Agenda Item# 6 C-1

PALM BEACH COUNTY

BOARD OF COUNTY COMMISSIONERS

AGENDA ITEM SUMMARY

Meeting Date:	**October 19, 2021**	**[ ]**	**Consent**	**[X]**	**Regular**
		[ ]	**Workshop**	**[ ]**	**Public Hearing**

Department: **Planning, Zoning & Building**

Submitted By: **Building Division**

Submitted For: **Building Division**

I. EXECUTIVE BRIEF

Motion and Title: Staff update seeking direction: To develop a building safety evaluation program using defined parameters and requiring periodic inspections, for certain building types within Palm Beach County.

Summary: Following the devastating event that took place on June 24, 2021 at Champlain Towers located in Surfside, Florida, the Palm Beach County Building Division requested direction from the Board of County Commissioners (BCC) regarding developing and implementing a program to evaluate the safety of certain building types in Palm Beach County. At the July 13 and August 17, 2021 BCC Meeting(s), the Board directed staff to continue identifying the potential candidate structures, work with specific industry representatives, evaluate other safety evaluation programs in effect in other areas around the country, and to continue to work with the League of Cities Building Officials to explore/develop a model standard. Staff intends to present an update on status of actions taken to date and a proposed program to be implemented by the Palm Beach County Building Division. Unincorporated (AH)

Background and Policy Issue: Staff facilitated or participated in the following industry stakeholder groups and meetings on this subject:

1. The League of Cities Building Officials Committee met on July 1st, July 9th, July 16th, July 23rd, and August 5th.
    a. The League of Cities Building Officials Drafting Sub-Committee met on July 12, July 19th, and August 2nd.
2. The Building Officials Association of Florida (BOAF) Legislative Committee met on July 6th, and July 27th.
3. The Beach Condo Association met on August 12th to discuss high rise certification.
4. The International Code Council hosted an "Expert Panel Discussion" on August 17th (concurrent with the BCC Meeting) at the West Palm Beach Hilton to develop a draft model.
5. The Community Officers Association of Singer Island held a webinar on August 18th to discuss high rise structure recertification.
6. The League of Cities Drafting Sub-Committee met on September 9th to finalize the League Draft Model.
7. The Florida Building Commission Hurricane Research Advisory Committee (HRAC) met on August 27th and September 13th to review the ICC Draft Model.
8. Palm Beach North Chamber of Commerce Governmental Affairs Committee met on September 10th to discuss hi-rise safety and re-certification programs
9. The Building Code Advisory Board of Palm Beach County met on September 15th and voted unanimously to approve the League of Cities Draft Model and release it to being local adoptions.
10. County Staff hosted an industry stakeholder meeting at the Vista Center on October 8th to solicit input for County adoption.

Attachments:
1. A copy of the League Draft Model
2. Copy of the ICC Draft Model 2.1
3. Building Recertification History

Recommended By: [signature] 10/15/2021
Department Director **Date**

Approved By: [signature] 10/18/21
Assistant County Administrator **Date**

Updated 1/13/17

II. FISCAL IMPACT ANALYSIS

A. Five Year Summary of Fiscal Impact:

Fiscal Years	2021		2022		2023		2024		2025
Capital Expenditures	**0**		**0**		**0**		**0**		**0**
Operating Costs	**0**		**0**		**0**		**0**		**0**
External Revenues	**0**		**0**		**0**		**0**		**0**
Program Income (County)	**0**		**0**		**0**		**0**		**0**
In-Kind Match (County)	**0**		**0**		**0**		**0**		**0**
NET FISCAL IMPACT	**0**		**0**		**0**		**0**		**0**
# ADDITIONAL FTE POSITIONS (Cumulative)	**0**		**0**		**0**		**0**		**0**

Is Item Included In Current Budget? **Yes _ No X**

Does this item include the use of federal funds? Yes ___ No ___

Budget Account No.: **Fund 1400 Department 600 Unit 6107 Object ___**

B. Recommended Sources of Funds/Summary of Fiscal Impact:
The fiscal impact is not yet known.

C. Departmental Fiscal Review: ____________________

III. REVIEW COMMENTS

A. OFMB Fiscal and/or Contract Dev. and Control Comments:

____________________ 10-15-21
OFMB

____________________ 10/15/21
Contract Dev. and Control

B. Legal Sufficiency:

____________________ for A. Helfant 10/18/21
Assistant County Attorney

C. Other Department Review:

____
Department Director

Palm Beach County League of Cities
Building Officials Technical Subcommittee

Building Safety Inspection Program

DRAFT

August 5, 2021

PALM BEACH COUNTY BUILDING SAFETY INSPECTION PROGRAM YEARLY SCHEDULE

<u>OCTOBER – NOVEMBER - DECEMBER</u>

Building Officials must notify property owners whose buildings are subject to the Safety Inspection Program for the specified calendar year

<u>JANUARY – FEBRUARY - MARCH</u>

90-day period for engineers/threshold inspectors to return structural and electrical check list to the City/County

<u>APRIL through SEPTEMBER</u>

180-day period of time for those buildings requiring structural or electrical repairs that pose an immediate threat to life safety to complete the work (repairs that are incidental and non-life threatening can be completed at a later date)

GENERAL CONSIDERATIONS

SCOPE OF STRUCTURAL INSPECTION

The fundamental purpose of the required inspection and report is to confirm in reasonable surety that the building or structure under consideration is safe for continued use under the present occupancy. As implied by the title of this document, this is a recommended procedure, and under no circumstances are these minimum recommendations intended to supplant proper professional judgment.

Such inspection shall be for the purpose of determining the general structural condition of the building or structure to the extent reasonably possible of any part, material or assembly of a building or structure which affects the safety of such building or structure and/or which supports any dead or designed live load, and the general condition of its electrical systems pursuant to the Building Code.

In general, unless there is obvious overloading, or significant deterioration of important structure elements there is little need to verify the original design. It is obvious that this has been "time tested" if still offering satisfactory performance. Rather, it is of importance that the effects of time with respect to deterioration of the original construction materials be evaluated. It will rarely be possible to visually examine all concealed construction, nor should such be generally necessary. However, a sufficient number of typical structure members should be examined to permit reasonable conclusions to be drawn.

Visual Examination will, in most cases, be considered adequate when executed systematically. The visual examination must be conducted throughout all habitable and non-habitable areas of the building, as deemed necessary by the inspecting professional to establish compliance Surface imperfections such as cracks, distortion, sagging, excessive deflections, significant misalignment, signs of leakage, and peeling of finishes should be viewed critically as indications of possible difficulty.

Testing Procedures and quantitative analysis will not generally be required for structural members or systems except for such cases where visual examination has revealed such need, or where apparent loading conditions may be critical.

Manual Procedures such as chipping small areas of concrete and surface finishes for closer examinations are encouraged in preference to sampling and/or testing where visual examination alone is deemed insufficient. Generally, unfinished areas of buildings such as utility spaces, maintenance areas, stairwells and elevator shafts should be utilized for such purposes. In some cases, to be held to a minimum, ceilings or other construction finishes may have to be opened for selective examination of critical structural elements. In that event, such locations should be carefully selected to be least disruptive, most easily repaired and held to a minimum. In any event, a sufficient number of structural members must be examined to afford reasonable assurance that such samples are representative of the total structure.

Evaluating an existing structure for the effect of time, must take into account two basic considerations; movement of structural components with respect to each other, and deterioration of materials.

With respect to the former, volume change considerations, principally from ambient temperature changes, and possible long time deflections, are likely to be most significant. Foundation movements will frequently be of importance, usually settlement, although upward movement due to expansive soils actually may occur. However, it is infrequent in this area. Older buildings on spread footings may exhibit continual, even recent settlements if founded on deep unconsolidated fine grained or cohesive soils or from subterraneous losses or movements from several possible causes.

With very little qualification, such as rather rare chemically reactive conditions, deterioration of building materials can only occur in the presence of moisture, largely to metals and their natural tendency to return to the oxide state in the corrosive process.

In this marine climate, highly aggressive conditions exist year round. For most of the year, outside relative humidity may frequently be about 90 or 95%, while within air-conditioned buildings; relative humidity will normally be about 35 to 60%. Under these conditions, moisture vapor pressures ranging from about 1/3 to 1/2 pounds per square inch will exist much of the time. Moisture vapor will migrate to lower pressure areas. Common building materials such as stucco, masonry and even concrete, are permeable even with these slight pressures. Since most of our local construction does not use vapor barriers, condensation will take place within the enclosed walls of the building. As a result, deterioration is most likely adjacent to exterior walls, or wherever else moisture or direct leakage has been permitted to penetrate the building shell.

Structural deterioration will always require repair. The type of repair, however, will depend on the importance of the member in the structural system and degree of deterioration. Cosmetic type repairs may suffice in certain non-sensitive members such as tie beams and columns, provided that the remaining sound material is sufficient for the required function. For members carrying assigned gravity or other loads, cosmetic type repairs will only be permitted if it can be demonstrated by rational analysis that the remaining material, if protected from further deterioration can still perform its assigned function at acceptable stress levels. Failing that, adequate repairs or reinforcement will be considered mandatory.

Written Reports shall be required attesting to each required inspection. Each such report shall note the location of the structure, description of type of construction, and general magnitude of the structure, the existence of drawings and location thereof, history of the structure to the extent reasonably known, and description of the type and manner of the inspection, noting problem areas and recommending repairs, if required to maintain structural integrity.

FOUNDATION:

If all of the supporting subterranean materials were completely uniform beneath a structure, with no significant variations in grain size, density, moisture content or other mechanical properties; and if dead load pressures were completely uniform, settlements would probably be uniform and of little practical consequence. In the real world, however, neither is likely. Significant deviations from either of these two idealism are likely to result in unequal vertical movements.

Monolithic masonry, generally incapable of accepting such movements will crack. Such cracks are most likely to occur at corners, and large openings. Since, in most cases, differential shears are involved, cracks will typically be diagonal.

Small movements, in themselves, are most likely to be structurally important only if long term leakage through fine cracks may have resulted in deterioration. In the event of large movements, continuous structural elements such as floor and roof systems must be evaluated for possible fracture or loss of bearing.

Pile foundations are, in general, less likely to exhibit such difficulties. Where such does occur, special investigation will be required.

ROOFING SYSTEMS:

Sloping roofs, usually having clay or cement tiles, are of concern in the event that the covered membrane may have deteriorated, or that the tiles may have become loose. Large deflections if merely resulting from deteriorated rafters or joists will be of greater importance. Valley Flashing, and Base Flashing at roof penetration will also be matters of concern.

Flat roofs with built up membrane roofs will be similarly critical with respect to deflection considerations. Additionally, since they will generally be approaching expected life limits at the age when building recertification is required, careful examination is important. Blisters, wrinkling, "alligatoring" and loss of gravel are usually signs of difficulty. Punctures or loss of adhesion of base flashing, coupled with loose counter flashing will also signify possible problems. Windblown gravel, if excessive, and the possibility of other debris, may result in pounding, which if permitted, may become critical.

MASONRY BEARING WALLS

Random cracking, or if discernible, definitive patterns of cracking will, of course, be of interest. Bulging, sagging, or other signs of misalignment may also indicate related problems in other structural elements. Masonry walls where commonly constructed of either concrete masonry remits or scored clay tile, may have been constructed with either reinforced concrete columns tie beams, or lintels.

Steel bar joists are, of course, sensitive to corrosion. Most critical locations will be web member welds, especially near supports, where shear stresses are high, possible failure may be sudden and without warning.

Cold formed steel joists, usually of relatively light gage steel, are likely to be critically sensitive to corrosion, and are highly dependent upon at least normal lateral support to carry designed loads. Bridging and the floor or roof system itself, if in good condition, will serve the purpose.

Wood joists and rafters are most often vulnerable to "dry rot", or the presence of termites. The former (a misnomer) is most often prevalent in the presence of sustained moisture or lack of adequate ventilation. A member may usually be deemed in acceptable condition if a sharp pointed tool will penetrate no more than about one eight of an inch under moderate hand pressure. Sagging floors will most often indicate problem areas. Gypsum roof decks will usually perform satisfactorily except in the presence of moisture. Disintegration of the material and the foam-board may result from sustained leakage. Anchorage of the supporting bulb tees against uplift may also be of importance, with significant deterioration. Floor and roof systems of case in place concrete with self-centering reinforcement, such as paper backed mesh and rib-lath, may be critical with respect to corrosion of the unprotected reinforcing. Loss of uplift anchorage on roof decks will also be important if significant deterioration has taken place, in the event that dead·loads are otherwise inadequate for that purpose.

