**Assessment of Inspection Reporting and Building Conditions in**

**South Florida (Miami-Dade and Broward Counties) – Phase II**

**Task Report 1: Engineer and/or Architects Feedback on SB 4-D**

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Florida Department of Business and Professional Regulation

Florida Building Commission

and

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# Background

The 2021 collapse of the Champlain Towers South in Surfside, Florida highlighted the need for a broad assessment of building inspection and maintenance practices in the State of Florida. A critical first step toward this assessment is to gain a clear understanding of the reported condition of existing structures through investigation of available building inspection reports in Miami-Dade and Broward Counties. In October of 2021, this research team (UF ESSIE) began work on a research project to achieve this objective. The scope of the project included the identification and collection of over 250 inspection reports from ten municipalities in these two counties. Analysis and reporting on this inspection data is ongoing and was completed in June 2022. In parallel with this research, a number of jurisdictions in Florida are considering or have already adopted new building age-based inspection programs or are in the process of amending their existing programs.

# Introduction and Task Description

In May 2022, new Florida legislation (Senate Bill 4-D) was passed mandating “milestone” structural inspections for condominiums and co-ops that are three or more stories. For buildings within three miles of the coast, the inspections must start when the building reaches 25 years of age, while inland inspections are to start at 30 years. In both cases, structural inspections are to occur every 10 years thereafter. The legislation also defines two phases of the structural inspection. During Phase 1, a visual inspection is carried out to assess whether there are signs of “substantial structural deterioration”. If evidence of substantial structural deterioration is seen, a Phase 2 inspection is required to conduct a more in-depth structural assessment that may include additional destructive and nondestructive testing, as needed. The purpose of the Phase 2 inspection is to fully assess areas of structural distress to confirm building is either structurally sound or to recommend repairs to restore the structural integrity of the building. The legislation calls on the Florida Building Commission to review the milestone inspection requirements and make recommendations by December 31, 2022, if any, to the Legislature to ensure inspections are sufficient to determine the structural integrity of a building.

The objective of Task 1 of this study was to obtain engineer and/or architect feedback on the milestone structural inspection requirements outlined in the new legislation for review by the Florida Building Commission in developing their required legislative response recommendations. After careful review of the legislation, a set of questions were developed for use in inspector phone interviews. In total, 15 interviews were conducted with engineers with direct experience in inspection of aged buildings

# Methodology

## Identification of Interviewees

Most of the interview candidates were identified from the data collected by the research team as part of the review of inspection reports in Phase I of the project. These data include information from over 300 reports from 40-year building safety inspections carried out in Miami-Dade and Broward Counties from 1977 to 2021, including the name of the engineer or architect who carried out the inspection. From the initial list of approximately 160 inspectors, a subset was selected based on the number of inspections for which they were responsible in the dataset and the date of the most recent inspection they conducted in the dataset. The goal was to find experienced inspectors who are likely to still be conducting inspections. Some additional interview candidates were identified through the research team’s professional network, or suggested by another interviewee.

Candidates were informed of the purpose and scope of the interview and were guaranteed anonymity with respect to the reporting of their opinions. Of the 32 inspectors contacted with a request for a phone interview, 15 responded and agreed to be interviewed. While several architects were contacted for interview, none responded. As a result, all interviewees are licensed professional engineers (P.E.s), with four having the additional certification of a Special Inspector (S.I.).

## Interview Questions

A set of interview questions was developed based on the content of the legislation and distributed to all candidates who agreed to be interviewed (see Appendix A). The first questions were to establish the relevant inspection experience of the engineers and to determine their level of familiarity with the legislation. Subsequent questions were written to solicit feedback on the definitions and processes outlined in the portion of the legislation specifically associated with the structural milestone inspections (Section 3. Section 553.899). A summary of the legislation was also provided (Appendix B). During each call, which lasted approximately 30-40 minutes, interviewees were prompted to answer most questions and to share any other opinions or experiences relevant to the content and language of the legislation; not all questions were addressed if other topics took precedence during the discussion.

# Feedback summary

Due to the conversational nature of the interviews and the resulting qualitative feedback that was received, the results are presented in an aggregated summary.

## Interviewee Experience and Familiarity with Legislation

The interviewees are all engineers with 15 to over 30 years of experience in building inspection and assessment, with some also having a structural design background. All but one have direct experience with the 40-year inspection programs in either or both Miami-Dade and Broward Counties. One engineer was part of the Surfside Working Group and two had input on recently developed guidelines for structural inspection in the City of Boca Raton. Most of the engineers have some level of familiarity with Senate Bill 4-D, with a few already conducting reserve study or milestone inspections associated with the new law.

