

# Item 401

## Flowable Backfill



### 1. DESCRIPTION

Furnish and place flowable backfill for trench, hole, or other void.

### 2. MATERIALS

Use materials from prequalified sources listed on the Department website. Use materials from non-listed sources only when tested and approved before use. Allow 30 calendar days for the Engineer to sample, test, and report results for non-listed sources. Do not combine approved material with unapproved material.

1.1 **Cement.** Furnish cement in accordance with [DMS-4600](#), "Hydraulic Cement."

2.2 **Fly Ash.** Furnish fly ash in accordance with [DMS-4610](#), "Fly Ash."

2.3 **Chemical Admixtures.** Furnish chemical admixtures in accordance with [DMS-4640](#), "Chemical Admixtures for Concrete." Use specialty type admixtures to enhance the flowability, reduce shrinkage, and reduce segregation by maintaining solids in suspension when necessary. Use and proportion all admixtures in accordance with the manufacturer's recommendations.

2.4 **Fine Aggregate.** Provide fine aggregate that will stay in suspension in the mortar to the extent required for proper flow and that meets the gradation requirements of Table 1.

**Table 1**  
**Aggregate Gradation Chart**

Sieve Size	Percent Passing
3/4"	100
#200	0-30

Test fine aggregate gradation in accordance with [Tex-401-A](#).

Plasticity Index (PI) must not exceed 6 when tested in accordance with [Tex-106-E](#).

1.5 **Mixing Water.** Use mixing water in accordance with Item 421, "Hydraulic Cement Concrete."

### 3. CONSTRUCTION

Submit a construction method and plan, including mix design, for approval. Provide a means of filling the entire void area, and be able to demonstrate this has been accomplished. Prevent the movement of any inserted structure from its designated location. Remove and replace or correct the problem if voids are found in the fill or any of the requirements are not met as shown on the plans without additional cost to the Department.

Furnish a mix meeting the requirements of Table 2 unless otherwise shown on the plans.

**Table 2**  
**Flowable Fill Mix Design Requirements**

Property	Excavatable	Non-Excavatable	Test Method
28-day Compressive Strength, <sup>1</sup> psi	80 to 200	> 200	ASTM D4832
Consistency, <sup>2</sup> Min diameter, in.	8		ASTM D6103
Unit Weight, pcf	90 to 125	100 to 145	ASTM D6023
Air Content, %	10 to 30	5 to 15	ASTM D6023

1. Average of 2 specimens.
2. Mixture must not segregate.

Mix the flowable fill using a central-mixed concrete plant, ready-mix concrete truck, pug mill, or other approved method.

Furnish all labor, equipment, tools, containers, and molds required for sampling, making, transporting, curing, removal, and disposal of test specimens. Furnish test molds meeting the requirements of [Tex-447-A](#). Transport, strip, and cure the test specimens as scheduled at the designated location. Cure test specimens in accordance with [Tex-447-A](#). The Engineer will sample, make, and test all specimens. Dispose of used, broken specimens in an approved location and manner. The frequency of job-control testing will be at the direction of the Engineer.

#### **4. MEASUREMENT**

This Item will be measured by the cubic yard of material placed. Measurement will not include additional volume caused by slips, slides, or cave-ins resulting from the Contractor's operations.

#### **5. PAYMENT**

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Flowable Backfill." This price is full compensation for furnishing, hauling, and placing materials and for equipment, tools, labor, and incidentals.