destructive Testing
  - Coring/Strength
  - Petrography
  - Chloride Profile
  - Carbonation

- Environmental Exposure
  - Corrosive
  - Chemical Attack
  - Fire
  - Carbonation
  - Poor Drainage
- Concrete Problems
  - Shrinkage
  - ASR
  - Freeze/Thaw
  - Permeability
- Other
  - Overloading
  - Change of Use
  - Code Change
  - Structural Catastrophe
  - Deferred Maintenance
  - Original Defects

ARE REPAIRS REQUIRED?

NO YES

- Owner Criteria:
  - Urgency
  - Budget
  - Expectations
  - Service Life
  - Facility Ops
  - Maintenance
  - Intended Use
- Structural Criteria:
  - Structural Engineering
  - Historic Considerations
  - Aesthetics
  - Materials Selection
  - Operating Environment
  - Maintenance Requirements
- Constructibility Criteria
  - Access
  - Staging
  - Schedule
  - Training
- Sustainability & Preservation:
  - Reduced Footprint
  - Re-purpose
  - Repair vs. Rebuild
  - Life Cycle Costing
  - Environmental Impact
- Pricing & Delivery:
  - Fiscal Year
  - Structured Pricing
  - Lump Sum
  - Time & Material
  - Design-Build
- Demolition
- Concrete Repair Methods:
  - Crack Repair
  - Surface Repair
  - Structural Repair
  - Stabilization
  - Shotcrete
  - Strengthening
  - Waterproofing
  - Post-Tension Repair
- Cathodic Protection:
  - Galvanic
  - Impressed Current
  - Electrochemical Treatments
- Surface Protection:
  - Coatings
  - Linings
  - Jackets
  - Overlays
- Communication:
  - Owner Updates
  - Regular Reporting
  - Differing Conditions
  - Safety Meetings
  - Work Permits
  - Near Miss Reporting
- Quality Control
  - QC / QA Plan
  - Mock-Ups
- Non-Destructive Testing
  - Sounding
  - Sonic/Ultrasonic
- Destructive Testing
  - Bond Strength
  - Compressive Strength
- Record Keeping
  - Batch Numbers & Bag Weights
  - Verification of Quantities
  - Environmental Conditions
  - Material Testing
  - Other Documentation
- Long-Term Monitoring
  - Cathodic Protection
  - Structural Health

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