

**ROOFING  
CONTRACTOR**

**BEST OF SUCCESSES  
20  
YEARS**





# SETTING THE STANDARD FOR SCHOOLS: WHY HAS IT TAKEN SO LONG?

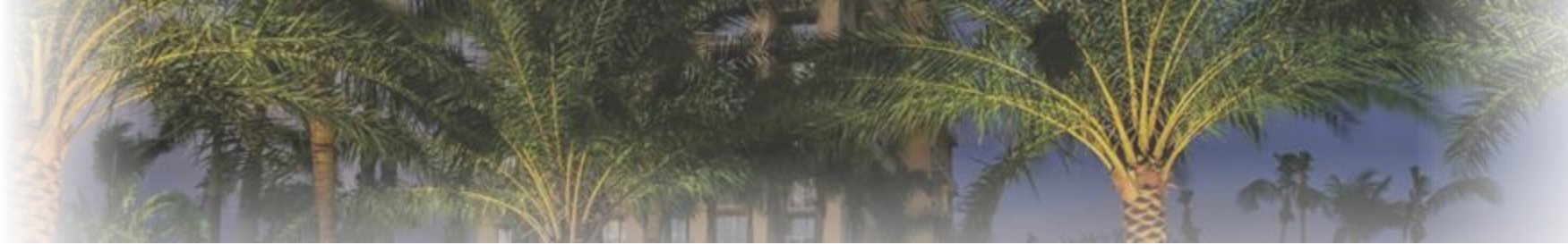
**Chris Coryell**, *CEO*, Coryell Roofing

**Charles Mahall**, *Americas Business Development Manager*, FM Approvals

**Phillip Smith**, *VP, Manager*, Building Materials,  
FM Approvals



**ROOFING  
CONTRACTOR**



*Why are  
We Here?*

*What are  
We Doing?*



*“You can never  
be great, if you  
are content  
with being  
good!”*

*John Maxwell  
The 17 Laws of Teamwork*

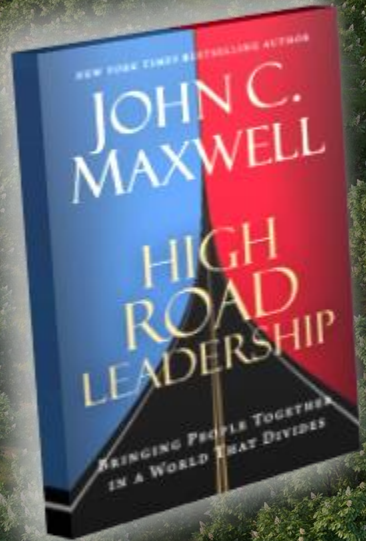


# High Road Leadership

HIGH ROAD Leaders focus on **OTHERS**

MIDDLE ROAD Leaders focus on **WHAT IS FAIR**

LOW ROAD Leaders focus on **THEMSELVES**



# High Road Leadership

*We are*

HIGH ROAD Leaders focus on **OTHERS**  
*ALL Leaders!*

MIDDLE ROAD Leaders focus on **WHAT IS FAIR**

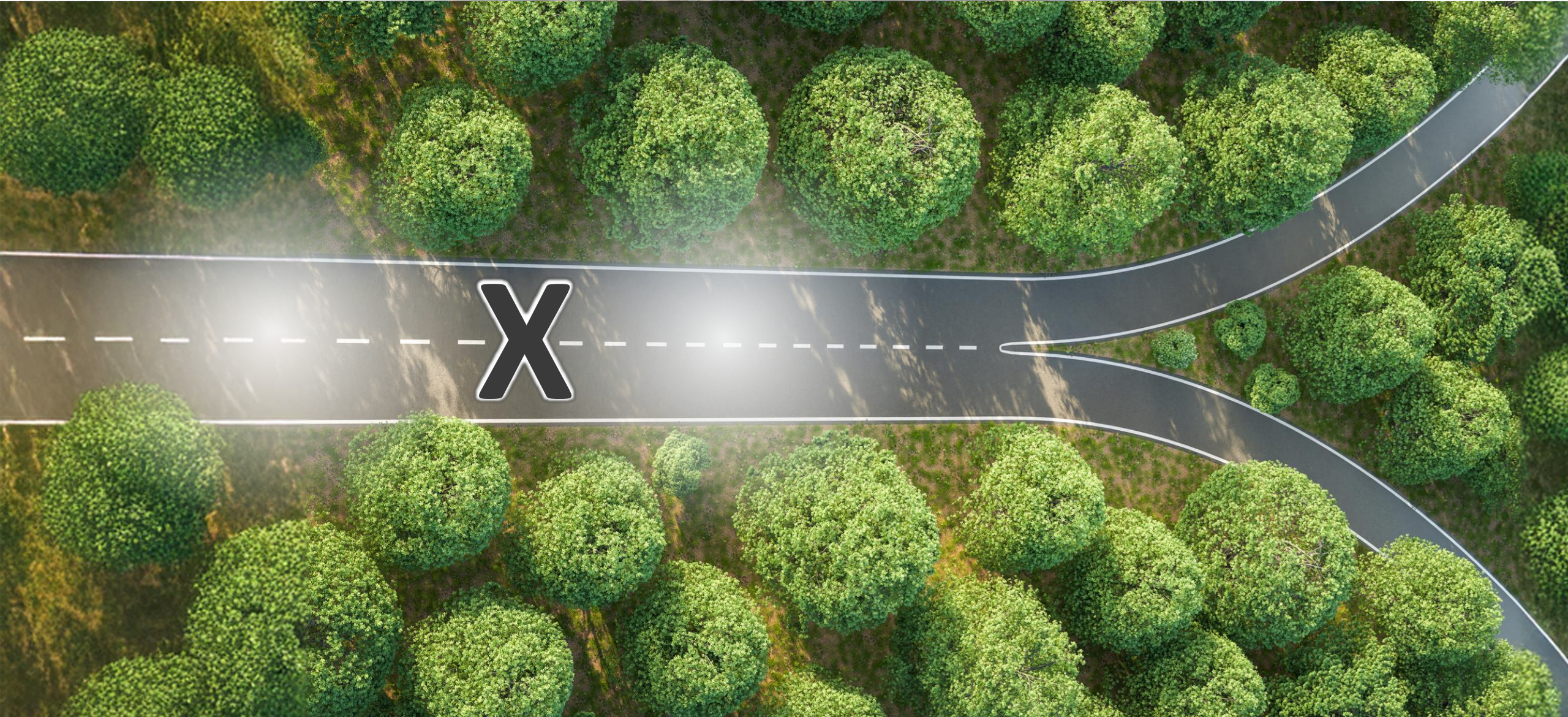
LOW ROAD Leaders focus on **THEMSELVES**



