



Section 04 05 13.91 Vertical Overhead Repair Mortar

SIKA SPECIFICATION NOTE: *This guide specification includes test methods, materials and installation procedures for SikaQuick® VOH, a fast setting, one component, cementitious, vertical and overhead repair mortar with superior high build properties. SikaQuick® VOH is an ideal repair material for vertical and overhead applications on parking decks, bridge decks, concrete surfaces, ramps, barriers, cooling towers, stadiums and many other concrete structures and substrates. 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 4 – Masonry.*

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 of interior and/or exterior vertical and overhead surfaces with a rapid setting portland cement mortar.

1.03 Related sections

Masonry Mortaring – Section 04 05 13

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

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 received 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 40°F (4°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®-VOH, as manufactured by Sika® Corporation, is considered to conform to the requirements of this specification.

2.02 Materials

- A. Vertical Overhead repair mortar shall be **SikaQuick®-VOH**, fast setting, cementitious repair mortar manufactured by Sika® Corporation.
- B. The material shall be high build mortar made with a specialty cement blend.
- C. The material shall be a one-component repair material manufactured by Sika Corporation .

2.03 Performance Criteria

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

Yield	0.44 ft ³ per bag
Color	Concrete gray
Mixing Ratio	6–6.5 pts (2.8-3.1 L) per bag
Application Thickness	Min 1/8" (3 mm) Max 3" (76 mm)
Application Temp	> 45 °F (7 °C)
Working Time	~ 15 minutes
Compressive Strength (ASTM C-109)	3 hours > 1,500 psi (10.3 MPa) 1 day > 3,000 psi (20.7 MPa) 28 days - 5,500 psi (37.9 MPa)
Flexural Strength (ASTM C-293)	1 day - 400 psi (2.8 MPa) 7 day – 600 psi (4.1 MPa) 28 day – 1,000 psi (6.9 MPa)
Bond Strength (ASTM C-1583)	> 250 psi (1.7 MPa) Substrate failure
Slant Shear Strength (ASTM C-882 modified*)	28 days - 2,000 psi (13.8 MPa)
Shrinkage @ 28 days (ASTM C-157 Modified per ASTM C-928)	< 0.05%
Modulus of Elasticity in Compression (ASTM C-469)	2.2x10 ⁶ psi (15.2 GPa)

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 $\pm 1/16''$ (CSP 5 or greater as per ICRI Guidelines) with a new exposed aggregate surface. Area to be patched shall not be less than 1/8" 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).

3.02 Mixing and Application

- A. Mechanically mix in appropriate sized mortar mixer or with a Sika jiffy paddle and low speed (400-600 rpm) drill. Pour approximately 5 pints of water into the mixing container. Add the powder while continuing to mix. Mix to a uniform consistency for a maximum of three minutes. Add up to another ½ pint of water to mix if a greater flow is desired. Should smaller quantities be needed, be sure the proper water/powder ratio is maintained and that the dry material is uniformly blended before mixing the components together. Mix only that amount of material that can be placed in 30 minutes. Do not retemper material.
- B. Mixing of the rapid-setting portland cement concrete: Pour 6 to 6-1/2 pints of water into the mixing container. Add the powder while continuing to mix. Add correct amount of the pre-approved coarse aggregate, and continue mixing to a uniform consistency. Mixing time should be 3 minutes maximum.
- C. Placement Procedure: At the time of application, the substrate should be saturated surface dry with no standing water. Mortar and/or concrete must be scrubbed into substrate filling all pores and voids. While the scrub coat is still plastic, force material against the edge of the repair, working toward the center. After filling, consolidate, then screed. Allow mortar or concrete to set to desired stiffness, then finish with a trowel for a smooth surface. Broom or burlap drag for rough surface. Areas where the depth of the repair is less than 2" over head and 3" vertical shall be repaired with one lift of the rapid setting portland cement mortar. Areas that exceed these depths must be repaired with multiple lifts.
- A. 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.
- B. 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 material can be cleaned from tools with water. The cured 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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