

Part Three : Installation

3.01 Inspection

- A. Oil, dirt, debris, loose gravel, paint, standing water, and foreign objects shall be cleaned from concrete slab, metal deck, and existing roof surfaces.

3.02 Metal Deck Preparation

- A. Concrecel Bonding Agent should be applied over the surface when required by approval or code at a rate of 600 sq. ft. per gallon. When dry, pour Concrecel LWIC over the corrugations.

3.03 Weather

- A. Concrecel shall be mixed and placed when the temperature is 40° F. (4.4° C) and rising.

3.04 Foam Quality Control

- A. The wet density of the preformed foam must weigh 2.5 lbs. + or - ¼ lb. pcf throughout the entire foam cycle.

3.05 Mixing

- A. All foam equipment used should be approved by Concrecel. Water and then the cement are discharged into the mixer to create a homogeneous slurry. The foam is then discharged into the mixer and blended into a homogeneous mix. The mix is discharged into a pump and placed.
- B. The batching time depends on the condition of the equipment and the manufacturers recommendations.

3.06 Lightweight Concrete Quality Control

- A. The wet density is sampled from hose end. The cylinders are made from materials sampled and tested according to ASTM C-495. The size of the cylinders may be the diameter of a height ratio of 1:2. The cylinders should be filled in two equal layers. Each layer is raised about 1" and then the cylinder is dropped on a hard surface, repeat three times.

3.07 Placing Concrecel Lightweight

- A. Minimum topping of 2 ¼" of Concrecel over the metal deck corrugation, concrete slab, EPS board, and existing roof substrates.
- B. If EPS board is incorporated in the deck place a slurry coat of Concrecel over the deck substrate. Minimum thickness of ¼".
 1. Place EPS board in the slurry coat with staggered joints and tap into place. No activity shall disturb the slurry coat bond to the underside of the EPS board.
- C. Within 24 hours the EPS board is inspected and any board not bonded to the slurry coat is adhered again with Concrecel during the pouring of the topping.

3.08 Curing

- A. When required by Concrecel the Curing Compound shall be applied at the specified rate within 24 hours after the topping pour.

3.09 Roofing

- A. Operations should start three days after topping pour. Concrecel shall appear dry, hard and light gray in color before the base sheet or adhesive is installed. Over non-vented substrates, venting may be required by the roof cover manufacturer.

Cost Savings Alternative to Tapered ISO Insulation

- Total cost of ownership is significantly less when compared to other insulated roof systems. Lightweight Insulated Concrete when applied and maintained properly can last the life of the building.
- Inexpensive choice for insulation and positive roof slope.
- Superior high wind uplift performance.
- HIGH R-Values! R-30 can be achieved when LWIC is used with EPS board.

Environmentally Friendly Alternative

- Concrecel Foam is Non-Toxic.
- Protein Based and Biodegradable Foam.
- Contains no fiberglass, Chlorofluorocarbons (CFCs) or Asbestos.

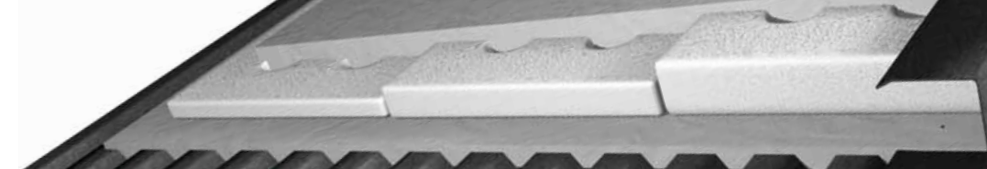
Product Approvals

- Florida Building Code State Approved.
- Miami-Dade NOA (High Velocity Wind Zone Approval).
- Miami-Dade County Public School (4th Largest School System in the United States).
- FM - Factory Mutual.
- UL-Underwriters Laboratories

Superior Roof Decks

- Superior high wind uplift performance.
- Fire Resistant.
- Insect Resistant.
- Accepts both Mechanically Fastened or Fully Adhered roofing systems.
- Extend the usable life of roofing membranes by the reducing the roof deck temperature.
- LWIC is poured in place resulting in minimized ponding on the roof deck thus extending the roof life.





