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Field Guide to Concrete Repair Application Procedures

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ACI RAP 10 – Leveling and Reprofiling of Vertical and Overhead Surfaces

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FIELD GUIDE TO
CONCRETE REPAIR
APPLICATION PROCEDURES

Leveling and
Reprofiling of
Vertical and
Overhead
Surfaces

Leveling and Reprofiling of Vertical and Overhead Surfaces (ACI RAP 10)

What Do I Need to Know?

- When do I use leveling or reprofiling
- What is the purpose of leveling or reprofiling
- How do I prepare the concrete substrate
- How do I select the correct material
- What tools do I need
- How to apply leveling and reprofiling materials
- Validation – How do I check the installation

When do I use Leveling or Reprofiling?

- Leveling or reprofiling is indicated whenever concrete with an unacceptable finish is exposed to the elements or in contact with aggressive chemicals.
- Leveling or reprofiling can be used on:
 - Exterior or interior façades
 - Foundations
 - Beams, columns and soffits found in buildings
 - Parking structures
 - Retaining walls
 - Bridges
 - Storage tanks
 - Tunnels.
- Leveling or reprofiling is used to improve the aesthetic appearance or prepare the surface for subsequent coating or application.

What is the purpose of leveling/reprofiling?

- Primary function is to correct surface deficiencies and provide the intended surface
- Deficiencies includes:
 - Non-moving hairline and plastic shrinkage cracks
 - Small or shallow surface air voids
 - Honeycombs or rock pockets
- This will allow for an acceptable surface to receive aesthetic or protective coatings.

How to prepare the surface?

- Concrete must be clean and open profile.
- It must be sound.
- It must be free of bond-inhibiting materials.
- Depending on the selected material, the surface profile should be similar to 60 – 100 grit sandpaper.

How do I select the correct material?

Table 1—Material and condition/application grid

Applications	Materials			
	Acrylic-based ready-to-use	Cement-based mortar	Polymer-modified cement-based mortar	Polymer-resin-based mortar
Building façades c/o nonstructural elements	X	X	X	
Curtain walls	X	X	X	
Beams and columns		X	X	X
Bridge wall/parapet		X	X	X
Tunnels			X	X
Water, wastewater, and process tanks			X	X

What tools do I need?

- Required tools include the following:
 - Surface preparation equipment
 - Heavy-duty mixing drill
 - Mixing paddle (jiffy or box)
 - Clean buckets
 - Mortar hawk
 - Pool, margin, or finishing trowels
- Optional: Most materials can be sprayed on with a hopper gun or a wet spray mortar equipment.

How to apply the leveler?

- Spray or Trowel into place.
- Apply adequate pressure to push material into voids.
- Finish surface to desired texture.
- Note: Excess Material may be shaved off to provide a smooth surface.

Validation – How do I check the repair?

Test Methods:

- Non-destructive:
 - Sound out the surface.
 - Impact-echo
- Destructive:
 - Direct Tensile Bond Test - (ASTM C1583).