



**Construction No. 110**  
**TGKX.110**  
**Roof Deck Constructions**

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**Design/System/Construction/Assembly Usage Disclaimer**

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Listed or Classified products, equipment, system, devices, and materials.
  - Authorities Having Jurisdiction should be consulted before construction.
  - Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
  - When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
  - Only products which bear UL's Mark are considered as Classified, Listed, or Recognized.
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**Roof Deck Constructions**

[See General Information for Roof Deck Constructions](#)

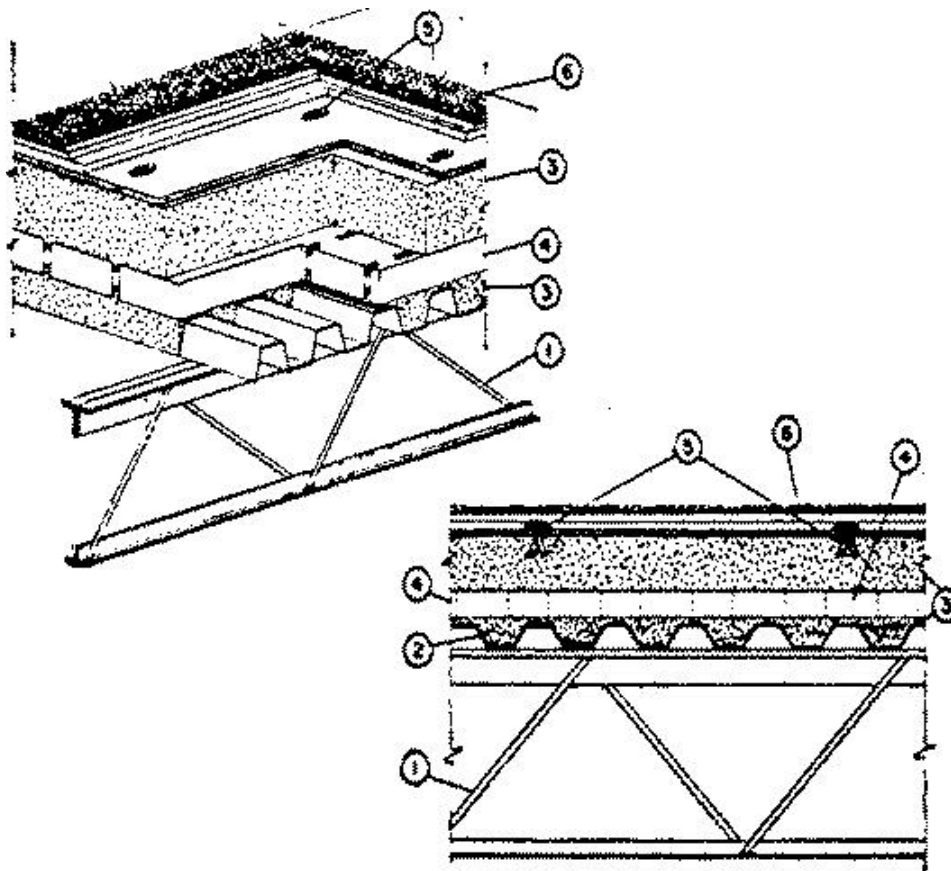
**Construction No. 110**

December 30, 2008

**Metal Deck Assemblies**

**Wind Uplift – Class 90**

**Fire-Classified**



**1. Steel Supports** — Min Type 10H2 open web steel joists or other structural supports acceptable to authorities having jurisdiction.

Spaced 48 in. O.C. when used with No. 28 MSG steel deck.

Spaced 72 in. O.C. when used with No. 26 MSG steel deck.

Supports to be laterally braced as required.

**2. Steel Deck** — Min No. 28 or 26 MSG gauge coated steel. Deck vented with venting slots covering 1-1/2 percent of total deck area. Either gauge to be welded to supports using acceptable weld washers located in every other valley.

**3. Vermiculite Concrete** — Poured in place lightweight insulating concrete. Mixed at a rate of 6 cu ft of **Vermiculite Aggregate\*** to 1 cu ft of cement with approx 25 gal of water and air entraining agent. Min dry density to be approx 24 pcf. Compressive strength to be a min of 125 psi, as tested in accordance with ASTM C495 specifications. When using foamed plastic insulation, a 1/8 in. thick slurry, as measured over the top of the steel deck crests is to be placed beneath the foamed plastic insulation. A min 2 in. thick deck is to be placed over the insulation before the slurry dries. When foamed insulation is not used, a min 2 in. thick concrete deck as measured over the metal deck crests is to be poured directly over the steel deck.

