







STEP 3. [Full Scale Assembly Testing](#)



IBC Section 1504.3.1 required testing per UL 580, UL 1897, or FM4474.

Testing base Frame



Loadmaster Steel Deck Sections



Duraflex Mineral Board Attached



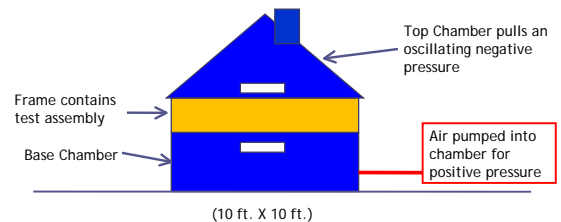
Underlayment



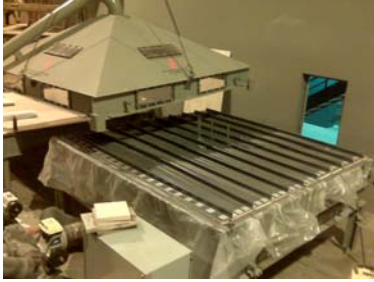
[3. Full Scale Assembly Testing](#)

UL 580 and UL 1897 Uplift Tests Apparatus

**42 Assembly Uplift Tests Have Been Run**



## UL 580 and 1897 Full Scale Uplift Testing



## Positive and Negative Pressure Placed on the Loadmaster System



### 3. Full Scale Assembly Testing (Performance Verification)

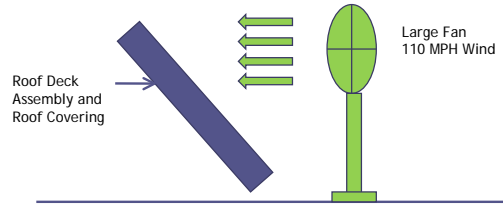
#### Roof Coverings Wind Uplift Tested

Built Up  
Modified Bitumen  
Standing Seam Metal  
Fully Adhered EPDM  
Fully Adhered TPO  
Asphalt Shingles  
Synthetic Slate  
Real Slate

### 3. Full Scale Assembly Testing

#### UL 997 Blow Off Tests Apparatus

3 Test Assemblies = Shingles, Slate and Synthetic Slate

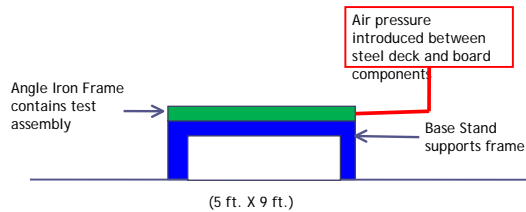


All Passed 100 MPH Requirement

### 3. Full Scale Assembly Testing

#### FM 4450 Uplift Tests Apparatus

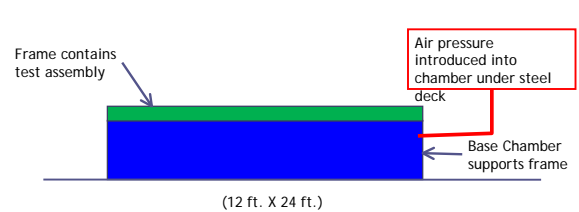
48 Uplift Tests Have Been Run



### 3. Full Scale Assembly Testing

#### FM 4474 Uplift Tests Apparatus

3 Uplift Tests Have Been Run

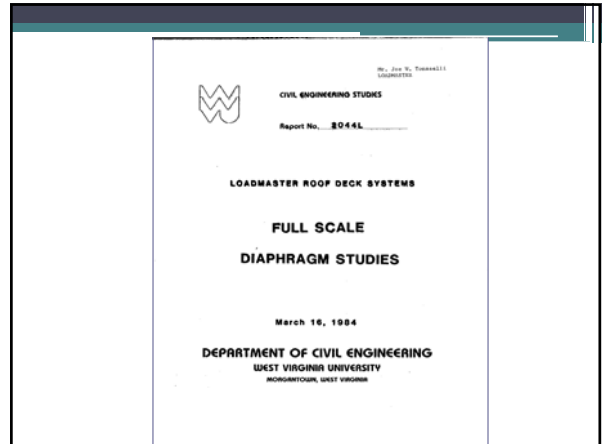


### 3. Full Scale Assembly Testing

Composite Assembly Uniform Load Tests  
2 Span Condition

**71 Assembly Tests Were Conducted to Determine Composite Performance**

(Spacing Varied 4 ft. to 8 ft.)



