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# Section 03 60 00
# Grouting

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***SIKA SPECIFICATION NOTE:*** *This guide specification includes test methods, materials and installation procedures for* ***SikaGrout®-528 SF****, a high-performance, cementitious grout with bleed resistance.* ***SikaGrout®-528 SF*** *is a non-shrink, non metallic, cementitious grout with a unique 2-stage shrinkage compensating mechanism. With a special blend of shrinkage-reducing and plasticizing/water-reducing agents,* ***SikaGrout®-528 SF*** *compensates for shrinkage in both the plastic and hardened states. 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 grouting of cavities, voids, key ways, etc. with a portland cement, non-shrink, non-metallic grout.

### 1.03 Related sections

A. 03 61 00 Cementitious Grouting
B. 03 62 00 Non-Shrink Grouting
C. 03 62 13 Non-Metallic Non-Shrink Grouting
D. 03 01 60 Maintenance of Grouting

### 1.04 References

The following standards are applicable to this section:

- ASTM C-266 – Time of Set
- ASTM C-939 – Fluidity
- ASTM C-109 – Compressive Strength
- ASTM C-940 - Expansion
- ASTM C-1090 – Shrinkage
- ASTM C-1107 – Standard Specification for Non-shrink Grouts

### 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 grouting 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 Material Safety Data Sheets 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

SikaGrout®-528 SF, as manufactured by Sika® Corporation, is considered to conform to the requirements of this specification.

### 2.02 Materials

A. The Grout shall be a blend of selected portland cements, with a special blend of shrinkage-reducing and plasticizing/water-reducing agents.

B. The material shall be non-combustible both before and after cure

C. The material shall be supplied in a factory-blended bag

### 2.03 Performance Criteria

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

| | | |
|---|---|---|
| 1 | Yield | 0.48 $ft^3$ (0.01 $m^3$) per bag |
| 2 | Color | Gray powder |
| 3 | Mixing Ratio | 11.5–12.5 pts (5.4–5.9 L) of water per bag |
| 4 | Application Thickness | Min. 1/8" (3 mm) |
| 5 | Application Temp | 40–100 °F (4–38 °C) |
| 6 | Flowability (ASTM C-939 Modified per FL DOT Section 938 and PTI Section 4.4.5.2.) | After mixing - 7–20 sec.<br>After 30 min. 7–20 sec. |
| 7 | Set time (ASTM C-266) | 3–12 hours |
| 8 | Compressive Strength (ASTM C-109) | 1 day - 2,000 psi (13.8 MPa)<br>3 days - 5,000 psi (34.5 MPa)<br>7 days - 7,000 psi (48.3 MPa)<br>28 days - 8,000 psi (55.2 MPa) |
| 9 | Expansion (ASTM C-940) | 3 hours: 0.0 to +2.0 % |

The grout shall not exhibit bleeding.

The grout shall be segregate.

The grout shall be pumpable through standard grout pumping equipment.

The grout shall not produce a vapor barrier.

The grout shall conform to United States Army Corps of Engineers Specification CRD C-621.

The grout shall conform to ASTM C-1107.

The material shall be approved by the United States Department of Agriculture.

**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 6 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.

### 3.02 Mixing and Application

A. For best results use a colloidal mixer similar to ChemGrout© CG-600 series or other type of high shear mixer at approximately 1,800 rpm. Mix for minimum of 3 minutes after the addition of the last bag or until a homogeneous mix is achieved. Continue to agitate material in the holding hopper to achieve best flow. Alternatively, for quantities less than 1 bag, mechanically mix with high-speed drill (2,500 rpm) and Sika jiffy paddle for a minimum of 6 minutes. Method of mixing may significantly affect the material properties, particularly flow. Project specific testing by the engineer is recommended to ensure that the mixing and placement methods result in the specified requirements. Add appropriate quantity of clean potable water. Add bag of material to mixing vessel. Start by using 11.5 pints of water per 50 lb. bag of material. As with any cementitious product most properties are best when the least mixing water is used. Only add additional water as needed up to a total maximum of 12.5 pints

B. Placement Procedure: At the time of application, the substrate shall be saturated surface dry with no standing water. Make sure all forming, mixing, placing, and clean-up materials are on hand. The grout shall be used within 60 minutes from the start of mixing. A mock-up should be completed on-site and inspected by the engineer to ensure that the placement means and methods yield the specified results.

