

**SECTION 03700**  
**CONCRESE<sup>®</sup> 1210, 1230 and 1250**  
**Special Concrete Repairs**  
**Waterproofing of Leaking Cracks and Joints**

**NOTE TO SPECIFIERS**

The purpose of this document is to assist the specifier while developing a specification for the use of Master Builders urethane injection resins in the rehabilitation of concrete structures that are experiencing water leakage through cracks and/or joints (expansion, construction or control). It has not been prepared to be a “stand alone” item. This document is not intended to be copied directly into project specifications.

**PART 1 - GENERAL**

**1.1 Related Documents**

Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

**1.2 Scope**

The contractor or his subcontractor shall furnish all materials, tools, equipment, appliances, transportation, labor, supervision and incidentals required to repair/waterproof cracks or joints by pressure injecting hydrophilic, polyurethane grout (such as CONCRESE<sup>®</sup> 1210, 1230, 1250) into the voids.

**1.3 Pre-Qualification**

**1.31 Applicators Qualification** – Urethane pressure injection should be performed by a manufacturer-certified chemical grout applicator (such as SCB Licensees of Master Builders, Inc.), whose technicians have received formal instruction as to the installation of such materials.

**PART 2 - PRODUCTS**

**2.1 Urethane Injection Resin**

(Insert selection based on physical properties, end performance and test method requirements)

**2.1.1 Quality Control** – All materials shall be delivered to the site in undamaged, unopened containers bearing the manufacturer's original labels.

**2.2 Surface Seal** – As required by job conditions, such as, resin-soaked oakum rope, hydraulic cement (EMACO<sup>®</sup> 503 from Master Builders, Inc.) or “none”.

**2.3 Equipment**

**2.3.1 Resin Pump** – excess of 2,000 psi (13.8 MPa) with a variable pressure control trigger mechanism with attached pressure gauge, on the downstream end of the material supply hose.

**2.3.2 Water Pump** – high pressure water blaster capable of 1,000 psi (6.9 MPa) or higher.

**2.3.3 Typical Incidentals** – to be determined by site conditions and contractor. (See Installation Bulletin 6I12 - Urethane Injection, from Master Builders, Inc.).

## PART 3 - EXECUTION OF WORK

### 3.1 Preparation

**3.1.1 Surface (external)** – Concrete surfaces adjacent to cracks or joints shall be cleaned of dirt, dust, grease or oil, efflorescence and other foreign matter to expose the work area. This will indicate as to whether a surface seal will be required to contain the resin being injected, mainly due to the gap width to be filled or the amount of running water present.

**3.1.2 Surface (internal)** – Concrete cracks or joints to be injected are to be inspected by the project engineer to determine if any chemical contamination is present within the cracks or joints. This may require taking a core sample.\* If flushing or cleansing is required, refer to Installation Bulletin 6112 Urethane Injection, from Master Builders, Inc.

\* If interior surfaces are deemed sufficient for bonding, continue to section 3.2.

**3.1.3 Injection Ports / Packers** – Establish port holes using a 1/2 in. or 5/8 in. (1.27 cm to 1.59 cm) roto-hammer bit at a 45 degree angle (approximate) to the crack or joint being injected. Alternate holes from side-to-side if possible. See Installation Bulletin 6112 - Urethane Injection, from Master Builders, Inc. for additional information on port spacing, selection and installation.

**3.1.4 Surface Seal** (if required) – Refer to paragraph 2.2.

### 3.2 Pressure injection of Urethane Resin

**3.2.1 Safety** – Technicians and workmen involved with actual injection of the resins (as well as any observers or inspection personnel in immediate vicinity of work area) are to be attired in hard-hats with full-face safety shields, long sleeve shirts, rubber gloves and chemical respirators when injection is taking place. Refer to SCB Safety Manual.

#### 3.2.2 Procedure

A. Material containers should be opened when injection equipment has been set into place and is ready for priming.

B. Injection is to be continuous on the initial injection, started at the lowest point vertically or at one end horizontally. As the resin appears at the next port in line, or evidence of resin travel indicates resin has past next the port in line, pumping apparatus is moved to that port and continued.

C. Technicians are to ensure that resin to water ratio recommended by the manufacturer is maintained within tolerance. Periodically, samples should be extracted during the injection to signify a control specimen.

D. Upon completion of the initial pass, sufficient reaction and curing time for the injected resin is allowed by monitoring the control samples taken. If, or when, leaks are identified within the previous pass, re-injection is to take place by following the aforementioned procedure of port installation through injection.

### 3.3 Finish-out and Clean-up

**3.3.1 Port / Packer Removal** – Entry ports are to be removed and drill holes filled with hydraulic cement (such as EMACO 503) and finished flush with surrounding concrete.

**3.3.2 Material Removal and Disposal** – Urethane overfill and waste product, when cured, is an inert material that can be disposed of in standard fashion. Concrete surfaces adjacent to repair areas are to be cleaned by wire brushing, waterblasting or sandblasting as is appropriate or conducive to final finish application (if any) in the specifications.

## **PART 4 – FIELD QUALITY CONTROL**

### **4.1 Testing**

In most cases visual inspection for performance is adequate, and is usually tied to the performance warranty provided by the installer. Destructive testing, such as cores, is not recommended as standard.

NOTE : The injection sequence as outlined above is a basis for standard procedure. Circumstances such as large voids gushing with water within the repair area, mechanical devices installed within the concrete work area, or aesthetic final finishes, may alter the above or require customization to adapt to actual site conditions and desired repair performance.

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