BUILDING TRUST

Section 03 01 00
Maintenance of concrete

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SIKA SPECIFICATION NOTE: *This guide specification includes test methods, materials and installation procedures for* ***SikaQuick® FNP****, a fast-setting, one-component, self-consolidating mortar with fiber and an integral corrosion inhibitor for form and pour/pump applications.* ***SikaQuick® FNP*** *is a self consolidating mortar for form and pour/pumping in concrete repair applications. It provides high pumpability for structural repair of columns and beams.This guide specification should be adapted to suit the needs and conditions of individual projects. It is prepared in CSI Master Format and should be included as a separate section under Division 3 - Concrete.*

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Part 1 - General

1.01 Summary

This Specification shall be read as a whole by all parties concerned. Each Section may contain more or less the complete Work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their Work and coordinate overlapping Work.

1.02 System description

This specification describes the patching or overlay of interior and exterior horizontal surfaces and formed vertical and overhead surfaces with Portland Cement Concrete.

1.03 Related sections

A. Maintenance of Cast-in-Place Concrete: Section 03 01 30
B. Maintenance of Precast Concrete: Section 03 01 40
C. Maintenance of Cast Decks and Underlayment: Section 03 01 50
D. Maintenance of Mass Concrete: Section 03 01 70
E. Structural Concrete: Section 03 33 00

1.04 References

The following standards are applicable to this section:

- ASTM C-109 - Compressive Strength
- ASTM C-1583 – Direct Pull-Off Bond Strength
- ASTM C-469 - Modulus of Elasticity
- ASTM C-157 Modified per ASTM C-928 – Shrinkage
- ASTM C-293 - Flexural Strength
- ASTM C-666 – Freeze-Thaw Resistance

1.05 Quality Assurance

A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001 certified and have in existence a recognized ongoing quality assurance program independently audited on a regular basis.

B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have receivced product training by a manufacturer's representative.

C. Store and apply materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Safety Data Sheets (SDS) for complete handling recommendations.

1.06 Delivery, Storage, and Handling

A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.

B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.

C. Condition the specified product as recommended by the manufacturer.

1.07 Job Conditions

A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 45°F (7°C) and rising.

B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified material.

1.08 Submittals

A. Submit two copies of manufacturer's literature, to include: Product Data Sheets (PDS), and appropriate Safety Data Sheets (SDS).

B. Submit copy of Certificate of Approved Contractor status by manufacturer.

1.09 Warranty

Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

Part 2 - Products

2.01 Manufacturer

SikaQuick®-FNP, as manufactured by Sika® Corporation, is considered to conform to the requirements of this specification.

2.02 Materials

A. The repair concrete shall be a blend of selected portland cements, specially graded aggregates, admixtures for controlling setting time, and water reducers for workability.

B. The material shall include prepackaged coarse aggregate and be supplied as a factory-blended unit.

C. The Portland Cement Concrete must be placeable from 1" to 8" depth and appropriate for full-slab depth repair and replacement.

D. The material shall contain a corrosion inhibitor.

2.03 Performance Criteria

Typical Properties of the mixed polymer-modified, portland cement mortar:

1. Yield	Approximately 0.5 ft^3 per 55 lb bag
2. Color	Concrete gray
3. Mixing Ratio	1 gal per 55-lb bag
4. Application Thickness	Neat: Min 1/4" (7 mm); Max 3 " (76 mm) Extended: Min 1" (25 mm); Max 8 " (200 mm)
5. Application Temp	> 45 °F (7 °C)
6. Working Time	60 min.
7. Compressive Strength (ASTM C-109)	1 day – 3,500 psi(24.1 MPa) 7 day - 6,000 psi (41.4 MPa) 28 days – 7,500 psi (51.7 MPa)
8. Flexural Strength (ASTM C-293)	1 day - 700 psi (4.8 MPa) 7 day – 1,300 psi (9.0 MPa) 28 day – 1,500 psi (10.3 MPa)
9. Bond Strength @ 28 days (ASTM C-1583)	500 – 600 psi (3.4 – 4.1 MPa)
10. Modulus of Elasticity @ 28 days (ASTM C-469)	5 x 10^6 psi (3.4 x 10^4 MPa)
11. Shrinkage @ 28 days (ASTM C-157 Modified per ASTM C-928)	< 0.06%
12. Freeze-Thaw Resistance (ASTM C-666)	98%

Note: Tests above were performed with the material and curing conditions @ 71°F – 75°F and 45 - 55% relative humidity.

Part 3 – Execution

3.01 Surface Preparation

A. Areas to be repaired must be clean, sound, and free of contaminants. All loose and deteriorated concrete shall be removed by mechanical means. Mechanically prepare concrete substrate to obtain a surface profile of ± 1/8" (CSP 7-8 or greater as per ICRI Guidelines) with a new exposed aggregate surface. Area to be patched shall not be less than 1/4" in depth.

B. Where reinforcing steel with active corrosion is encountered, sandblast the steel to a white metal finish to remove all contaminants and rust. Where corrosion has occurred due to the presence of chlorides, the steel shall be high pressure washed after mechanical cleaning. Prime steel with 2 coats of Sika® Armatec® 110 EpoCem as per the Product Data Sheet (PDS).

