

August 6, 2010

M E M O R A N D U M

TO: All Who May Be Concerned

FROM: Jonathon D. Hamrick, Construction Planning and Design Manager

SUBJECT: Roof Decks on Public Hurricane Shelters - Updated

On March 1, 2002, the Florida Building Code (FBC) became effective, eliminating all other building codes in Florida.

FBC Section 423.25.4.1 contains missile impact requirements for roof decks. Please note that all roof deck systems which satisfy the missile impact and rain resistance criteria must function as an assembly. We recognize that it is not the deck alone that fulfills the above requirements, but rather the entire assembly including the roof membrane. Hence we require that the entire assembly be tested successfully in a laboratory for compliance with SSTD 12-99.

A number of other requirements for roof deck assemblies are listed in FBC Section 423.25.4.2. Standard SSTD 12-99 addresses only the resistance of the building envelope to impact by large missiles. SSTD 12-99 does not address bearing, wind uplift anchorage, diaphragm action, all of which are part of the design by the structural engineer of record; nor does SSTD 12-99 address water intrusion. Yet a hurricane shelter must be watertight to protect the occupants. Therefore FBC Section 423.25.4.2 properly requires that the system used as a deck assembly be waterproof (resistant to rain), besides fulfilling the structural and missile impact requirements. The Office thus requires that all roof deck systems used on public hurricane shelters, except as described under items 1 and 2 below, be tested as an assembly.

Please feel free to contact Mr. Ed Hubert, P.E., of my staff at (850) 245-9226 if you have any further questions.

JDH/eha

MOR-4 Metal Paneling: Morin SLR 24 ga. steel, two inch high seam at 16 inches oc
Underlayment: Miradri 300 HT ice and water protection, over 0.5 inch
Densglass, over
Insulation: 1.5 inch polystyrene
Deck: B-deck, 0.030 inch thick
Fastener:#14 x 5 inch long self-drilling screws 2 per clip at 72 inches oc
over 6 inch x 6 inch steel sheet bearing plate x 0.035 inch
Testing by: Architectural Testing, Inc.
130 Derry Court
York, PA 17402-9402
Phone: (717) 764-7700

MOR-5 Metal Paneling: Morin SLR 0.032 inch aluminum, two inch high seam at 16
inches oc
Underlayment: Miradri 300 HT ice and water protection, over 0.5 inch
Densglass, over
Insulation: 1.5 inch polystyrene
Deck: B-deck, 0.030 inch thick
Fastener:#14 x 5 inch long self-drilling screws 2 per clip at 72 inches oc
over 6 inch x 6 inch steel sheet bearing plate x 0.035 inch
Testing by: Architectural Testing, Inc.
130 Derry Court
York, PA 17402-9402
Phone: (717) 764-7700

PAC-1 Metal paneling: 16 inch x 24 ga. Tite-Lok Plus by PAC-Clad, open framing supports at
5 ft. oc
Clips: Tite-Loc Plus two-piece sliding clip, spaced 5 ft. oc
Testing by: Farabaugh Engineering and Testing, Inc.
515 Braddock Avenue
Turtle Creek PA 15145
Phone: (412) 824-3316

Roof Decks on Public Hurricane Shelters

August 6, 2010

Page 50 of 54

PAC-2 Metal paneling: 16 inch x 24 ga. Tite-Lok Plus by PAC-Clad Ice and water shield

Board: 2 inch OSB

Insulation: 4 inch rigid insulation

Deck: 1.5 inch x 22 ga. corrugated metal

Clips: Spaced 5 ft. oc

Testing by: Farabaugh Engineering and Testing, Inc.

515 Braddock Avenue

Turtle Creek PA 15145

Phone: (412) 824-3316

PAC-3 Metal paneling: 16 inch x 24 ga. Tite-Lok Plus by PAC-Clad Ice and water shield

Insulation: 3.3 inch rigid insulation

Deck: 1.5 inch x 22 ga. corrugated metal

Clips: Spaced 5 ft. oc

Testing by: Farabaugh Engineering and Testing, Inc.

515 Braddock Avenue

Turtle Creek PA 15145

Phone: (412) 824-3316

PAC-4 Metal paneling: 16 inch x 0.032 inch sheet aluminum panel roofing

Self-adhering "peel and stick" 40 mil waterproof membrane

One-half inch Dens-Deck

1 inch ISO board rigid insulation

One and one-half inches deep x 22 gauge metal deck

Clips: #14-13 x 4 inch self-drill (2 per clip). Clips located at 5 ft. oc.

Testing by: Farabaugh Engineering and Testing, Inc. (FETLabs)

401 Wide Drive

McKeesport, PA 15135

PH (412) 751-4001

Enhancements:

Alternative materials or enhancements to a given tested assembly are acceptable, provided they are a product by the same manufacturer of the material tested. A tested assembly may be enhanced in one or more of the following three ways:

1. Thicker material of a given component. Examples follow:

Example A. Assume that 1.5 inch x 22 gauge Type B steel deck was tested as part of an assembly. Steel deck 1.5 inch x 20 gauge Type B is acceptable.

Example B. Assume that 45 mil EPDM membrane was tested as part of an assembly. 60 mil EPDM is acceptable.

2. Higher grade material in a given component. Examples follow:

Example C. Assume that #30 ABC regular base sheet was tested as part of an assembly. ABC Bettergrade base sheet is acceptable.

Example D. Assume that 60 mil plain PVC single-ply roofing was tested as part of an assembly. 60 mil reinforced PVC is acceptable.

3. Additional materials used. Examples follow:

Example E. Assume that one ply of 60 mil PVC single-ply roofing was tested as part of an assembly. Two plies of 60 mil PVC are acceptable.

Example F. Assume that a single ply membrane and 2 inch rigid isocyanurate insulation over a metal deck were successfully tested as an assembly. 0.5 inch nailable insulation between the isocyanurate insulation and the membrane is acceptable. This is because, even though the nailable insulation was not a part of the assembly tested, yet it improves the tested assembly's missile impact-resistive capacity.

4. Wider support spacing. An example follows:

Example G. Assume that a roof deck assembly was tested with supports spaced 5 ft. oc. A spacing of 66 inches or even 72 inches is acceptable from a missile-impact perspective. This is because wider support spacings cause the assembly to become more flexible, in turn, causing the missile to bounce or rebound instead of penetrating the membrane. However, wider support spacings should be carefully investigated for gravity loads by the design engineer.