

Specification for Geofill LD Low Density Cellular Concrete For Filling Abandoned Pipes & Structures

I – SCOPE OF WORK

This work consists of providing Geofill LD, a non-pervious, Low Density Cellular Concrete (LDCC) to fill abandoned pipes or other structures at the location shown in the plans in accordance with the details in the plans and these specifications.

II – MATERIALS

- A. Portland cement shall comply with ASTM C150 (Type I, II or III).
- B. Fly ash shall be Class C or Class F and compatible with foaming agent.
- C. Water shall be free from deleterious substances.
- D. Foaming agent shall be Geofill Concentrate (Phone #888-820-3455) conforming to ASTM C796.
- E. Admixtures for water reducing, retarding, accelerating, and other specific properties may be used when recommended by the manufacturer of the foaming agent.
- F. Geofill LD shall have the following properties:

Range of Cast Density, PCF	24-30
Minimum Compressive Strength (28 Days), PSI	40
Flow Consistency per ASTM D6107	Greater than 7”

III – SUBMITTALS

- A. Mix design for LDCC, including materials to be used and their sources.
- B. Resume of contractor showing experience as specified below, including qualifications of contractor’s superintendent and/or foreman.
- C. Description of equipment and placement methods to verify compliance with specifications.

IV – PRODUCTION

- A. Foam generating equipment shall be used to produce a predetermined quantity of pre-formed foam which shall be mixed and blended with cementitious slurry. Equipment shall be calibrated to produce consistent foam with stable, uniform cellular structure.
- B. LDCC shall be produced utilizing specialized automated proportioning, mixing, and foam producing equipment, which is capable of meeting the specified properties.
- C. Avoid excessive handling of the material. After sufficient mixing of the foam with slurry, the material shall be conveyed promptly in its final location.
- D. All equipment used must be approved by the foam manufacturer.

V – INSTALLATION

- A. Contractor must fill the existing abandonment as indicated in the plans or as directed by project engineer.
- B. LDCC shall be pumped through injection ports located at bulkhead to allow abandonment to be completely filled.
- C. All bulkheads and injection ports installed shall be capable of withstanding a minimum of 30 PSI or the allowable maximum pressure, whichever is greater and shall be water tight.
- D. Injection and vent ports and pipes must be securely installed and be able to receive a minimum 3” male threaded NPT.
- E. Space injection points at intervals that allow material to be forced from one injection point to the next at pressures below maximum allowable pressure.
- F. All water and other residual materials must be removed from pipe prior to initiating filling procedure. If required, dewatering shall be continuous during installation.
- G. If pipe cannot be dewatered, Geofill LD Hybrid, with a density greater than 65 pcf, is recommended.
- H. LDCC shall be placed in a manner so as not to cause collapsing of material, which may require multiple lifts depending upon length and diameter of pipe being abandoned.

VI – QUALITY CONTROL AND QUALITY ASSURANCE

- A. Contractor shall have a record of experience and quality of work placing foam concrete that is satisfactory to the Engineer. Including the following:
 - 1. Shall be capable of developing a mix design, batching, mixing, handling, and placing LDCC.
 - 2. Shall be regularly engaged in the production and pumping of LDCC for filling abandoned pipes or other structures.
 - 3. Shall have satisfactory completed at least five (5) similar LDCC projects during the last twelve (12) months.
 - 4. Workers included the contractor’s superintendent and /or foreman, shall be fully qualified to perform the work and have had previous experience in production and pumping of LDCC under similar conditions.

B. TESTING

- 1. Testing to be performed by the Owner or approved agency.
 - 1. A minimum of four (4) 3”x 6” cylinders shall be molded for each shift of operation.
 - 2. LDCC to be tested at any age after three (3) days for compressive strength. At least two (2) specimens from each set should be tested at 28 days in accordance with ASTM C-495 unless otherwise approved by engineer.

3. Contractor shall record and measure wet cast densities at the point of placement regularly. Mix shall be adjusted as required to obtain the specified cast density at the point of placement.
4. Contractor shall record and measure flow consistency regularly in accordance with ASTM D6107.

VII – MEASUREMENT AND PAYMENT

- A. Geofill LD shall be paid for at the contract unit price per cubic yard for materials produced based on theoretical volume of pipe or other method acceptable to engineer.