

SURFSIDE WORKING GROUP

Florida Building Professionals Recommendations

ACEC
American Council of Engineering Companies of Florida

Founded 1916
Florida Engineering Society

AIA Florida

ASCE Florida Section

Building Officials Association of Florida

FSEA Florida Structural Engineers Association

ICRI Concrete Repair

September 2021

EXECUTIVE SUMMARY

Reacting to the tragedy of the Champlain Tower South collapse in Surfside, Structural Engineers from ACEC-FL and FES assembled a coalition of engineers and building professionals from various backgrounds, understanding that changes are needed to Florida's Building Code and inspection laws to assure the safety of all other existing structures in Florida.

This coalition includes engineers from the American Council of Engineering Companies of Florida, the Florida Engineering Society, the Florida Structural Engineers Association, the Florida Section of the American Society of Civil Engineers, and other building professionals from the International Concrete Repair Institute, the Building Officials Association of Florida, and the Florida Association of the American Institute of Architects. Together this group presents the following recommendations from the Florida building professionals.

Surfside Working Group

SUMMARY OF RECOMMENDED CHANGES

1 RECOMMENDATION

Establish statewide Mandatory "Minimum Structural Inspections" for all existing buildings over a certain size throughout Florida.

- These inspections would be similar to the current Miami-Dade Re-certification program.
- Inspection period would decrease based on proximity to more aggressive, corrosive saltwater environments.
- Inspections would be required for all non-single family residential buildings over a certain size.
- Phase 1 visual inspection conducted for all buildings in this category.
- If the Phase 1 inspection finds signs of structural damage, a more rigorous Phase 2 inspection and repair program would be triggered.
- Payment for inspections and any required repairs is the responsibility of the building Owner(s).
- Inspector's reporting responsibility is to the Building Department / Official.
- Building Department has the responsibility to require repair recommendations be acted upon by the Owner.

2 RECOMMENDATION

Establish post-occupancy "Whole Building Safety Inspection" program for all existing buildings over a certain size throughout Florida.

- The document "Ensuring the Safety of Existing Buildings" currently being prepared by the International Code Council should be adopted into the Florida Building Code.
- This document establishes periodic and milestone inspections for building structures, envelopes, electrical, and fire protection systems on existing buildings.

1 RECOMMENDATION
Mandatory Minimum Structural Inspections

All structures require periodic maintenance to extend lifespan and to ensure structural integrity from exposure to the environment. After a new building is completed, planned maintenance programs should be established by building owners to assure items such as protective coatings for concrete, paint on structural steel, expansion and control joints, and other elements crucial to maintaining the health of a building structure remain functional. These programs are not always established by all building owners.

To assure that all structures remain safe regardless of maintenance programs put in place by building owners, this group recommends that Florida mandate minimum periodic structural inspections similar to the Structural Recertification program currently required in Miami-Dade County. This mandatory program should serve as a minimum guideline that individual localities can make more stringent as they see fit.

BUILDING TYPES

All buildings not exempt from the Florida Building Code (refer to section 102.2) that exceed 10 occupants and greater than 2,000 square feet would require mandatory minimum structural inspections. Detached one- and two-family dwellings and townhouses not more than three stories above grade should also be exempt.

This is in line with the current requirements in the Miami-Dade Municipal Code for building Re-Certification (county code 8-11, f, iii)

FREQUENCY OF INSPECTION

Buildings shall have their first Structural Recertification Inspection 30 years after first occupancy, with re-inspections required every 10 years after.

For buildings closer to corrosive saltwater environments, which are more aggressive in degrading concrete and steel, first Structural Recertification Inspections shall take place 20 years after first occupancy, with re-inspections required every 7 years after. This should apply for all buildings within a minimum of 3 miles of saltwater, or as defined by the local jurisdiction.

1 RECOMMENDATION
Mandatory Minimum Structural Inspections

TYPES OF INSPECTIONS

Building Structural Recertification Inspections should involve a Phase 1 visual inspection and, if necessary, a Phase 2 inspection.

- **Phase 1 Inspection:**
  - This will be a visual observation performed under the direction of a Licensed Professional Engineer or Licensed Architect who has experience designing the structural components of buildings and inspecting structural components of existing buildings. This person will be the Professional in Responsible Charge (PIRC) of the Phase 1 Inspection.
  - While the inspector will not be able to visually inspect inaccessible areas that are either hidden or covered up, they should inspect at a minimum, garages, pool decks, roof parapets, common areas, unconditioned spaces, accessible exterior areas of the structure, including at least 33% of the balconies and handrails.
  - Locations for visual observation should be randomly chosen, and representative of entire building (Not for instance just the 1st and 2nd floor of a 6-story building).
  - Finish removal is NOT expected for Phase 1 inspections.
  - Phase 1 Inspection reports must be signed and sealed by the PIRC, and submitted to the Building Department / Official.

- **Phase 2 Inspections:**
  - Will be required if the PIRC of the Phase 1 inspection finds signs of structural distress and deems a Phase 2 inspection necessary to assure the structural health of the building.
  - The PIRC of a Phase 2 Structural Inspection must be a Licensed Professional Engineer (PE) or Licensed Architect who has a minimum of: (a) ten years of experience designing the primary structural components of buildings, and (b) a minimum of five years inspecting structural components of existing buildings of a similar size, scope, and type of construction.