STEEL FRAMING SYSTEM

Corrosion, obviously enough, will be the determining factor in the deterioration of structural steel. Most likely suspect areas will be fasteners, welds, and the interface area where bearings are embedded in masonry. Column bases may often be suspect in areas where flooding has been experienced, especially if salt water has been involved.

Thin cracks may indicate only minor corrosion, requiring minor patching. Extensive spalling may indicate a much more serious condition requiring further investigation.

Of most probable importance will be the vertical and horizontal cracks where masonry units abut tie columns, or other frame elements such as floor slabs. Of interest here is the observation that although the raw materials of which these masonry materials are made may have much the same mechanical properties as the reinforced concrete framing, their actual behavior in the structure, however, is likely to differ with respect to volume change resulting from moisture content, and variations in ambient thermal conditions.

Moisture vapor penetration, sometimes abetted by salt laden aggregate and corroding rebars, will usually be the most common cause of deterioration. Tie columns are rarely structurally sensitive, and a fair amount of deterioration may be tolerated before structural impairment becomes important. Usually, if rebar loss is such that the remaining steel area is still about 0.0075 of the concrete area, structural repair will not be necessary. Cosmetic type repair involving cleaning, and patching to effectively seal the member, may often suffice. A similar approach may not be unreasonable for tie beams, provided they are not also serving as lintels. In that event, a rudimentary analysis of load capability using the remaining actual rebar area, may be required.

FLOOR AND ROOF SYSTEMS

Cast in place reinforced concrete slabs and/or beams and joists may often show problems due to corroding rebars resulting from cracks or merely inadequate protecting cover of concrete. Patching procedures will usually suffice where such damage has not been extensive. Where corrosion and spalling has been extensive in structurally critical areas, competent analysis with respect to remaining structural capacity, relative to actual supported loads, will be necessary. Type and extent or repair will be dependent upon the results of such investigation.

Precast members may present similar deterioration conditions. End support conditions may be important. Adequacy of bearing, indications of end shear problems, and restraint conditions are important, and should be evaluated in at least a few typical locations.

CONCRETE FRAMING SYSTEMS

Concrete deterioration will, in most cases be similarly related to rebar corrosion possibly abetted by the presence of salt-water aggregate or excessively permeable concrete. In this respect, honeycomb areas may contribute adversely to the rate of deterioration. Columns are frequently most suspect. Extensive honeycomb is most prevalent at the base of columns, where fresh concrete was permitted to segregate, dropping into form boxes. This type of problem has been known to be compounded in areas where flooding has occurred, especially involving saltwater.

In spall areas, chipping away a few small loose samples of concrete may be very revealing. Especially, since loose material will have to be removed even for cosmetic type repairs, anyway. Fairly reliable quantitative conclusions may be drawn with respect to the quality of the concrete. Even though our cement and local aggregate are essentially derived from the same sources, cement will have a characteristically dark grayish brown color in contrast to the almost white aggregate. A typically white, almost alabaster like coloration will usually indicate reasonably good overall strength. The original gradation of aggregate can be seen through a magnifying glass. Depending upon the structural importance of the specific location, this type of examination may obviate the need for further testing if a value of 2000 psi to 2500 psi is sufficient for required strength, in the event that visual inspection indicates good quality for the factors mentioned.

WATERPROOFING

Adequacy of seals and waterproofing is of concern to ensure corrosion protection. Further modifications to exposed exterior surfaces, such as decks, balconies and exposed walkways that may trap moisture and lead to deterioration should be evaluated. Areas of concentration include: 1) pool decks, rooftop gardens, green roofs, 2) sealing around vertical supports, 3) pump control room ceilings below deck, 4) roof connections at sheer walls, 5) window, doors and attachments from balconies. Seals around roof membranes, A/C stances, shear wall connections and joint connections should be examined.

WINDOWS

Window condition is of considerable importance with respect to two considerations. Continued leakage may have resulted in other adjacent damage and deteriorating anchorage may result in loss of the entire unit in the event of severe wind storms short of hurricane velocity. Perimeter sealant, glazing, seals, and latches should be examined with a view toward deterioration of materials and anchorage of units for inward as well as outward (section) pressures, most importantly in high buildings.

WOOD FRAMING

Older wood framed structures, especially of the industrial type, are of concern in that long term deflections may have opened important joints, even in the absence of deterioration. Corrosion of ferrous fasteners will in most cases be obvious enough. Dry rot must be considered suspect in all sealed areas where ventilation has been inhibited, and at bearings and at fasteners. Here too, penetration with a pointed tool greater than about one eighth inch with moderate hand pressure, will indicate the possibility of further difficulty.

LOADING

It is of importance to note that even in the absence of any observable deterioration, loading conditions must be viewed with caution. Recognizing that there will generally be no need to verify the original design, since it will have already been "time tested", this premise has validity only if loading patterns and conditions remain **unchanged.** Any material change in type and/or magnitude or loading in older buildings should be viewed as sufficient jurisdiction to examine load carrying capability of the affected structural system.

SCOPE OF ELECTRICAL INSPECTION (Main Distribution Equipment and Feeder Circuits)

The purpose of the required inspection and report is to confirm with reasonable fashion that the building or structure and all habitable and non-habitable areas, as deemed necessary by the inspecting professional to establish compliance, are safe for continued use under present occupancy. As mentioned before, this is a recommended procedure, and under no circumstances are these minimum recommendations intended to supplant proper professional judgement. Items 1-4 shall be evaluated by means of thermal imaging during time of high demand in addition to the visual inspections required below.

ELECTRIC SERVICE

A description of the type of service supplying the building or structure must be provided, stating the rating (Voltage, Amperage & Phase) of the system, if it is protected by fuses or circuit breakers, which shall be operational and functional per the equipment manufacturer's standards. Proper grounding of the service should also be visually verified. All electric rooms and utility meter locations shall have working clearance for all equipment per NEC Article 110.26 and as necessary for service personnel to perform both work and inspections. All wire ways, electric panels and associated equipment shall be in good mechanical condition, free of unused openings, and equipped with properly functioning doors and covers throughout the entire building or structure.

BRANCH CIRCUITS

Branch circuits for all common areas in the building must be clearly identified at each panel board and an evaluation of the conductors and terminations at all panels must be performed. All equipment and devices used in the building, including emergency generators, elevators, air conditioning equipment, etc. shall be effectively grounded per NEC Article 250.

CONDUIT RACEWAYS

All wiring methods present in the building must be detailed on the report and individually inspected, where reasonably accessible. All wiring methods shall be appropriate for the building type and acceptable per NEC Chapter 300 for the present use. The evaluation of each type of conduit and cable, if applicable, must be done individually. The conduits in the building should be free of erosion, and checked for considerable dents or damage that may be prone to cause damage to the conductors. The conductors and cables in all conduit systems should be chafe free, and their loads should not exceed the ratings specified per NEC Article 310. All conduit supports shall be secure and inspected for erosion.

LIFE SAFETY SYSTEMS/ FLORIDA FIRE PREVENTION CODE

Florida Statute and the scope of this document does not allow for testing of built in fire protection systems such as fire alarms and fire sprinkler systems by anyone other than properly licensed fire system contractors. These systems are required to be inspected, tested and maintained on a frequency determined by the licensing authority and as directed within the Florida Fire Prevention Code, or by local jurisdiction amendments. The compliance for ITM of these systems is under the scope and authority of the local fire official. This inspection/survey shall include a visual verification that systems have been maintained by evidence of proper documentation on site and will serve as a good check and balance that the complete building life safety system has been maintained. The inspection may also document the visual presence of emergency lighting, exit lighting and egress pathway illumination. If any concerns are presented from these observations the report shall be submitted to the local building official who shall consult with the local fire official for remedial action.

STRUCTURAL SAFETY INSPECTION REPORT FORM

Inspection Firm or Individual Name:____

Address: ____

Telephone Number:____

Inspection Commenced Date: _____________________Inspection Completed Date:____________________

_____No Repairs Required

_____ Repairs are required as outlined in the attached inspection report

_____ Immediate Repairs Needed, restricted use

_____ Building Unsafe

Engineer/Architect Name: _____________________________________

License Number ____

I am qualified to practice in the discipline in which I am hereby signing. I affirm that I do not have an affiliation or other financial interest in the subject building(s).

Seal

Signature________________________________Date:________________

This report has been based upon the minimum inspection guidelines for building safety inspection developed by the Palm Beach County League of Cities Building Officials Subcommittee. To the best of my knowledge and ability, this report represents an accurate appraisal of the present condition of the structure, based upon careful evaluation of observed conditions, to the extent reasonablypossible

Consultant:

DESCRIPTION OF STRUCTURE		
a. Name on Title:		
b. Street Address:		
e. Legal Description:		
d. Owner's Name:		
e. Owner's Mailing Address:		
f. Folio Number of Property on which Building is Located:		
g. Building Code Occupancy Classification:		
h. Present Use:		
i. General Description, Type of Construction:	Square Footage:	Number of Stories:
j. Special Features:		
k. Additional Comments:		

l. Additions to original structure:

2. PRESENT CONDITION OF STRUCTURE
a. General alignment (Note: good, fair, poor, explain if significant):
1. Bulging:
2. Settlement:
3. Deflections:
4. Expansion:
5. Contraction:
b. Portion showing distress (Note, beams, columns, structural walls, floor, roofs, other):
c. Surface conditions - describe general conditions of finishes, noting cracking, spalling, peeling, signs of moisture penetration and stains:
d. Cracks - note location in significant members. Identify crack size as HAIRLINE if barely discernible; FINE if less than 1 mm in width; MEDIUM if between 1 and 2 mm width; WIDE if over 2 mm:

e. General extent of deterioration - cracking or spalling of concrete or masonry, oxidation of metals; rotor borer attack in wood:
f. Previous patching or repairs:
g. Nature of present loading indicate residential, commercial, other estimate magnitude:
h. Protection from undermining

3. INSPECTIONS
a. Date of notice of required inspection:
b. Date(s) of actual inspection:
c. Name and qualifications of individual submitting report:
d. Description of laboratory or other formal testing, if required, rather than manual or visual procedures:
e. Structural repair-note appropriate line:
1. None required:
2.Required (describe and indicate acceptance):

4. SUPPORTING DATA

a. ____________________________ sheet written data

b. ____________________________ photographs

c. ____________________________ drawings or sketches

5. MASONRY BEARING WALL = Indicate- good, fair, poor on appropriate lines:
a. Concrete masonry units:
b. Clay tile or terra cota units:
c. Reinforced concrete tie columns:
d. Reinforced concrete tie beams:
e. Lintel:
f. Other type bond beams:
g. Masonry finishes -exterior:
1. Stucco:
2.Veneer:
3. Paint only:
4. Other (describe):
h. Masonry finishes - interior:
1. Vapor barrier:
2. Furring and plaster:
3. Paneling:
4. Paint only:
5. Other (describe):
i. Cracks:
1. Location - note beams, columns, other:
2. Description:
j. Spalling:
1. Location- note beams, columns, other:
2. Description:
k. Rebar corrosion-check appropriate line:
1. None visible:
2. Minor-patching will suffice:

3. Significant-but patching will suffice:
4. Significant-structural repairs required:
1. Samples chipped out for examination in spall areas:
1. No:
2. Yes - describe color, texture, aggregate, general quality:

6. FLOOR ANO ROOF SYSTEM AND WATERPROOFING
a. Roof:
1. Describe (flat, slope, type roofing, type roof deck, condition):
2. Note water tanks, cooling towers, air conditioning equipment, signs, other heavy equipment and condition of support:
3. Note types of drains and scuppers and condition:
b. Floor system(s):
1. Describe (type of system framing, material, spans, condition):
c. Inspection - note exposed areas available for inspection, and where it was found necessary to open ceilings, etc. for inspection of typical framing members:
d. Waterproofing Have finishes been added after construction? ____ Yes ______ No For waterproofing inspection findings, add Supplemental Inspection Report

7. STEEL FRAMING SYSTEM

a. Description:

b. Exposed Steel- describe condition of paint and degree of corrosion:

c. Concrete or other fireproofing - note any cracking or spalling and note where any covering was removed for inspection:

d. Elevator sheave beams and connections, and machine floor beams - note condition:

8. CONCRETE FRAMING SVSTEM

a. Full description of structural system:

b. Cracking:

1. Not significant:

2. Location and description of members affected and type cracking:

c. General condition:

d. Rebar corrosion - check appropriate line:

1. None visible:

2. Location and description of members affected and type cracking:

3. Significant but patching will suffice:

4. Significant - structural repairs required (describe):
e. Samples chipped out in spall areas:
1. No:
2. Yes, describe color, texture, aggregate, general quality:

9.WINDOWS
a. Type (Wood, steel, aluminum, jalousie, single hung, double hung, casement, awning, pivoted, fixed, other):
b. Anchorage- type and condition of fasteners and latches:
c. Sealant - type of condition of perimeter sealant and at mullions:
d. Interiors seals - type and condition at operable vents:
e. General condition:

10. WOOD FRAMING
a. Type - fully describe if mill construction, light construction, major spans, trusses:
b. Note metal fitting i.e., angles, plates, bolts, split pintles, other, and note condition:
c. Joints - note if well fitted and still closed:
d. Drainage - note accumulations of moisture:
e. Ventilation - note any concealed spaces not ventilated:
f. Note any concealed spaces opened for inspection:
11. Areas of Other Concerns:

ELECTRICAL SAFETY INSPECTION REPORT FORM

Inspection Firm or Individual Name:______________________________

Address:______________________________

Telephone Number:____________________

Inspection Commenced Date:____________ Inspection Completed Date:____________

_____ No Repairs Required

_____ Repairs are required as outlined in the attached inspection report

_____ Immediate Repairs Needed, restricted use

_____ Building Unsafe

Engineer/Architect Name: ______________________________

License Number: ______________________________

I am qualified to practice in the discipline in which I am hereby signing. I affirm that I do not have an affiliation or other financial interest in the subject building(s).