*We are  
ALL Leaders!*







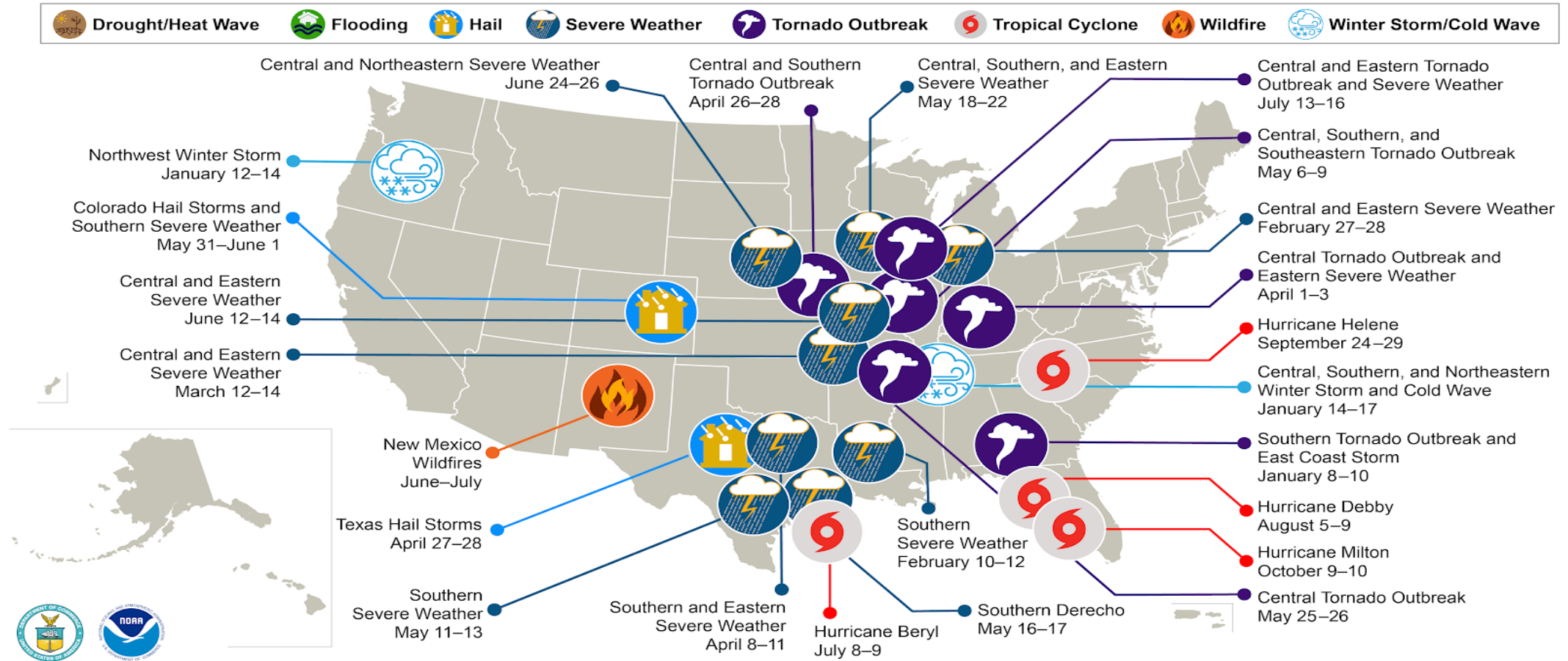
**FM** Approvals

# FM / FM Approvals Overview

**Charles Mahall - Manager, Business Development Americas**

# Why FM Is Here...

## U.S. 2024 Billion-Dollar Weather and Climate Disasters



This map denotes the approximate location for each of the 24 separate billion-dollar weather and climate disasters that impacted the United States through October 2024.

[Ncei.noaa.gov/access/billions/](https://ncei.noaa.gov/access/billions/)

# FM – Risk Improvement in Action - Physical

**100K+**

Locations visited  
on an annual  
basis

**30.05M**

Square feet  
sprinklered in 2023

**41K+**

Completed risk  
improvements in  
2023

**1800+**

Loss Prevention  
Engineers

**145+**

Countries with  
Active Locations

# FM – Risk Improvement in Action - Educational

**Learning Centers | Research Campus | Mobile Learning Center  
Communications | Loss Prevention Data Sheets**



# FM Risk Improvement in Action - Financial

**US\$5B**

Membership Credit  
(2001 – 2023, approx.)

**US\$300M**

Resilience Credit  
(2022)

**US\$350M**

Resilience Credit  
(2023)