### 3. Full Scale Assembly Testing

Diaphragm Studies  
Of Composite Assembly

(16ft. X 20 ft.)

### 3. Full Scale Assembly Testing

Shear Diaphragm Tests  
Of Complete Assembly

### 3. Full Scale Assembly Testing

Shear Diaphragm Tests  
Of Complete Assembly

**6 Assemblies Were Tested to Determine Composite Performance**

(16ft. X 20 ft.)

**Composite Attachment Improved Assembly Stability**

### 3. Full Scale Assembly Testing

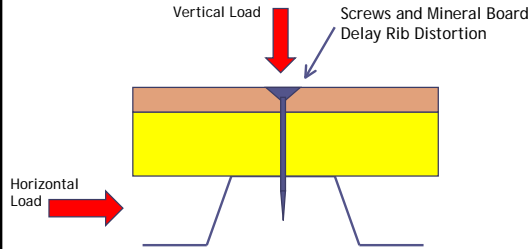
Rib Stability Evaluation

Steel Section Shape

- Rib Movement Opens Joints of Substrate
- Rib Buckling Produces Assembly Failure

### 3. Full Scale Assembly Testing

#### Rib Stability Evaluation



1. Composite Attachment Produces Added Rib Stability
2. Substrate Joint Stability Protects Roof Covering

### 3. Summary of Assembly Testing (Performance Verification)

- 71 - Composite Uniform Load Tests 2-Span Condition
- 6 - 16 ft. x 20 ft. Composite Assembly Diaphragm Tests
- 38 - 10 ft. x 10 ft. UL 580 Composite Assembly Wind Uplift Tests
- 4 - 10 ft. x 10 ft. UL 1879 Composite Assembly Wind Uplift Tests
- 3 - 4.5 ft. x 5 ft. UL 997 Composite Wind Blow Off Tests
- 48 - 5 ft. x 9 ft. FM 4450 Composite Assembly Wind Uplift Tests
- 3 - 12 ft. x 24 ft. FM 4474 Composite Assembly Wind Uplift Tests

173 Full Scale Tests For Wind Stability

### 3. Full Scale Assembly Testing (Performance Verification)

#### Roof Assembly Wind Uplift Performance

**Min. Uplift Pressure Achieved = 60 PSF**

(every assembly has min. 60 PSF Uplift)

**Max. Uplift Pressure Achieved = 420 PSF**

(Values as of 11/01/2009)

### STEP 4. Engineering Analysis of Test Results

Based upon component testing applied to full scale assembly testing, roof assembly designs have been further developed and modified to meet specific conditions.

Additional component testing is performed as needed.

Additional full scale testing is on-going.

A Data Bank of component and assembly performance values has been created to facilitate engineering analysis of future design requirements.



### Attachment Analysis

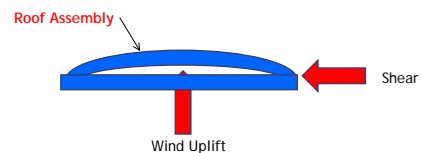
Steel Section Attachment: (Combined Loading Included)

90 Attachment Configurations

540 Attachment Patterns

Board Attachment:

### Combined Loading on Board Components

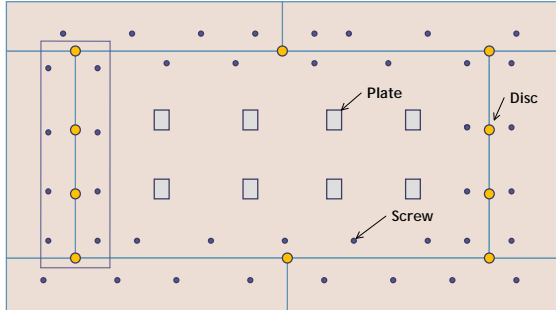


#### (Paper Sheet Example)

Board components react to deck loadings causing board joints to open and attempt to slide past one another.