## Non-exempt Buildings

The legislation requires milestone inspections for all condominiums and cooperatives that are three or more stories, including dwellings with three or more families. The inspections are to be initiated when the building reaches 25 years of age if it is within three miles of the coast (defined in Florida Statute s. 376.031) or 30 years inland. The interval for subsequent inspections is 10 years, regardless of their proximity to the coast.

The interviewees were asked their opinion on these definitions. The responses are summarized as follows:

* Building use: most say that the requirement for inspections should not be limited to condos and cooperatives; buildings of any use, especially dwellings, should be assessed for safety.
* Building stories: some indicate that lower-rise buildings can also have safety issues that milestone inspections could address (e.g., falling debris from spalling). One respondent thinks that the legislation should be for buildings over three stories to be consistent with the definition of a threshold building in Florida.
* Distance from the coast for earlier initial inspection:
	+ Most express an understanding for a differentiation between buildings with saltwater exposure and those inland.
	+ Some state that the most important distinction for inspections is the identification of buildings directly exposed to saltwater, especially the exposed portions (balconies, parking garages, pool decks, etc.); such buildings, or portions of buildings, that are directly on the coast or intercoastal waterway may warrant even earlier and more frequent inspections.
	+ Some question the scientific reasoning for the three-mile demarcation, while others reason that a line must be drawn so three miles is reasonable. A few suggest that the line may shift in response to additional data that is collected throughout implementation of the inspection legislation.
	+ Regardless of what the line is, a few of the respondents see a need for GIS specialists to be involved in creating maps that can be used by the various jurisdictions for identifying coastal buildings; jurisdictions do not have the resources to create these maps.
* Age of initial milestone inspection: Most feel that the ages of initiation are reasonable. A few suggest that earlier initial inspections promote less-costly maintenance rather than waiting for more concerning and costly issues to develop, with 10-20 years being the appropriate age of initial for buildings in the coastal zone. Another respondent thinks that 40 years is reasonable for a consistent statewide requirement.
* Inspection interval: most feel that 10 years is a reasonable time between inspections. A few indicated that shorter intervals may be better and would align better with other maintenance activities, such as painting, to streamline exterior building access.

Several of the respondents expressed that while they would favor different definitions of buildings and timelines for inspections, they also think that the definitions outlined in the legislation are a reasonable starting point. They anticipate that changes and additions to the buildings that are inspected and their inspections timelines, may shift over time.

## Substantial Structural Deterioration

Substantial structural deterioration is defined in the legislation as “substantial structural distress that negatively affects a building’s general structural condition and integrity. The term does not include surface imperfections such as cracks, distortion, sagging, deflections, misalignment, signs of leakage, or peeling of finishes unless the licensed engineer or architect performing the phase one or phase two inspection determines that such surface imperfections are a sign of substantial structural deterioration.” The interviewees were asked their opinion of this definition and how the term is used to differentiate between stages of the inspection process.

Most of the interviewees find the definition to be reasonable and that it is broad enough to allow the inspector to use their engineering judgement in assessing the structural condition. One engineer feels that the word “deterioration” should be replaced with “deficiency” to indicate that the structure no longer meets the code-described ability to carry load. They feel the term “deterioration” implies something that has occurred to the building over time, while some sources of structural concern may be inadequate in the initial design or construction or changes to the building use during its life. In addition, they state that significant deterioration may occur without compromising the load carrying capacity of the structural members due to the high factor of safety present in design codes. As a result, it is asserted that the definition of substantial structural deterioration or deficiency should be made relative to specific definitions of what constitutes a safe structure and cannot be determined without careful analysis of the current structural capacity and demand.

Some of the respondents have concern regarding the first part of the definition provided in the legislation, stating that surface imperfections, with common reference to spalling, are often an indication of structural deterioration or deficiency. Furthermore, such defects are often precursors to issues that may ultimately result in structural compromise. While this concern is somewhat alleviated in the second part of the definition, where the engineer may use their judgement to assess what constitutes a sign of structural deterioration, a few feel that the wording is unnecessarily circular or vague.