**US\$855B**

2023 Total Loss  
Expectancy Reduction

**Risk  
Prioritization**

**Claims**

**FM** Approvals

# FM Approvals Building Materials Overview

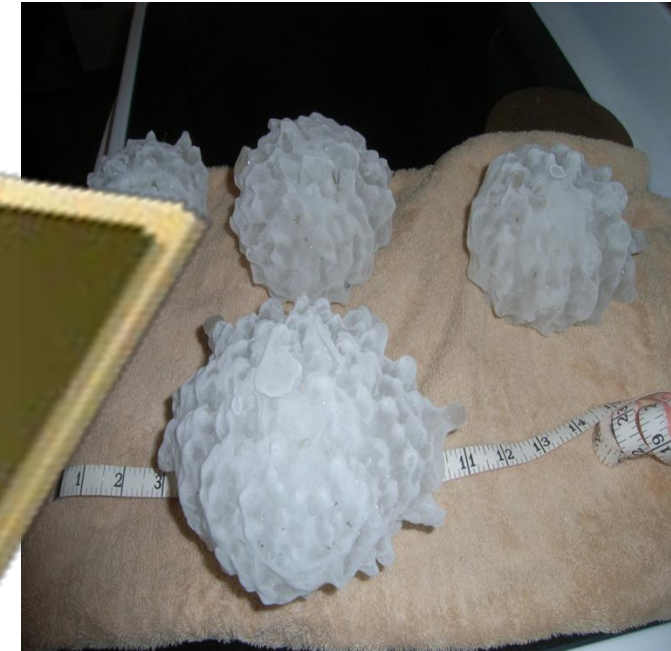
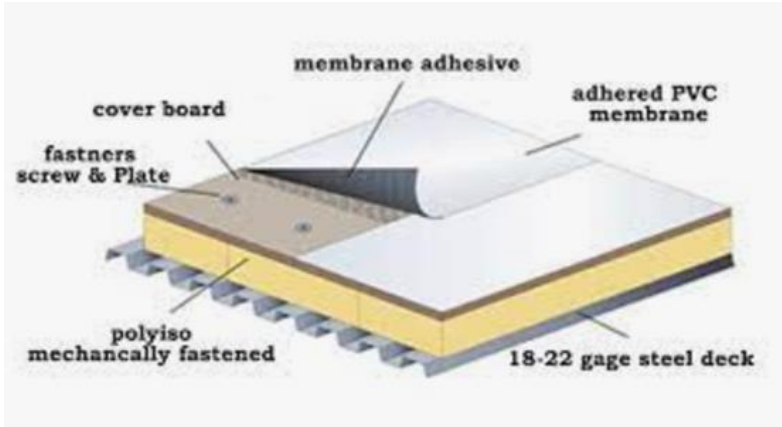
**Phil Smith - Manager, Building Materials**

# FM Approvals Strategy – Building Materials

- FM Approvals offers manufacturers a **single source** for global certification and direct access to critical markets
- To be successful products must **meet local code requirements and FM requirements.**
  - How to do this efficiently
- RoofNav™, a free Web-based roofing reference and **configuration tool**
  - Not just a list of Approved products
  - Enhance the awareness of **systems**



# How are roofs (and walls) tested for Approval?



- Corrosion
- Leakage
- Foot traffic
- Steel Deck stress

# Meeting code (IBC) and FM Approval

- Interior fire spread – NFPA 276 (IBC 1508.1, 2603.3, 2603.4.1.5)
- Exterior fire spread – ASTM E108 (IBC 1505.1, 2603.6, 2610.2)
- Wind resistance – ANSI/FM 4474 (IBC 1504.3.1, 1504.3.2)
- **Steel deck stress limit - AISI S100 (IBC 2210.1)**
  - **Deck design and mech. attached vs. FA covers**
- Foot traffic resistance – FM test (IBC 1504.7) an accepted non consensus test
  
- Why no hail?

So how many <FM> roofs are there...and how do I find them...

FM Approvals | RoofNav

Enter Assembly #

Assemblies Tools

Reset

### RoofNav Just Got

FM Approvals welcomes you to F...ation on FM Approved roofing

To get started immedi...ce your search results

being parsed de...ould like assistance completing

successf...

www.roofnav.com

Quick Tips for C...

