

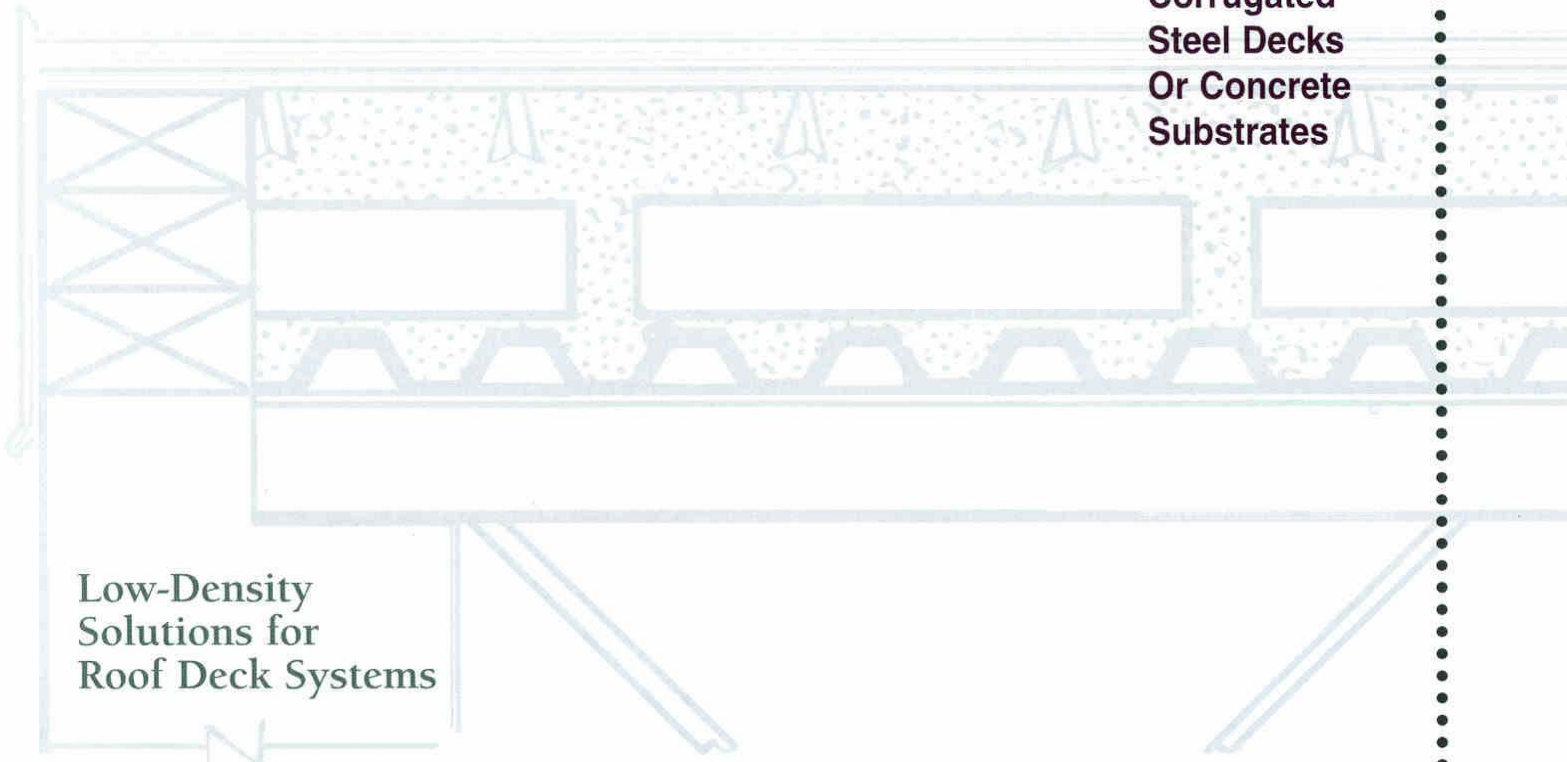
# Mearlcrete®

Cellular Concrete Roof Decks .....



