

Structural Safety, Assessment and Restoration 101

Kimley»Horn

Expect More. Experience Better.

PROPERTY RESTORATION EXPERTS

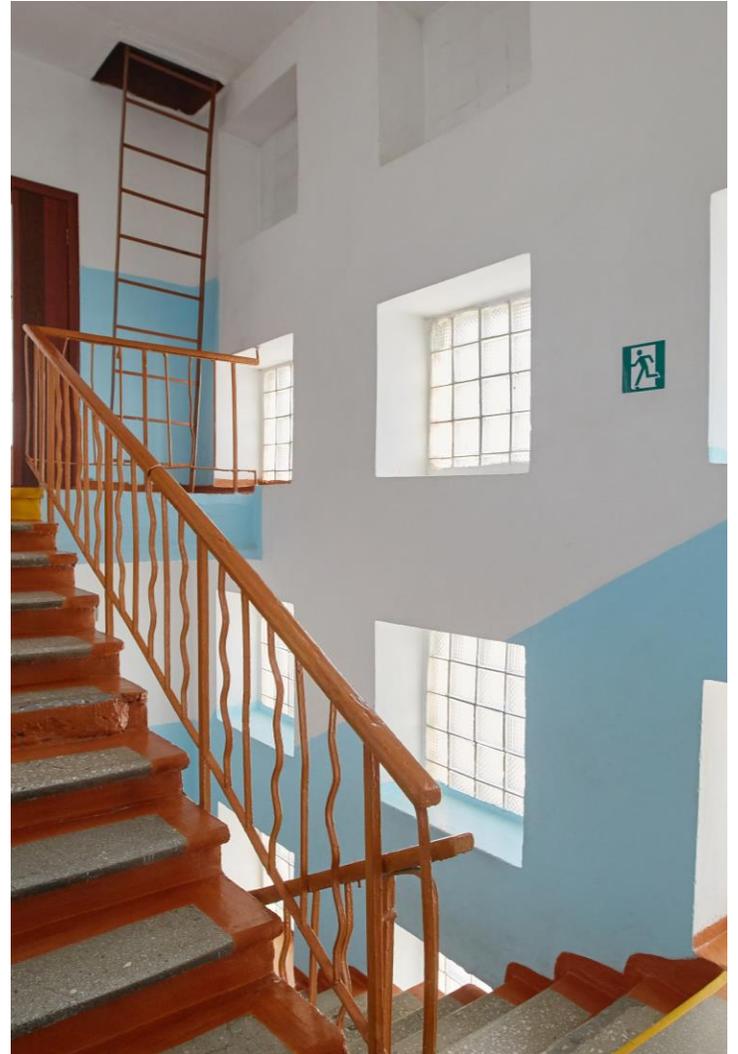
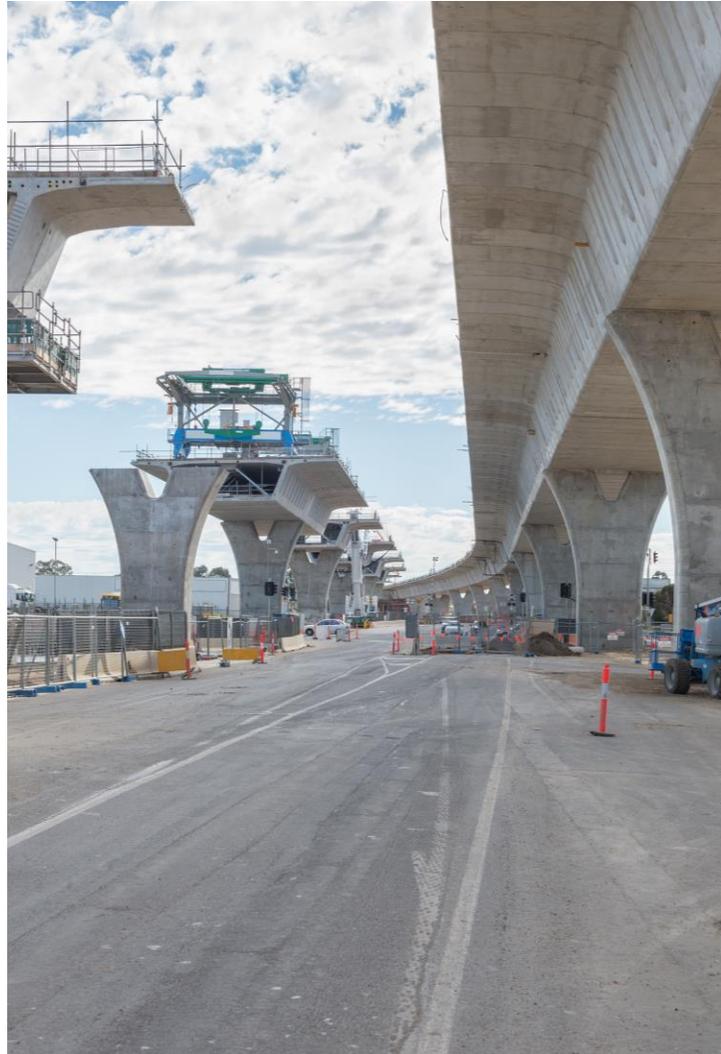