Assembly S... Rating S... Product Search

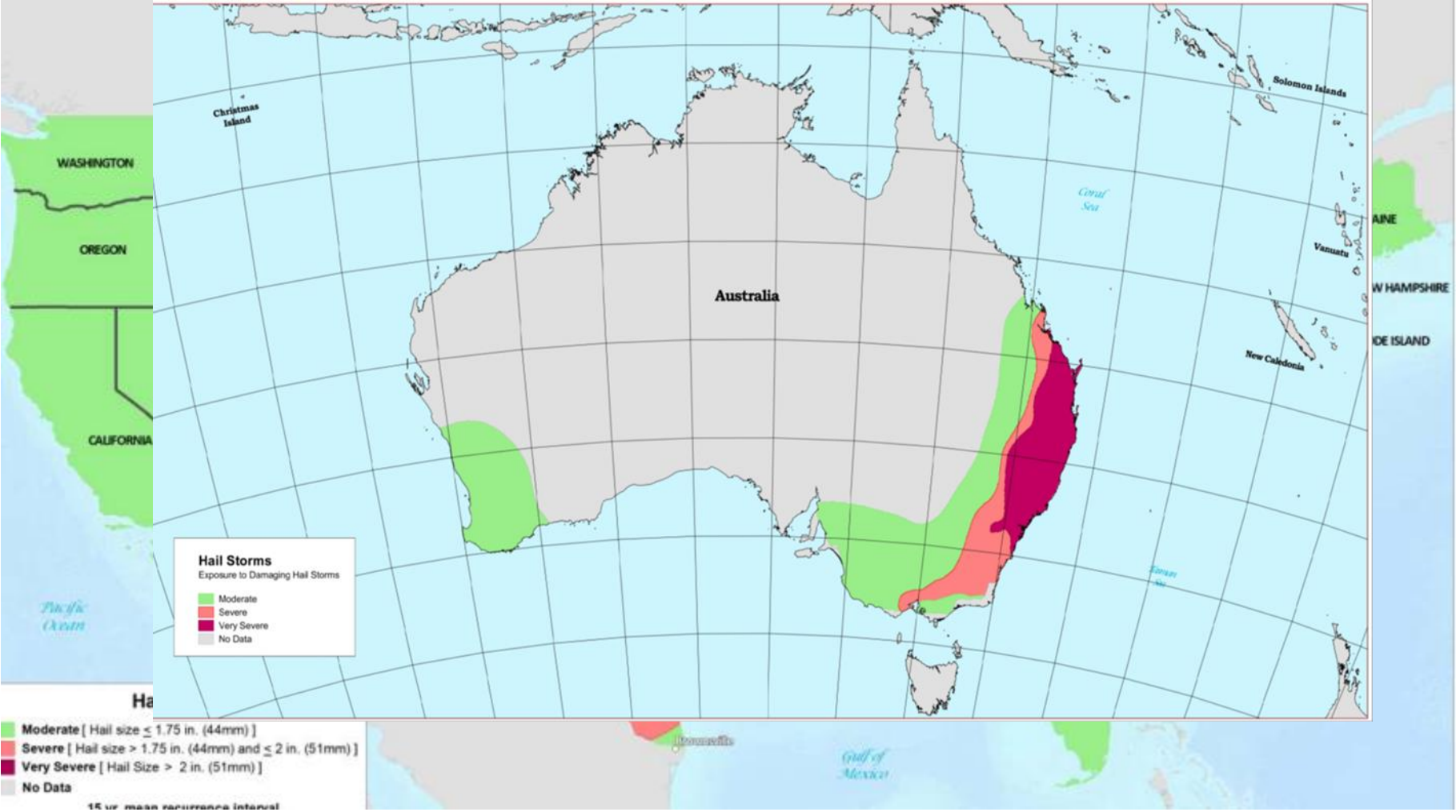
assembly has 6,961,920 unique compos

# And now for the rest of the story...

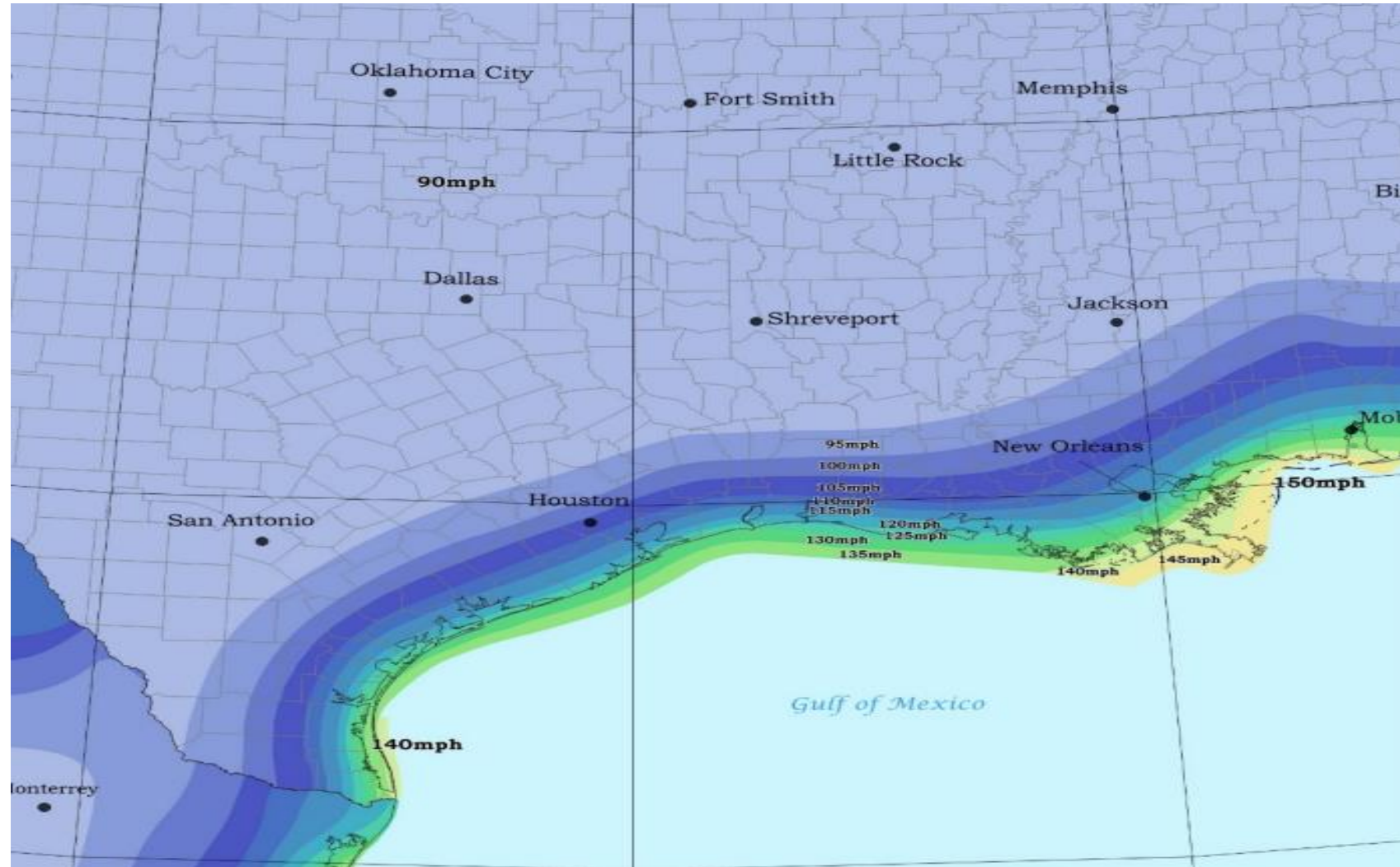
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- Approved products and systems are only the first step
- FM and FM Approvals give you “both sides of the equation”
  - “Load” and “Capacity” What do I mean by that and why is it important
- Capacity from RoofNav listings
- Load from RoofNav Calculator / FM Data Sheets

