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<u>Suggestion 1</u>: Include guidelines/minimum requirements for Structural Assessments of Existing Buildings within the FBC Existing Building, by means of an additional Chapter and/or Appendix.

The "checklist" and other introductory/baseline information would be included within this Chapter/Appendix. The purpose of this suggestion is to clearly organize Assessment Requirements separate from other Repair/Alteration information. This clear organization can establish a baseline consensus for all engineers, so we all have a common "starting point" for our assessment, vocabulary, and overall understanding of the assessment's purpose. The provided information should be "universal" to each assessment, and should not pigeonhole or micromanage the engineer beyond the baseline consensus.

Within the new Chapter/Appendix, provide the following information, at a minimum (presented below in no particular order). Note that when other Standards/Codes are referenced or paraphrased within my below suggestions, it is my suggestion that the FBC adopt the language or something similar to it. I am not suggesting that the FBC contain paraphrases or references to other Codes/Standards.

1. Define "Service Life" of a Building, based on existing consensus documents.
    a. *Based on language within ACI 365.1R-00 Report on Service-Life Prediction:*
        i. The building has reached the end of its service life when one of the following conditions exist:
            1. The inability of the existing structure to continue to perform its intended duties [relative to its original design intent] without extensive repair or modifications;
            2. The inability of the existing structure to meet current or predicted future requirements due to changes in demand (if any); or
            3. The appearance on the market of challengers that can perform the duties of the structure more economically.
    b. *Based on language within the ACI 562-19 Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures:*
        i. The Design Service Life of a building is defined as the period of time after installation or repair during which the performance satisfies the specified requirements if routinely maintained but without being subjected to an overload or extreme event.

2. In addition to defining "Service Life", further classify the three types of "Service Life", based on existing consensus documents.
    a. *Based on language within ACI 365.1R-00 Report on Service-Life Prediction:*
        i. Three classifications of service life have been defined:
            1. **Technical service life**: The time in service until an unacceptable state is reached, relative to the capacity vs demand of the structure, its systems, elements, and components, which results in a strength level below required loading, failure of elements, or loss of continuity of the load path laterally or vertically.
            2. **Functional service life**: The time in service until the structure no longer fulfills the functional requirements or becomes obsolete due to change in functional requirements, such as the needs for repair cycles, inspection cycles, increased clearance, or higher loads.
            3. **Economic service life:** The time in service until replacement of the structure (or part of it) is economically more advantageous than keeping it in service via repairs or maintenance.
        ii. End-of-life can be defined as one of the following conditions:
            1. **Technical**: Structural safety is unacceptable due to material degradation, lack of load path continuity, or exceeding the design load-carrying capacity;
            2. **Functional**: Capacity of the structure is no longer sufficient for a demand, such as a repair cycle that prohibits the function of the building, or a repair that reduces the required clearance or performance of the structure.
            3. **Economic**: Maintenance or repair requirements exceed available resource limits;

3. Define baseline condition ratings, for the inspector to utilize, which are applicable to all systems and materials, based on existing consensus documents.
    a. **Good**: (requires all below conditions)
        i. Without repair or modifications,
            1. The existing structure is able to continue to perform its intended duties relative to its original design intent; and
            2. The existing structure is able to meet current or predicted future requirements due to changes in demand since its original design (if any).
        ii. Utilizing computation analysis, the strength of the existing structure is able to be calculated in accordance with applicable statics, dynamics, and strengths of material via referenced codes and standards, and it exceeds the demand on the structure/elements.
    b. **Fair**: (requires all below conditions)
        i. With minor repair or modifications, defined as repairs/modifications which do not interrupt the vertical or lateral load path and do not require shoring in order to complete the repair/modification:
            1. The existing structure is able to continue to perform its intended duties relative to its original design intent; and
            2. The existing structure is able to meet current or predicted future requirements due to changes in demand since its original design (if any).
        ii. Utilizing computational analysis, the strength of the existing structure is able to be calculated in accordance with applicable statics, dynamics, and strengths of material via referenced codes and standards, and it exceeds the demand on the structure/elements.
    c. **Poor**: (requires all below conditions)
        i. With moderate repair or modifications, defined as repairs/modifications which do not interrupt the vertical or lateral load path but do require vertical (non-lateral) shoring in order to complete the repair/modification:
            1. The existing structure is able to continue to perform its intended duties relative to its original design intent; and
            2. The existing structure is able to meet current or predicted future requirements due to changes in demand since its original design (if any).
        ii. Utilizing computational analysis and/or load test, the strength of the existing structure is able to be calculated, in accordance with applicable statics, dynamics, and strengths of material via referenced codes and standards, and it exceeds the demand on the structure/elements.
    d. **Severe**: (requires all below conditions)
        i. With major repair or modifications, defined as repairs/modifications which will interrupt the vertical or lateral load path and also require vertical and lateral shoring in order to complete the repair/modification:
            1. The existing structure is able to continue to perform its intended duties relative to its original design intent; and
            2. The existing structure is able to meet current or predicted future requirements due to changes in demand since its original design (if any).
        ii. Utilizing load test only (ie: analysis not possible due to construction defects/deterioration), the strength of the existing structure is able to be calculated, in accordance with applicable statics, dynamics, and strengths of material via referenced codes and standards, and it exceeds the demand on the structure/elements.
    e. **Critical** (End-Of-Service): (An item/system is Critical If any one of the below conditions is identified)
        i. The existing structure is not able to continue to perform its intended duties relative to its original design intent without extensive repair or modifications;
        ii. The existing structure is not able to meet current or predicted future requirements due to changes in demand without extensive repair or modifications;
        iii. The strength of the existing structure is not able to be calculated utilizing analysis or load test (ie: analysis not possible due to construction defects/deterioration; load test not possible without causing damage/failure/feasibility), therefore, the strength cannot be verified relative to the demand on the structure/elements.