**APPROVED**

Lightweight  
Insulating  
Cast-In-Place  
Concrete  
Roof Deck  
Systems  
For Galvanized  
Corrugated  
Steel Decks  
Or Concrete  
Substrates



Low-Density  
Solutions for  
Roof Deck Systems

Over 45 Years of Successful Worldwide Roofing Projects  
Used In Both New Roof Deck Systems Installations And  
Re-Roofing Projects with BUR And Single Ply Roofing Membranes

[www.cellular-concrete.com](http://www.cellular-concrete.com)



**CELLULAR™**  
**CONCRETE LLC**  
MEARLCRETE® DIVISION

# MEARLCRETE®

MEARLCRETE® Cellular Concrete is a lightweight cellular concrete, which is manufactured at the jobsite by mixing a portland cement-water slurry with a preformed foam produced from Mearlcrete Foam Liquid Concentrate. The high stability of the pre-generated foam enables MEARLCRETE Cellular Concrete to withstand mixing, pumping, finishing and permits precise control of the density.

The installation of MEARLCRETE Cellular Concrete is by factory trained applicators who have the specialized equipment and experienced personnel to install the low density MEARLCRETE Cellular Concrete decks. MEARLCRETE Cellular Concrete may be pumped up to 500 ft. vertically and over 1,000 ft. horizontally.

## Incombustible - Fire Rated

MEARLCRETE Cellular Concrete has excellent fire resistance properties and is listed in the UL Fire Resistance Directory for the following designs:

P214	P246	P410	P708	P905	P916	P923	P928
P215	P251	P411	P810	P907	P919	P924	P929
P216	P405	P509	P812	P908	P920	P925	P930
P231	P406	P511	P902	P910	P921	P926	
P241	P407	P513	P903	P913	P922	P927	

Consult Cellular Concrete LLC for additional UL listed designs.

## MEARLCRETE:

- Low Water Content**..... Compared to low density aggregate concretes, MEARLCRETE Cellular Concrete uses 3 to 5 times less water by weight and about the same water as normal concrete. Slotted Steel Deck Not Required.
- Positive Slope to Drain**..... Either stairstep polystyrene board method or screeding to slope.
- High Insulating Value**..... When combined with expanded polystyrene board.
- Low Cost**..... When compared to lightweight aggregate and other foaming agents.
- Lightweight**..... As low as 4.5 pounds per square foot.
- Rapid Installation**..... Up to 25,000 square feet per day.
- Rot & Vermin Proof**..... Remains clean and safe indefinitely.
- Available**..... MEARLCRETE Roof Decks accept most mechanical fasteners currently on the market.
- Environmentally Safe**..... Non-hazardous and non-polluting.
- Quality Controlled**..... Density easily adjusted for greater strengths or better R values.
- Diaphragm Shear Value**..... Tables available upon request.

