Author: Eng. Ashraf Elziny
05 / 2011

Method Statement for Application of Sika Injection 20

"SIKA EGYPT"

Injection Systems

Scope: **Highly expansion solvent free water-reactive two part Polyurethane foam injection system**

Construction

INTRODUCTION:

The water leakage out of the structure could be coming through:

1- The construction joints between floor slabs and walls, and also construction joints in floor slab itself.
2- The control and injection pipes within zones where waterproofing is leaking.
3- The concrete itself.

So, the process for control of leakage should be planed and organized in order to get best efficiency and tightness using a minimum quantities of materials. A survey for locations where the leakage started is to be in the first priority and the direction where to start and to end.

Two techniques may be required

- the injection of a crack or construction joint with infiltrating water with a polyurethane resin (Sika injection 20)
- or the rapid repair of pressure leaks and seepage with an instant-setting, Portland cement water stop with mortar additive (Sika 4-A & Sika –2) & Sika Latex . the choice of the product is depending on the state of water seepage and the water pressure and time needed for stopping of water infiltration

Sika Egypt
El Abour City
1st. Industrial Zone (A)
Section # 10 Block 13035,
Egypt
Tel: +202-46100714/15/16/17/18
Fax: +202-6100759
www.sika.com.eg

Construction

METHOD STATEMENT

Surface preparation:

- For the injection works - begin by drilling 19mm diameter holes along the side of the construction joint at 45° angles. Drill the hole to intersect the joint midway through the substrate. Install the Sika injection packers in holes. Prior to product application moisture must be present. If concrete being injected contains insufficient moisture to activate the injected material, inject the joint with a small amount of water prior to the application of the product.

Materials

A. Polyurethane injection resin (SIKA INJECTION 20)

B. The use of Sika injection packers is required for the application of the polyurethane resin.

Mixing and Application

A. Mixing the polyurethane Resin for the injection of construction joints/cracks:

1. Manual - Slowly combine accelerator component “B” with the required quantity of component “A” and mix thoroughly for about 2 minutes with low speed (400-600 rpm), drill and paddle until uniform in color.

Caution: Do not allow water to enter this mix and avoid “whipping” air into the material.

B. Placement procedure: set Sika injection packers as required.

1. Begin by drilling 19mm diameter holes along the side of the construction joint /crack at a 45° angle. Drill the hole to intersect the construction joint/crack midway through the substrate. Spacing of the devices shall be accomplished as required to achieve the travel of the polyurethane resin for the pressure injection grouting between packers and to fill the construction joint/crack to the maximum. On structures open on both sides, provide packers on opposite sides at staggered elevations. Install the injection packers in the holes.

Construction

Pump polyurethane resin at >5 bars into or behind fissure or into voids which are allowing water to infiltrate into unwanted areas. If concrete being injected contains insufficient moisture to activate the grout, inject the crack with a small amount of water prior to injecting the polyurethane resin.

Pump polyurethane resin for 45 seconds and then pause to allow the material to flow into all of the cracks and crevices. Watch for material flow and water movement to appear on the surface. When movement stops, begin injection into the next packer. When sealing vertical cracks, begin injecting at the bottom of the crack and work vertically. If faster or slower reaction time is needed, adjustment of the accelerator can be added to the base resin, component "A". Re-inject to assure that all voids are properly sealed off.

Caution: With regard to injection packers the maximum injection pressure is determined by the quality (grade) of the concrete of the building part being treated.

Where a crack develops vertically to the surface, the following general rule can be applied:
Maximum pressure in bar = 3 x grade of concrete accord. to EN 205
As a rule the minimum pressure should be around 5 bar
Example: In concrete of B 45 the maximum pressure would be 135 bar.

2. The polyurethane resin for the pressure injection grouting.

A. Inject the prepared cracks with a minimum of 5 bars in order to achieve maximum filling and penetration without the inclusion of air pockets or voids in the polyurethane chemical grout. Begin the pressure injection at the lowest packer and continue until there is the appearance of the polyurethane chemical grout at an adjacent packer, thus indicating travel. When travel is indicated, a decision to discontinue or continue the pressure injection from that packer should be made by the contractor, based on his experience, with the approval of the engineer. Continue the procedure until all pressure-injectable cracks have been filled.

B. If penetration of any cracks is impossible, consult the engineer before discontinuing the injection procedure.

If modification of the proposed procedure is required to fill the cracks, submit said modification to the engineer for acceptance prior to proceeding.