## Two-phase Inspections

The milestone inspection process is divided into two phases such that an in-depth, possibly more intrusive, and likely more costly inspection is only required after a qualitative visual inspection reveals signs of substantial structural deterioration. Most of the interviewees are in favor of the two-phase inspection process, with many indicating that it reflects how 40-year building safety inspections are already carried out: the engineers conduct an initial walk-through to determine if additional in-depth inspection and testing is required. A few respondents are concerned that breaking the inspection up into two phases may insert an unnecessary delay during the inspection process and even prolong the implementation of time-critical shoring or repairs. One interviewee feels that coastal buildings should automatically require a Phase 2 inspection due to the mechanisms and timelines of their deterioration.

The interviewees that are working on reserve study inspections question the relationship between the milestone inspections and the required reserve study inspections. Specific questions include whether a single inspection can fulfill both requirements and whether they can or should be conducted by different engineers (with possibly very different assessments). They also note that reserve study inspections do investigate roofing, windows, and waterproofing; which could be beneficial to include in the milestone inspections.

## Phase 1 Inspections

A Phase 1 inspection is defined as a visual inspection of the habitable and non-inhabitable areas of the building that is intended to provide a qualitative assessment of the structural conditions of the building. The definition of a Phase 1 inspection is reasonable to most of the interviewees. Several interviewees believe that visual inspection conducted by an experienced inspector is adequate to evaluate if there are signs of substantial structural deterioration but not necessarily to determine cause or extent. Some feel that additional inspection techniques, such as hammer/tap tests may be useful during this inspection phase for assessing the level of structural deterioration. One inspector expressed that a visual inspection could still require the removal of finishes as needed, which is not addressed in the legislation.

A common discussion point in many of the interviews was whether the intent of the legislation is to promote maintenance that will ultimately improve structural performance or whether it is to simply identify structural conditions that have already reached a critical level of concern. If the promotion of structural preservation through timely maintenance is desired, then some feel that a Phase 1 inspection should include assessment of components such as windows, waterproofing, and sealing.

## Phase 2 Inspections

A Phase 2 inspection is a more in-depth inspection of the structure that may involve destructive or nondestructive testing and may be as extensive or limited as necessary to fully assess areas of structural distress. The purpose of the Phase 2 inspection is either confirm that the building is structurally sound and safe for its intended use or to recommend a program for fully assessing and repairing distressed and damaged portions of the building. The inspector is encouraged to select testing locations that are the least disruptive, when possible.

### Trigger

A Phase 2 inspection is triggered if the inspector determines that there are signs of substantial structural deterioration under visual inspection (Phase 1). Some interviewees expressed the opinion that, due to liability concerns, many inspectors will call for a Phase 2 inspection if there is even the possibility of structural deterioration, regardless of whether their assessment can determine if it has reached the level of “substantial”.

There was a lot of discussion on whether a Phase 2 inspection should be required when what may be deemed to be superficial defects, such as spalling or compromised seals, are observed. These defects can be indicative of, or quickly lead to, structural issues even if they do not yet rise to the level of substantial structural deterioration. Several interviewees would like more latitude for the inspector to specify the need for a Phase 2 inspection. Some respondents question whether they can specify the need for minor repairs upon completion of the Phase 1 inspection as preventative measures without having to trigger a Phase 2 inspection.

### Description

Most interviewees find the description of the Phase 2 inspection to be adequate and reasonable. Some request more detailed language, such as the requirement to inspect “all exterior surfaces” or to specifically address foundation assessment. One respondent feels that the legislation should address whether an engineer can “fail” the building if unpermitted work is found during the inspection. Several interviewees feel that more specific language provides them backing when they find themselves in the position to convince condominium association boards of the necessity of certain evaluation methods.

### Methods

There are mixed opinions on what, if any, destructive or non-destructive testing methods are appropriate for structural assessment. A few think that visual techniques can often provide all the necessary information, while most had one or two testing methods they favor for assessment. Methods commonly used by those interviewed include

* Hammer/tap/sounding – concrete assessment
* Chipping out spalls – spall assessment, corrosion identification and assessment
* Ground penetrating radar (GPR) – rebar location and assessment
* X-Ray – rebar location and assessment
* Core samples – as-built assessment (e.g., cover thickness), chloride content testing, mix assessment
* Thermal imaging/IR cameras – moisture detection
* Geotechnical assessments

A few respondents have concern that larger engineering firms with more resources may have access to expensive testing equipment and may be more likely to recommend testing that requires it, while smaller firms may not be able to compete.

### Challenges

Almost all the interviewees cite gaining adequate access as the primary challenge to carrying out a Phase 2 inspection. Obtaining unit owner approval for removal of finishes can be a challenge and condo boards do not always provide timely access to necessary inspection locations. A few respondents mentioned the challenges of obtaining original building plans.