SEAL

Signature______________________ Date:______________

This report has been based upon the minimum inspection guidelines for building safety inspection developed by the Palm Beach County League of Cities Building Officials Subcommittee To the best of my knowledge and ability, this report represents an accurate appraisal of the present condition of the electrical system, based upon careful evaluation of observed conditions, to the extent reasonably possible

Consultants:

DESCRIPTION OF STRUCTURE

a. Name on Title:

b. Street Address:

c. Legal Description:

d. Owner's Name:

e. Owner's Mailing Address:

f. Folio Number of Property on which Building is Located:

g. Building Code Occupancy Classification:

h. Present Use:

i. General Description, Type of Construction: Square Footage: Number of Stories:

j. Special Features:
k. Additional Comments:

MINIMUM GUIDELINES AND INFORMATION FOR RECERTIFICATION OF ELECTRICAL SYSTEMS OF TWENTY-FIVE (25) / THIRTY-FIVE (35) YEAR OLD STRUCTURES

1. ELECTRIC SERVICE

1. Rating: Amperage ☐ Fuses ☐ Breakers ☐

2. Phase: Three Phase ☐ Single Phase ☐ Needs Repair ☐

3. Condition: Good ☐ Fair ☐

4. Service Disconnects were exercised /cycled Y or N

Thermal Imaging Summary: (attach report as appendix to this form)

Additional Comments:

2. ELECTRIC ROOMS, METER ROOMS AND TRANSFORMER LOCATIONS

1. Clearances: Good ☐ Fair ☐ Requires Correction ☐

Thermal Imaging Summary: (attach report as appendix to this form)

Additional Comments:

3. WIREWAYS

Location: Good ☐ Requires Repair ☐

Taps and Fill: Good ☐ Requires Repair ☐

Thermal Imaging Summary: (attach report as appendix to this form)

Additional Comments:

4. ELECTRICAL PANELS

Location:	Good	☐	Needs Repair	☐
1. Panel #( )	Good	☐	Needs Repair	☐
2. Panel #( )	Good	☐	Needs Repair	☐
3. Panel #( )	Good	☐	Needs Repair	☐
4. Panel #( )	Good	☐	Needs Repair	☐

Thermal Imaging Summary: (attach report as appendix to this form)

Additional Comments:

5. BRANCH CIRCUITS:

1. Identified:	Yes	☐	Must be identified	☐		
2. Conductors:	Good	☐	Deteriorated	☐	Must be replaced	☐

Comments:

6. **MAIN SERVICE GROUND AND GROUNDING ELECTRODE:**

Good ☐ Repairs Required ☐

Comments:

7. **GROUNDING OF EQUIPMENT:**

Good ☐ Repairs Required ☐

Comments:

8. **SERVICE CONDUITS/RACEWAYS <u>(AND SUPPORTS)</u>:**

Good ☐ Repairs Required ☐

Comments:

9. **SERVICE CONDUCTOR AND CABLES:**

Good ☐ Repairs Required ☐

Comments:

10. TYPES OF WIRING METHODS:

Conduit Raceways:	Good	☐	Repairs Required	☐
Conduit PVC:	Good	☐	Repairs Required	☐
NM Cable:	Good	☐	Repairs Required	☐
BX Cable:	Good	☐	Repairs Required	☐

11. FEEDER CONDUCTORS:

Good ☐ Repairs Required ☐

Comments:

12. EMERGENCY LIGHTING:

Good ☐ Repairs Required ☐

Comments:

13. BUILDING EGRESS ILLUMINATION:

Good ☐ Repairs Required ☐

Comments:

NOTE pertaining to the following Items # 14, 15, 16 and 17:

Florida Statute and the scope of this document does not allow for testing of built in fire protection systems such as fire alarms and fire sprinkler systems by anyone other than properly licensed fire system contractors. These systems are required to be inspected, tested and maintained on a frequency determined by the licensing authority and as directed within the Florida Fire Prevention Code, or by local jurisdiction amendments. The compliance for ITM of these systems is under the scope and authority of the local fire official. This inspection/survey shall include a visual verification that systems have been maintained by evidence of proper documentation on site and will serve as a good check and balance that the complete building life safety system has been maintained. The inspection may also document the visual presence of emergency lighting, exit lighting and egress pathway illumination. If any concerns are presented from these observations the report shall be submitted to the local building official who shall consult with the local fire official for remedial action.

14. FIRE ALARM SYSTEM:

Good ☐ Repairs Required ☐

Comments:

15. SMOKE DETECTORS:

Good ☐ Repairs Required ☐

Comments:

16. EXIT LIGHTS:

Good ☐ Repairs Required ☐

Comments:

17. EMERGENCY GENERATOR:

Good ☐ Repairs Required ☐

Comments:

Load Bank Test Summary (attach report as appendix to this form):

18. WIRING IN OPEN OR UNDER COVER PARKING GARAGE AREAS:

Good ☐ Repairs Required ☐

Comments:

19. OPEN OR UNDERCOVER PARKING GARAGE AREAS AND EGRESS ILLUMINATION:

Good ☐ Repairs Required ☐

Comments:

20. SWIMMING POOL WIRING:

Good ☐ Repairs Required ☐

Comments:

21. WIRING TO MECHANICAL EQUIPMENT:

Good ☐ Repairs Required ☐

Comments:

22. ADDITIONAL COMMENTS:

INTERNATIONAL
CODE
COUNCIL®

Ensuring the Safety of Existing Buildings in Florida:

Codes, Standards, and Inspections (Draft 2.1)

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Ensuring the Safety of Existing Buildings in Florida: Codes, Standards, and Inspections (Draft 2.1)

BACKGROUND

In addition to Florida specific provisions, the Florida Building Code (FBC) is based on national consensus standards and the model International Codes (I-Codes) developed by the International Code Council (ICC) through a national voluntary consensus process with input from leading experts from the private and public sectors. Florida maintains its building and safety codes through revisions and adaptations of updated construction standards on a three-year cycle.

Since the collapse of Champlain Towers South 12-story condominium, in Surfside, Florida; the International Code Council has been working with Building Safety Professionals, and other leaders to support efforts to assure that older existing buildings remain safe. Together with the Building Owners and Managers Association (BOMA), and the National Institute of Building Sciences (NIBS) a panel of subject matter experts from throughout the nation was convened in West Palm Beach on August 17, 2021. The purpose was to share knowledge and recommendations on how communities monitor the safety of existing buildings, what guidance already exists, and how future catastrophic events may be avoided.

Takeaways and recommendations from the meeting listed below were shared with the Florida Building Commissions, Hurricane Research Advisory Committee on August 27, in order to gain additional feedback.

- Communities are seeking better guidance for inspections of existing buildings, depending on local risk criteria.
- Owners need to keep building maintenance records available for inspection.
- More accountability is necessary; dangerous conditions must be reported to code (building) officials immediately.
- Timing and frequency of post Certificate of Occupancy (CO) inspections must be considered.
- A uniform statewide property maintenance standard administered by local governments is critical for public safety and health of the real estate market.
- Continuous education and training for building managers, Code (Building) Officials and the building community is important.
- An analysis of existing and new technologies available to implement changes would provide great value to all stakeholders.

RECOMMENDATON

Adoption of a property maintenance standard for existing buildings.

Maintaining the structural integrity of a building throughout its service life is of critical importance to the public's health and safety. The *International Property Maintenance Code* (IPMC) requires that both the building and the service systems be maintained in good repair, and structurally sound. Currently the Code Council with input from stakeholders, is developing an appendix guide on the best practices for inspection of existing buildings. The IPMC is a ready-made solution for Florida or individual jurisdictions that are considering the adoption of procedures to assess the safety of existing buildings.

Since a one size inspection protocol would not be the right solution for Florida, this guide is being developed based on Florida specific risks. The geographic location of the building, regional climate, risk of flooding, areas of very high wind, poor soil conditions, the presence of salt air and other risk factors are factors being considered to focus on only the right existing buildings. The purpose of the Existing Building Inspection Guide, Appendix C, is to give communities an option to adopt an existing building monitoring program that takes a reasonable approach to ensure buildings are safe for continued use and occupancy. It also provides jurisdictions the choice and flexibility of how to administer the program with support from design professionals.

The key criteria of attached Working Draft 2.1 of Appendix C includes site specific inspection requirements based on the location of the building, including:

- The Use Classification of buildings and the required inspections based on the risk categories in the ***International Building Code/FBC*** in addition to and environmental risk exposures.
- Three phases of periodic inspections with specified frequency intervals over the service life of the building, performed by the following:
  - » **Maintenance inspection** performed by the owner or owner's authorized representative
  - » **Periodic inspection** performed by a Registered Design Professional
  - » **Milestone special inspection** performed by a Registered Design Professional who is qualified and a registered engineer in the system discipline being inspected in accordance with the professional registration laws in the state of Florida
- Details of each of the required inspections, including reference documents to be used for the inspections.
- Roles and responsibilities of all parties, including the Code (Building) Official.
- Inspection records, including sample inspection report forms.
- Resource materials providing additional information and guidance.

COMMENTS

The Code Council received comments from the Hurricane Research Advisory Committee and the following individuals. All comments have been reviewed and considered. Changes based on most of the comments are reflected in this latest draft. A few comments warrant further review and input from the Hurricane Research Advisory Committee. Finally, this draft reflects feedback that is being obtained from jurisdictions throughout Florida and subject matter experts interested in this effort as well as comments made at the September 13, 2021 meeting of the FBC – HRAC committee.

Written comments have been received from:

- Jim Schock, Chair
- Jaime Gascon, P.E.
- Don Whitehead, AIA
- Dan Lavrich, P.E.
- Angela Schedel, Ph.D.,P.E.
- David Feist
- Lawrence Murphy, CBO
- Rick De La Guardia, B.S.A.E., E.I., M. ASCE
- Florida Building Codes and Standards staff

Appendix C
Existing Building Safety Inspection Guide
(Working Draft 2.1)

1. INTRODUCTION AND PURPOSE

Introduction

Maintaining the structural integrity of the building throughout its service life is of paramount importance. The ***International Property Maintenance Code*** **(IPMC)** requires both the interior and exterior of the building to be maintained in good repair and structurally sound so as to not pose a threat to public health, safety and welfare. Specifically, where the nominal strength of a structural member is exceeded by nominal loads, the load effects or the required strength, the building is determined to be unsafe and shall be required to be repaired or replaced to comply with the IBC/FBC. There are many such examples of unsafe conditions in the IPMC for both structural and non-structural considerations.

In order to assess whether an unsafe condition exists, this appendix provides guidance and evaluation criteria for the regular inspection of structural safety as well as the building envelope (including the roof) and the electrical system.

An important criterion for the establishment of the necessary inspection frequency is the location where the building is sited. All buildings are not considered the same even where their occupancy, size, and height are similar. Each building must be considered unique based on its site location due to concerns in response to the following:

- Occupancy and Use Classification
- Risk Categories
- Environmental influences such as humidity, temperature, presence of salt air and chlorides
- Areas which are subject to frequent flooding
- Areas of very high wind
- Site soil conditions such as questionable soils, expansive soils, ground water table, compacted fill, and rock strata

Purpose

The fundamental purpose of an Existing Building Inspection program is to confirm that the building or structure under consideration is safe for continued use under the present occupancy. As implied by the title of this document, this is a recommended program, and under no circumstances are these minimum recommendations intended to supplant proper professional judgment.

Structural

Such inspection shall be for the purpose of determining the general condition of the building or structure to the extent reasonably possible of any part, material or assembly of a building or structure which affects the safety of such building or structure and/or which supports any dead or designed live load, and the general condition of its electrical systems.