C. Adhere to all limitations and cautions for the polyurethane resin as stated in the technical data sheet.

Cleaning

A. Clean-up: Completely flush pump and hoses with thinner or colma cleaner. Use sharp sided tool such as putty knife or trowel to remove excess material from walls, floors, etc. Wait for material to cure before removing. May be sanded off if necessary.

B. The uncured polyurethane resin can be cleaned from tools with an approved solvent. The cured polyurethane resin can only be removed mechanically.

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

REMARKS:

The water leakage out of the control pipes can be used for the injection by the sika injection 20.
The injection works may be assisted by a quick-setting, Portland cement/sand mortars with mortar additive (Sika 4-A & Sika –2) & Sika Latex

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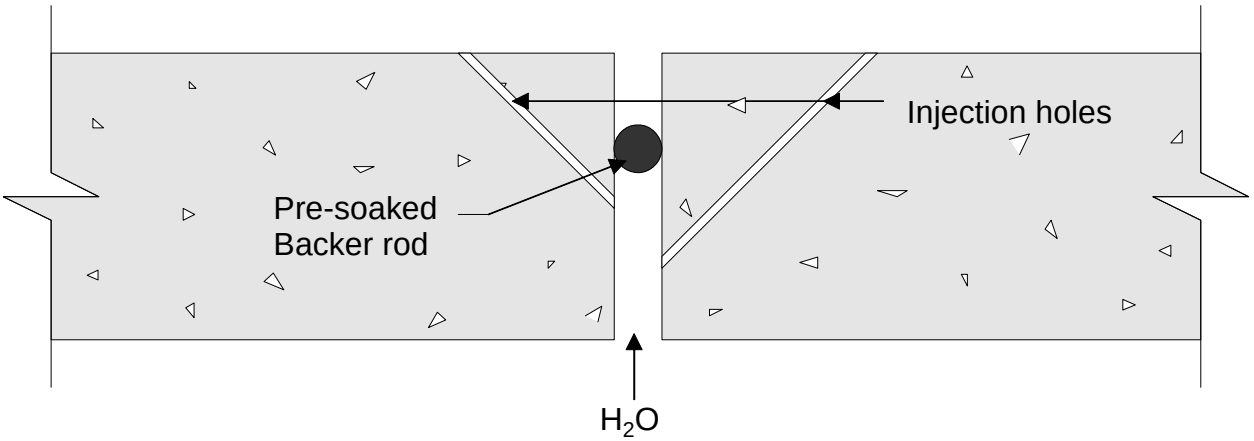
Construction

Sika injection 20
Expansion joints



1. Pump Sika injection 20 for 45 seconds and then pause to allow the material to react and flow into all of the cracks and crevices.

2. Watch for material flow and water movement to appear on the surface. When movement stops, begin injecting into the next packer.

3. When sealing vertical cracks, begin injecting at the bottom of the crack and work vertically.

4. Where heavy water flow is present begin injecting the crack at the part where the slowest flow is apparent and work vertically towards the area of heavy flow following application procedures above.

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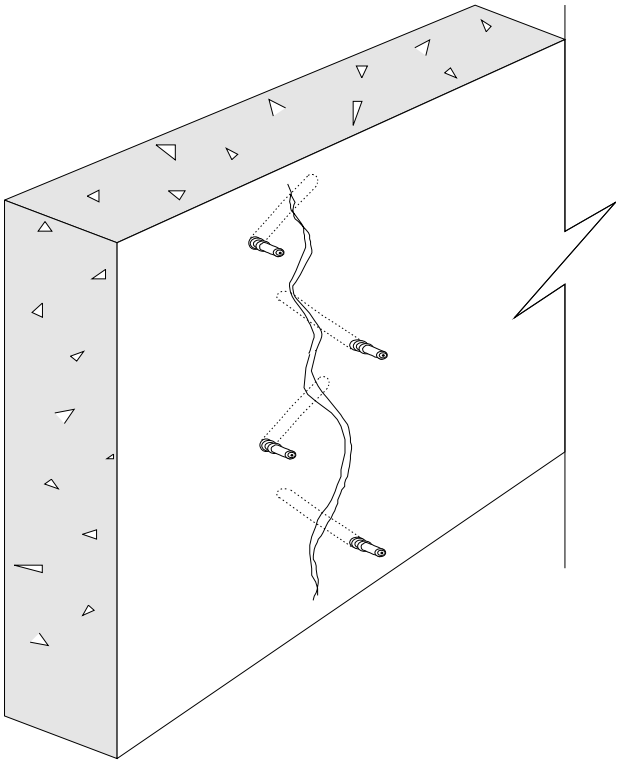
Construction