## Inspection Reporting

Many strongly request that consistent inspection forms be adopted in all jurisdictions. There is concern about the challenges that would be presented with a lack of consistency in reporting requirements. Most are in favor of the requirement for condo boards to provide the inspection report to all unit owners; while a few suggest redacting contact information of the engineers so that all correspondence is carried out through the board.

## Timelines and Enforcement

Several of the interviewees express concern regarding the timeline for the initial round of inspections to take place (before the end of 2024). They cite the large number of buildings that will need to be inspected versus the small number of experienced inspectors in the state. This capacity concern is further exacerbated by building departments that may not be adequately staffed to implement the new inspection program and process the inspection reports and subsequent repair permits.

The requirement for repairs to be started within a year of a Phase 2 inspection seems long to some interviewees; six months may be more reasonable with extensions requested as needed. If the repairs are more minor in nature, or to address maintenance concerns, then a year may be reasonable; however, if substantial structural deterioration is observed, repairs should start sooner, if not immediately in some cases. While more timely repairs can be specified by the engineer, a shorter timeline enforced by building departments would provide additional motivation to the owners. Another interviewee does not think that the repair process will move quickly given timelines for creating repair drawings, pulling permits, and competitive bidding as required by condominium laws. Extensions may be filed if the process takes longer than expected.

Several interviewees stressed the importance of role of the building departments in enforcing timelines for inspections and following up on inspections to ensure that owners are meeting the requirements of the legislation and that inspection and repairs are occur in a timely manner. One respondent suggested that building departments should go to each site to verify repairs and sign off that they have been completed.

Several interviewees expressed concern for inevitable cases when condo boards and building owners do not have adequate funds to perform required repairs.

## Inspector Qualifications

Most interviewees do not feel that architects have the appropriate training to carry out milestone structural inspections, especially Phase 2 inspections that may require in-depth structural analysis and design of repairs. In addition, several think that engineers should have a specific background in structural engineering to qualify as milestone inspectors. Almost all support a minimum required level of experience to qualify inspectors to carry out the inspections. This experience could be defined in number of years or number of buildings inspected. There is little support for the requirement of a Special Inspector (S.I.) certification to conduct milestone inspections; it is not relevant experience for this type of inspection and would potentially narrow an already small pool of potential inspectors.

# Summary

All interviewees have a generally positive opinion of legislation mandating a statewide building inspection program and see the benefit of providing building owners the information needed to maintain the safety of their buildings. Overall, many see the legislation, as it is currently written, as a good starting point and see the opportunity for this program to collect data on building performance that may ultimately provide more information on the most appropriate inspection onset and interval and how the proximity to the coast impacts structural deterioration. There is also recognition of the challenges associated with implementing the program on such a large scale, including a lack of qualified inspectors, inadequate resources for building department enforcement, and the potential for inconsistent reporting requirements across hundreds of jurisdictions.

Many of the interviewees appreciate that the general language in the legislation allows inspectors to apply their judgement in assessing structural condition, determining when a Phase 2 inspection is required, and specifying repairs. Some feel that additional specificity would promote more consistent inspection outcomes and offer the engineer some support in cases where condo boards are resistant to more in-depth evaluation and repairs.

# Appendix A: List of Possible Questions for Interviewees

* Have you been involved in 40-year building safety inspections (in either Miami-Dade or Broward Counties) in the past and, if so, approximately how many buildings have you inspected for building safety inspection programs?
* What is your level of familiarity with Florida Senate Bill 4D?
* Are the definitions for non-exempt buildings reasonable?
* Describe the inspection methods that are required to adequately assess the structural condition of the building, to determine the presence of substantial structural deterioration, to determine if a building is structurally sound, and to determine appropriate repair and maintenance measures to restore the structural safety of a building.
* Do you think that the definition of “substantial structural deterioration” in the legislation is clear and reasonable? If not, what changes would you suggest?
* Is the description of the phase one inspection in the legislation clear? Are the requirements for the phase one inspection clear? Are there any changes you would suggest to the description?
* Are the conditions that trigger a phase two description clearly outlined? If not, what clarifications would you suggest?
* Is the description of the phase two inspection in the legislation reasonable and clear? Are the requirements for the phase two inspection reasonable and clear? Are there any changes that you would suggest to the description?
* What assessment methods (destructive or nondestructive) could be used in a phase two inspection and under what circumstances?
* What challenges do you see to carrying out the phase two inspection as outlined in the legislation?
* What consideration or challenges do you anticipate regarding the preparation and public distribution of the full inspection report and the inspection summary as outlined in the legislation?
* Does the legislation provide adequate and clear guidelines related to enforcement of milestone inspections?
* What inspector qualifications should be required to carry out milestone inspections?
* What is your overall opinion of the legislation as currently written? What changes or additions would you suggest?