Wet - Concrecel Weights and R-Values						
Concrecel LWIC Topping	EPS Thickness (inches)	Weight of LWIC with EPS in lbs/sqft	R - Value Over Metal Deck (Avg)	U- Value Over Metal Deck (Avg)	R - Value Over Structural Concrete Deck	U- Value Over Structural Concrete Deck
2.25"	0	7.88	4.66	0.215	3.02	0.332
	1	7.96	8.51	0.118	7.20	0.139
	2	8.04	12.36	0.081	11.05	0.090
	3	8.12	16.21	0.062	14.90	0.067
	4	8.21	20.06	0.050	18.75	0.053
	5	8.29	23.91	0.042	22.60	0.044
	6	8.37	27.76	0.036	26.45	0.038
	7	8.46	31.61	0.032	30.30	0.033
	8	8.54	35.46	0.028	34.15	0.029
9	8.62	39.31	0.03	38.00	0.03	

Dry - Concrecel Weights and R-Values						
Concrecel LWIC Topping	EPS Thickness (inches)	Weight of LWIC with EPS in lbs/sqft	R - Value Over Metal Deck (Avg)	U- Value Over Metal Deck (Avg)	R - Value Over Structural Concrete Deck	U- Value Over Structural Concrete Deck
2.25"	0	7.22	4.66	0.215	3.02	0.332
	1	7.30	8.51	0.118	7.20	0.139
	2	7.38	12.36	0.081	11.05	0.090
	3	7.47	16.21	0.062	14.90	0.067
	4	7.55	20.06	0.050	18.75	0.053
	5	7.63	23.91	0.042	22.60	0.044
	6	7.72	27.76	0.036	26.45	0.038
	7	7.80	31.61	0.032	30.30	0.033
	8	7.88	35.46	0.028	34.15	0.029
9	7.97	39.31	0.03	38.00	0.03	

Concrecel Standard Design		
LWIC Volume	1 Cu. Yd	1.20 Cu. Yd
Wet Density	34 - 44 pcf	34 - 44 pcf
Portland Cement	625-675 lbs.	775-823 lbs.
Mixing Water	28-36 Gal.	34-44 Gal.
Concrecel Foam	15.96-20.52 Cu. Ft.	19.95 - 25.08 Cu. Ft.
Compressive Strength PSI	300-360 PSI	300-360 PSI

Part One: General

1.01 Sections Includes

- A. Concrecel Lightweight Insulating Concrete
- B. Insulation Board
- C. Metal Decking
- D. Reinforcing Mesh

1.02 References

- A. ASTM C-150 Standard Specification for Portland Cement Type I,II,III.
- B. ASTM C-495 Standard Test Method for Compressive Strength Lightweight Insulating Concrete.
- C. ASTM C-518-91 Standard Test Method for Steady-State Heat Flux Measurement and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- D. ASTM A-653 (446) Specification for Steel Zinc Coated by Hot Dip Process.
- E. ASTM C-796 Standard Test Method for Foaming Agents for use in Producing Cellular Concrete Using Preformed Foam.
- F. ASTM A -924 (525) Specification for Galvanize Required for Steel Sheet Zinc Coated by the Hot Dip Process.
- G. FMRC 4454 – Approval Standards for Class 1 Roof Covers.
- H. South Florida Building Code.
- I. Steel Deck Institute Specifications for Steel Roof Decks.
- J. Steel Deck Institute Diaphragm Design Manual.
- K. Concrete Manual U.S. Department of Interior Bureau of Land Management.
- L. Design and Control of Concrete Mixtures Portland Cement Association.
- M. ACI 523.1R Guide for Cast in Place Low Density Concrete.

1.03 Submittals

- A. Prior to bid provide Architect with.
 1. Concrecel roof deck Specification and product information.
 - a. Mix Designs.
 - Minimum 34 pcf wet and minimum 27 pcf dry densities.
 - Minimum wet and dry densities per approval, code or as specified by the architect or engineer of record.
 2. Concrecel/Roof Cover FMRC and Miami-Dade Wind Uplift Approvals.
 3. The applicator shall be approved by Concrecel.

1.04 Product Delivery

- A. All products delivered to the jobsite shall be sealed, wrapped, and labeled by Concrecel or by other manufacturer.

Part Two: Products

2.01 Cellular Lightweight Insulating Concrete

- A. Concrecel foam concentrate should be mixed with potable water at a 1:40 ratio prior to use.
- B. Portland Cement type I, II, III ASTM C-150.
- C. Water should be potable.
- D. Concrecel Bonding Agent where required is applied at a rate of 600 sq. ft. per gallon.
- E. Concrecel curing compound when required is diluted with water 1:3 and applied at a rate of 600 sq. ft. per gallon.

2.02 Expanded Polystyrene Board (EPS)

- A. Shall have a nominal density of 1 lb/cf specified thickness, 2' x 4', 8 key holes of approximate diameter of 2 1/2", conforming to ASTM C578.

2.03 Metal Deck

- A. The corrugated deck shall meet ASTM - 653, approvals or the local code. A vented deck should not exceed 0.5% opening.

2.04 Reinforcing Mesh

- A. When required shall be Keydeck type 2160-2-1619.