**PALMETTO VERMICULITE CO** ([View Classification](#))

**SIPLAST INC** ([View Classification](#))

**VERMICULITE PRODUCTS INC** ([View Classification](#))

**3A. Cellular Concrete** — Poured in place lightweight insulating concrete. Produced by mixing components in accordance with instructions found on Roof Topping Mixture\*.

Cellular concrete to have an air dry density of 36 pcf and 28-day compressive strength of 200 psi min as tested in accordance with ASTM C495 (Note: Strength samples are not to be oven dried). A 1/8 in. thick slurry, as measured over the top of the steel deck crests, is to be placed beneath the foamed plastic insulation before the slurry dries. A min 2 in. thick deck is then placed over the insulation before the slurry dries. When foamed plastic is not used, a min 2 in. thick concrete deck as measured over the metal deck crests, is to be poured directly over the steel deck.

**CELLULAR CONCRETE L L C** ([View Classification](#)) — "Mearlecrete" or "Mix#2"

**SIPLAST INC** ([View Classification](#)) — "Insulcel", "Insulcel PB".

**3B. Cellular/Vermiculite Concrete** — Poured in place lightweight insulating concrete. Produced by mixing components in accordance with manufacturers instructions. Concrete consists of Portland cement, Insulcel-PB foam and 28 (4 c.f.) to 84 (12 c.f.) of vermiculite aggregate per cu yard of concrete. Concrete to have a dry density of 33 + 3 pcf and minimum compressive strength of 190 psi as tested in accordance with ASTM C-495. When using foamed plastic insulation, a 1/8" thick slurry, as measured over the top of the steel deck crests, is to be placed beneath the foamed plastic insulation. A min 2 in. thick deck is then place over the insulation before the slurry dries. When foamed plastic is not used, a min. 2 in. thick concrete deck as measured over the metal deck crests, is to be poured directly over the steel deck.

**CELLULAR CONCRETE L L C** ([View Classification](#)) — "Mearlecrete" or "Mix#3"

**SIPLAST INC** ([View Classification](#))

**4. Foamed Plastic\*** — (Optional) Sandwiched between the vermiculite concrete slurry and the vermiculite concrete deck. Max thickness to be 6 in. Supplied in 24 in. by 48 in. sheets having holes, slots or notches. Butt joints to be staggered.

**CELLOFOAM NORTH AMERICA INC** ([View Classification](#))

**POWERFOAM INSULATION DIV METL-SPAN**

**CORP** ([View Classification](#))

**SIPLAST INC** ([View Classification](#))

**STARRFOAM MFG INC** ([View Classification](#))

**VERMICULITE PRODUCTS INC** ([View Classification](#))

**5. Roof Fasteners** — Fasteners used to attach base sheet Item 6 alternate b or Item 7 to the vermiculite concrete deck. To consist of two parts: A basic fastener and an oversize cap. The basic fastener is fabricated in one piece with a cap having circular segments and straight sides. The dimension between edges is 1-1/8 in. min and 1-1/4 in. max. The stem portion of the basic fastener consists of a single piece formed into two "U" shaped segments, 1-5/8 in. long and is expandable. The cap is 2-1/2 in. in diam. Both parts are fabricated from No. 30 MSG galv. steel.

**6. Roof Covering\*** — Shall consist of one of the following:

(a) A primer conforming to ASTM D41 specifications is to be applied over the concrete deck at a rate of 1 gal per 100 sq ft. Any hot mopped or heat fused (with hot mopped base sheet) roof covering system Classified under the Roofing Systems Category (TGFU) shall be applied directly over the primed concrete deck.

(b) Base sheet consisting of Type 30, G1 or G2, mechanically attached to the concrete using fasteners (Item 5) in rows spaced 16 in. OC across the width of sheet. Fastener rows located in the side lap and centerline of sheet are spaced 7-1/2 in. OC. Any hot mopped or heat fused roof covering system Classified under the Roofing Systems Category (TGFU) shall be applied directly over the base sheet.

Refer to General Information, Roof Deck Constructions (Roofing Materials and Systems Directory) for items not evaluated.

\*Bearing the UL Classification Mark

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