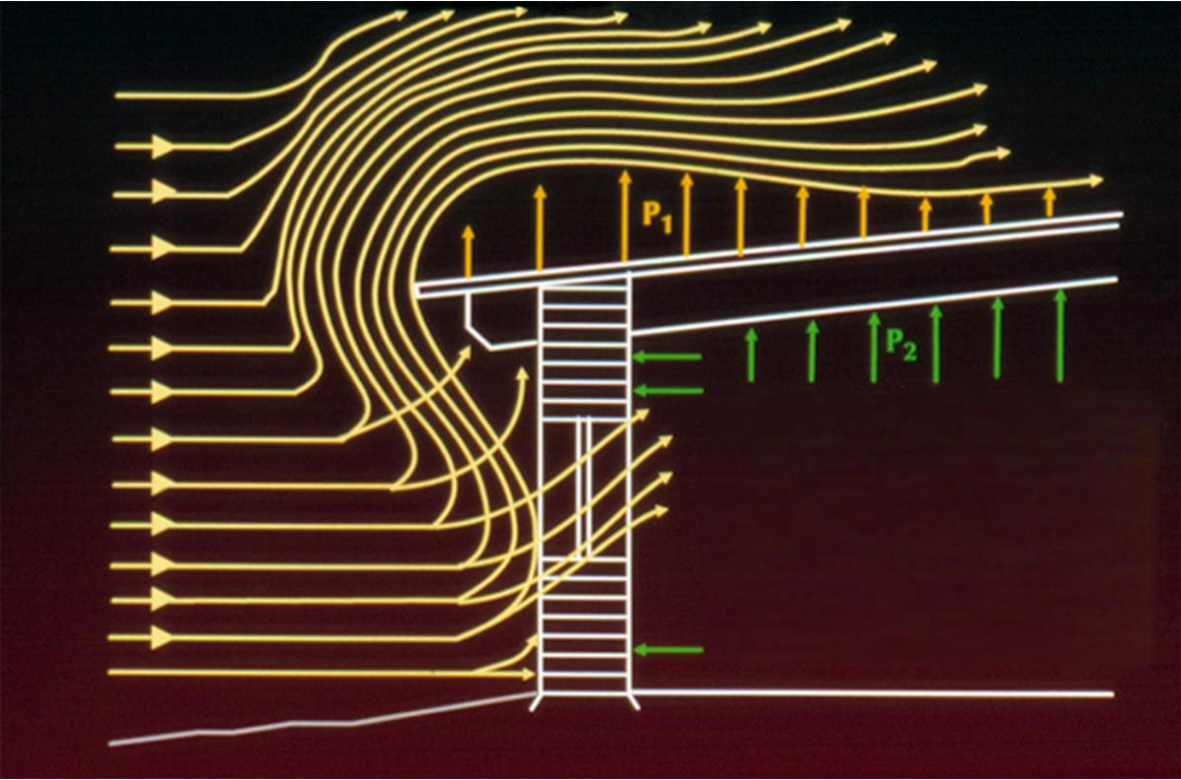
# Hail "Loading"



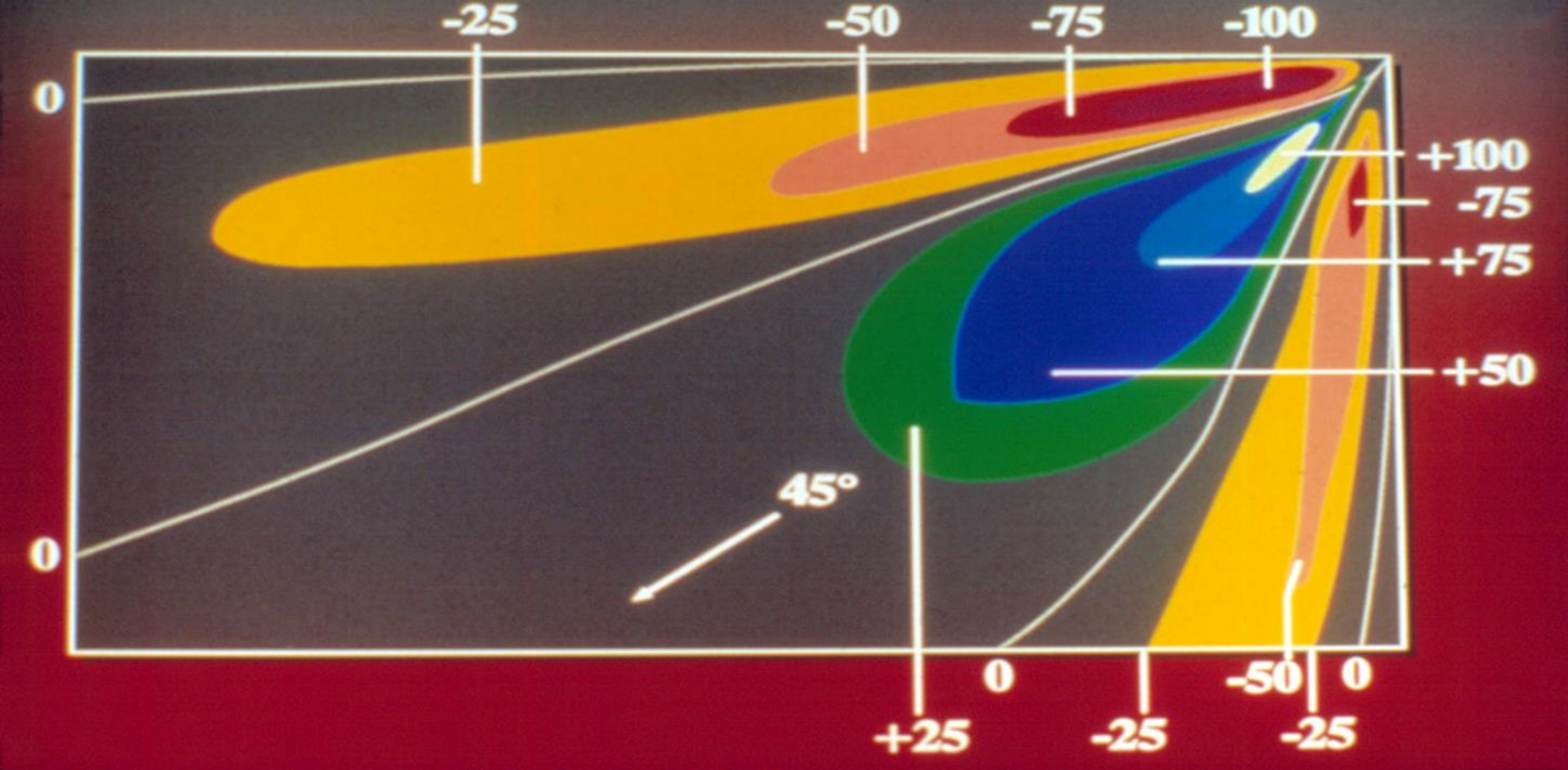
# Wind "Loading"