The effects of time with respect to deterioration of the original construction materials must also be evaluated.

Visual examination will, in most cases, be considered adequate when executed systematically. The visual examination must be conducted throughout all habitable and non-habitable areas of the building, as deemed necessary by the inspecting professional to establish compliance. Surface imperfections such as cracks, spalling and signs of corrosion, distortion, sagging, excessive deflections, significant misalignment, signs of leakage, and peeling of finishes should be viewed critically as indications of possible concern. Adequate roof anchorage of mechanical system components and other roof top components such as solar panels are included in this visual examination.

Testing procedures and quantitative analysis will not generally be required except for such cases where visual examination has revealed such need, or where apparent loading conditions may be critical.

Manual procedures such as chipping small areas of concrete and surface finishes for closer examinations are encouraged in preference to sampling and/or testing where visual examination alone is deemed insufficient.

Generally, unfinished areas of buildings such as utility spaces, maintenance areas, stairwells and elevator shafts should be utilized for such purposes. In some cases, to be held to a minimum, ceilings or other construction finishes may have to be opened for selective examination of critical structural elements. A sufficient number of structural members must be examined to afford reasonable assurance that such are representative of the total structure.

When evaluating an existing structure for the effect of time, two basic elements must be considered:

1. Movement of structural components with respect to each other
2. Deterioration of materials

With respect to the former, volume change considerations, principally from ambient temperature changes, and possible long-time deflections, are likely to be most significant. Foundation movements will frequently be of importance (usually settlement) although upward movement due to expansive soils may occur.

Older buildings on spread footings may exhibit continual settlements if constructed on deep, unconsolidated, fine-grained or cohesive soils or from subterraneous losses or movements.

Structural deterioration will always require repair. The type of repair, however, will depend on the importance of the member in the structural system and degree of deterioration. Cosmetic repairs may suffice in certain non-sensitive members such as tie beams and columns, provided that the remaining sound material is sufficient for the required function. For members carrying assigned gravity or other loads, cosmetic repairs will only be permitted if it can be demonstrated by rational analysis that the remaining material, if protected from further deterioration, can still perform its assigned function at acceptable stress levels. Failing that, adequate repairs or reinforcement will be considered mandatory. Such repairs require the notification of the Code (Building) Official and the issuance of a permit to perform the repairs.

Electrical

Structural problems in existing buildings may have catastrophic consequences. Just as important are potential hazards to building occupants caused by electrical deficiencies. These are often qualified under the following three headings:

1. Electric service
2. Branch circuits and raceways
3. Emergency lighting, essential power and fire alarm systems.

As such, they warrant special attention in terms of periodic inspections.

For additional information on structural and electrical evaluations, see the "Resource Material" at the end of this appendix.

2. SCOPE/RESPONSIBILITIES

The owner or owner's authorized representative of the building bears the responsibility for the maintenance of the building and for maintaining public safety.

Registered Design Professionals shall be used when required by Table 4.1 and Section 5.

The owner or owner's authorized representative is responsible for the orderly maintenance of buildings. Maintenance for the purpose of this appendix refers to all measures for maintenance of the planned condition or the assurance of unrestricted usability of a building. Servicing and regular inspections are essential elements of maintenance.

The Code (Building) Official shall ensure all existing buildings are maintained by the owner or owner's authorized representative in accordance with the *International Property Maintenance Code* and this appendix.

The inspections required by Table 4.1 are in addition to those required by the applicable laws, ordinances and statutes.

3. TERMS

APPROVED AGENCY. An established and recognized agency that is regularly engaged in conducting tests, furnishing inspection services or furnishing product certification where such agency has been approved by the Code (Building) Official.

CODE (BUILDING) OFFICIAL. The officer or other designated authority charged with the administration and enforcement of this code, or a duly authorized representative.

DURABILITY. The condition of building elements or individual construction components that ensure the load-bearing capacity and the usability during the whole service life when subjected to reasonable maintenance.

EXTREME RAINFALL AREAS. (under development)

EXTREME SEISMIC AREAS. (under development)

EXTREME WIND AREA. Include areas where the ultimate design wind speed is 140 mph or greater and in Exposure Category D and over 150 mph in every exposure category.

LIFETIME. The actual time during which a building or bearing element is structurally safe.

OWNER. Any person, agent, operator, entity, firm or corporation having any legal or equitable interest in the property; or recorded in the official records of the state, county or municipality as holding an interest or title to the property; or otherwise having possession or control of the property, including the guardian of the estate of any such person, and the executor or administrator of the estate of such person if ordered to take possession of real property by a court.

REGISTERED DESIGN PROFESSIONAL. An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed. This includes any registered design professional so long as they are practicing within the scope of their license, which includes those licensed under Chapters 471 and 481, Florida Statutes.

REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A registered design professional engaged by the owner or the owner's authorized agent to review and coordinate certain aspects of the project, as determined by the building official, for compatibility with the design of the building or structure, including submittal documents prepared by others, deferred submittal documents and phased submittal documents.

RISK CATEGORY. A categorization of buildings and other structures for determination of flood, wind, and earthquake loads based on the risk associated with unacceptable performance.

TABLE 1604.5
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY	NATURE OF OCCUPANCY
1	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to: ▪ Agricultural facilities. ▪ Certain temporary facilities. ▪ Minor storage facilities.
2	Buildings and other structures, including screen enclosures, except those listed in Risk Categories 1, 3 and 4.
3	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to: ▪ Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300. ▪ Buildings and other structures containing one or more public assembly spaces, each having an occupant load greater than 300 and a cumulative occupant load of the public assembly spaces of greater than 2,500. ▪ Buildings and other structures containing Group E or Group I-4 occupancies or combination thereof, with an occupant load greater than 250. ▪ Buildings and other structures containing educational occupancies for students above the 12th grade with an occupant load greater than 500. ▪ Group I-2, Condition 1 occupancies with 50 or more care recipients. ▪ Group I-2, Condition 2 occupancies not having emergency surgery or emergency treatment facilities. ▪ Group I-3 occupancies. ▪ Any other occupancy with an occupant load greater than 5,000.[a] ▪ Power-generating stations, water treatment facilities for potable water, wastewater treatment facilities and other public utility facilities not included in Risk Category 4. ▪ Buildings and other structures not included in Risk Category 4 containing quantities of toxic or explosive materials that: » Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the *FFPC*; and » Are sufficient to pose a threat to the public if released.[b]

TABLE 1604.5
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY	NATURE OF OCCUPANCY
4	Buildings and other structures designated as essential facilities, including but not limited to: ▪ Group I-2, Condition 2 occupancies having emergency surgery or emergency treatment facilities. ▪ Ambulatory care facilities having emergency surgery or emergency treatment facilities. ▪ Fire, rescue, ambulance and police stations and emergency vehicle garages ▪ Designated earthquake, hurricane or other emergency shelters. ▪ Designated emergency preparedness, communications and operations centers and other facilities required for emergency response. ▪ Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category 4 structures. ▪ Buildings and other structures containing quantities of highly toxic materials that: ▪ Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the *International Fire Code*; and ▪ Are sufficient to pose a threat to the public if released.b ▪ Aviation control towers, air traffic control centers and emergency aircraft hangars. ▪ Buildings and other structures having critical national defense functions. ▪ Water storage facilities and pump structures required to maintain water pressure for fire suppression.

[a] For purposes of occupant load calculation, occupancies required by Table 1004.5 to use gross floor area calculations shall be permitted to use net floor areas to determine the total occupant load.

[b] Where approved by the building official, the classification of buildings and other structures as Risk Category 3 or 4 based on their quantities of toxic, highly toxic or explosive materials is permitted to be reduced to Risk Category 2, provided that it can be demonstrated by a hazard assessment in accordance with Section 1.5.3 of ASCE 7 that a release of the toxic, highly toxic or explosive materials is not sufficient to pose a threat to the public.

SERVICEABILITY. The property of a building or individual construction elements of being useable as planned and according to the specified conditions.

SERVICE LIFE. The planned period for which a building or individual construction elements can be used with regular maintenance, but without any significant restoration.

SPECIAL BUILDING ENVIRONMENTAL FACTORS (SBEF). Special building environmental factors are areas where natural conditions can impact a buildings performance or safety. Special attention must be paid to proper building maintenance and regular inspection, as specified in Table 4.1. SBEF areas include the following **(Florida specific risk data under development, see below)**:

WIND-BORNE DEBRIS REGION. Areas within hurricane-prone regions located:

1. Within 1 mile (1.61 km) of the coastal mean high water line where the ultimate design wind speed, V_{ult}, is 130 mph (58 m/s) or greater; or
2. In areas where the ultimate design wind speed is 140 mph (63.6 m/s) or greater.

For ***Risk Category*** II buildings and structures and ***Risk Category*** III buildings and structures, except health care facilities, the wind-borne debris region shall be based on Figure 1609.3.(1). For ***Risk Category*** IV buildings and structures and ***Risk Category*** III health care facilities, the wind-borne debris region shall be based on Figure 1609.3(2).

MARINE. This includes areas that are regularly subject to marine spray, fog or mist, etc. where a building is exposed to brine or chlorides.

FLOOD COASTAL A ZONE. Area within a special flood hazard area, landward of a V zone or landward of an open coast without mapped coastal high hazard areas. In a coastal A zone, the principal source of flooding must be astronomical tides, storm surges, seiches or tsunamis, not riverine flooding. During the base flood conditions, the potential for breaking wave height shall be greater than or equal to 1½ feet (457 mm). The inland limit of the coastal A zone is (a) the Limit of Moderate Wave Action if delineated on a FIRM, or (b) designated by the authority having jurisdiction.

COASTAL HIGH HAZARD AREA. Area within the special flood hazard area extending from offshore to the inland limit of a primary dune along an open coast and any other area that is subject to high-velocity wave action from storms or seismic sources, and shown on a Flood Insurance Rate Map (FIRM) or other flood hazard map as velocity Zone V, VO, VE or V1-30.

COASTAL BUILDING ZONE. The land area from the seasonal high-water line landward to a line 1,500 feet landward from the coastal construction control line as established pursuant to s. 161.053, and, for those coastal areas fronting on the Gulf of Mexico, Atlantic Ocean, Florida Bay, or Straits of Florida and not included under s. 161.053, the land area seaward of the most landward velocity zone (V-zone) line as established by the Federal Emergency Management Agency and shown on flood insurance rate maps.

Link to Florida specific data similar to the ASCE 7 Hazard tool and the FDEP SLIP tool under development

SPECIAL SOIL CONDITIONS. (under development)

For other terms not defined in this appendix, refer to the definitions in the *International Building Code/FBC* and *International Property Maintenance Code.*

4. BUILDING OCCUPANCIES/RISK CATEGORY ASSESSMENTS/INSPECTION FREQUENCY

Each building or structure shall be assigned a minimum frequency of required inspections based upon its structural design risk category as specified in the *International Building Code*, Table 1604.5, and its exposure to environmental factors in accordance with Table 4.1. The frequency intervals for existing building inspections shall be maintained for the service life of the building.

Exceptions – The following are exempted from the required inspections of Table 4.1:

1. Detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress, and their accessory structures not more than three stories above grade plane.
2. Hospital and hospital related facilities covered by the Joint Commission and AHCA accreditation surveys.
3. Educational facilities covered by the Florida State Requirements for Educational Facilities (SREF).

Table 4.1 Use, Occupancy and Special Building Environmental Factors Frequency Intervals for Existing Building Inspections

IBC/IFC Use Risk Category	Special Environmental Factors Applicable (Yes/No)	Maintenance Inspection	Periodic Inspection (in years)	Milestone Special Inspection (in years)	Follow-Up Milestone Special Inspection (in years)
1 (e.g. Ag buildings)	No	Recommended	N/A	N/A	N/A
	Yes	Recommended	N/A	N/A	N/A
2 (e.g. commercial/ multifamily residential)	No	Annually	15 (N/A for buildings <4 stories or 3,500 sq.ft.)	30 (N/A for buildings <4 stories or 3,500 sq.ft.)	10 (N/A for buildings <4 stories or 3,500 sq.ft.)
	Yes	Annually	10 (N/A for buildings <4 stories or 3,500 sq.ft.)	20 (N/A for buildings <4 stories or 3,500 sq.ft.)	10 (N/A for buildings <4 stories or 3,500 sq.ft.)
3 (e.g. large assembly)	No	Annually	15	30	10
	Yes	Annually	10	20	10
4 (e.g. Hospitals)	No	Annually	5	20	10
	Yes	Annually	5	20	10

5. TYPES OF INSPECTIONS

A. Maintenance Inspection

Maintenance inspections required by Table 4.1 shall be a visual surveillance by the owner or owner's authorized representative and include the inspection of the building for obvious defects or damages and the documentation thereof.

