

## SECTION 03317

### CONCRETE FLOOR JOINT FILLERS

#### PART 1 – GENERAL

##### 1.01 GENERAL DESCRIPTION OF WORK

- A. Provide all labor, products and equipment required to properly install semi-rigid filler in joints in the interior concrete floor slabs.

##### 1.02 SCOPE OF WORK

- A. Fill all contraction (control) and construction (formed) joints in the interior concrete floor slab where the joints will be exposed to material handling vehicle wheels.
- B. Refer to drawings for additional joints possibly requiring filler, such as joints under racks, joints at column diamonds and pads, etc.

##### 1.03 RELATED WORK

- A. Division 3, Section 03300 – “Cast-In-Place Concrete”
- B. Division 3, Section 03930 – “Concrete Floor Crack and Joint Repair”
- C. Division 7, Section 07900 – “Joint Sealants”

##### 1.04 APPLICABLE STANDARDS

- A. Products and installation shall be in compliance with or exceed the joint filling criteria established in the latest ACI 302 and ACI 360 Committee published documents.

##### 1.05 CONTRACTOR QUALIFICATIONS

- A. Installer shall have a minimum of three (3) years experience in the installation of semi-rigid fillers on industrial floors.
- B. Use only Metzger/McGuire Approved Applicators for work covered by this section.
- C. Approved Applicator shall use tools and equipment specifically designed for the preparation and placement of industrial joint fillers.

##### 1.06 SUBMITTALS

- A. Joint Filler Materials: Submit Manufacturer’s data describing joint filler proposed for use on the project.
- B. Submit Manufacturer’s Approved Applicator Certificate.

**PART 2 – PRODUCTS**

2.01 CONTROL JOINT FILLER:

- A. Provide semi-rigid, two-part, self-leveling, 100% solids content epoxy control and construction joint fillers intended for each condition listed.
- B. Utilize products with physical values meeting the following minimum values.

<u>PROPERTY</u>	<u>TEST METHOD</u>	<u>PROPERTY VALUE</u>
Shore A Hardness.....	ASTM D2240.....	90 or greater
Tensile Strength.....	ASTM D638.....	1200 psi “
Adhesion to Concrete .....	ASTM D4541.....	300 psi “
Solids Content.....		100%

Acceptable for use in USDA/FDA/CFIA regulated facilities

- C. Product: Subject to compliance with requirements, utilize products manufactured by Metzger/McGuire Co., Concord, NH (800) 223-6680.
  - 1. Joint filler for all areas with operating temperatures of 40° F or higher shall be **“MM-80/MM-80P Semi-Rigid Epoxy Joint Filler”**.
- D. No joint filler substitutions will be allowed.

2.02 ACCESSORIES

- A. Silica sand may be used at contractor’s option to choke-off shrinkage cracks beneath filler at maximum depth of ¼” above joint shelf. Silica sand must be dry, bagged, of 20 to 40 grit.
- B. The use of compressible foam backer rod is strictly prohibited in ALL saw-cut control joints.
- C. Compressible foam backer rod may be used in through slab construction joints only but **MUST** be placed at a minimum depth of 2”. No other use of backer rod will be allowed. Refer to installation section and product technical data for additional information.

2.03 DUST FREE PREPARATION EQUIPMENT

- A. Subject to compliance with project requirements, provide equipment manufactured by the following:
  - 1. U.S. Saws
  - 2. Gorilla Concrete Tools
  - 3. Pulman-Ermator
  - 4. Diamatic
  - 5. Husqvarna
  - 7. HTC
  - 8. Perfect-Trac
- B. DUST EXTRACTION SYSTEM FOR GRINDING/SAWING:
  - 1. HEPA filtration vacuum, designed for use with all hand tools when grinding sawing concrete (minimum 125CFM air flow).
  - 2. Provide one of the following:
    - a. S26/S36, by Pullman-Ermator
    - b. D30/D60, by HTC
    - c. Approved equal

C. JOINT FILLER REMOVAL AND PREPARATION

1. Dust Buggy (MKIII or Standard) by U.S. Saws
2. GCT-10/X Tank by Gorilla Concrete Tools
3. JS-130/JS-100E by U.S. Saws
4. Perfect-Trac Saw by Perfect-Trac.
5. Approved equal

**PART 3 – EXECUTION**

3.01 PROJECT CONDITIONS

- A. Work area should be free of obstructions and other trades.
- B. Slab should be visibly dry and all floor scrubbing/washing activities should be suspended at least 48 hours prior to filler installation.

3.02 TIMING OF INSTALLATION

- A. The American Concrete Institute (ACI) recommends that filling be deferred as long as possible to allow for maximum slab shrinkage and joint widening. Deferring filler installation as long as possible will help to minimize the occurrence of joint filler separation due to excessive joint widening during concrete cure (and shrinkage).
- B. For ambient temperatures a 90-120 day slab cure is advisable. Deferring filling until after facility is under permanent temperature control is best, if possible. Minimum slab cure time should exceed 28 days per ACI 302.
- C. If building is to have HVAC/climate control it is recommended that such system be activated for a minimum of 7 days prior to filler installation.

