Synthetic Ultra Light-Weight Fill

Description

Furnish and install Synthetic Ultra Ligtht-Weight fill to the lines, grades and thickness' specified and where shown on the plans or as directed in writing by the engineer.

Materials

GENERAL

Furnish Synthetic Ultra Light-Weight fill in 3 ft. x 4 ft. x 8 ft. blocks or in sizes as shown on the plans. The Synthetic Ultra Light-Weight fill blocks shall have a size tolerance of ± 1/8 inch for each dimension and meet the physical properties given below.

PHYSICAL PROPERTIES[1]

ASTM D1622	Density (Nominal)	1.25 pcf
ASTM D1621	Strength at 10% Deformation	13-18 psi
ASTM C203	Flexural Strength	30-38 psi
ASTM D1623	Tensile Strength	17-45 psi
ASTM D732	Shear Strength	23-40 psi
ASTM C272	Water Absorption	<3% by volume
ASTM D696	Coefficient of Thermal Expansion	0.000035 per C

PHYSICAL STANDARDS

ASTM D3345-74	Insect Resistance (ants, termites etc.)

The Synthetic Ultra Light-Weight fill blocks shall be produced by a manufacturer with an in place, third party certification, Quality Control program which is monitored by an independent testing organization.

The Synthetic Ultra Light-Weight fill blocks shall be labeled with the manufacturer's name and product type. Galvanized, barbed, metal fasteners are available from the manufacturer.

BASIS OF ACCEPTANCE:

Furnish the Engineer with two copies of the third party certified test report showing that the Synthetic Ultra Light-Weight fill blocks meet the physical properties and standards listed above.

[1] These Physical Properties are for 1.25 pcf Density which is common for Ultra Light-Weight Fills. See Table A attached for Physical Properties of other densities available for Ultra Light-Weight Fills.

GeoTech TerraLite manufactured by licensees of GeoTech Systems Corporation, 9912 Georgetown Pike, Suite D-2, Great Falls, Virginia 22066, (703) 759-0300, is an approved material.

The Engineer will randomly test Synthetic Ultra Light-Weight fill blocks delivered to the job site. If any block does not conform to the specified physical properties the sampled shipment will be rejected in writing by the Engineer.

CONSTRUCTION DETAILS

GENERAL:

Exercise care to prevent damage to the Synthetic Ultra Light-Weight fill blocks during delivery, storage, and construction. Damaged blocks will not be used.

Protect the Synthetic Ultra Light-Weight fill blocks from: (1) Organic solvents such as acetone, benzene, and paint thinner; (2) Petroleum based solvents such as gasoline and diesel fuel; (3) Open flames; (4) Prolonged exposure to sunlight (no more than 90 days) during shipping and on-site storage.

INSTALLATION:

Place the Synthetic Ultra Light-Weight fill blocks on the bedding material indicated on the plans, within a tolerance of 1/2 inch in 10 feet. Trim the blocks as required to maintain this tolerance throughout the fill height. Trim or cut the blocks using a handsaw or an alternative cutting method approved by the Engineer.

To avoid continuous joints, place blocks in a bond pattern and orient each successive layer with the long axis of blocks at 90 to previous layer as shown on the plans.

To provide lateral restraint between blocks, install manufacturer's barbed fasteners at the locations shown on the plans. Use two-sided barbed fasteners between layers and single sided barbed fasteners on the exposed portions of each layer and on top of the final layer. Press fasteners firmly into the blocks until the plate is flush with the surface.

METHOD OF MEASUREMENT

The quantity of Synthetic Ultra Light-Weight fill blocks is the number of cubic yards satisfactorily installed as measured in its final position.

BASIS OF PAYMENT

The unit price bid per cubic yard includes the cost of labor, materials, incidentals, and equipment necessary to satisfactorily construct the Synthetic Ultra Light-Weight fill.

Table A

Physical Properties of Synthetic Ultra Light-Weight Fills ASTM C 578 Classification						
Property	ASTM Test	Type XI	Type I	Type VIII	Type II	Type IX
Density kg/m3 (lbs/ft3) Nominal Minimum	C 303/D 1622	12 (0.75) 11 (0.70)	16 (1.00) 15 (0.90)	20 (1.25) 18 (1.15)	24 (1.50) 22 (1.35)	32 (2.00) 29 (1.80)
Thermal Resistance 25.4 mm (1.00 in) thickness minimum k m2/W (F ft2 h/BTU) @ 4.4C (40F) @ 23.9C (75)F)	C 177/C 518	0.58 (3.3) 0.55 (3.1)	0.7 (4.0) 0.63 (3.6)	0.74 (4.2) 0.68 (3.8)	0.77 (4.4) 0.70 (4.0)	0.81 (4.6) 0.74 (4.2)
Compressive Resistance (Stress) kPA, (psi) @ 0.5%strain @ 1% strain	C 165/D 1621	17(2.5) 35(5.0)	24(3.5) 48(7.0)	29(4.3) 58(8.5)	41(6.0) 82(12.0)	55(8.0) 110(16.0)
Flexural Strength Min. kPa (psi)	C 203	70 (10)	173 (25)	208 (30)	276 (40)	345 (50)
Water Absorption by total immersion Max. Vol. %	C 272	4.0	4.0	3.0	3.0	2.0
Dimensional Stability (change in directions) Max. %	D 2126	2.0	2.0	2.0	2.0	2.0
Buoyancy Force kg/m3 (lbs/ft3)	-----	961 (60)	961 (60)	961 (60)	961 (60)	961 (60)
Modulus of Elasticity (Young's Modulus) kPa (psi)	D 1621	3103 (450)	4655 (675)	5862 (850)	7935 (1150)	10344 (1500)
Poisson's Ratio	---	0.05	0.05	0.05	0.05	0.05