This includes all load-bearing construction elements such as supports, walls, ceilings, joists, trusses, with a focus on deformations, misalignments, cracks, humidity, efflorescence, water intrusion and corrosion.

In addition to the structural considerations noted above, the building envelope components (including balconies and roof), electrical system, and the mechanical and plumbing systems shall be inspected at the noted frequency interval to maintain public safety.

Written reports shall be required for all inspections and shall note the description of the type and manner of the inspection, noting problem areas and recommended repairs. All repairs requiring a building permit shall be submitted and approved by the Code (Building) Official.

B. Periodic Inspection

Periodic inspections required by Table 4.1 shall be a visual surveillance performed by a Registered Design Professional.

The owner or owner's authorized representative, other than the contractor, shall employ one or more approved Registered Design Professionals to provide periodic visual inspections.

The following guidelines are recommended for use:

- *ASCE 11 – 99, Guideline for Structural Condition Assessment of Existing Buildings*, should be used when performing any structural inspection.
- *ASCE/SEI 30 – 14, Guideline for Condition Assessment of the Building Envelope*, should be used when performing any building envelope inspection.

All inspection results, as well as any corrective measures necessary, must be documented and shall be provided to the Code (Building) Official.

If additional special inspections or tests are recommended by the design professional, such special inspection or testing shall be performed by a qualified agency. The agency shall submit reports of special inspections and tests to the Code (Building) Official, the registered design professional in responsible charge and the owner or the owner's authorized agent.

C. Milestone Special Inspection

Milestone inspections required by Table 4.1 at long-term milestones shall be performed by a Registered Design Professional. The Registered Design Professional shall be qualified and registered in the discipline for the system being evaluated (structural and electrical) in accordance with the professional registration laws in the state of Florida. Such agency shall provide all information as necessary for the Code (Building) Official to determine that the agency meets the applicable requirements specified in the *International Building Code*, Sections 1703.1.1 through 1703.1.3 and the ***Florida Building Code***.

The owner or owner's authorized representative, other than the contractor, shall employ one or more approved Registered Design Professionals to provide milestone inspections and tests on the types of work specified by the registered design professional in responsible charge of the periodic inspection as specified in Table 4.1.

The Registered Design Professional shall keep records of special inspections and tests, as required by the *International Building Code*, Section 1704, and shall submit reports of special inspections and tests to the Code (Building) Official, the registered design professional in responsible charge and the owner or the owner's authorized agent.

A final report documenting required special inspections and tests, and correction of any discrepancies noted in the inspections or tests, shall be submitted at a point in time agreed upon prior to the start of work by the owner or the owner's authorized agent to the Code (Building) Official.

The Code (Building) Official may require additional inspections as necessary to approve the corrective action(s) necessary. The Code (Building) Official shall issue an updated Certificate of Occupancy (CO) when the building is deemed safe by the Registered Design Professional, in accordance with local rules and procedures.

6. INSPECTION RECORDS

A. Original Construction Design and Construction Documents

Figure 1 indicates the minimum type of construction documents that the owner must have readily available on site.

B. Existing Building Safety Inspection Log

The Existing Building Safety Inspection Log should provide an overview of the building, the basic data of the structural analysis and the permit documents and serve as a reliable source of information for the regular inspections by the licensed design professionals required by Table 4.1 and the Code (Building) Official. Each report shall include a statement to the effect that the building is structurally safe, unsafe, or safe with qualifications.

Figure 2 is a sample the layout and the content of a typical Building Safety Inspection Log. The Building Safety Inspection Log shall be referenced while performing all periodic inspections and should also be maintained as an electronic document in PDF format.

If there are no copies of the approved construction documents available for an existing building, the Code (Building) Official must approve all documents, or measures that are necessary for the assessment of type of inspection(s) required. In such instances, it is imperative that the documentation is representative of the actual construction of the building.

C. Inspection Report Forms

See Figures 3 and 4 for sample inspection report forms for structural and electrical inspections, respectively. These forms are intended to be sample forms which can be customized as needed or replaced in their entirety. It is important to note that some type of equivalent record keeping report forms is imperative.

FIGURE 1

EXISTING BUILDING SAFETY INSPECTION
(Structural Documents)

A. Approved Geotechnical/Soils Investigation Reports

B. Approved construction documents, as necessary

C. Threshold buildings approved inspection plan/signed and sealed statement of inspection in accordance with the rules and regulations of the state of Florida

E. Structural design analysis and assumptions

E. Approved fabrication drawings for pre-cast or prefabricated structural elements

F. Approved erection plans for the load-bearing structure

G. Reports by the registered design professional of record

H. Monitoring reports by the registered design professional of record

I. Material test reports and inspection records

J. Final special inspection reports

K. Construction documents for any subsequent additions, alterations and repairs

FIGURE 2

EXISTING BUILDING SAFETY INSPECTION LOG
(Layout and content)

1. **Title sheet**
2. **Contents**
3. **Overview drawings**
   3.1 Views, cross sections of the building
   3.2 Copies of all approved architectural, structural, electrical, mechanical, plumbing and fire protection plans, and details
4. **Documents for structural analysis**
   4.1 Structural design analysis with construction description and data on building materials, site, applicable regulations and all assumed loads
   4.2 Construction/Erection/Fabrication drawings/details
5. **Copies of all building permits**
6. **Copies of all property owner inspection results**
7. **Copies of all registered design professional inspection results**
8. **Copies of all special inspection agency reports and test results**
9. **Copies of all maintenance logs**

FIGURE 3
(Figure 3 pdf)

Please download the form to your computer before filling out and submitting.

EXISTING BUILDING SAFETY INSPECTION REPORT FORM (STRUCTURAL)

INSPECTION COMMENCED
Date: ____________

INSPECTION COMPLETED
Date: ____________

INSPECTION MADE BY: ____________

SIGNATURE: ____________

PRINT NAME: ____________

TITLE: ____________

ADDRESS: ____________

1. DESCRIPTION OF STRUCTURE

a. **Name on Title:** ____________

b. **Street Address:** ____________

c. **Legal Description:** ____________

d. **Owner's Name:** ____________

e. **Owner's Mailing Address:** ____________

f. **Folio Number of Property on which Building is Located:** ____________

g. **Building Code Occupancy Classification:** ____________

h. **Present Use:** ____________

i. **General Description:**

Addition Comments:

j. **Additions/Alterations/Repairs to original structure:**

EXISTING BUILDING SAFETY INSPECTION REPORT FORM – STRUCTURAL www.iccsafe.org | page 1

FIGURE 3 (continued)
(Figure 3 pdf)

2. PRESENT CONDITION OF STRUCTURE

a. General alignment (Note: good, fair, poor, explain if significant)

1. Bulging
2. Settlement
3. Deflections
4. Expansion
5. Contraction

b. Portion showing distress (Note, beams, columns, structural walls, floor, roofs, other)

1. Surface conditions – describe general conditions of finishes and sealants, noting cracking, spalling, peeling, signs of moisture penetration and stains.

c. Cracks – note location in significant members. Identify crack size as HAIRLINE if barely discernible; FINE if less than 1 mm in width; MEDIUM if between 1 and 2 mm width; WIDE if over 2 mm.

d. General extent of deterioration – cracking or spalling of concrete or masonry, oxidation of metals; rot or borer attack in wood.

e. Previous patching or repairs

f. Nature of present loading indicate residential, commercial, other estimate magnitude.

EXISTING BUILDING SAFETY INSPECTION REPORT FORM – STRUCTURAL www.iccsafe.org | page 2

FIGURE 3 (continued)
(Figure 3 pdf)

3. **INSPECTIONS**

   a. **Date of notice of required inspection** ______

   b. **Date(s) of actual inspection** ______

   c. **Name and qualifications of individual submitting report:**
   ______

   d. **Description of laboratory or other formal testing, if required, rather than manual or visual procedures**
   ______

   e. **Structural repair – note appropriate line:**

      1. ☐ None required

      2. ☐ Required (describe and indicate acceptance)
      ______

4. **SUPPORTING DATA**

   a. ______ **sheet written data**

   b. ______ **photographs**

   c. ______ **drawings or sketches**

5. **MASONRY BEARING WALL = Indicate good, fair, poor on appropriate lines:**

   a. **Concrete masonry units** ______

   b. **Clay tile or terra cota units** ______

   c. **Reinforced concrete tie columns** ______

   d. **Reinforced concrete tie beams** ______

   e. **Lintel** ______

   f. **Other type bond beams** ______

   g. **Masonry finishes – exterior**

      1. Stucco ______

      2. Veneer ______

      3. Paint only ______

      4. Other (describe)
      ______

FIGURE 3 (continued)
(Figure 3 pdf)

h. Masonry finishes – interior

1. Vapor barrier
2. Furring and plaster
3. Paneling
4. Paint only
5. Other (describe)

i. Cracks

1. Location – note beams, columns, other
2. Description

j. Spalling

1. Location – note beams, columns, other
2. Description

k. Rebar corrosion – check appropriate line

1. ☐ None visible
2. ☐ Minor – patching will suffice
3. ☐ Significant – but patching will suffice
4. ☐ Significant – structural repairs required

l. Samples chipped out for examination in spall areas:

1. ☐ No
2. ☐ Yes – describe color, texture, aggregate, general quality

FIGURE 3 (continued)
(Figure 3 pdf)

6. FLOOR AND ROOF SYSTEM

a. Roof

1. Describe (flat, slope, type roofing, type roof deck, condition)

2. Note water tanks, cooling towers, air conditioning equipment, signs, other heavy equipment and condition of support:

3. Note types of drains, scuppers and flashing and respective condition:

b. Floor system(s)

1. Describe (type of system framing, material, spans, condition)

c. Inspection – note exposed areas available for inspection, and where it was found necessary to open ceilings, etc. for inspection of typical framing members.

7. STEEL FRAMING SYSTEM

a. Description

b. Exposed Steel – describe condition of paint and degree of corrosion

c. Concrete or other fireproofing – note any cracking or spalling and note where any covering was removed for inspection

d. Elevator sheave beams and connections, and machine floor beams – note condition:

FIGURE 3 (continued)
(Figure 3 pdf)

8. CONCRETE FRAMING SYSTEM

a. Full description of structural system

b. Cracking

1. ☐ Not significant
2. ☐ Location and description of members affected and type cracking

c. General condition

d. Rebar corrosion – check appropriate line

1. ☐ None visible
2. ☐ Location and description of members affected and type cracking
3. ☐ Significant but patching will suffice
4. ☐ Significant – structural repairs required (describe)

e. Samples chipped out in spall areas:

1. ☐ No
2. ☐ Yes, describe color, texture, aggregate, general quality:

FIGURE 3 (continued)
(Figure 3 pdf)

9. WINDOWS AND DOORS

   a. Type (Wood, steel, aluminum, jalousie, single hung, double hung, casement, awning, pivoted, fixed, other)

   b. Anchorage – type and condition of fasteners and latches

   c. Sealant – type of condition of perimeter sealant and at mullions:

   d. Interiors seals – type and condition at operable vents

   e. General condition:

10. WOOD FRAMING

   a. Type – fully describe if mill construction, light construction, major spans, trusses:

   b. Note metal fitting i.e., angles, plates, bolts, split pintles, other, and note condition:

   c. Joints – note if well fitted and still closed:

   d. Drainage – note accumulations of moisture

   e. Ventilation – note any concealed spaces not ventilated:

   f. Note any concealed spaces opened for inspection:

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FIGURE 4
(Figure 4 pdf)

Please download the form to your computer before filling out and submitting.