Novak
Vukasinovic, PE, MBA



Sheila
Preble, PE

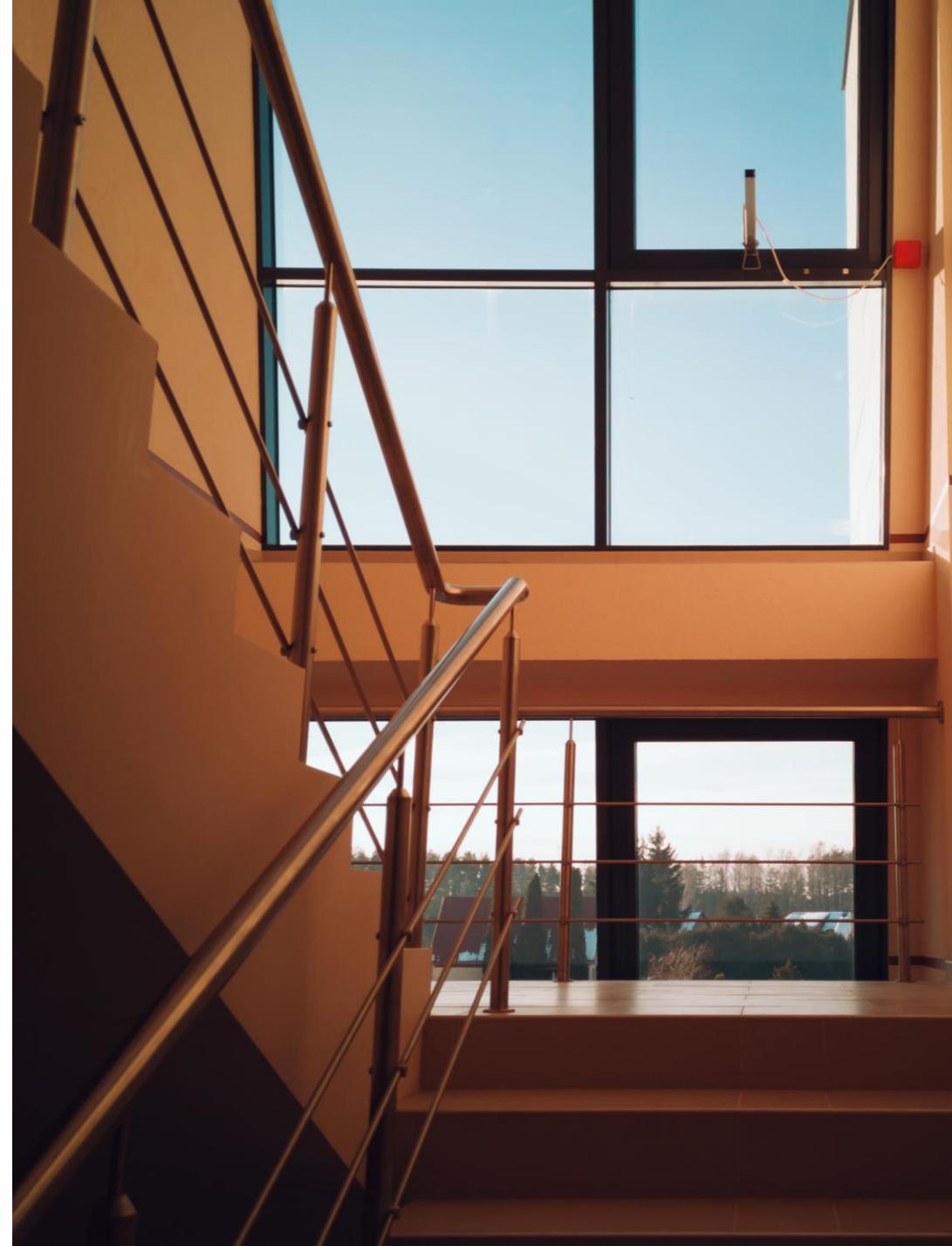
Kimley-Horn Goes Inside the Building and Beyond!