## INSULATION VALUES FOR CORRUGATED STEEL AND CONCRETE SUBSTRATE DESIGNS

### 28 Ga. Steel 9/16" Corrugation

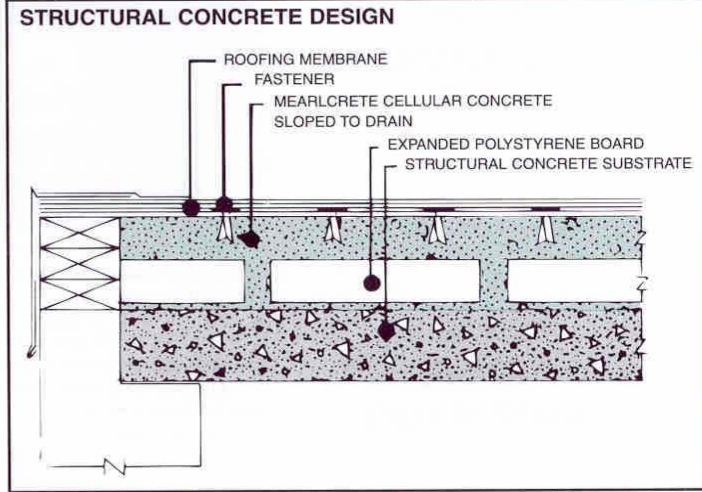
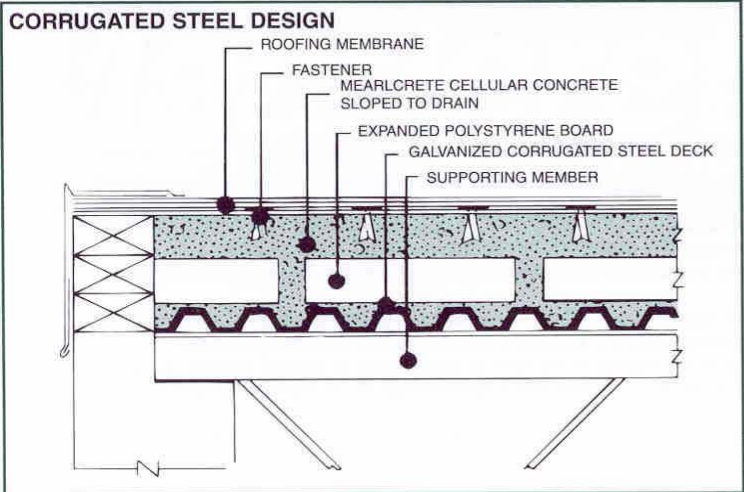
### Structural Concrete Deck 4" Thick

Thickness of Expanded Polystyrene Board (Inches)	U-Factor No Ceiling		Total Wgt. Steel Deck EPS Board MEARLCRETE (PSF)	R Factor	U-Factor No Ceiling		Total Wgt. 4" Deck EPS Board MEARLCRETE (PSF)	R Factor
	Heat Flow				Heat Flow			
	Up	Down			Up	Down		
1	.123	.117	5.44	7.0	.119	.113	54.6	7.3
2	.081	.078	5.52	11.2	.079	.077	54.7	11.5
3	.060	.059	5.60	15.3	.060	.058	54.8	15.6
4	.048	.047	5.68	19.5	.048	.047	54.9	19.8
5	.040	.040	5.76	23.7	.040	.039	55.0	24.0
6	.034	.034	5.84	27.8	.034	.034	55.1	28.1

### NOTES:

1. Weight of roofing not included.
2. Minimum 2' thickness of MEARLCRETE Cellular Concrete over EPS board at a cast density of 35 pcf.
3. Includes both inside and outside air films and roofing membrane.
4. 4" structural concrete deck (140pcf) weight 50 psf.
5. Conventional 4 ply BUR add 6 psf. single ply add 2-7 psf. See steel deck table for additional information.
6. Weights and U-factors may vary depending on the steel used and structural concrete design.
7. The U-factors shown are for uniform thickness of insulation.

## TYPICAL ROOF INSULATION CONSTRUCTION



### MEARLCRETE® Roof Deck - Physical Properties

Wet Density lbs/ft <sup>3</sup> (1)	Dry Density lbs/ft <sup>3</sup>	Compressive Strength lbs/in <sup>2</sup> (2)	R-Factor °F/(BTU/hr./sq.ft.) per in. Thick
30	25	140	1.49
35	29	210	1.32
40	34	330	1.15
45	38	450	1.02

(1) Water/Cement Ratio 0.50  
 (2) Method of ASTM C-495

Actual properties will depend on cement used, curing conditions and other variables dictated by job conditions.