4. As an alternative to the lengthy #2 Rating Descriptions, consider the below Concise Summary of the #3 Condition Rating Language, which still convey the same points. Note that the below Ratings are applicable to all systems and materials, and are based on existing consensus documents.
    a. **Good**: (requires all below conditions)
        i. No repair or modifications
        ii. Strength of existing structure by computation analysis without need for load test, exceeds the demand on the structure/elements.
    b. **Fair**: (requires all below conditions)
        i. Minor repair or modifications, with both of the below conditions
            1. Does not interrupt the vertical or lateral load path
            2. Does not require shoring in order to complete the repair/modification:
        ii. Strength of existing structure by computation analysis without need for load test, exceeds the demand on the structure/elements.
    c. **Poor**: (requires all below conditions)
        i. Moderate repair or modifications, with all of the below conditions
            1. Does not interrupt the vertical or lateral load path
            2. Will require vertical (non-lateral) shoring in order to complete the repair/modification
            3. Low/Acceptable risk of collapse/damage during repairs/modifications (TBD by EOR, Owner, Building Official, and AHJ)
        ii. Strength of existing structure by computation analysis AND/OR load test, exceeds the demand on the structure/elements.
    d. **Severe**: (requires all below conditions)
        i. Major repair or modifications, with one or more of the below conditions
            1. Will interrupt the vertical or lateral load path
            2. Will require vertical **and** lateral shoring in order to complete the repair/modification:
            3. Moderate/Acceptable risk of collapse/damage during repairs/modifications (TBD by EOR, Owner, Building Official, and AHJ)
        ii. Strength of existing structure by load test only, exceeds the demand on the structure/elements.
    e. **Critical** (End-Of-Service): (An item/system is Critical If any one of the below conditions is identified)
        i. Extensive repair or modifications, with one or more of the below conditions
            1. Will essentially require “rebuild in place”
            2. Will interrupt the vertical or lateral load path
            3. Will require vertical **and** lateral shoring in order to complete the repair/modification
            4. High/Unacceptable risk for collapse during repairs/modifications (TBD by EOR, Owner, Building Official, and AHJ)
        ii. Cannot be analyzed using computational analysis or load test, therefore, the strength cannot be verified relative to the demand on the structure/elements.

6. Define “Durability”, such as shown in the following consensus documents:
    a. ACI 318-14:
        i. durability—ability of a structure or member to resist deterioration that impairs performance or limits service life of the structure in the relevant environment considered in design.

7. Define the “Coastline” as a <xx> distance from the coast of all saltwater and/or brackish water bodies, **or** by using similar distinguishing categories/classes per existing consensus documents:
    a. Similar to design of clear cover for reinforced concrete, based on ACI 318-14 Table 19.3.1.1 Exposure Categories and Classes
        i. *Coastal:*
            1. *Structure* exposed to moisture and an external source of chlorides from deicing chemicals, salt, brackish water, seawater, or spray from these sources
        ii. *Non-Coastal:*
            1. Structure not within <xx> miles of a Coastal condition
            2. *Structure* dry or protected from moisture
            3. *Structure* exposed to moisture but not to an external source of chlorides
    b. A different consideration will be distance to saltwater/brackish waterbodies, similar to when in marine designs, you must know the nearby waterbody classifications for specification of pressure treatment and/or corrosion protection

8. Establish a baseline for minimum requirements for Phase 1 and Phase 2 of the Inspection/Assessment
    a. Phase 1: Qualitative Review minimum deliverables
        i. Identify the continuous structural systems within the building (location of isolation joints and transfer levels).
        ii. Identify mechanisms for potential progressive collapse of the building which could result from isolated, local, failure.
        iii. Assess the condition of lateral and vertical system’s structural elements throughout the building and identify areas of reduced strength.
        iv. Identify locations of reduction of strength relative to construction defects, design defects, material deterioration.
        v. Identify the feasibility to repair or modify the structure
    b. Phase 2: Quantitative Review minimum deliverables
        i. Computational Analysis
        ii. Load Test (not required if full computational analysis is possible)
        iii. Analysis linking Observations from Phase 1 to Conclusions by using the FBC and/or referenced standards
        iv. Material, System, and Overall Condition Ratings for each individual structure (ie: if a building has an isolation joint, then it is comprised of 2 independent structures)
        v. The “Checklist” should be completed as an appendix to the report, simply as a means of confirming that the report addressed all minimum criteria for the Assessment. The “Checklist” should not be used *as* the Report itself.