# Converting Wind to Pressure



# Converting Wind to Pressure





# Converting Wind to Pressure



# RoofNav ratings calculator

The screenshot shows the RoofNav Ratings Calculator interface. At the top, there is a dark blue header with the 'FM Approvals | RoofNav' logo on the left. On the right side of the header, there is a search bar labeled 'Enter Assembly #' with a magnifying glass icon, followed by a funnel icon, a calculator icon, a wrench icon, a home icon, a question mark icon, and a user profile icon. Below the header, there is a light gray sidebar on the left with two tabs: 'Assemblies' and 'Tools'. The 'Tools' tab is active and highlighted in orange. Below the tabs, there is a 'Reset' link in blue. Underneath, there is a section titled 'Ratings Calculator' with an upward-pointing arrow. Below this section, there is a prominent orange button with a calculator icon and the text 'Launch Ratings Calculator'. Below the button, there are two expandable sections: 'Product Used' and 'Assembly Search', both with downward-pointing arrows. The main content area on the right features the title 'Ratings Calculator' in a large, bold font. Below the title, there is a paragraph explaining the calculator's function: 'The Ratings Calculator allows you to specify fire and hail ratings, and calculate the wind uplift rating, for a roof area or for use in an assembly search.' This is followed by another paragraph: 'You can complete as few or many of the fields in the Fire and Hail sections as desired. However, to calculate the wind uplift ratings, all fields in the Wind section must be completed. When you are finished you can perform an assembly search with the specified ratings and slope.' At the bottom of the main content area, there is an orange button labeled 'Next'.

FM Approvals | RoofNav


Enter Assembly # 🔍

🔍 📊 🛠️ 🏠 ? 👤

Assemblies **Tools**

Reset

^ Ratings Calculator

 Launch Ratings Calculator

Product Used

Assembly Search

## Ratings Calculator

The Ratings Calculator allows you to specify fire and hail ratings, and calculate the wind uplift rating, for a roof area or for use in an assembly search.

You can complete as few or many of the fields in the Fire and Hail sections as desired. However, to calculate the wind uplift ratings, all fields in the Wind section must be completed. When you are finished you can perform an assembly search with the specified ratings and slope.

Next

# Roof Area Properties

Dimensions: 200 x 100 ft (60.96 x 30.48 m)

Height: 30 ft (9.14 m)

Slope: 0.25 in 12 (1.2°)

