

Gun Shot LPS

Division 3: Concrete

Low pressure, wet process, fiber reinforced, silica fume enhanced shotcrete with ECB-Tech corrosion protection.

SECTION 033713 – SHOTCRETE

PART 1 GENERAL

1.1 SUMMARY

Provide labor, materials, equipment and supervision necessary to complete the application of product to the existing substrate.

1.2 SYSTEM DESCRIPTION

The products shall meet or exceed the following performance requirements:

Base		Portland cement with silica fume		
pH		>12		
Density	Hardened	135 pounds per cubic feet		
Setting time by vicat needle	ASTM C191	Initial 30 minutes – Final 60 minutes		
Percent air – pressure method	ASTM C231	3 – 5 percent		
Resistance to deicing chemicals under freeze/thaw	ASTM C672	50 cycles – no effect		
Slough	ACI 506 R90	None		
Rebound	Vertical	None		
		7 Day	14 Days	28 Days
Compressive strength – psi	ASTM C109	7275	7350	7400

Typical performance data representing material vertically applied and cured in field under varying temperatures. Test performed at 2 1/4 quarts of water per bag.

1.3 SUBMITTALS

- A. Manufacturer’s current product data bulletin.
- B. The trained applicator shall prepare a test panel of the repair installed on the actual building as a submittal for approval of proper application and adhesion.
- C. The trained applicator shall submit to the specifier a list of five projects that he has completed within the last five years, exhibiting the applicator’s skills. The list shall include project name, location, and description of work and completion date.

1.4 QUALITY ASSURANCE

Products shall be installed by a trained applicator with a minimum of five years’ experience and meet the requirements of the specifier.

1.5 DELIVERY, STORAGE & HANDLING

- A. Deliver all products in original labeled, sealed, and undamaged containers.
- B. Store all products in accordance with manufacturer's printed instructions.
- C. Handle all products in accordance with manufacturer's printed instructions.

1.6 PROJECT/SITE CONDITIONS

All products shall be applied at substrate and ambient temperatures of 40 degrees F or above. A minimum temperature of 40 degrees F shall be maintained 24 hours after completion of work. Protect products from weather and other damage for a period of 24 hours after installation. Do not apply products to frozen surfaces.

1.7 SCHEDULING

The work requires close coordination with related sections and trades.

PART 2 PRODUCTS

2.1 MANUFACTURERS

The following manufacturers are approved for the project.
Conproco

2.2 MATERIALS

Gun Shot LPS: A low pressure, wet process spray applied, fiber reinforced, silica fume enhanced, repair mortar with ECB-Tech corrosion protection.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Installation shall be performed strictly in accordance with manufacturer's current product data bulletin.
- B. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.
- C. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas and landscaping from contact due to mixing, handling, and application of materials.

3.2 SURFACE PREPARATION

- A. Remove loose and deteriorated material, laitance, dirt, dust, oil and any surface contaminants that will inhibit proper bond.
- B. Saw cut edges with a diamond blade at a 90 degree angle to eliminate feather edging. Avoid polishing the edges, as this will inhibit bond.
- C. Avoid bruising or micro cracking during surface preparation. Refer to ICRI Surface Preparation Guide 03732.

- D. Repair zone must be a minimum of 1/4 inch deep, of simple geometry, with no complex edge conditions.
- E. Avoid long narrow repairs; these have a greater tendency to crack.
- F. Apply Conpro Start where a consolidant is of benefit (soft, powdery surfaces).
- G. Remove concrete from corroded steel and several inches beyond to expose non-corroded steel.
- H. Provide a 3/4 inch clearance between the concrete and steel.
- I. Damaged reinforcing steel should be inspected by a qualified engineer and appropriate action taken.

3.3 APPLICATION

A. Priming

1. Concrete:

- a. Apply Conpro Primer, or ECB as a bonding primer to all exposed surfaces. Refer to the individual product technical data bulletin for information.

2. Reinforcing Steel:

- a. Remove all scaling rust from reinforcing steel.
- b. Apply ECB anti-corrosion coating.

B. Mixing

1. Mechanically mix using a low speed drill (400 - 600 rpm) and mixing paddle or mortar mixer.
2. Pour 2-1/4 quarts of potable water into a clean mixing vessel and slowly add all of the powder.
3. Mix continuously for 3 minutes to a uniform, lump-free consistency.
4. Add up to 1 pint of additional water if needed.
5. Allow to "breathe" for 1 minute and remix for 1 minute. This will improve workability and open time.
6. Do not over mix, as this will entrain excess air.
7. Do not re-temper.

C. Application

1. At the time of application, surfaces should be saturated surface dry (SSD) but hold no standing water. Follow instructions for primer.
2. Spray Application:
 - a. Material should be applied by an experienced nozzle man using a rotor/stator or peristaltic pump. Follow ACI 506R, for recommendations for wet process shotcrete.
 - b. Material may be applied in multiple lifts of not less than 3/8 inch and no greater than 2 inches.
 - c. Allow material to stiffen to thumbprint hard before continuing.
 - d. Scratch (cross-hatch) each lift to prepare surface for subsequent lift.
 - e. Strike off with straight edge to a uniform plane, close with a trowel or sponge float.
3. Trowel Application:
 - a. Force the material against the edges of the repair, working toward the center.
 - b. Material may be applied in multiple lifts of not less than 3/8 inch and no greater than 2 inches.
 - c. Consolidate each lift and allow to stiffen to thumb-print hard before continuing.
 - d. Scratch (cross-hatch) each lift to prepare surface for subsequent lift.
 - e. Finish with a sponge float or trowel.

D. Curing

1. Dampen the repair with a fine mist of water for 24 hours or moist cure with wet burlap and polyethylene. Alternatively, apply ProMasonry Cure & Seal.
2. Protect repair from direct sunlight, wind, rain and frost.

3.4 CLEANING

- A. Material left over at the job site by the approved applicator shall be removed.
- B. Clean tools and equipment with water immediately after use.
- C. Cured material must be removed mechanically.

END OF SECTION 033713