EXISTING BUILDING SAFETY INSPECTION REPORT FORM (ELECTRICAL)

INSPECTION COMMENCED
Date: [ ]

INSPECTION MADE BY: [ ]

SIGNATURE: [ ]

INSPECTION COMPLETED
Date: [ ]

PRINT NAME: [ ]

TITLE: [ ]

ADDRESS: [ ]

DESCRIPTION OF STRUCTURE

a. **Name on Title:** [ ]
b. **Street Address:** [ ]
c. **Legal Description:** [ ]
d. **Owner's Name:** [ ]
e. **Owner's Mailing Address:** [ ]
f. **Folio Number of Property on which Building is Located:** [ ]
g. **Building Code Occupancy Classification:** [ ]
h. **Present Use:** [ ]
i. **General Description, Type of Construction, Size, Number of Stories and Special Features:**

[ ]

Additional Comments:

[ ]

EXISTING BUILDING SAFETY INSPECTION REPORT FORM – ELECTRICAL 21-20572 www.iccsafe.org | page 1

FIGURE 4 (continued)
(Figure 4 pdf)

1. ELECTRIC SERVICE

1. Size: Amperage (☐) Fuses (☐) Breakers (☐)
2. Phase: Three Phase (☐) Single Phase (☐)
3. Condition: Good (☐) Fair (☐) Needs Repair (☐)

Comments:

2. METER AND ELECTRIC ROOM

1. Clearances: Good (☐) Fair (☐) Requires Correction (☐)

Comments:

3. GUTTERS

1. Location: Good (☐) Requires Repair (☐)
2. Taps and Fill: Good (☐) Requires Repair (☐)

Comments:

FIGURE 4 (continued)
(Figure 4 pdf)

4. ELECTRICAL PANELS

Location:

1. Panel #	( )	Good	( )	Requires Repair	( )
2. Panel #	( )	Good	( )	Requires Repair	( )
3. Panel #	( )	Good	( )	Requires Repair	( )
4. Panel #	( )	Good	( )	Requires Repair	( )
5. Panel #	( )	Good	( )	Requires Repair	( )

Comments:

5. BRANCH CIRCUITS

1. Identified:	Yes ( )	Must be identified	( )		
2. Conductors:	Good ( )	Deteriorated	( )	Must be replaced	( )

Comments:

6. GROUNDING SERVICE

Good ( ) Repairs Required ( )

Comments:

7. GROUNDING OF EQUIPMENT

Good ( ) Repairs Required ( )

Comments:

EXISTING BUILDING SAFETY INSPECTION REPORT FORM – ELECTRICAL www.iccsafe.org | page 3

FIGURE 4 (continued)
(Figure 4 pdf)

8. SERVICE CONDUITS/RACEWAYS

	Good	( )	Repairs Required	( )

Comments:

9. SERVICE CONDUCTORS AND CABLES

	Good	( )	Repairs Required	( )

Comments:

10. SERVICE CONDUCTORS AND CABLES

Conduit Raceways:	Good	( )	Repairs Required	( )
Conduit PVC:	Good	( )	Repairs Required	( )
NM Cable:	Good	( )	Repairs Required	( )
BX Cable:	Good	( )	Repairs Required	( )

Comments:

11. FEEDER CONDUCTORS

	Good	( )	Repairs Required	( )

Comments:

FIGURE 4 (continued)
(Figure 4 pdf)

12. EMERGENCY LIGHTING

Good ( ) Repairs Required ( )

Comments:

13. BUILDING EGRESS ILLUMINATION

Good ( ) Repairs Required ( )

Comments:

14. FIRE ALARM SYSTEM

Good ( ) Repairs Required ( )

Comments:

15. SMOKE DETECTORS

Good ( ) Repairs Required ( )

Comments:

FIGURE 4 (continued)
(Figure 4 pdf)

16. EXIT LIGHTS

Good ( ) Repairs Required ( )

Comments:

17. EMERGENCY GENERATOR

Good ( ) Repairs Required ( )

Comments:

18. WIRING IN OPEN OR UNDER COVER PARKING GARAGE AREAS

Require Additional

Good ( ) Repairs Required ( )

Comments:

19. OPEN OR UNDERCOVER PARKING GARAGE AREAS AND EGRESS ILLUMINATION

Require Additional

Good ( ) Repairs Required ( )

Comments:

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FIGURE 4 (continued)
(Figure 4 pdf)

20. SWIMMING POOL WIRING

Good (☐) Repairs Required (☐)

Comments:

21. WIRING TO MECHANICAL EQUIPMENT

Good (☐) Repairs Required (☐)

Comments:

22. ADDITIONAL COMMENTS

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RESOURCE MATERIAL

I STRUCTURAL EVALUATION

A. Foundations

If all the supporting subterranean materials were completely uniform beneath a structure, with no significant variations in grain size, density, moisture content or other mechanical properties; and if dead load pressures were completely uniform, settlements would likely appear uniform and of little practical consequence. Unfortunately, that is typically not the case. Significant deviations are likely to result in unequal vertical movements.

Monolithic masonry, generally incapable of accepting such movements, will crack. Such cracks are most likely to occur at corners, and large openings. Since, in most cases, differential shears are involved, cracks will typically be diagonal.

Small movements are most likely to be structurally important only if long term leakage through fine cracks may have resulted in deterioration. In the event of large movements, continuous structural elements such as floor and roof systems must be evaluated for possible fracture or loss of bearing.

Pile foundations are, in general, less likely to exhibit such difficulties. Where such does occur, special investigation will be required.

B. Roof Construction and Roof Coverings

The construction and anchorage of the roof to the load resisting elements of the building (gravity, uplift and lateral loads) are critical to the building's structural integrity. The roof must not only be designed to resist the imposed loads, but the method of anchoring the roof to the structural elements such as bearing walls and shear walls must be evaluated. As such, the anchorage must be checked for cracks and possible corrosion. Similarly, roof top units such as chillers and solar panels must be evaluated relative to their anchorage to the roof as well as confirmation of an adequate load path to the supporting elements.

Sloping roofs, constructed of clay or cement tiles, are of concern in the event that the covered membrane may have deteriorated, or the tiles may have become loose. Large deflections, if merely resulting from deteriorated rafters or joists are of greater importance. Valley flashing, and base flashing at roof penetrations need to similarly be investigated.

Flat roofs with built up membrane roofs require investigation with respect to deflection considerations. Additionally, since roofing materials may be approaching expected life limits at the age when building special inspections are required, careful examination is important. Blisters, wrinkling, and loss of gravel are usually an indication of possible roof problems.

Punctures or loss of adhesion of base flashing, coupled with loose counterflashing will also signify possible problems. Windblown gravel, if excessive, and the possibility of other debris, may result in pounding, which if permitted, may impact the performance of the roof.

Gypsum roof decks will usually perform satisfactorily except in the presence of moisture. Disintegration of the material and the foam-board may result from sustained leakage. Anchorage of the supporting bulb tees against uplift may also be of importance if there is significant deterioration.

C. Floor Assemblies

Sagging floors will most often indicate problem areas. Floor and roof systems of cast-in-place concrete with self-centering reinforcing, such as paper backed mesh and rib-lath, may be critical with respect to corrosion of the unprotected reinforcing. Loss of uplift anchorage on roof decks will also be important if significant deterioration has taken place, in the event that dead loads are otherwise inadequate to resist uplift.

D. Masonry Bearing Walls

Random cracking, or if discernible, definitive patterns of cracking, as well as bulging, sagging, or other signs of misalignment may also indicate related problems in other structural elements. Masonry walls constructed of either concrete masonry remits or scored clay tile, may adversely impact adjacent reinforced concrete columns tie beams, or lintels.

E. Structural Steel/ Cold-Formed Steel Framing/Welding

Corrosion will be the determining factor in the deterioration of structural steel. Most likely suspect areas will be fasteners, welds, and the interface area where bearings are embedded in masonry. Column bases may often be suspect in areas where flooding has been experienced, especially if salt water has been involved.

Thin cracks usually indicate only minor corrosion, requiring minor patching. Extensive spalling may indicate a much more serious condition requiring further investigation.

Vertical and horizontal cracks where masonry units abut tie columns, or other frame elements such as floor slabs may be an indication of volume change resulting from moisture content, and variations in ambient thermal conditions versus the adjacent frame elements.

Moisture vapor penetration, sometimes abetted by salt laden aggregate and corroding rebars, will usually be the most common cause of deterioration. Tie columns are rarely structurally sensitive, and a fair amount of deterioration may be tolerated before structural impairment becomes important. Cosmetic type repair involving cleaning and patching to effectively seal the member may often suffice. A similar approach may not be unreasonable for tie beams, provided they are not also serving as lintels. In that event, a rudimentary analysis of load capability using the remaining actual rebar area, may be required.

Steel bar joists are sensitive to corrosion. Most critical locations will be web member welds, especially near supports, where shear stresses are high, possible failure may be sudden and without warning.

Cold formed steel joists, usually of relatively light gage steel, are similarly sensitive to corrosion, and are highly dependent upon at least normal lateral support to carry designed loads. Bridging and the floor or roof system itself, if in good condition, will serve the purpose.

F. Concrete Framing Systems

Cast in place reinforced concrete slabs and/or beams and joists may often show deterioration due to corroding rebars resulting from cracks or merely inadequate protecting cover of concrete. The same applies to post tensioned slabs at the location where the stressing anchor is applied. Patching procedures will usually suffice where such damage has not been extensive. Where corrosion and spalling has been extensive in structurally critical areas, competent analysis with respect to remaining structural capacity, relative to actual supported loads, will be necessary. The type and extent or repair will be dependent upon the results of such investigation.

Precast members may present similar deterioration conditions. End support conditions including adequacy of bearing, indications of end shear problems, and restraint conditions should be evaluated in at least a few typical locations.

Concrete deterioration can occur due to the presence of salt-water aggregate or in excessively permeable concrete. In this respect, honeycomb areas may contribute adversely to the rate of deterioration. Columns are frequently most suspect. Extensive honeycomb is most prevalent at the base of columns, where fresh concrete was permitted to segregate during placement into the form boxes. This type of problem has been known to be compounded in areas where flooding has occurred, especially involving salt water.

In spall areas, chipping away a few small loose samples of concrete may be very revealing. Fairly reliable quantitative conclusions may be drawn with respect to the quality of the concrete. Even though the cement and local aggregate may be derived from the same sources, cement will have a characteristically dark grayish brown color in contrast to the almost white aggregate. A typically white, almost alabaster like coloration will usually indicate reasonably good overall strength. The original gradation of aggregate can be seen through a magnifying glass.

G. Wood Construction

Wood joists, rafters and wall framing are most often deteriorated due to "dry rot", or the presence of termites. The former is most often prevalent in the presence of sustained moisture or lack of adequate ventilation. A member may usually be deemed in acceptable condition if a sharp pointed tool will penetrate no more than about ⅛" under moderate hand pressure.

Older wood framed structures, especially of the industrial type, are of concern in that long term deflections may have opened important joints, even in the absence of deterioration. Corrosion of ferrous fasteners will in most cases be obvious. Dry rot must be considered suspect in all sealed areas where ventilation has been inhibited, and at bearings and at fasteners. Penetration with a pointed tool greater than about ⅛" with moderate hand pressure, will indicate the possibility of further concern.

Possible wood construction failures are locations which employ wood framing with stucco. Of note is the condition of the moisture barrier and fasteners which are often staples. The condition of the metal flashing (and its attachment) can be a possible source of water infiltration.

H. Windows and Doors

Window condition is of considerable importance with respect to two considerations: Leakage and anchorage. Deteriorating anchorage may result in loss of the entire unit in the event of severe windstorms. Perimeter sealant, glazing, seals, and latches should be examined with a view toward deterioration of materials and anchorage of units for inward as well as outward (section) pressures, most importantly in high-rise buildings. In order to do a proper assessment, the type of window and door must be assessed. This includes:

- Type: Sliding glass doors, side swinging doors, horizontal rolling windows, etc.
- Material: Wood, steel, aluminum, vinyl etc.
- Glazing: Annealed, heat strengthened, termpered, laminated, etc.
- Impact rating: Impact or non-impact rated for hurricane force winds
- Framing: Including anchor spacing and location; Mullions; True or false muntins;
- Weatherstripping: Condition of the installed weatherstripping

II BUILDING MATERIALS EVALUATION

Building materials are subject to aging over the course of their useful life. How quickly this progresses during the planned service life and to what extent properties of the building materials are altered depends on the building material, but also to a substantial degree on the type and intensity of the environmental influences.

Deterioration of building materials can only occur in the presence of moisture, mostly to metals because of their natural tendency to return to the oxide state in the corrosive process.

In a marine climate, highly aggressive conditions exist year-round. For most of the year, outside relative humidity may frequently be about 90 or 95%, while within air-conditioned buildings, relative humidity will normally be about 35 to 60%. Under these conditions moisture vapor pressures ranging from about ⅓ to ½ pounds per square inch will exist much of the time. Moisture vapor will migrate to lower pressure areas. Common building materials such as stucco, masonry and even concrete, are permeable even with these slight pressures. Where vapor barriers were not used for the existing building, condensation will take place within the enclosed walls of the building. As a result, deterioration is most likely adjacent to exterior walls, or wherever else moisture or direct leakage has been permitted to penetrate the building envelope.

The changes in the building material properties can be essential for the structural safety of a building. For this reason, it is important that these are examined in the regular inspections and evaluated.

A. Critical building material properties/potential impairments

Changes which can occur in building materials due to environmental influences are listed in table below.

Characteristics of a building material with reference to the structural safety of a building are its strength, rigidity, ductility, and its time- and load-related behavior.

For building materials mainly subject to compression, compressive strength is the decisive value, for building materials subject to tension or bending, tensile strength, as applicable in conjunction with shear strength, is of primary importance.