1 RECOMMENDATION
Mandatory Minimum Structural Inspections

TYPES OF INSPECTIONS (CONTINUED)

- Evaluation and Repairs to any building shall conform to Chapter 4 of the Florida Building Code – Existing.
- Signs of structural distress may include, but are not limited to, excessive concrete cracking or spalling, signs of corrosion in concrete reinforcing, excessive corrosion in structural steel framing or connections, excessive deflections in structural framing, excessive settlement of foundations, water intrusion, etc.
- Phase 2 inspections may involve destructive or non-destructive testing at the PIRC's direction. Phase 2 inspections may be as extensive or as limited as necessary to fully assess damaged areas of the structure in order to either (a) confirm that the structure is safe for its intended use, or (b) recommend a program for fully assessing and repairing damaged portions of the structure.
- The PIRC of the Phase 2 inspection shall engage the services of specialists such as a Geotechnical Professional Engineer, or a concrete repair contractor to fully assess and recommend a repair program for the damaged structure.
  - Where the Phase 1 Inspection identifies deficiencies requiring multiple areas of expertise, the relevant portions of each deficiency in the Phase 2 Inspection shall be conducted by the Licensed Professional qualified by experience specific to the expertise of their engineering discipline.
- Phase 2 Inspection Reporting:
  - Report must be concurrently submitted to the owner, and the Building Official as the Authority Having Jurisdiction (AHJ).
    - Note that the PIRC's duty of care is to the Building Official as the AHJ.
    - The Building Official shall respond to the Phase 2 Inspection PIRC within 90 days to confirm receipt of report and notify the PIRC of the intent to act or not.
  - It should be noted that AHJ's may need to develop departments to receive and manage this reporting statewide.
  - Inspection reports will be maintained as part of the building's record with the City / County.
  - If the PIRC finds that the structure is degraded to the point where integrity of the structure may be jeopardized, this should be clearly indicated at the beginning of a report.
  - The final Phase 2 Inspection documents shall be signed and sealed by the PIRC and, for documents collaborated upon by multiple PE's in their area of expertise, shall be signed by all PE's contributing to the final document.

1 RECOMMENDATION
Mandatory Minimum Structural Inspections

BUILDING SIGN OFF

- Building Officials typically look for something that says a building is "safe for continued occupancy", however it is not possible for the PIRC to say the building is "safe" when there will be portions of the structure that will not be inspected due to inaccessibility. It is understood that the intent is to convey an opinion on the general structural condition of the building.
  - **Suggested Language:** "Based on the scope of the inspection and for the areas that were able to be assessed, within a reasonable degree of engineering certainty, we have not observed any conditions that would compromise the safety of the building for its intended use and occupancy. We reserve the right to amend our opinion should new information be brought to our attention."
  - PIRC's duty is to the AHJ, their scope is limited to saying there are or are not damaged conditions observed, and what the repairs should involve.
  - The AHJ currently has the duty to follow up and enforce that repairs are made.

COSTS OF INSPECTIONS & REPAIRS

The costs of inspections and repairs should remain with the building owner. While budgets for these costs are outside of the scope of this Group's review, we do recommend that all building owners should have a budget and a plan for continued building inspections and maintenance after occupancy.

2 RECOMMENDATION
Post-Occupancy Whole-Building Safety Inspections Program

All buildings require periodic maintenance to extend lifespan and to ensure integrity over the life of the building. The Mandatory Minimum Structural Inspection program outlined above will address signs of environmental degradation of the structural frame, however other components of buildings can also impact the life and safety of occupants and can degrade over time. In addition to the building structure, the electrical systems, fire-protection systems, and exterior envelope of buildings should also be inspected for damage and degradation on a periodic basis to assure the safety and integrity of those systems. The current Miami-Dade Building Recertification program includes assessments of the electrical service, emergency lighting, and the integrity of roofing and windows for that purpose.

The International Code Council (ICC), in coordination with the Florida Building Commission, is currently finalizing a document titled “Ensuring the Safety of Existing Buildings,” which addresses periodic and milestone assessments of building structures, envelopes, electrical, and fire protection systems on existing buildings. This group recommends this be adopted statewide to ensure overall building safety.

It should be noted that this document relies on the Building Code, Chapter 17 to define inspector qualifications for each of the building systems. Additional changes would be required to the Florida Building Code Chapter 17 for Florida to adopt this program.

CONCLUSION

The authors of this report began by discussing what could be done to prevent a building collapse from happening again. The National Institute of Standards and Technology is currently investigating the cause of the Champlain Tower South collapse, and their findings will not be known for some time. It is likely that a combination of factors led to the structural failure and could have included a number of issues such as a deficiency in the original design, a construction error not following design drawings, environmental degradation of the structure, or a sudden change in loading conditions.

Identification of deficiencies in a structural design that is signed and sealed by a licensed Professional Engineer could be identified prior to construction by a third party peer review. Several localities within Florida, as well as in many other states, require peer reviews for buildings over a certain size, however no such requirement exists statewide in Florida.

Since the 1980's when the Champlain Towers were constructed, Florida has established a number of laws, codes and standards to improve building safety. Florida's Threshold Inspection law was established after a building collapse in 1981 to minimize construction errors on the structural components of a building. Florida adopted a robust statewide building code in 2002 after Hurricane Andrew decimated South Florida ten years earlier, and today the Insurance Institute for Business & Home Safety (IBHS) ranks Florida first in the nation in the strength of its building code.

The recommendations in this report are focused on preserving the long-term health of buildings by assessing environmental and other degradation of structures and their systems over the life of the building. Whatever milestone is used for conducting a building inspection, building owners should not wait for damage to become evident to conduct periodic maintenance inspections. The authors of this document encourage owners to be proactive in assessing and maintaining the buildings that Floridians depend on to be reliable.