C.

3.02 Mixing and Application

A. Place 7/8 and up to 1 gal of water per 55 lb. bag in a mixing container. Add SikaQuick FNP while continuing to mix. Mix to a uniform consistency, maximum 3 minutes. Mechanically mix with a low-speed drill (400-600 rpm) and paddle or in appropriate size mortar mixer or concrete mixer.

B. Placement Procedure: Form and pour or pump applications: Pre-wet surface to SSD (Saturated Surface Dry). Ensure good intimate contact with the substrate is achieved. To accomplish this, material should be scrubbed into the substrate or other suitable means should be employed such as vibration of the material or pumping under pressure. Vibrate form while pouring or pumping. Pump with a variable pressure pump. Continue pumping until a 3 to 5 psi increase in normal line pressure is evident then STOP pumping. Form should not deflect. Vent to be capped when steady flow is evident and forms stripped when appropriate. When preplaced aggregate, pre-wash aggregate before placing in repair area

C. As per ACI recommendations for portland cement concrete, curing is required. Moist cure with wet burlap and polyethylene, a fine mist of water or a water-based* compatible curing compound. Moist curing should commence immediately after finishing and continue for 48 hours. Protect newly applied material from rain, sun, and wind until compressive strength is 70% of the 28 day compressive strength. To prevent from freezing cover with insulating material. Setting time is dependent on temperature and humidity.

*Pretesting of curing compound is recommended.

D. Adhere to all procedures, limitations and cautions for the polymer-modified portland cement mortar in the manufacturers current printed Product Data Sheet (PDS) and literature.

3.02 Cleaning

A. The uncured polymer-modified portland cement mortar can be cleaned from tools with water. The cured polymer modified portland cement mortar can only be removed mechanically.

B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

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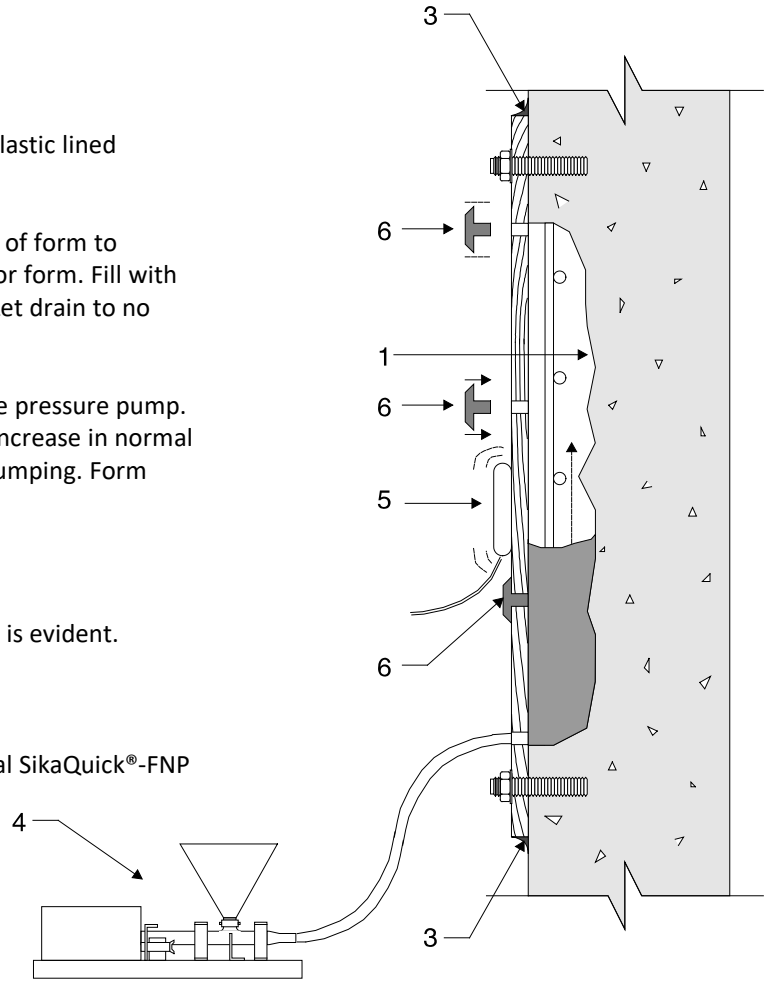
1. Pre-wet surface to SSD.
2. Apply release agent to form or use plastic lined plywood.
3. Run bead of Sikaflex 1a around edge of form to prevent leakage, let cure, then anchor form. Fill with water to check for water tightness. Let drain to no free standing water.
4. Pump SikaQuick®-FNP with a variable pressure pump. Continue pumping until a 3 to 5 psi increase in normal line pressure is evident then STOP pumping. Form should not deflect.
5. Vibrate form while pumping.
6. Vent to be capped when steady flow is evident.
7. Strip form when appropriate.
8. Dry pack anchor holes with additional SikaQuick®-FNP material



Concrete Restoration Systems by Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Product Data Sheet, product label and Safety Data Sheet which are available online at http://usa.sika.com/ or by calling Sika's Technical Service Department at 800-933-7452. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instruction for each Sika product as set forth in the current Product Data Sheet, product label and Safety Data Sheet prior to product use.