What is Structural Restoration?

Structural restoration is the process of repairing and reinforcing building's structural elements to restore them to their original condition or enhance their strength and stability, addressing issues like cracks, corrosion, water damage, and extend the useful life of the building.

- ✓ **Concrete / Steel / Masonry**
- ✓ **Paint / Sealants**
- ✓ **Building Envelope Restoration**
- ✓ **Re-Roofing**
- ✓ **Waterproofing**



When Do You Need Structural Restoration on Your Educational Facility?



Age-Related Restoration



Storm Event/Failure



Change of Use



Code Mandates



Beginning of Building Lifecycle

TOP PRIORITY

Safe Schools

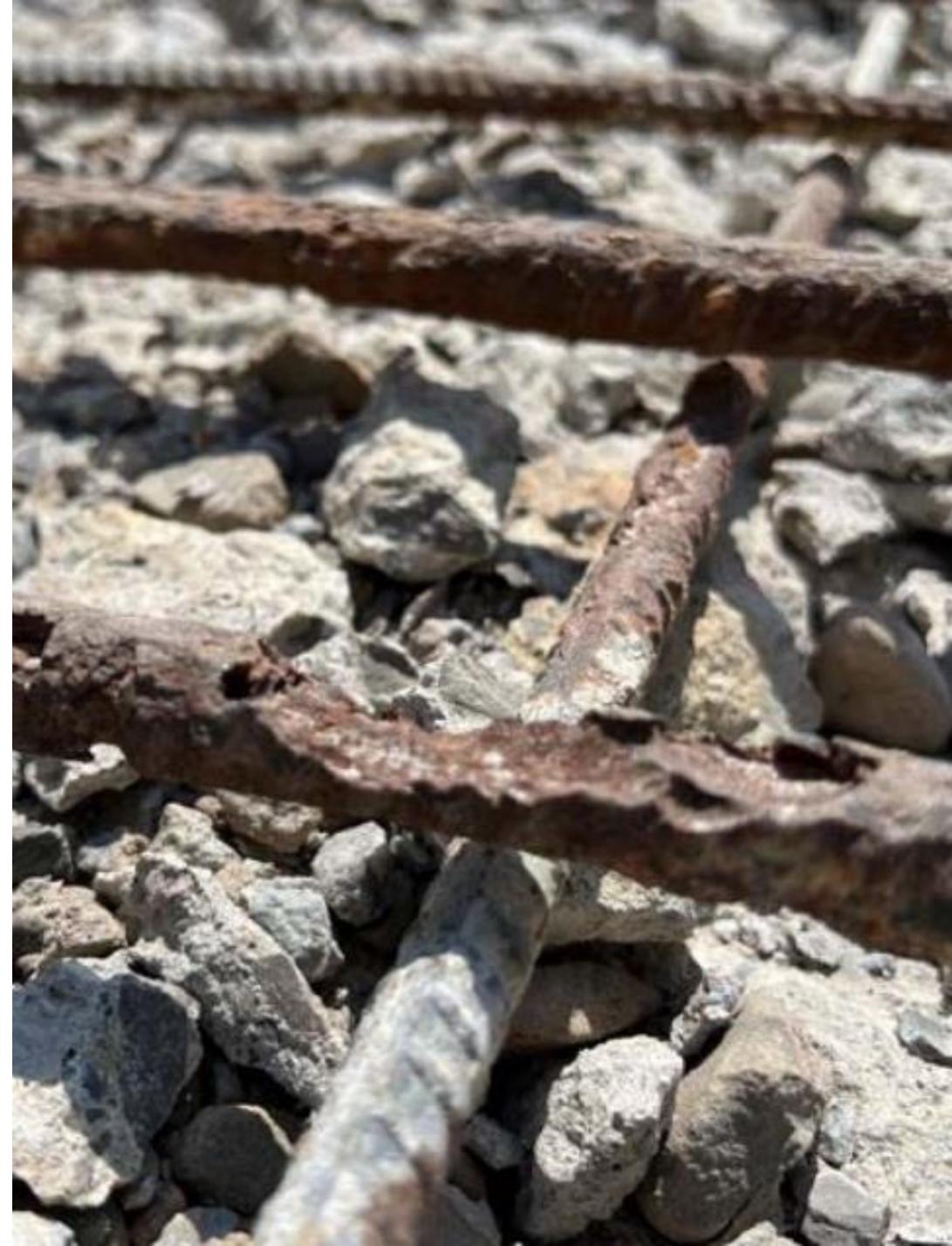


Restoration and the Learning Environment



Unique Florida Challenges

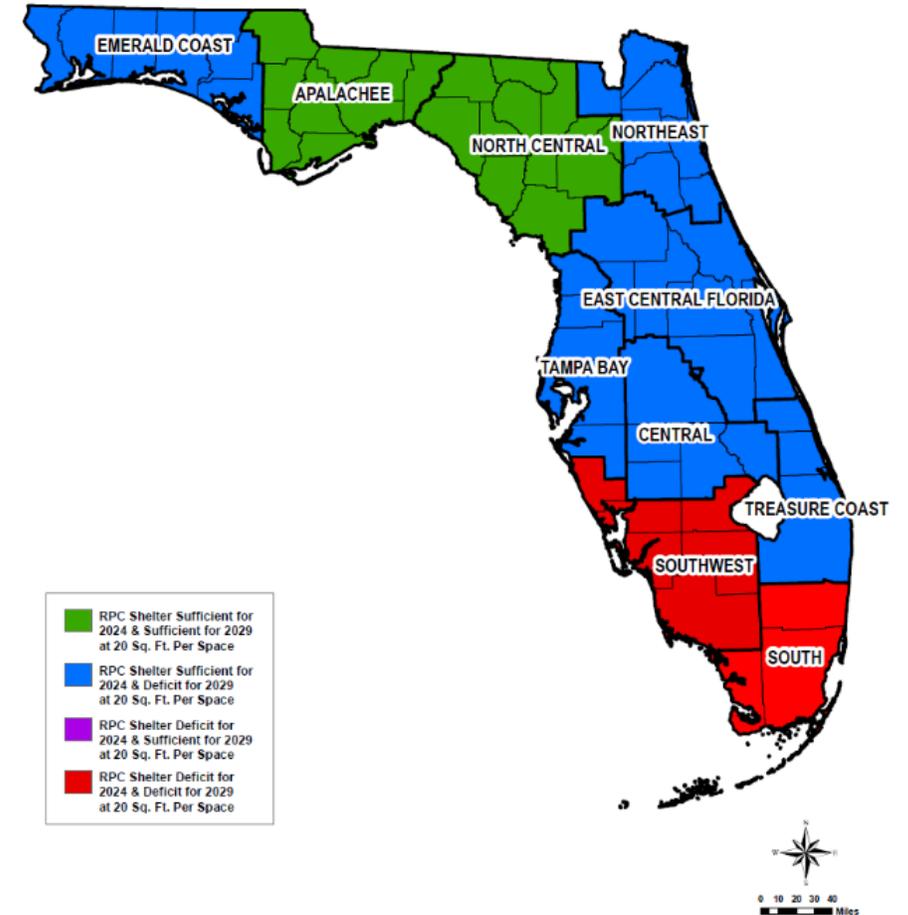
- **Environmental**
 - Moisture
 - Humidity
 - Coastal zones
 - Sulfite and Carbonation
 - Elevated temperature and UV
 - Continual exposure
- **Hurricanes and hurricane wind speeds related distress**
- **Accelerated rate of material deterioration**