23 Board Attachment Configurations

3 Attachment Devices  
6 Top Board Configurations



Attachment Analysis

Steel Section Attachment: (Combined Loading Included)

90 Attachment Configurations

540 Attachment Patterns

Board Attachment:

23 Attachment Configurations

1,656 Attachment Patterns

**2,196 Attachment Patterns Available**

Have Attachment Patterns Worked?  
You be the Judge.

40 Year Performance History  
Over 500,000,000 sq. ft. of Installations  
Major Installation Area = Gulf Coast States



Blow Offs Todate?  
**NONE**

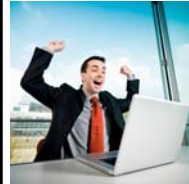
STEP 5. Computer Aided Engineering and Designs

*•Combined Loading requirements have made performance charts for diaphragm shear obsolete.*

*•Each roof area and it individual zones must be engineered for it's own unique design requirements.*

*•Our engineering calculations are based upon the following:*

- IBC Chapter 16
- ASCE 7
- SDI - DDM 03
- ANSI Standards



Using computer aided engineering we individually engineer each zone of a roof area, all terminations and all transitions to meet all required loading.

(Pass Out Engineering Report)

Loadmaster Offers the Following:

•Fully tested Roof Assembly Systems that meet the requirements of Chapters 15 and 16.

•Computer aided engineering of all assemblies to fit each specific roof area presented in a **FREE** Design Proposal.

•Certification of design and engineering to be code compliant and performance specific.

•Engineering documents sealed by a structural engineer licensed in the state where the project is located.



**Only Quality Installation**

Erectors are hand picked.

Only financially responsible firms chosen.

Trained in two training schools.

Licensed by contract with Loadmaster.

Guaranteed workmanship for term of warranty.

**Loadmaster Offers the Following:**

•Fully tested **Roof Assembly Systems** that meet the requirements of Chapters 15 and 16.

•**Computer aided engineering** of all assemblies to fit each specific roof area presented in a **FREE** Design Proposal.

•**Certification** of design and engineering to be code compliant and performance specific.

•**Engineering documents sealed by a structural engineer** licensed in the state where the project is located.

•**Installation by licensed and trained Erectors** who warrant their workmanship.

•**A System Warranty** on strength and serviceability, including wind blow-off up to and including the design wind speed.



**So What Does Loadmaster Cost?**

First we must determine which assembly is needed and what performance level will be required.

This can be accomplished 2 ways:

1. Call your local Loadmaster Rep for assistance with a Design Proposal.
2. Go On-line at [Loadmaster.net](http://Loadmaster.net) fill out CompuDesian forms.

We will engineer a **free** Design Proposal.

Design Proposal will include all information about required assembly.

Pricing can be determined from a Design Proposal.

(Sample Design Proposal)



**Why Should I Chose Loadmaster?**

- Guaranteed to meet the Code and the performance needs of the building.
- The Terminator System improves performance and reduces cost.
- On certain roofs Loadmaster is the best and least expensive system.
- Quality installation is assured.
- The system's stability reduces roof maintenance costs.
- Roof coverings last longer and won't blow off.
- The system is reusable for the life of the building - nothing to throw away.
- Long term performance is guaranteed at no additional costs.
- Joint warranties assure long term performance of the entire roof system.
- Forty (40) year record of outstanding performance on similar projects.



**Loadmaster Systems, Inc.**

*Certified,  
Sealed  
& Guaranteed!*

Shouldn't your next job use Loadmaster?