

THINGS YOU SHOULD KNOW

RETROFITTING
LIGHTWEIGHT
INSULATING
CONCRETE
ROOF DECKS



Loadmaster
Systems, Inc.



Failed Lightweight Insulating Concrete

PER SECTION
114.1 AND 114.2
OF THE IBC

The Reality

“ By International Building Code:

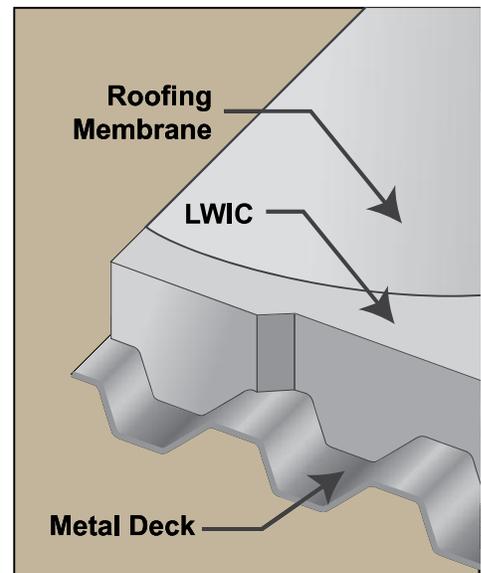
- Replacing an existing roof is a repair to a building.
- It is unlawful to make repairs to a building that violate the building code.
- It is unlawful to occupy a building that has been repaired in violation of the building code.
- Violators are subject to penalties as prescribed by law.
- Reroofing **MUST** meet building code!

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How LWIC
ROOF DECKS
CARRY
STRUCTURAL
LOADS

Composite Strength:

Light-weight insulating concrete (LWIC) uses composite structural action to carry **gravity, wind uplift and diaphragm loads**. Zinc and cement form a bond creating a composite structural connection. This connection depends on 1) maintaining a rigid, monolithic sheet of concrete 2) bonded to the zinc finish of the steel form deck. Should either of these two elements fail, then the composite structural connection ceases to exist and the roof deck system has received substantial structural damage. **It no longer provides the gravity, wind uplift and diaphragm shear strength required by the IBC and the structure is rated as being dangerous.**



The Reality

“ LWIC roof decks must maintain composite structural strength for the roof assembly to meet building code requirements and not be rated as dangerous. ”

Owner's Responsibility:

IBC Section 3401.2 Maintenance - Buildings and structures and parts thereof, shall be maintained in a **SAFE** and sanitary condition. The owner or the owner's designated agent shall be responsible for the maintenance of the building and structures.

The Reality

“ Failure to comply with the building code and re-establish structural properties could lead to any or all of the following unsafe conditions:

- Building roof assembly blow-off during high winds.
- Building collapse under high wind loads due to insufficient diaphragm strength.

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LWIC Design Professional Evaluation:

IBC Section 3405.2.1 - Evaluation - If the LWIC deck has been substantially structurally damaged, IBC requires the building to be evaluated by a *registered design professional* and the finding submitted to the building code official. The evaluation shall establish if the damage repaired building would meet code requirements for wind loads.

Retrofit Procedure

IBC Section 1510.3 Recovering versus Replacement - New roof covering shall not be installed without first removing all existing layers of roof coverings **down to the roof deck** where any of the following conditions occur:

1. Where existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing
2. ...
3. Where the existing roof has two or more applications of any type of roof covering.

The Reality

“ Failure to comply with the building code could lead to any or all of the following:

- Insufficient gravity load-carrying components can lead to roof or building collapse.
- Deficient lateral load-carrying capacity can lead to building collapse.
- Deficient wind uplift capacity can lead to roof blow-offs.
- Building and contents insurance coverage could be voided.
- Violators could be subject to triple damages.
- Violators subject to penalties as prescribed by law.

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Retrofitting Options:

For LWIC assemblies that have lost composite action, only 2 practical repair options exist that can return the assembly to an IBC compliant condition:

- Option 1:** Remove the entire roof assembly (roof covering, concrete and steel form deck) and replace with an entirely new roof assembly that is tested and qualified to meet IBC requirements.
- Option 2:** Retrofit the Loadmaster way. Remove the roof covering and the LWIC from the steel form deck. Design, engineer and install a Loadmaster assembly over the existing steel form deck that will re-instate the required composite structural action. Install a new roof covering that is tested and qualified with Loadmaster, thus returning the roof assembly to its pre-damaged structural condition in compliance with IBC requirements.

To reroof such a LWIC assembly without restoring its load-carrying properties to its pre-damage condition is to violate the IBC requirements.

“So what are the consequences of my reroof not meeting the code?”

THE
BIG
QUESTION

The Reality

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