Changes in strength, generally the microstructure of the material reduction, are usually the result of changes in material structure. This is associated with a more or less pronounced reduction of the elasticity module so that even larger deformations can occur. This must be taken into account in the prognosis for the future behavior of the building structure.

Embrittlement of the materials micro-structure generally leads to a significant reduction in failure strain. This means that comparatively little deformation occurs which would indicate an imminent failure.

In addition to changes caused by environmental influences, strength and rigidity losses may also be caused by external loads, such as overloading or cyclical loads at an unplanned high level.

Changes in Building Material Characteristics due to Environmental Influences

Material	Environmental Influence	Primary Consequence	Secondary Consequence
Steel	humidity	corrosion	reduction of cross section
	oxygen, hydrogen, nitrogen, phosphorous	embrittlement	reduction in ductility
	heat	hardening, softening	cracks
Aluminum	alkalis (mortar, building lime)	corrosion	reduction of cross section
Concrete	humidity, frost, chemicals	crumbling, cracks	loss of strength & stiffness
Masonry	humidity, frost, chemicals	weathering	reduction of cross section
Reinforced Concrete	carbonization, chlorides	corrosion of the reinforcement, cracks	reduction of cross section loss of strength & stiffness
Pre/post-stressed concrete	carbonization, chlorides	corrosion of the reinforcement, cracks	reduction of cross section loss of strength & stiffness
Wood	humidity, mold, insects	rotting	loss of strength & stiffness
Plastics	UV radiation	embrittlement, cracks	reduction in elongation

B. Identification of changes in the building

Some changes in the building material characteristics can be deduced from visible changes in the appearance of the construction element surface (weathering, corrosion, crack, etc.). This is why a vigorous visual inspection of buildings for these parameters is particularly important.

The environmental conditions can be important for the long-term behavior of the building materials (humidity, temperature, alternation of frost and thawing). Effects on the building physics (heat conductivity, condensation, etc.) must also be taken into account.

For a quantitative identification of the current building material and construction element characteristics (contamination profiles, corrosion, etc.) destructive and non-destructive test methods can be used. In the case of destructive test methods, the relevant characteristic data is generally gained directly. Samples are taken for this purpose without causing significant damage to the building, such as:

- Core drill sampling with direct strength test or direct determination of moisture content
- Sampling of core drills with direct determination of contaminants (chloride, sulphate content)
- Direct determination of the carbonization depth on fresh fracture surfaces
- Visual inspection of the state of corrosion of exposed reinforcement
- Determination of the depth of rot damage in wood by shaving off or drill/puncture resistance measurements
- Assessment of the type and condition of adhesives
- Taking samples from metallic construction elements for an analysis of chemical properties (spectral analysis), mechanical characteristics, susceptibility to brittle fracture (notched bar impact bending test) and the microstructural composition (microsection, structural characteristics, grain size)

Non-destructive test methods generally use indirect characteristics which make it possible to deduce the primary characteristics on the basis of more or less reliable correlations (often on an empirical basis). Non-destructive testing and the subsequent interpretation of the measurements requires experience and may only be performed by the approved special inspection agency. Examples of non-destructive testing include:

- Strength test on mineral building materials with a rebound hammer (primary tested characteristic: elastic behavior in the boundary zone)
- Tensile strength of metallic materials by hardness test
- Determination of microstructural dispersal by ultrasound (primary tested characteristic: ultrasonic transit time; comparative values from different test times are essential for this purpose)
- Moisture content determination by electrical resistance measurement or carbide method (CM)
- Determination of surface cracks using magnetic powder or pigment penetration methods
- Localization and determination of weak points (e.g. weld seams)
- Thickness measurement of the corrosion protection coating or metal coatings
- Wall thickness measurement (vernier)
- Measurement of the concrete cover

C. Evaluation of the examination results and assessment of the service life

The results gained during building inspections provide information about the building material characteristics at the time of testing. For a prognosis regarding further changes to the materials over time, the particular location (indoors, outdoors) and the environmental conditions to which the material in the respective construction element is exposed must be taken into consideration.

III DESIGN LOADS EVALUTION

An existing building may be exposed to the following loads:

- Dead loads and imposed loads
- Soil and water pressure
- Wind loads
- Extraordinary actions, such as impact, explosion and wildfires
- Restraint from settlement and deformation
- Temperature and humidity
- Shrinkage and swelling
- Actions during construction, i.e., pre-tensioning, etc.
- Mechanical and chemical actions

For the assessment of the load-bearing capacity and the serviceability of an existing building, it is essential to consider the applicable loads based on the code of record for the original construction, particularly taking into account any design changes and change in use.

Models as well as the corresponding values (characteristics, measurements) of the loads must be determined in line with the safety concept. The actual values of the loads are often greater than the values applicable at the time when the building was constructed. It is also essential to correctly assess the nature of the loads (constant, pulsating, alternating).

IV EXISTING DESIGN EVALUATION

A. Code of Record

The code of record used for the initial building design shall be the minimum building design. Certified copies of all building permits and approved construction documents, including as-built drawings, shall be maintained by the property owner and available on site.

B. Design Strength of Materials and Referenced Standards at time of construction

- Concrete and masonry grout mix designs for all structural components
- Prestressing tendons design strength/post tensioning pressures
- Structural Steel design strengths of primary and secondary members
- Cold-formed steel framing/cladding design strengths
- The design pressure rating of exterior windows and doors in the buildings

C. Subsequent Additions/Alterations/Repairs

The Florida Building Code – Existing Buildings shall be used for any subsequent additions, alterations or repairs.

Certified copies of all building permits and approved construction documents shall be maintained by the property owner and available on site.

V ELECTRICAL/FIRE ALARM SYSTEMS EVALUATION

A. Electrical Service

A description of the type of service supplying the building or structure must be provided, stating the size of amperage, if three (3) phase or single (1) phase, and if the system is protected by fuses or breakers. Proper grounding of the service should also be in good standing. The meter and electric rooms should have sufficient clearance for equipment and for the serviceman to perform both work and inspections. Gutters and electrical panels should all be in good condition throughout the entire building or structure.

B. Branch Circuit and Raceways

Branch circuits in the building must all be identified, and an evaluation of the conductors must be performed. There should also exist proper grounding for equipment used in the building, such as an emergency generator, or elevator motor.

All types of wiring methods present in the building must be detailed and individually inspected. The evaluation of each type of conduit and cable, if applicable, must be done individually. The conduits in the building should be free from erosion and checked for considerable dents in the conduits that may be prone to cause a short. The conductors and cables in these conduits should be chafe free, and their currents not over the rated amount.

C. Emergency Lighting/Essential Power/Fire Alarm Systems

Exit signs lighting and emergency lighting, along with voice annunciation systems and a functional fire alarm must tested to confirm they are in good working condition.

A Look at Building Recertification in South Florida

BY JOHN C. PISTORINO, PE, SI

On June 24, 2021, a portion of a 12-story, concrete-frame condominium in Surfside, Fla., crashed to the ground, killing 98 people.

It was thought that collapses such as Champlain Towers South weren't supposed to happen. Miami-Dade County, and neighboring Broward County, had a 40/50-year building recertification program in place. No other jurisdiction in the country had such a program.

A Brief History

The only other poured-in-place concrete building to have collapsed in the United States — a federal building housing the Drug Enforcement Administration Miami Field Office — happened in downtown Miami on Aug. 5, 1974, killing seven.

At the time, my evaluation of the cause of the federal building collapse revealed that corrosion of embedded reinforcing steel had compromised the ability of concrete members to support the gravity loads.

The on-going corrosion of the steel had not been addressed, and the cracks in the concrete members (spalling) had been filled with caulking and aesthetically painted over on a continual basis. The building was originally constructed in 1925 and underwent renovations from time to time, so we considered the building was equivalent to a 40-year-old structure. An engineer had inspected and deemed the building safe six years before, in 1968.

We (Herbert M. Schwartz and Associates), as consultants to the Dade County Board of Rules and Appeals, were asked for a recommendation to prevent such an occurrence from happening again. We recommended that any building in Dade County older than 25 years be inspected by a competent structural engineer and be certified to be safe for occupancy. Many buildings were in this category, and ultimately the 40-year criteria were decided upon, with a follow-up every 10 years thereafter.

The South Florida Building Code (SFBC), a uniform building code for all of Dade County and its cities, incorporated Subsection 104.9, *Recertification* (1979 Edition). Subsection 104.6, SFBC, *Structural Determination*, defined structural as "*any part, material or assembly of a building or structure which affects the safety of such building or structure and/or which supports any dead or designed live load and the removal of which part, material or assembly could cause, or to be expected to cause, all or any portion to collapse or to fail.*"
The building officials were required to send a "Notice of Required Inspection" to owners of buildings 40 years or older regarding recertification. The owner had to provide a written report, prepared by a Professional Engineer or architect registered in Florida,

certifying that a building was structurally safe for the specified use or continued occupancy in accordance with the Recommended Minimum Procedural Guidelines for Building Recertification issued by the Building Official.

This applied to all buildings except single-family residences, duplexes, and minor structures. Minor structures have an occupant load of 10 or fewer and a gross area of 2,000 square feet or less.

"*The report shall only be made by an engineer or architect qualified by training and experience. The report must indicate the manner and type of inspection forming the basis for the report,*" as stated in the building code.

The recertification program was incorporated into the Miami-Dade County Ordinance, Subsection 8-11(f), *Existing Buildings*, because it was not carried through in the new Florida Building Code that replaced the SFBC in 2002. The last edition of the SFBC was 1994, and electrical recertification was added as a result of observations made in damaged buildings after Hurricane Andrew in 1992.

Recertification was also added to the Broward County Code Subsection 110.15.

Needless to say, the recertification program was intended to prevent a reoccurrence of the 1974 collapse.

Enforcement of Recertification Program

At this writing, it is unknown why Champlain Tower South collapsed. However, the incident revealed that many buildings in Miami-Dade and Broward counties, including Champlain Tower South, had not been recertified as required for one reason or another.

Irrespective of the recertification program, the SFBC required that buildings be maintained in a safe condition from the time they were constructed (SFBC Section 105, *Maintenance of Buildings and Property*). Building owners weren't intended to wait for 40 years before inspecting and maintaining their buildings. In fact, the 40-year recertification was envisioned to confirm that the building had been maintained and was safe for occupancy.

It would be a relatively easy task to prepare a Recertification Report if the building was properly maintained over its life. Unfortunately, this was not the case in many buildings where sufficient funds and reserves were not available, and therefore critical maintenance was deferred.

Because of the unique mandatory and legal requirements of the 40-year recertification program, owners of buildings are required to produce the engineering reports or face fines and possible eviction. The Building Official has the authority to withdraw occupancy permits and declare a building unsafe in the absence of a Recertification Report.

Current Status

Deferred maintenance has placed a major responsibility on structural engineers and architects to evaluate buildings that have been neglected and to make judgements as to the significance of the deterioration observed in such buildings. Therefore, the structural inspections have become more difficult as the significance and degree of spalling concrete in key structural elements — such as columns, beams, or slabs that are carrying significant and critical loading — must be made by the engineer.

Concrete buildings exposed directly to salt-laden air and rain and that may have workmanship deficiencies are candidates for concrete spalling deterioration long before the 40-year period has been reached. Deferred maintenance, such as painting and waterproofing, add to the potential for early significant deterioration of the building's structural elements.

The conclusion that an engineer or architect makes after conducting a 40-year structural inspection must be documented with a written opinion as to the continued safe occupancy of a building, even if the building requires significant repairs. Such judgement will be relied upon by the occupants and the Building Official, and with limitations as to when the repairs will be undertaken and completed. In fact, the common denominator is the judgement of the engineer/architect.

This is also true of the electrical engineer who is providing that phase of the recertification. Deficiencies in the maintenance of the electrical system may also lead to a potentially unsafe building.

Qualifications of Recertification Engineering/Architect Experts

The recertification program requires that the report be made only by a Professional Engineer or architect qualified by training and experience. The FBPE licensing program relies upon an engineer to provide services only in areas for which he or she is competent, as well as qualified. Therefore, the mere designation of "PE" after ones' name does not qualify an engineer to perform recertification inspections on buildings. As stated above, the occupants and building official must rely upon the *judgment of an engineer* as to whether a building should continue to be occupied.
Such judgments are life-safety decisions, and therefore, a Building Official may review the qualifications of an engineer and decide to accept a Recertification Report from the engineer or advise a building owner to obtain the services of another engineer/architect who, in the opinion of the Building Official, is qualified.

For purposes of this article, only the structural aspects will be discussed at this time.

The construction of a building and the significance of the load-carrying members must be well known by an inspecting engineer. Generally, this author is of the opinion that the engineer must be familiar with the design of buildings, as well as the activity during the construction phase. Such qualifications are similar to requirements for Special Inspectors (SI) of Threshold buildings, wherein minimum two years of design and three years of construction inspection are required by the Florida Board of Professional Engineers.