C. Adhere to all procedures and limitations for the high-performance grout 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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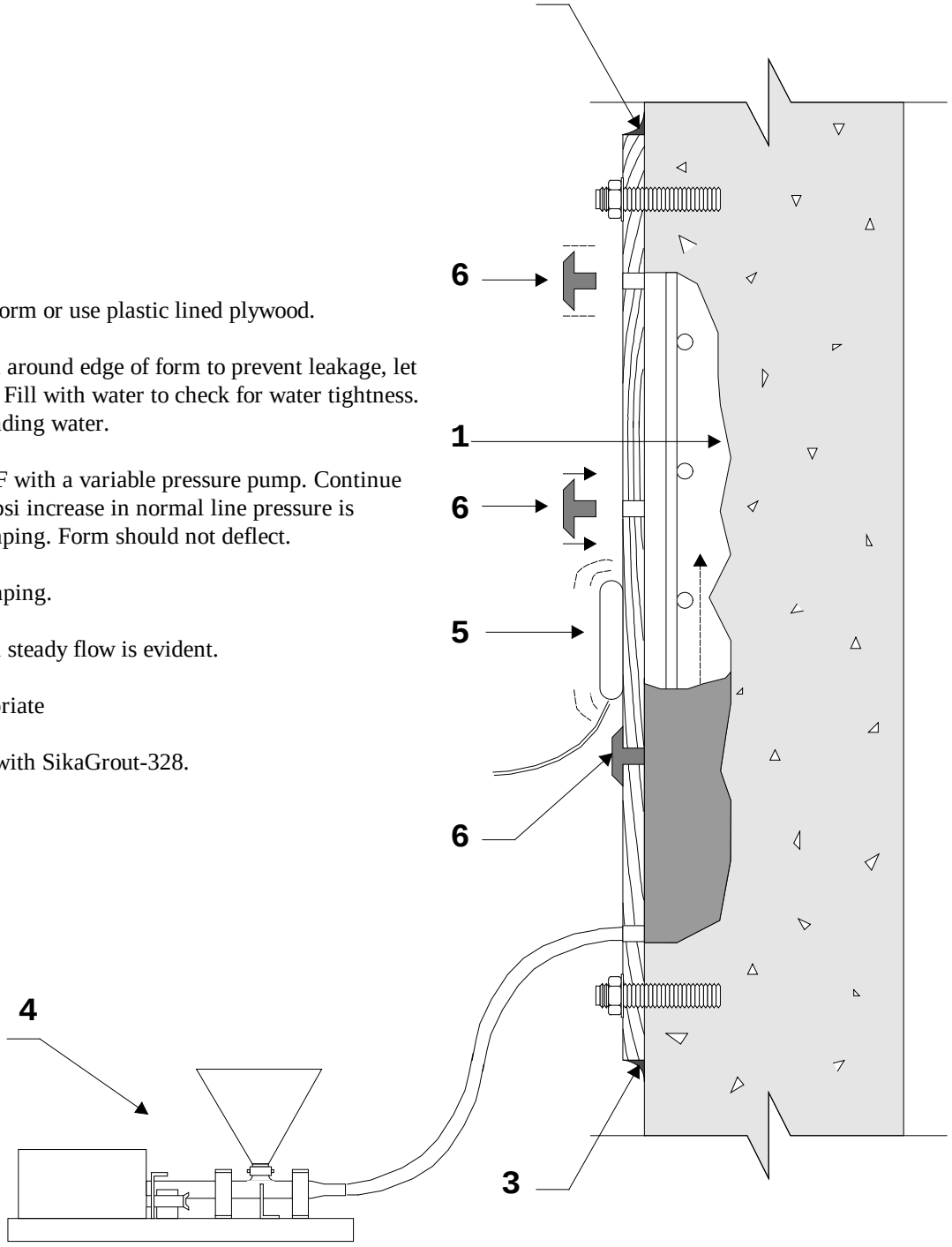
# SikaGrout®-528 SF Form and Pump

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 SikaGrout-528 SF 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 SikaGrout-328.



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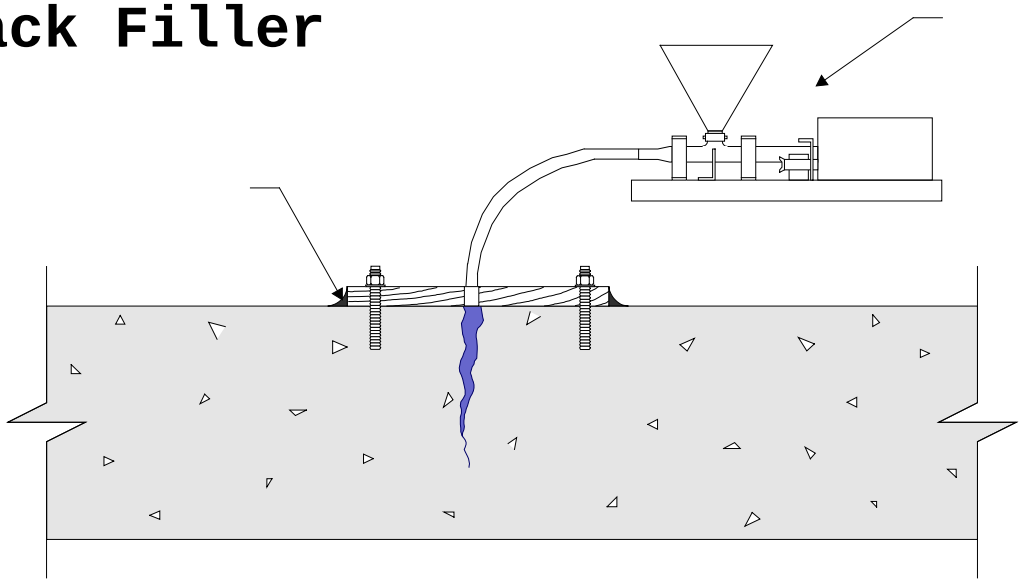
# SikaGrout®-528 SF Crack Filler



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.
4. Pump SikaGrout-528 SF with a variable pressure pump. Continue pumping until grout flow is evident at an adjacent port.
5. Cap off original port when steady flow is evident, move to adjacent port and continue pumping procedure until all injectable cracks have been filled.
6. Strip form when appropriate.
7. Dry pack anchor holes with SikaGrout-328.

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

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