Shelter Requirements and Impacts

2024 Statewide Emergency Shelter Plan

Figure 2-1. Regional Hurricane Evacuation Shelter Space Deficit / Sufficient Status of General Population Shelters



- **Division of Emergency Management**
 - Major Shortage of shelters in Florida
- **EHPA Requirements**
 - New Construction
 - Existing Buildings
- **Hurricane Mitigation Program**
 - Grant funding for existing buildings
 - Feasibility Study
 - Hardening of entire building to a single room
- **Storm Shelter Code ICC 500**
 - Design guide for Shelters
 - 250 mph!



Florida Legislative Updates



**Miami-Dade 40-Year
Recertification**



**Senate Bill 4D
Milestone/SIRS**



Senate Bill 154



State Educational Facilities



**FBC
Section 453**



**SREF/FDOE Office of
Educational Facilities**



**553.87 Florida
Statutes**

Impact of Deferred Maintenance on Your Facilities



Safety



Cost Savings

Impact of Deferred Maintenance on Your Facilities



Impact of Deferred Maintenance on Your Facilities

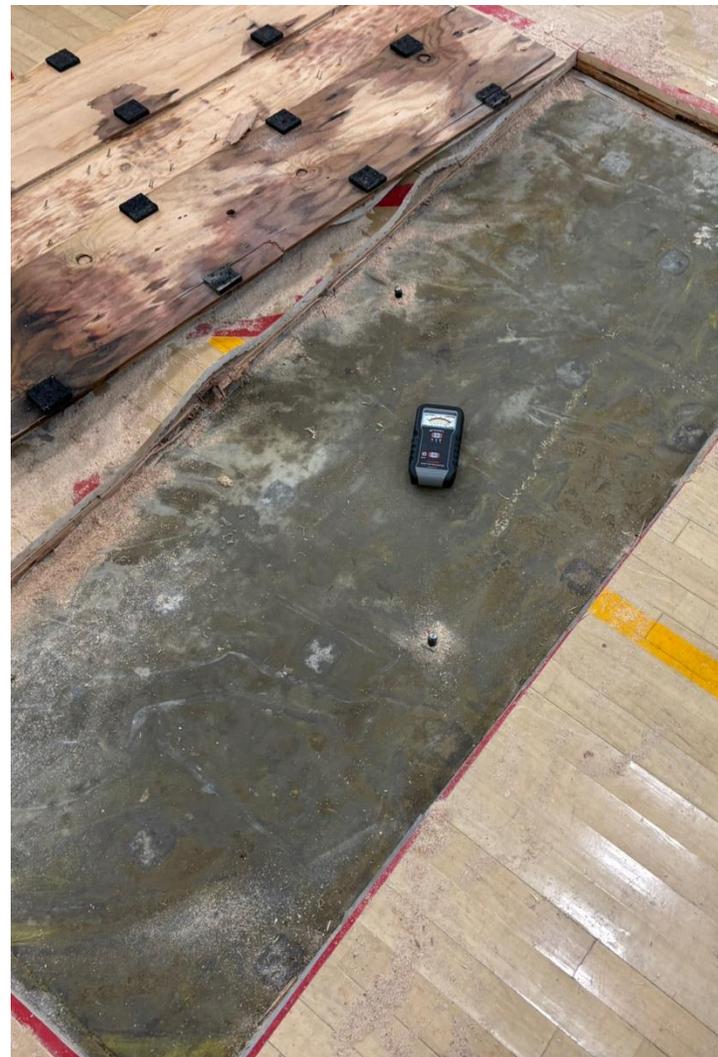
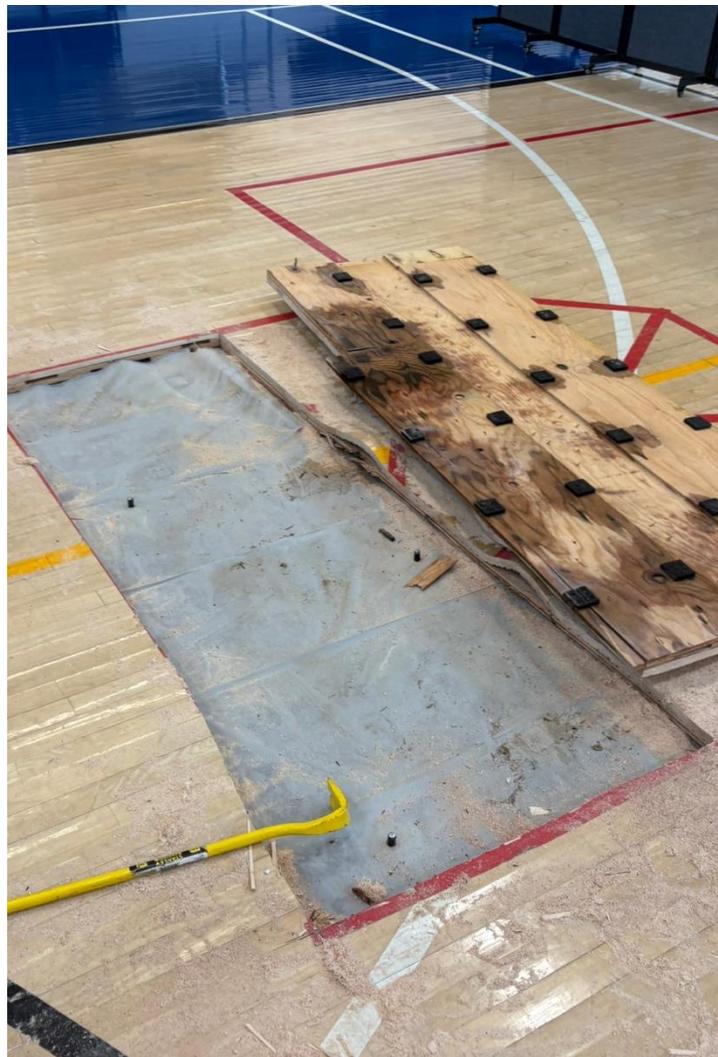


