

*In repair and restoration work it is recommended to first take care of the cause before repairing the effect. Many times a condition survey is needed to determine the cause(s) and to plan the proper, most cost-effective approach to correct the problem.*

*Surface preparation is very important. The best of products with poor surface preparation is no better than the lesser product with the proper surface preparation.*

## What is Surface Preparation?

“The process whereby a method or combination of methods is used to remove deteriorated or contaminated concrete and roughen and clean a substrate to enhance bond of a repair material or protective coating.”

\* In doing so, this will provide the desired cleanliness and profile of the substrate in order for the repair material or protective coating to achieve its full potential.

### **\*ICRI Concrete Repair Terminology.**

To restore Concrete, identify the **“Cause”** of the condition 1st...Then properly address the **“Effect”!**

- Examination of concrete for the purpose of identifying and defining areas of distress.
- For a lasting repair, it is critical to determine the cause of any problem to ensure that the appropriate products and procedures are specified.

## Surface Preparation Standards

ICRI Guideline No. 03732 and the ACI 546 Concrete Repair Guide provides an in depth description of various types of surface preps, substrate condition surveys, and selection & specifying methods of surface preparation.

- ACI 546 Concrete Repair Guide
- ICRI 310.1R-2008, “Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion”
- ICRI 310.2R-2013 Surface Preparation Standards
- CSP # (Concrete Surface Profile) Designed to match equipment.

## Surface Preparation Methods

- Water-blast
- Sand-blast
- Scabblers
- Scarifier
- Grinder
- Needle gun
- Hammer chisels
- Shot-blasting

## Procedures that should be followed

- Provide a high profile substrate for a good mechanical bond.
- Have a defined edge...saw cut or use a grinding wheel to create a clean defined edge to which you will work the repair mortar.
- Mixing methods: drill & paddle, mortar mixer, concrete mixer (when stone added), pump, by hand.

## ***Guide to Concrete Repair Continued***

- Concrete substrate to be in a Saturated-Surface-Dry condition (SSD) so that the concrete will not absorb water from the repair mortar.
- When mixing less than a full bag always first mix the bag so that a representative sample is obtained.
- Add the powder to the water.
- Water requirements stay the same regardless if the material is used neat or if pea gravel is used.
- Application methods: by hand, form & pump, form & pour, dry packing, pneumatic (spraying), pneumatic (shotcrete).

### **General Use Repair Mortars:**

#### **ReCrete™ 5 Minute & ReCrete™ 20 Minute**

- Cost-effective repair mortar with no polymers or fibers
- Min. thickness 1/8", max. 2", neat
- Extend with clean washed stone for repairs > 2" per Data Sheet
- Water substitution with Acrylic Bonding Agent J40 1:1, recommended for enhanced performance

#### **Polyfast™ FS**

- Rapid setting vertical and overhead applications
- Polymer modified
- Min. thickness 1/4", max. 2", neat
- Extend with clean washed stone for repairs > 2" per Data Sheet
- Easily shaped and finished

### **Vertical/Overhead Repair Mortars:**

#### **Architectural Finish™**

- Polymer modified
- Use for rubbing, smoothing, resurfacing repairing vertical surfaces
- Colored blended to a light gray
- Featheredge to 1/8" application depth

#### **Perma Patch VO™**

- One component w/water or 2-component w/approved admixture
- Min. thickness 1/4", max. 2" neat
- Formulated for vertical / overhead applications
- Shrinkage compensated
- Can be sprayed or pumped through small volume pneumatic equipment
- Rapid strength gain
- Can be extended with aggregate for repairs > 2"

#### **HD 25 VO**

- Designed for vertical and overhead applications
- Polymer modified
- Min. thickness 1/4", max. 2" neat
- More rapid initial strength gain than Polyfast

#### **Civil / Structural VO**

- Vertical or overhead applications
- Formulated for use in spray applications using the wet process
- Can also be applied by hand or trowel
- Contains a corrosion inhibitor
- Very high compressive strengths

### **Form & Pour Repair Mortars:**

#### **Civil / Structural FPX**

- For form & pour or horizontal applications
- Extended with blended aggregate
- Contains a corrosion inhibitor
- Long working time

#### **Perma Patch™ F/P**

- Flowable/self-consolidating
- Up to 40 minute working time
- Ideal for horizontal or formed vertical/overhead applications
- High early strength

### **Horizontal Repair Mortars:**

#### **Thin Resurfacer**

- Polymer modified
- Min. thickness 1/16", max. 1/2" and cannot be extended
- Substitute 1 qt. of water with J-40 for enhanced performance

#### **Special Patch**

- Shrinkage compensated
- High early strength
- Rapid-hardening mortar that accepts foot traffic in 1-2 hours and pneumatic
- Good resistance to freeze-thaw and impact
- Excellent abrasion resistance to heavy loads and traffic
- polymer-modified, cementitious, two component

#### **HD 50**

- Pourable consistency
- Very rapid setting
- Polymer modified, fiber reinforced
- Min. thickness 1/2", max. 2", neat
- Extend with clean washed stone for repairs > 2" per Data Sheet

#### **Pave Patch 3000**

- Pourable consistency
- Very rapid setting
- Min. thickness 1/2", max. 2", neat
- Extend with clean washed stone for repairs > 2" per Data Sheet
- Capable of being extended up to 60% (40# stone) per bag
- Resists freeze-thaw cycles to extend the life of the patch

### **Resinous Based Repair Mortars**

#### **Rapid Resin Repair**

- 100% solids 3-component low modulus repair material
- Chemically resistant
- Cures from -20°F to 130°F
- Low odor

#### **Sure Patch™**

- 100% solids 3-component low modulus repair material
- Trowelable
- Rapid strength gain
- Moisture insensitive

### **Epoxy/Cementitious Bonding Agent/Rebar Primer**

#### **Perma Prime™ 3C**

- Bonding agent & rebar primer/protector
- Long open time
- Epoxy-modified with corrosion inhibitor

### **Specialty Repairs:**

#### **Snaplugs®**

- High Strength cement compound
- Plugs for tie cone holes
- Gray in color
- Saves time and labor

#### **Anchor All**

- Non-shrink
- Pourable
- Fast setting
- Ideal for posts and dowels

#### **Waterstop**

- Rapid setting hydraulic cement
- For plugging & stopping water or fluid leaks in concrete or CMU
- Initial set 2½ min., final set 3½ min.
- Non-corrosive, non-rusting