Sika injection 20
Crack Filler/ Construction joint



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SURFACE PREPARATION:
Control / Construction Joints

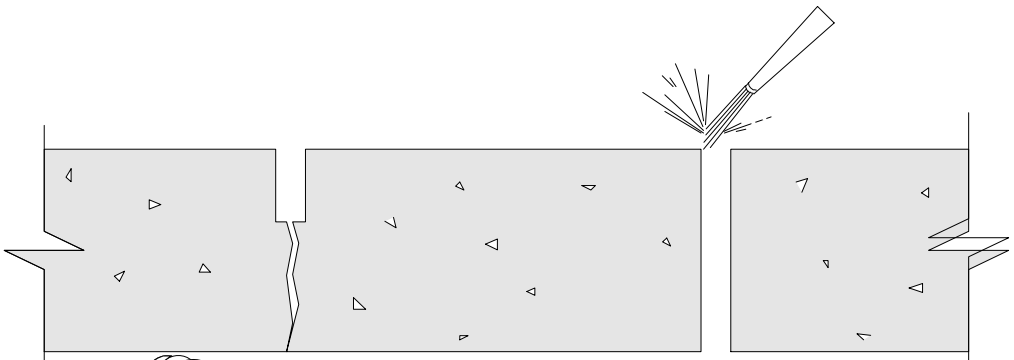


Fig. 1 Control Joint Construction Joint

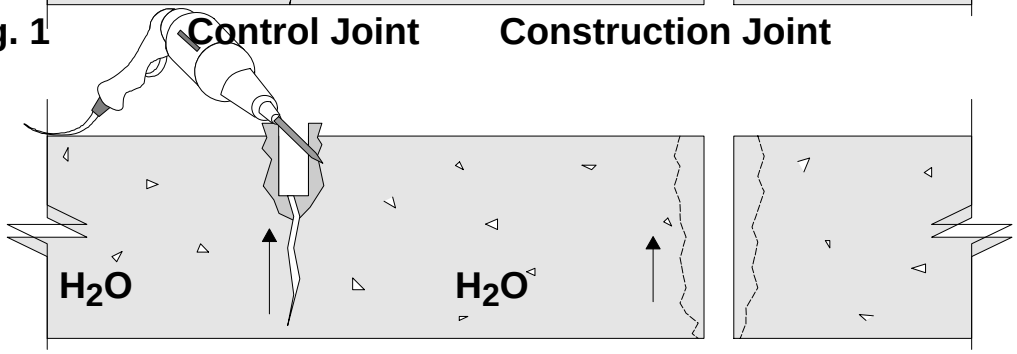
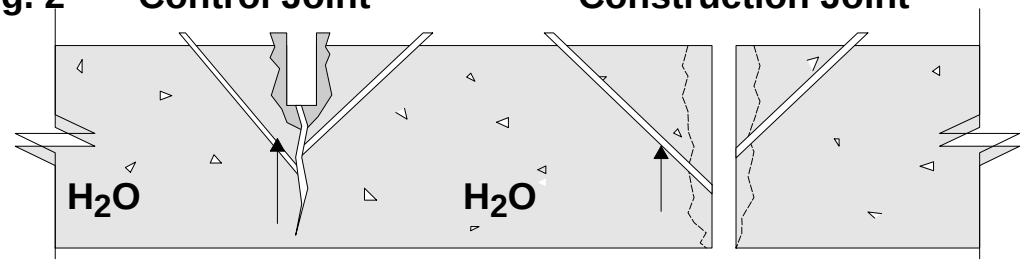


Fig. 2 Control Joint Construction Joint



1. **Instant-setting, Portland cement, water-stop - remove soft, deteriorated, unsound substrate, by mechanical means i.e. chipping hammer, sand blasting, high pressure water blasting, etc. as approved by the Engineer, clean cavity completely. (Fig 1)**

2. Expanding polyurethane resin* - begin by drilling 19 mm diameter holes along the side of the joint at 45° angles. Drill the hole to intersect the joint midway through the substrate. Install the injection packers in holes. Prior to product application moisture must be present. If concrete being injected contains insufficient moisture to activate the grout, inject the joint with a small amount of water prior to the application of the chemical grout. (Fig 2.) If the joint to be injected is a 15mm or greater at the surface pack an open cell polyurethane foam saturated with the mixed polyurethane resin into to the joint. Spray the saturated foam with a small amount of water to activate the resin and create a surface seal.

Would you need any further information, Please don't hesitate to contact us.

Best Regards,
Technical Department

Sika Egypt
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Egypt
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