

**SECTION 03575**

**CONTROLLED LOW STRENGTH FLOWABLE FILL**

**01 DESCRIPTION:**

This work shall consist of furnishing and placing flowable fill as an alternate to compacted soil as approved by the Engineer. Applications for this material include beddings, encasements, and closures for tanks and pipe, and general backfill for trenches and abutments.

**02 MATERIALS:**

All materials shall meet the requirements of the following Specifications:

- \* Fine Aggregate..... TDOT SS Subsection 901-01
- Portland Cement Type 1 ..... TDOT 901.01
- Fly Ash Class C or Class A..... AASHTO MO295
- \*\* Air Entraining Admixtures..... TDOT 918.09
- Water ..... TDOT 918.01
- Chemical Additives ..... TDOT 918.09

**03 MIX DESIGN:**

Flowable fill is a mixture of Portland cement, fly ash, fine aggregate, air entraining admixtures and water. Flowable fill contains a low cementitious content for reduced strength development.

- A. The Contractor shall submit mix designs for the flowable fill to the Engineer for approval.

The following are suggested mix designs for Excavatable and Non-Excavatable flowable fill:

	Excavatable	Non-Excavatable
Cement Type 1	75-100 lbs/yd	75-100 lbs/yd
Fly Ash		150-600 lbs/yd
**Air	15-35%	5-15%
**28 Day Compressive Strength	Maximum 100 PSI	Minimum 125 PSI
**Unit Weight (Wet)	90-100 lbs/ft	100-125 lbs/ft

\*Mix designs shall produce a consistency that will result in a flowable self-leveling product at time of placement.

\*\*The requirements for percent air, compressive strength and unit weight are for Laboratory designs only and are not intended for jobsite acceptance requirements.

**04 MANUFACTURING:**

Flowable fill will be manufactured at plants that qualify as approved sources in accordance with the Standard Operating Procedure for Ready – Mix Concrete. Mixing and delivering shall be in accordance with the Standard Specifications or other methods approved by the Engineer. Revolution counter requirements are waived.

**05 CONSTRUCTION:**

When used as backfill for pipe, where flotation or misalignment may occur, correct alignment will be assured by means of straps, soil anchors or other approved means of restraint.

**06 JOBSITE ACCEPTANCE:**

Acceptance of flowable fill will be based on documentation as outlined in the standard Specifications and a minimum temperature of flowable fill at the point of delivery of 50°F.

**07**

The above proportions may be adjusted by the Engineer to obtain the consistency required for satisfactory flow. Consistency shall be determined as follows:

Place an open-ended cylinder (pipe) three (3) inches in diameter by six (6) inches in height in an upright position on a smooth, level surface. Fill the cylinder with a representative sample of the flowable mortar proposed for use. Remove the cylinder by lifting it straight up thus allowing the sample to diffuse on the smooth, level surface. The flowable mortar should diffuse into a circular shape having an approximate diameter of not less than a width of eight (8) inches.

**08 BACKFILLING:**

Flowable Mortar shall be placed at locations as directed by the Engineer. The flowable mortar shall be covered and otherwise protected while in the plastic state. Backfill shall not be placed on the flowable mortar prior to final set or hardening as determined by the Engineer.