Impact of Deferred Maintenance on Your Facilities



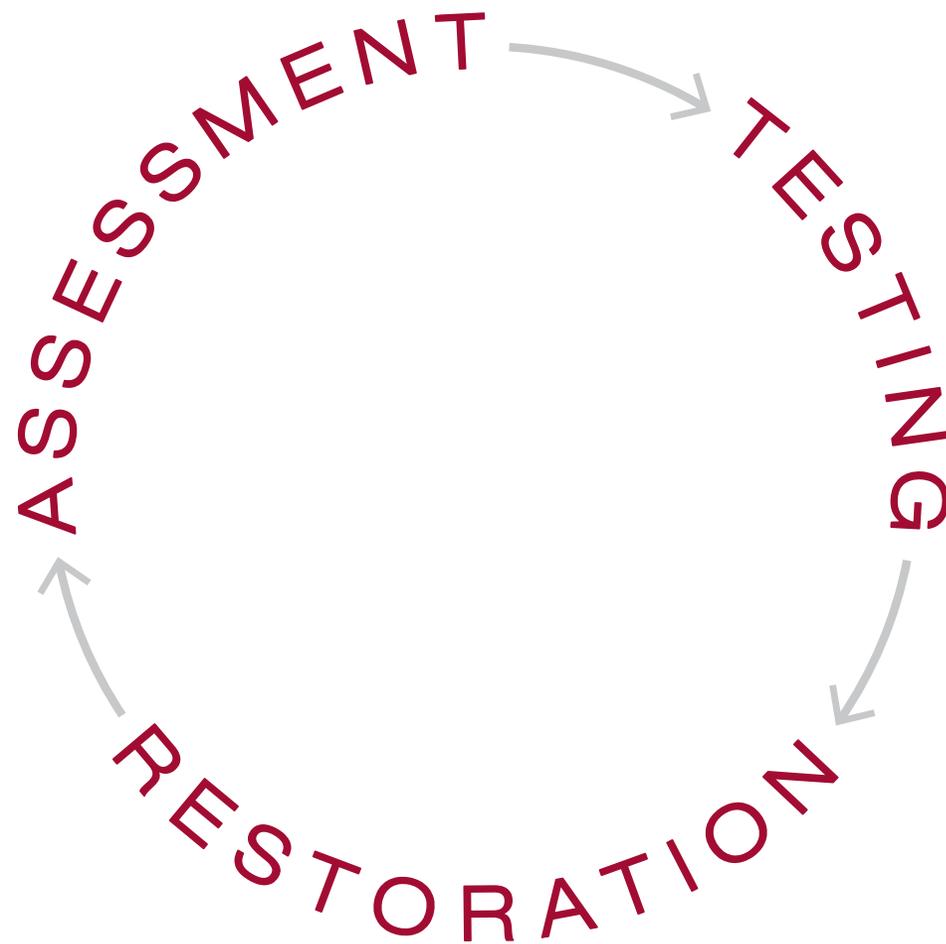


Moisture Intrusion





Three Pillars to Structural Restoration



ASSESSMENT

STEP 1

- **Governing Documents – ACI, ASTM, AISC**
 - **ACI 562-19 – concrete/masonry assessment**
 - **ASTM E2018 - PCA**
 - **ASTM E 2128 – Water intrusion**
 - **AISC Design Guide 16 – Steel assessment**
 - **USDA – Wood and Timber Condition Assessment Manual, NDS**
 - **National Roof Contractors Association (NRCA)**
 - **Historical Codes**

TESTING STEP 2

- **Governing Documents – ASTM, AAMA**
- **Field applications:**
 - **Concrete cores testing**
 - **Concrete pull testing**
 - **Water testing**
 - **Air tightness**
 - **Sealant Adhesion test**
 - **Chemical composition – sulfites & carbonation**
 - **GPR scanning**
 - **Thermal scanning**
 - **Acoustical surveys**

1 COLUMN A TYPICAL REPAIR DETAIL
SCALE: N.T.S.

2 COLUMN A CONCRETE PEDESTAL PLAN VIEW
SCALE: N.T.S.

6 WINDOW SILL REPAIR DETAIL
SCALE: N.T.S.

PERMIT SET

RESTORATION **STEP 3**

- Concrete / Steel / Building Envelope / Roofing
- Analysis and design
- Construction documents
- Material specifications
- Budgeting and cost engineering
- Contractor RFP and selection
- Permitting
- Field inspections – EOR / SI
- Quality control and supervision
- Project management
- Project close-out

1 COLUMN A TYPICAL REPAIR DETAIL
SCALE: N.T.S.

2 COLUMN A CONCRETE PEDESTAL PLAN VIEW
SCALE: N.T.S.

4 COLUMN B TYPICAL REPAIR SECTION
SCALE: N.T.S.

5 COLUMN C TYPICAL REPAIR DETAIL
SCALE: N.T.S.

6 WINDOW SILL REPAIR DETAIL
SCALE: N.T.S.

PERMIT SET

QUESTIONS?