Internal Fire Rating: 1

Exterior Fire Rating: A

Min 3ft (1m) Continuous Parapet: N

# Site Properties

Surface Roughness: C

Wind Speed: 115

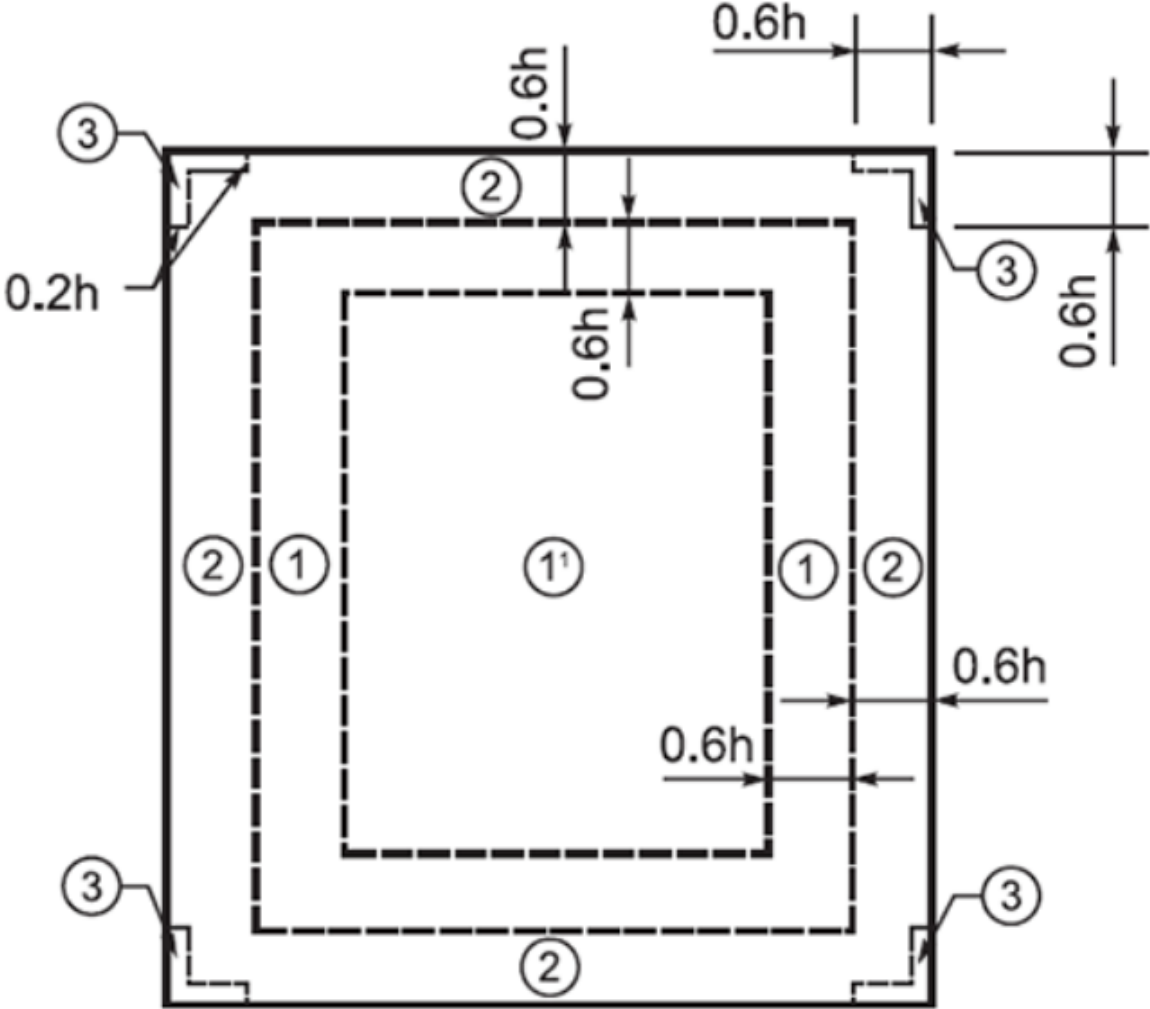
In a Tropical Cyclone Prone Region: N

Enclosure Classification: Enclosed

Hail Zone: VSH

Zone	Wind Pressures (psf)	Roof	Fascia	Coping	Gutter
Zone 1 Prime	35 psf (1.6 kPa)	1-75			
Zone 1	61 psf (2.9 kPa)	1-135			
Zone 2	80 psf (3.8 kPa)	1-165	1-90	1-105	1-105
Zone 3	109 psf (5.2 kPa)	1-225	1-90	1-90	1-90

# What's Zone 1'; 1; 2; 3...



# And now for the rest of the story...not done yet

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- Field performance feed back loop
- WORKMANSHIP

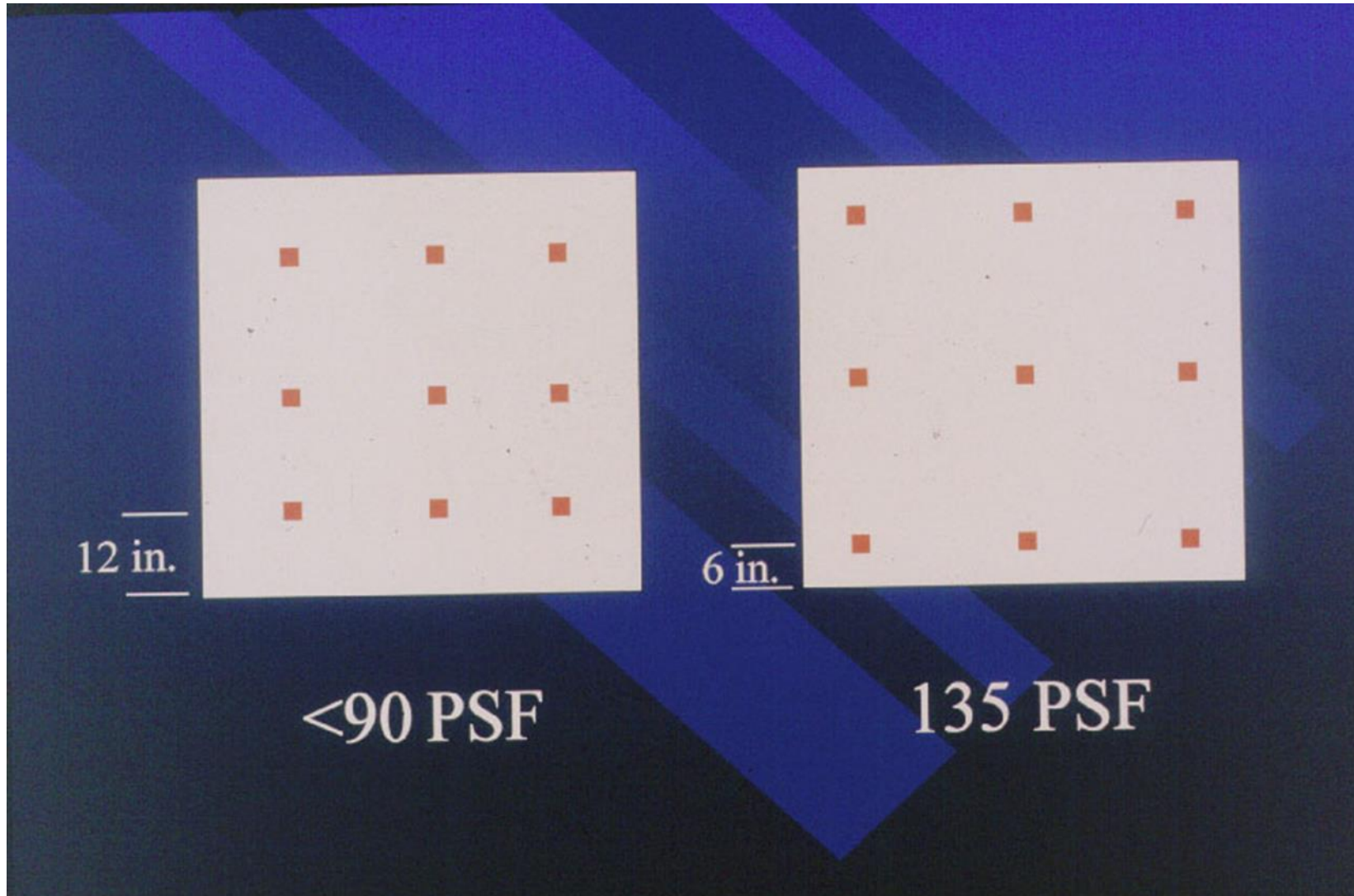
# Why so many rules...? Are we building a watch or a roof?

Sometimes you have to build a watch

Sometimes we are building roofs to withstand forces that can do this



# Details matter



# Workmanship





# Why so many rules...? Are we building a watch or a roof?



# Design or workmanship?



# Mechanically Attached Roof Cover...remember steel deck stress



Weld designed for 3 sq ft  
With a 10 ft sheet it's holding 30 sq ft  
No "picture framing" at the perimeter

# Summary

- **You play a huge part in this**
- **We know and share how to build resilient buildings**
  
- ❖ **Proper design to expected conditions**
  - ❖ Wind, fire, hail, corrosion...
- ❖ **Certified, audited products and assemblies**
- ❖ **Proper installation**
- ❖ **Proper maintenance**
- ❖ **= Resilient buildings**

# Thank you.

[phillip.smith@fmapprovals.com](mailto:phillip.smith@fmapprovals.com)