3.03 EXAMINATION OF CONDITIONS

- A. It is the responsibility of the installer to inspect project and joint conditions and notify on-site management in writing of any deficiencies that might adversely affect the quality or durability of the work performed or his contract price.
- B. Start of work by the installer implies acceptance of conditions.

3.04 PRE-INSTALLATION SAMPLE

- A. Before start of actual work the applicator shall install samples to demonstrate his intended procedures and finished product. Sample shall include at least 25' each of both contraction and construction joints and be performed in the presence of on-site management.
- B. If procedures and finished product are approved they will be considered a standard for the entire project.

3.05 JOINT PREPARATION

- A. Prior to installation of joint fillers, all saw-cut joints shall be thoroughly cleaned to their full original depth. Typically 1 ¼ - 1 ½" in a 6" slab, 2" in an 8" slab. Where the original saw-cut depth exceeds 2", joint preparation and filling must be performed to a minimum depth of 2".

- B. Construction (formed, through slab) joints that are not saw-cut shall be cleaned to a minimum depth of 2”.
- C. Preparation shall be performed using a vacuum-equipped saw that will reach the base of the saw-cut joint or to a depth of 2” in the case of through slab construction joints, and shall be used in a manner that takes both joint walls back to bare concrete, removing all saw laitance, curing compounds, sealers, debris, etc. Joint cleaning may be performed using two cleaning passes, one along each side of the joint. Or, if only one cleaning pass is performed, the diamond blade width must be slightly wider than the joint to be cleaned.
- D. Where joints have minor edge chips, said chips shall be “squared off” and filled along with the joint itself.
- E. Keep prepared joints free of dust, moisture, and jobsite debris prior to filling.

#### 3.06 CHOKING-OFF JOINT BOTTOM

- A. The installer may, at his option, use a maximum of 1/4” of silica sand placed at the bottom of the saw-cut joints to prevent filler run-thru into the shrinkage crack.
- B. Compressible backer rod is prohibited in saw-cut joints unless they exceed 2” deep.
- C. Compressible backer rod may be used in through-slab (non-sawn) construction joints but must be recessed at least 2” below the slab surface.

**Caution: The use of backer rod in any saw-cut joints less than 2” deep will result in the rejection of all saw-cut joints work.**

#### 3.07 JOINT FILLER INSTALLATION

- A. Installation of MM80/MM-80P Semi-Rigid Epoxy Joint Filler:
  - 1. Pre-mix Part “A” component to re-distribute any settlement that may have occurred during shipping or storage.
  - 2. Combine Part “A” with “B” per manufacturer’s instructions and dispense through bulk caulking guns or dual-feed power pump.
  - 3. Install using a two pass method per manufacturer instructions, with second pass overfilled (crowned).
  - 4. If stain from overfill will be objectionable, apply Metzger/McGuire SPF (Stain Preventing Film) prior to joint cleanout and filler placement. For additional information contact Metzger/McGuire at (800) 223-6680.
  - 5. After MM-80/MM-80P has fully cured, razor off excess to leave a flush filler profile. The overfill should be heated just prior to shaving to provide a smooth, flush filler profile (see manufacturer instructions on heating methods).

### **PART 4 -QUALITY ASSURANCE**

#### 4.01 JOINT FILLER DEFICIENCIES:

- A. Installer is advised that significant deficiencies in workmanship, including: less than proper filler depth, inadequate joint cleaning, concave filler profile, etc., shall be removed and properly replaced.

- B. Joint filler installed to depths less than specified in this Section shall be removed and replaced at no additional cost to the General Contractor or Owner. As each sector of work is completed the general contractor, using a 1/8" drill bit, shall drill through the filler to verify filler depth. GC shall test drill at an approximate rate of 1 core every 500 lineal feet. Location of core and filler depth found shall be recorded and provided to the owner prior to project completion.

4.02 JOINT FILLER SEPARATION:

- A. Joint filler separation, both adhesive (leap-frog side to side) and cohesive, occurs as a result of concrete shrinkage and subsequent joint opening in excess of the fillers ability to laterally expand. In the event joint separation voids are 1/32 (credit card width) or greater, correction by refilling should be required.
- B. The existence of joint filler separation as outlined does not mean that joint filler deficiencies exist as a result of the applicators initial installation. As outlined in 4.02.A above, joint filler separation is specifically related to concrete shrinkage and joint widening, all of which are conditions outside the control of the joint filler applicator.
- C. For a further discussion and information pertaining to joint filler separation, please refer to Metzger/McGuire Technical Bulletin, T11.

END OF SECTION -