

SECTION 31 23 23

FLOWABLE FILL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. This work shall consist of furnishing and placing a flowable mortar fill material at the locations shown on the drawings or as directed by the Engineer.

1.02 REFERENCES

A. ACI 229 Controlled Low Strength Material

B. ASTM D6103, C939, C143, D6023, C1152, D4380, D1556, D2922, D6024, C403, D4832, D1196, D4429.

C. NRMCA Guide Specification for Controlled Low Strength.

1.03 SUBMITTALS

A. Submittals shall conform to Section 01 33 00.

B. Submit mix design for flowable fill minimum of seven days prior to start of construction.

PART 2 PRODUCTS

2.01 MIX DESIGN PARAMETERS:

A. Flowable Fill shall be a low strength material used for placement adjacent to utilities or piping. It shall achieve sufficient strength to support anticipated loads but shall be readily removable if needed in the future.

B. The 28 day compressive strength of the flowable fill shall be 60 psi.

C. Cement shall be Type I.

D. Fly Ash shall meet the requirements of ASTM C-618, Class C.

E. Suggested mix design for controlled low strength materials is as follows:

1. Cement 50 lbs.
2. Fly Ash 250 lbs.

- 3. Aggregate 2,910 lbs.
- 4. Water 60 Gallons.

F. Aggregate Gradation is listed below:

<u>Sieve Size</u>	<u>% Passing</u>
¾ Inch	100
200	0-10

G. The Contractor may submit alternate mix designs to the Engineer for approval prior to placement of the flowable fill.

PART 3 EXECUTION

3.01 PLACEMENT

- A. Flowable Fill may be placed into the area to be filled directly from the mixer truck, by pumping, or by any other reasonable means.
- B. Controlled low strength material shall not be placed on frozen ground, snow, or ice.
- C. Flowable Fill shall be placed continuously to prevent cold joints.
- D. Maximum lift shall be three feet, except where such thickness would cause lifting or displacement of the utility, pipe or structure.
- E. If possible both sides of the structure shall be filled simultaneously to avoid displacement. If this is not possible, fill shall be alternated side to side in shallow lift.
- F. The air temperature must be 34 degrees F and rising prior to batching, mixing, and placement of the flowable fill. Material temperature at the time of placement shall be a minimum of 40 degrees F.
- G. Backfilling and compacting on top of the in-place Flowable Fill shall not proceed until the Flowable Fill has reached a minimum bearing strength of 20 psi.