



LOW DENSITY

CELLULAR / FOAM CONCRETE

FILL (LDCCF)

SPECIFICATIONS



SPECIFICATIONS FOR LOW DENSITY CELLULAR / FOAM CONCRETE FILL (LDCCF)

1. General

- 1.1 Description
- 1.1.1 Work Included

This work shall consist of batching, mixing and placing Cellular / Foam (LDCCF) of the appropriate type as indicated on the plans or as directed by the engineer.

- 1.1.2 Work not included but related to the LDCCF:
 - (A) Excavation and preparation of the site for the LDCCF
 - (B) Installation of any utilities or services within the LDCCF.
 - (C) Final surface waterproofing (optional) over the LDCCF and any subsequent structural concrete slab or pavement.

1.2 Quality Assurance

- 1.2.1 Use skilled workmen who are thoroughly trained, experienced and familiar with the specified requirements and the methods for proper performance of this work.
- 1.2.2 The approved subcontractor, supplier and producer of the LDCCF shall be experienced in the production and placing of LDCCF.
- 1.2.3 The specialized batching, mixing and placing equipment shall be approved for the purpose of mixing and placing LDCCF.

1.3 Submittals

- 1.3.1 The prime contractor shall list the product and qualified producer of the LDCCF and shall not employ any product or producer without the prior approval of the engineer.
- 1.3.2 Product data: within 30 (option 15) calendar days after award of the contract, the prime contractor shall submit for approval by the engineer:
 - (A) Manufacturer's specifications, catalog cut and other engineering data needed to demonstrate to the issuing authority compliance with the specified requirements.
 - (B) Written approval of the approved subcontractor and the approved equipment.

2. Products

- 2.1 Materials
 - 2.1.1 Provide the Pre-formed foam concentrate for LDCCF as specified.
 - 2.1.2 Cement: the portland cement shall comply with ASTM C150 Type I, II, or III.



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Pozzolons and other cementitious materials may be used when specifically approved by the engineer.

2.1.3 Admixtures: admixtures for accelerating, water reducing, and other specific properties may be used when specifically approved by the engineer.

2.1.4 Water: use water which is potable and free from deleterious amounts of alkali, acid and organic materials which would adversely affect the setting or strength of the LDCCF.

2.1.5 Expansion Material: Meeting ASTM C869, "Standard Specification For Foaming Agents Used In Making Preformed Foam For Cellular / Foam Concrete".

2.2 Properties

2.2.1 The LDCCF shall meet the following properties:

	CATEGORY		
	<u>II</u>	<u>III</u>	<u>IV</u>
Maximum Cast Density, pcf	30	36	42
Minimum Compressive Strength, psi	40	80	120
Freeze-Thaw Resistance, Cycles	330	-	330
Relative E not less than 70% per ASTM C666, modified			
Shear Modulus, G, psi per ASTM D4015 at confining stress of 3 psi	27,670	41,800	-
Young's Modulus, E, psi based on Poisson's Ratio $\mu=0.22$ and $E=2G(1+\mu)$	67,500	101,900	-
% Water Absorption, after 120 days, maximum	20	16	14
Coefficient of Permeability, k cm/sec., per ASTM D2434			
Confining stress, 2.5 psi	4.7×10^{-5}	1.5×10^{-6}	
Confining stress, 18 psi	1.9×10^{-5}	5.4×10^{-7}	

3. Execution

3.1 Subgrade Condition:

3.1.1 Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until satisfactory conditions are established.



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- 3.2.2 The area to be filled shall not have any standing water in it prior to placement of LDCCF.
- 3.2.3 Any items to be encased in the LDCCF shall be properly set and stable prior to the installation of LDCCF.
- 3.2.4 Weather Conditions:
- (A) Avoid freezing before initial set of LDCCF.
 - (B) Do not place at temperatures lower than 32 degrees Fahrenheit or when freezing conditions are expected in less than 24 hours.
 - (C) If these conditions cannot be met, consult the contractor and determine precautions necessary to assure installation on an acceptable LDCCF.
- 3.2.5 Mixing and Conveying
- (A) Using only the approved job site proportioning, mixing and placing equipment that is industry approved by, mix the materials according to the mix design and convey promptly to the location of final placement.
 - (B) Avoid excessive handling of the LDCCF.
 - (C) Place LDCCF in lifts not to exceed 3 feet 0 inches in depth, unless otherwise recommended by the approved contractor.
 - (D) The final surface finish shall be within ± 0.1 feet of the plan elevation.
 - (E) Backfill or other unusual loadings on the LDCCF shall not be permitted until the LDCCF has attained a compressive strength of at least 20 psi.
4. Testing
- 4.1 Wet Density
- 1. During placement of the initial batches, check the density and adjust the mix as required to obtain the specified cast density at the point of placement.
 - 2. At hourly intervals during placing, monitor the density and adjust as necessary to maintain the specified cast density
5. Measurement and Payment
- 5.1 Measurement
- 1. Lightweight Low Density Cellular Concrete shall be measured on a cubic yard basis.
- 5.2 Payment
- 1. Payment for LDCCF shall be made at contract unit prices for quantities determined as specified above.

<u>ITEM NO.</u>	<u>PAYMENT ITEM</u>	<u>UNIT</u>
	LDCCF	C.Y.