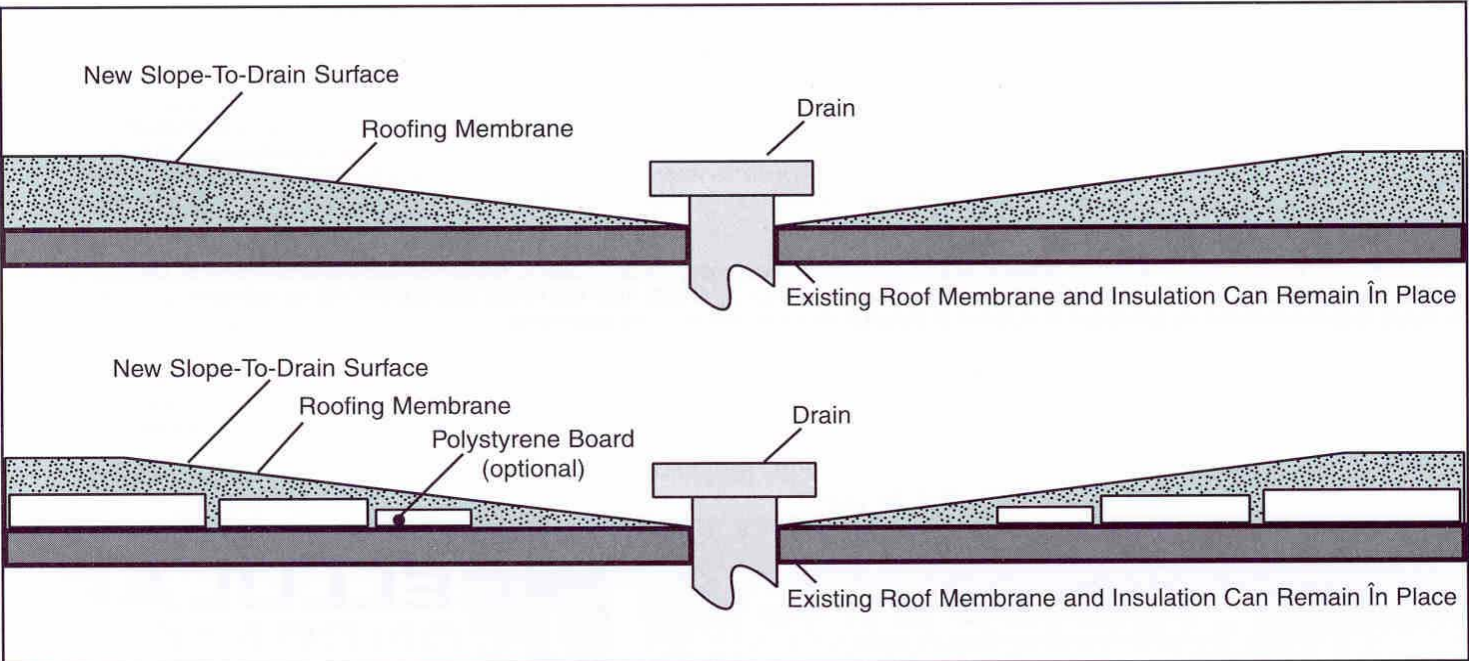
#### Approvals & Guides:

- Factory Mutual Approved
- Dade County, Florida – #96-0919.01
- New York City Board of Standard/Appeals (Docket 680-58-SM)
- U.S. Army Corps of Engineers – CEGS-03510
- Roof Decking, Cast-In-Place Low Density Concrete

#### Technical Staff Membership Representation:

- American Concrete Institute
- American Society for Testing and Materials
- National Roof Deck Contractors Association
- South Florida Roof Deck Association
- Roof Consultants Institute