The SI is expected to observe all aspects of construction in new buildings and the repair of significant damage in existing buildings in accordance with the permitted plans. The permitted plans are used and not the shop drawings. The SI must measure the concrete cover that will be provided and observe the placement of concrete ensuring that required concrete sampling is taken. This experience during construction provides firsthand knowledge as to the original condition of concrete members as constructed. The concrete quality and workability are also observed, including curing methods used.

The significance of a damaged structural member must be recognized and identified by the engineer who understands what loads and what capacities members are carrying, as well as their connection details. This requires design experience wherein load paths are developed and reinforced concrete structural capacities are established for shear, moment, and flexure in accordance with American Concrete Institute (ACI) Standards and building frame load path distribution. Therefore, engineers/architects must assure and demonstrate to the end users (building occupants and the Building Official) their relative experience and capability regardless of how many years of work in the field. Simply being part of a design and construction team does not qualify an engineer/architect. However, prior responsibility, including the signing and sealing of structural documents during design and the construction phase, will help demonstrate the required knowledge.

The engineer who is inspecting a building may use full-time employees who are also engineers to assist in the actual inspections. Employees who assist the engineer (*duly authorized representatives*) are under the engineer's supervision and therefore can facilitate such inspections in a more timely and economical manner. A Building Official may require the employees to be identified by the engineer prior to conducting inspections.

Regarding Shoring

Familiarity with shoring techniques and capabilities is also a requirement when critical conditions are observed.

When cantilevered balconies are determined to be in imminent failure, shoring must be provided quickly. Most structural engineers are not qualified to specify shoring systems, as this is a specialty that revolves around shoring contractors and shoring-system manufacturers. Therefore, shoring engineers must be engaged who are familiar with a specific shoring system and its capabilities.

However, the inspecting engineer must recognize how the shoring will transfer loads and whether loads must be transferred all the way to the ground or distributed to other supporting members. In such cases, a decision must be made as to the reliability of the shoring so that a building can remain occupied while corrective work is underway. The Special Inspector must confirm that shoring plans and calculations have been provided to the Building Official and that the specialty-shoring engineer has inspected the shoring system in place and approved it. The shoring must be maintained and reinspected frequently by the shoring engineer. An SI does have the experience of observing shoring installed and certified by a shoring engineer during original construction and can rely on that experience when observing an older building that will require shoring.

Shoring for the main load-bearing concrete-frame components (columns, girders, transfer beams, etc.) can be a major undertaking in a multistory building. Such shoring often requires the removal of all loading on the member being repaired. Complex shoring systems that transfer vertical loads down to the foundations can require intrusion into occupied spaces and apartments. A determination must be made whether to temporarily vacate a building that requires such shoring until the repairs have been made and the shoring removed.

In no case should substantial structural damage in which "there exists a significant risk of collapse, detachment, or dislodgement of any portion, member appurtenance or ornamental of the building or structure under service loads" [FBC-E] be allowed in an occupied building.

Reinforced Concrete

Cracks in concrete increase its permeability. The corrosion of embedded reinforcing steel affects the durability and load-carrying ability of structural elements especially in harsh environments where chlorides are present in the air and water.

The embedded steel is protected by the alkalinity of the concrete and therefore is resistant to corrosion. However, when chlorides reach the steel, an electrochemical reaction takes place in the presence of oxygen that causes the steel to corrode and expand, creating a force larger than the tensile strength of the concrete resulting in cracking, delamination, and ultimately spalling.

It is known that concrete that is underwater may not have significant corrosion due to the absence of higher levels of oxygen.

Information on the mechanism of corrosion of steel in concrete may be read in ACI 222R.

Other types of cracks may be the result of settlement, volume change, temperature changes, redistribution of loading, vibration, impact, overloading, excessive long-term deflection, and the effects of aging and other events during the life of a building, including the wind force of hurricanes. The recertification inspector is expected to recognize the type of cracks, delamination, and spalling, and their significance and cause.

40-year Inspection Procedure

Engineers who inspect a building for the purpose of recertification should observe, as a minimum, the following procedures. (These are recommended procedures, and under no circumstances are these minimum recommendations intended to supplant proper professional engineering judgement.)

1. Undertake an initial, cursory inspection for the purpose of becoming familiar with the general condition of the structure. Photographs may be taken at this time.
2. Obtain the permit plans (original design) for the building if they are available.
3. Research the permit history of the building, and become familiar with the previous work undertaken on the building, including concrete repairs, additions, modification to the main structure, reroofing, window and door replacement, painting, guard-rail repair or replacement, waterproofing, expansion joints, and all items that could affect the structural frame of the building.
4. Obtain a list of observations or reports previously made by the management company or residents.
5. Identify persons most familiar with the condition of the building, such as building maintenance engineers who may have extended experience with many aspects of the building.
6. Obtain information on previous claims made to insurance companies, such as for hurricane damage, pool leaks, and water intrusion.
7. Obtain documentation on all service contracts, such as roofing.
8. Become familiar with the structural system and the main load-transfer components.
9. Create a check list of adjacent improvements that will be inspected, such as pool deck, seawall, retaining wall, rooftop equipment, etc.
10. Create a plan identifying and locating each structural component inspected, such as columns, soffit beams, and transfer beams. This will provide a documented history for each item to be included in follow-up inspections, including future 10-year recertifications.
11. Begin inspecting and evaluating at locations where the initial inspection documented deterioration and determined the failure mechanism.
12. Starting with the lower foundation or garage area, focus on the main supporting-load-bearing systems of the building (columns, pile caps, structural slabs, cast in place transfer beams and framing beams and joists. Observe and make note of each element observed.
13. For reinforced concrete, begin by using the traditional sounding technique of a tapping hammer. This method will provide a strong ping for solid concrete and a dull sound for hollow concrete that may have internal spalling, delamination of concrete cover, and void areas. The use of simple equipment, such as tape measures, depth gauges, keel markers, and caliper gauges, is recommended. Information is noted together with sketches, photographs, and even video. This is referred to as nondestructive testing (NDT) and allows for a quick determination of the overall condition. Soundings, as they are called, are the first of the NDT methods.

14. Observe all cracks, and denote their configuration with sketches. Pay particular attention to those that are subject or exposed to water intrusion. Determine the cause of such cracks if possible. Strain gauges may be installed on cracks that are not caused by corroding steel but may be the result of settlement, overstressing, or movement. Such strain gauges can be electrically monitored if desired. In addition, elevations of critical members may be established to monitor movement using benchmarks from a licensed land surveyor. The use of feeler gauges and crack-width meters will document the size of the cracks at the time of inspection.
15. Observe and note any corrosion stains and their sources.
16. If spalling is evident at the surface of concrete members, it may be removed with a handheld non-mechanical chipping hammer to expose the steel. A photograph of the condition should be made first. Such spalled concrete is no longer providing strength or support to the member and may be removed. Ensure that a maintenance person or assistant is available to collect and preserve the removed pieces. Spalled, damaged concrete is usually removed to expose sound concrete. The removed concrete may be tested for chloride ion, strength, sulfates, and carbonation.
17. Observe the condition of the embedded steel behind the removed spalled concrete and measure its diameter. Compare the existing diameter with the original size as constructed.
18. Observe the bond of concrete behind the exposed embedded steel.
19. Evaluate the surrounding concrete for strength and consistency by observing and probing with a handheld tool. If the evaluation indicates low or significantly reduced characteristics, a core sampling location must be determined so that a laboratory can test the in-place concrete for strength, carbonation, sulfates, PH, and chloride ion content. Refer to ACI PRC-214.4-21 as a guide to obtain cores and interpret compressive strength results in accordance with ACI 301. The inspector can assess the issue of poor consolidation in the concrete by using nondestructive techniques of ACI 228.2R-13, *Report on Nondestructive Test Methods for the Evaluation of Concrete in Structures.*
20. In-place strength values including sample size and locations can be selected using ASTM E122-17 and ASTM C823/C823M. Obviously as sample size increases, accuracy improves, but do not risk weakening the structure.
21. Other methods for NDT testing include the use of Ferroscan magnetic equipment and Profometer to locate embedded steel. Such equipment will establish the presence of steel and the concrete cover if the size of the steel is known. Ground penetrating radar (GPR) is another useful method to be used with a consultant that offers those services.
22. Review and become familiar with the *ACI SP-2 Manual of Concrete Inspection* by ACI Committee 311. In particular, Chapter 11 has detailed recommendations about using NDT methods and destructive sampling testing (DST) methods in Tables 11.1 and 11.2 of that Standard. Methods include Windsor Probe, pulse-

echo, impact-echo testing, short-pulse radar, infrared wave, x-ray, and petrographic testing.

The Report

The engineer must decide on what concrete restoration is required based upon the potential hazard of a defect and the continued deterioration that can take place. Defects that affect the structural integrity and durability must be repaired. If the defect is a hazard that threatens safety, immediate remedies must be taken, such as emergency shoring or evacuation of the building, and the Chief Building Official must be notified.

While the report is not a document to be used to implement repairs, it can refer to ACI 546 R, wherein an engineer must be retained to specify the repairs to be made by a qualified contractor with building department permits in place. In general, the report must document surface imperfections, such as cracks, distortion, sagging, excessive deflections, significant misalignment, signs of leakage, and peeling of finishes, which are all indications of possible structural deficiencies in load-carrying capacity.

The fundamental purpose of the report is to confirm, in a reasonable fashion, that the building is safe for continued use under present occupancy, even if repairs are necessary.

It will most likely not be possible to visually examine all concealed construction, nor should it be generally necessary. However, a sufficient number of typical structural members should be examined to permit reasonable conclusions that are representative of the total structure.

Structural deterioration that is observed will always require repair.

Written reports attesting to each inspection must be required. The report must note the location of the structure, description of the type of construction, and general magnitude of the structure, the existence of drawings and location thereof, history of the structure to the extent reasonably known, a description of the type and manner of the inspection, and problem areas and recommended repairs.

Each report must include a statement to the effect that the building is structurally safe, unsafe, safe with qualifications, or has been made safe. The following is a paragraph that this author created in 1974 to be included in such reports:

"As a routine matter, in order to avoid possible misunderstanding, nothing in this report should be a guarantee for any portion of the structure. To the best of my knowledge and ability, this report represents an accurate appraisal of the present condition of the building based upon careful evaluation of observed conditions, to the extent reasonably possible."

Who Gets the Report?

The client is the owner or association that retains the engineer and therefore the report is provided to that entity. Eventually, the report must be furnished to the Building Official by the client as part of the 40-year recertification process. However, and always, if critical deficiencies are identified, the Building Official must also be informed immediately about the condition and status.

We recommend that upon engagement, and as part of the contract, the client agrees that the engineer will also furnish the Building Official with the report by a specific time. The client usually wants enough time to evaluate the report, especially if repairs are necessary and financial considerations are made.

The client will then be able to advise the Building Official as to a schedule to complete any repairs and as to what safeguards may be put in place if necessary to maintain occupancy. Often the initial report is modified as repairs are made, and the Building Official is kept informed.

Report Categories

When drafting the report, consider these categories:

- Foundations
- Roofs, roofing
- Bearing walls
- Floor systems
- Concrete framing systems
- Steel framing systems
- Windows, wall openings
- Wood framing
- Railing

Report Outline

Reports should follow an outline similar to this:

1. Description of structure
    a. General description, type of construction, size, number of stories, and special features.
2. Present condition of structure
    a. Good, fair, poor – with explanation
    b. Describe and show areas of distress (beams, columns, walls, floors, roof, slabs)
3. Inspection
    a. Date of notice of required inspection
    b. Date(s) of actual inspection
    c. Name and qualification of individual submitting report
    d. Description on laboratory or other formal testing.
    e. Description of shoring as determined to be required

f. Structural repair required (describe scope and condition)

4. Supporting data
    a. Field notes
    b. Photographs
    c. Drawings and sketches showing location and condition

Each jurisdiction may have its own reporting format. The engineer may need to submit additional documents that clearly identify the findings in a format that is appropriate for the actual description.

Summary

This article is a summary of the existing 40/50-year recertification program unique to Miami-Dade and Broward counties. It is probable that other jurisdictions throughout Florida may adopt similar recertification requirements for older buildings. This author has experienced deficiencies in structures far from coastal areas so that each jurisdiction may implement requirements based upon its own experience.

About the Author

John Pistorino, PE, SI, was appointed to the Florida Board of Professional Engineers in June 2021. He has over 50 years of experience as a Professional Engineer and over 35 years as a Special Inspector of Threshold Buildings. In 1975, he wrote the 40-year building recertification program requirements for Miami-Dade County.