# Appendix B: Senate Bill 4D Summary Sent to Interviewees

[The full text of legislation](https://www.flsenate.gov/Session/Bill/2022D/4D/BillText/er/PDF) (See Section 3, Section 553.899 F.S. – Mandatory structural inspections for condominiums and cooperative buildings)

*Definitions:*

* Milestone inspection:
	+ Structural inspection of a building, including load-bearing walls and the primary structural members and primary structural systems by licensed architect or engineer authorized to practice in Florida
	+ The purpose is to attest to the life safety and adequacy of the structural components of the building and, to the extent reasonably possible, determine the general structural condition of the building as it affects the safety of such building, including a determination of any necessary maintenance, repair, or replacement of any structural component of the building.
* Substantial structural deterioration:
	+ Substantial structural distress that negatively affects a building’s general structural condition or integrity.
	+ Does not include surface imperfections such as cracks, distortion, sagging, deflections, misalignments, signs of leakage, or peeling of finishes unless the licensed engineering or architect determines that such surface imperfections are a sign of substantial structural deterioration.
* Phase one inspection:
	+ Visual examination of habitable and non-habitable areas of a building, including the major structural components of a building.
	+ Intended to provide a qualitative assessment of the structural conditions of the building.
	+ If no signs of substantial structural deterioration are found to any building components under visual examination, a phase two of the inspection is not required.
	+ Inspection report shall be prepared and submitted pursuant to subsection (8).
* Phase two inspection:
	+ Required if any substantial structural deterioration is identified during phase one.
	+ May involve destructive or nondestructive testing at the inspector’s direction.
	+ May be as extensive or as limited as necessary to fully assess areas of structural distress in order to confirm that the building is structurally sound and safe for its intended use and to recommend a program for fully assessing and repairing distressed and damaged portions of the building.
	+ When determining testing locations, the inspector must give preference to locations that are the least disruptive and most easily repairable while still being representative of the structure.
	+ Inspection report shall be prepared and submitted pursuant to subsection (8).

*Inspection Reports*

* Report requirements (subsection 8):
	+ Report and summary to be submitted to the condominium/cooperative association and to local jurisdiction building official
	+ Seal and signature
	+ Manner and type of inspection
	+ Identification of any substantial structural deterioration within a reasonable professional probability based on the scope of inspection, describing the extent of such deterioration
	+ Identification of any recommended repairs for noted deterioration
	+ State whether unsafe or dangerous conditions, defined in Florida Building Code, were observed
	+ Recommend any remedial or preventative repair for any items that are damaged but not substantial structural deterioration
	+ Identify and describe any items requiring further inspection
* Condominium/Cooperative association must distribute inspection summary to each unit owner and must post a copy of summary in conspicuous place. A copy of full inspection report must be published on the association’s website.

*Enforcement and Scheduling*

* Initial milestone inspection must occur by December 31 in the year required (25 for buildings within three miles of the coast or 30 years for buildings more than three miles from the coast, from the certificate of occupancy), and every 10 years thereafter.
* Condominium and cooperative associations are responsible for arranging the milestone inspection and for all costs associated with the inspection.
* For buildings with certificates of occupancy issued on or before July 1, 1992, the building’s initial milestone inspection must be performed by December 31, 2024.
* The local enforcement agency must provide written notice to the association that an inspection is required.
* The association must complete the phase one milestone inspection (determined by submission of the report by the engineer or architect) within 180 days from receiving notice that the inspection is due.
* Local enforcement agency prescribes timelines and penalties with respect to inspection requirements.
* A board of county commissioners may adopt an ordinance requiring that a condominium or cooperative association schedule or commence repairs for substantial structural deterioration within a specified timeframe after the local enforcement agency receives a phase two inspection.
* Such repairs must be commenced within 365 days after receiving such report.
* If an association fails to submit proof to the local enforcement agency that repairs have been scheduled or have commenced for substantial structural deterioration identified in a phase two inspection report within the required timeframe, the local enforcement agency must review and determine if the building is unsafe for human occupancy.