## TYPICAL SLOPED ROOF INSULATION CONSTRUCTION FOR NEW OR REROOFING PROJECTS



## Specifications

- 1.00 General**
- 1.1 Scope of Work. The factory trained MEARLCRETE® applicator shall furnish labor, material equipment and supervision for the installation of the MEARLCRETE Cellular Concrete in accordance with the drawings and specifications.
- 1.2 Work by Others. All framing, wood nailers and structural expansion joints shall be provided by others unless specifically stated.
- 2.00 Materials**
- 2.1 MEARLCRETE Cellular Concrete shall consist of portland cement, water, MEARLCRETE FOAM LIQUID CONCENTRATE and other materials as recommended by CELLULAR CONCRETE LLC™, all thoroughly and uniformly blended and pumped.
- b. MEARLCRETE FOAM LIQUID CONCENTRATES shall be supplied by CELLULAR CONCRETE LLC™. MEARLCRETE FOAM LIQUID CONCENTRATE shall comply with the standard specifications of ASTM C869 when tested in accordance with ASTM C796.
- c. Portland cement shall comply with ASTM C 150, Type I, II, or III.
- d. Mixing water shall be a maximum of 6 gallons per sack of cement and be potable, free from deleterious amounts of acid, alkali, salts, oils and organic materials which would adversely affect the setting or strength of the cellular concrete.
- e. Admixtures for reducing water, accelerating set, etc., may be used when specifically approved by CELLULAR CONCRETE LLC™ and in accordance with the admixture manufacturer's recommendations.
- 2.2 Expanded polystyrene insulating board shall be in the form of rigid boards or formed unit with a minimum density of 1 pcf. The EPS board shall include venting holes which approximate 3% of the board surface area. Thickness may be from 1" to 6".
- 2.3 Corrugated Steel Deck shall be galvanized high tensile corrugated steel deck meeting ASTM A525, G 60 minimum with vented side lap openings. Slotted steel decks are not required. The corrugated deck shall be \_\_\_\_\_ type and \_\_\_\_\_ gauge, capable of carrying live and dead loads per load table and recommendations prepared by the corrugated steel deck manufacturer. Welding patterns shall be those recommended by the deck manufacturer. Consult CELLULAR CONCRETE LLC™ for diaphragm shear tables and welding information.
- 2.4 Reinforcing Mesh for fire-rated assemblies over steel deck and as an option for seismic diaphragm designs. The mesh shall be Keydeck style 2160-2-1619 galvanized mesh, or equal. For structural concrete decks and over precast concrete, reinforcing mesh is not required.
- 2.5 Expansion Joints. MEARLCRETE Cellular Concrete roof decks require only those expansion joints normally used for sound building design.
- 2.6 Slope Design is recommended so that drainage is provided by sloping the roof deck system. This is accomplished by using either the stair-step method or screeding and darbying the slope to the drains.
- 3.00 Installation**
- 3.1 Worksite Preparation. The corrugated steel deck surface or the concrete substrate surface shall be clear of standing water, dirt, debris, ice and other foreign materials.
- 3.2 Weather. MEARLCRETE Cellular Concrete shall only be placed when the temperature is at least 40 F and rising.
- 3.3 Mixing and placing. MEARLCRETE Cellular Concrete shall be blended in mixing equipment as approved by CELLULAR CONCRETE LLC™. A CELLULAR CONCRETE LLC™ Foam Generator shall be used to convert MEARLCRETE FOAM LIQUID CONCENTRATE to a stable foam at the time of mixing. MEARLCRETE cellular concrete shall be pumped to point of finishing using approved equipment.
- A. Application
- Before the expanded polystyrene insulation board is installed over the corrugated steel deck, the corrugations shall first be filled with MEARLCRETE Cellular Concrete to a minimum of 1/8" over the top of the steel deck. The board shall be placed in the concrete and tightly butted together with staggered joints and placed in a manner that provides full contact of concrete to board. A minimum thickness of 2" MEARLCRETE Cellular Concrete shall be immediately placed over the board and screeded to a smooth surface to receive the roofing.
- 3.4 Testing: The wet density of the MEARLCRETE Cellular Concrete shall be checked at the point of placement and the mix adjusted to obtain the required wet density. At least 4 test cylinders shall be taken at the point of placement for each day's pour or every 100 cubic yards of MEARLCRETE Cellular Concrete installed. The 3" D x 6" cylinders shall be protected from damage and temperature extremes and shall be tested in accordance with ASTM C495.
- 3.5 Curing. MEARLCRETE Cellular Concrete shall be protected from foot traffic for at least 24 hours or until such time as the material is strong enough so that no visible impression is made in the surface material.
- 4.0 Roofing**
- Roofing material may be applied to the MEARLCRETE Cellular Concrete after 3 days providing the surface is dry and hard. Almost all built-up roofing manufacturers recommend the use of 40 pound base sheet on all cast-in-place decks including MEARLCRETE Cellular Concrete. Where such a base sheet is used, one mopping to allow vapors entrapped beneath the roofing felts to have free access to the perimeter of the deck to the atmosphere through the perimeter flashing. Consult CELLULAR CONCRETE LLC™ for single ply roofing application guidelines.

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