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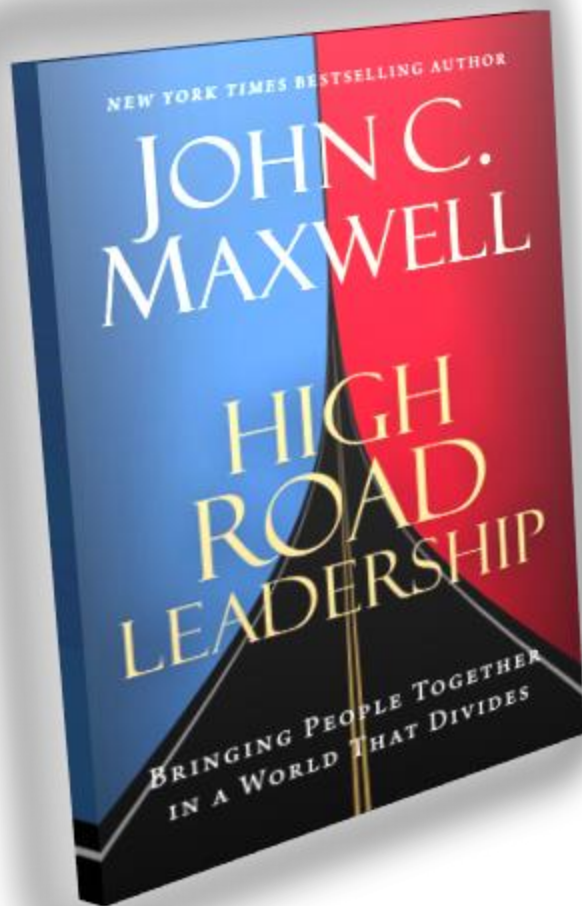
 FM Approvals

 FM Approvals

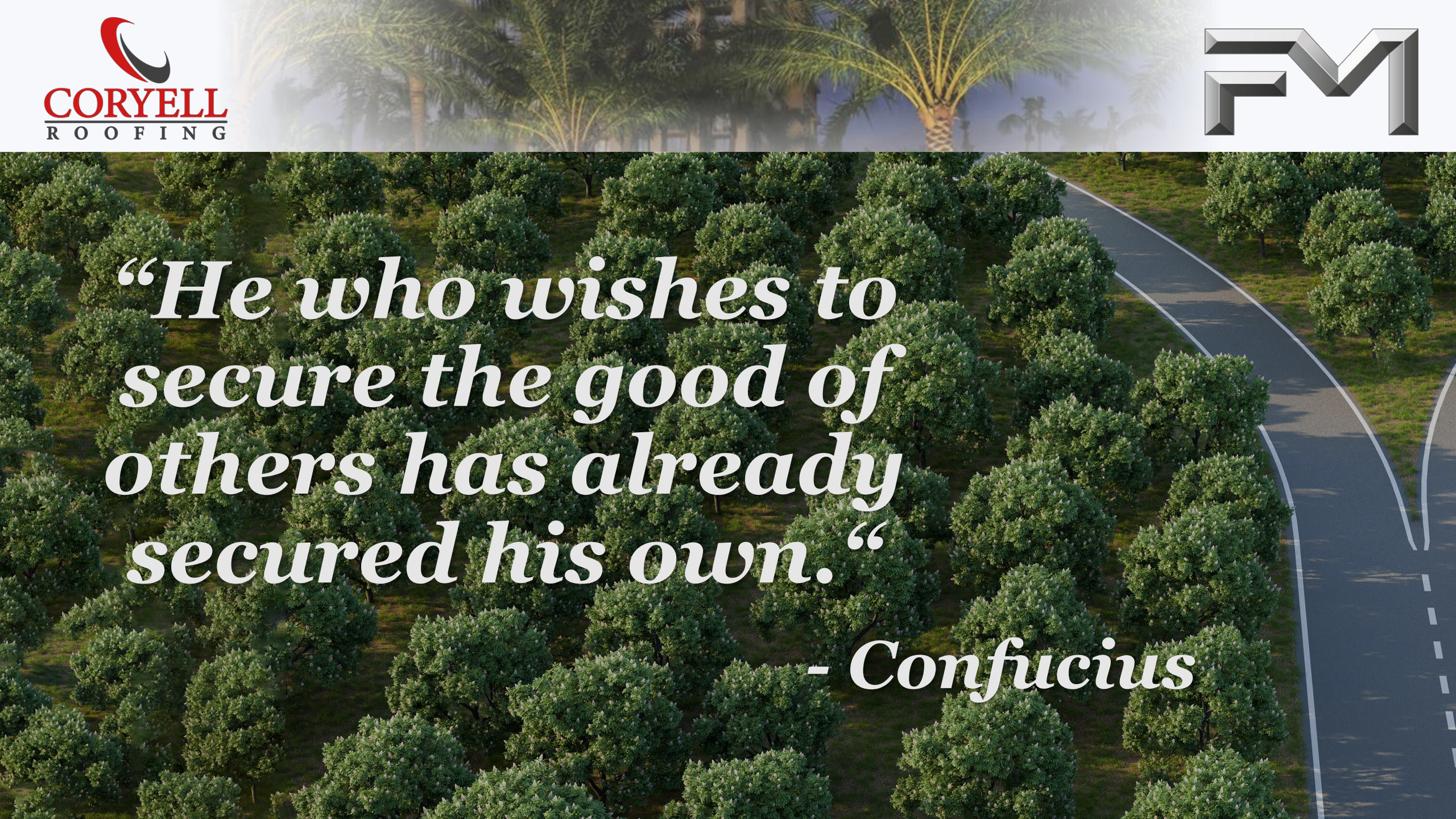


# Approvals

# High Road Leadership



- Bring People Together**
- Value All People**
- Acknowledge Your Humanness**
- Do The Right Thing For The Right Reasons**
- Give More Than You Take**
- Develop Emotional Capacity**
- Place People Above Your Own Agenda**
- Embrace Authenticity**
- Take Accountability for Your Actions**
- Live By The Bigger Picture**
- Don't Keep Score**
- Desire The Best for Others**



*“He who wishes to  
secure the good of  
others has already  
secured his own.”*

*- Confucius*



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