9. At the start of Phase 1, the inspector must complete the following tasks, at a minimum, citing all references. The inspector must clearly state if the below items were not able to be identified in any portion of the building, and establish an inspection plan to gather such information during Phase 2.
    a. The inspector must identify the location of all isolation/expansion joints and transfer systems of the structure.
    b. The inspector must clearly identify how many “independent” structural systems comprise the overall building structure and provide clear sketches/graphics depicting each structure with the following information:
        i. Identify each lateral system and schematically draw the flow of each load path to the ground, including the foundation.
        ii. Identify each vertical system and schematically draw the flow of each load path to the ground, including the foundation.

10. Add a section to the “Checklist” relative to “Rehabilitation/Repair Analysis”, based on existing consensus documents

a. ACI 364.1R-19, Guide for Assessment of Concrete Structures before Rehabilitation, indicates that the evaluation of rehabilitation approaches should consider the following criteria:
    i. Probability of success [of the Repair]
    ii. Achievable service life [following the Repair]
    iii. Initial costs and future maintenance costs [of the Repair and future repairs]
    iv. Maintenance/Assessment Cycle [following the Repair, for future repairs]
    v. Relative risks and uncertainties [before, during, and after the Repair]
    vi. Disruption to operations [before, during, and after the Repair]

11. Add section to the "Checklist" relative to timeline for repairs and the engineer's recommended next steps if action is not taken within 1, 3, 5, and 10 years, for the Building Official's consideration

12. Consider adding discussion sections to FBC Existing similar to the following existing consensus language
    a. FBC 2020 7th Edition Building
        i. Section 1604 General Design Requirements Subsections 1604.4 Analysis, 1604.8 Anchorage, & 1604.9 Counteracting Structural Actions
            1. https://codes.iccsafe.org/content/FLBC2020P1/chapter-16-structural-design#FLBC2020P1_Ch16_Sec1604
        ii. Section 1615, Structural Integrity
            1. https://codes.iccsafe.org/content/FLBC2020P1/chapter-16-structural-design#FLBC2020P1_Ch16_Sec1615
    b. ACI 318-14
        i. Define "Structural Integrity", based on existing consensus document:
            1. Overall structural integrity relies not only on the design of individual members, but also on the design of the structure as an entire system. A structural system consists of structural members, joints, and connections, each performing a specific role or function. A structural member may belong to one or more structural systems, serving different roles in each system and having to meet all the detailing requirements of the structural systems of which they are a part. Joints and connections are locations common to intersecting members or are items used to connect one member to another, but the distinction between members, joints, and connections can depend on how the structure is idealized.
            2. Structural integrity of the entire system requires redundancy and ductility through connections so that, in the event of damage to a major supporting element or an abnormal loading, the resulting damage will be localized and the structure will have a higher probability of maintaining overall stability. Therefore, connections shall be detailed to tie the structure together effectively and to improve overall structural integrity.
            3. Within a structural system, floor and roof systems play a dual role by simultaneously supporting gravity loads and transmitting lateral forces in their own plane as a diaphragm. Diaphragms, such as floor or roof systems, shall be designed to resist simultaneously both out-of-plane gravity loads and in-plane lateral forces.
            4. All structural systems must have a complete load path.
        ii. Define "Structural Analysis" based on existing consensus document:
            1. The role of analysis is to estimate the internal forces and deformations of the structural system and to establish compliance with the strength, serviceability, and stability requirements of the Code. The Code requires that the analytical procedure used meets the fundamental principles of equilibrium and compatibility of deformations.
            2. The basic requirement for strength design may be expressed as design strength ≥ required strength
        iii. Define "Distress" based on existing consensus documents
            1. Distress is a visual or audible indication of loss of strength, change in strength, loss of performance, and/or change of performance, of a structural element, connection, system, or foundation.
            2. Distress can take the form of cracking, warping, deformation, settlement, or otherwise movement of structural elements, components, and systems.

3. Damage, deterioration, structural deficiencies or behavior
4. Distress can result from overloading, deficient design, construction defects, exposure to moisture, exposure to heat, and many other factors.
5. Structural performance cannot be considered as acceptable if past and present performance has indicated structural distress beyond expected levels.
6. To paraphrase ACI 562-19, member deterioration and damage may result in distribution of internal forces different than the distribution of forces of the original structural design. In order to keep a structure in service, the state of the structure should be accurately modeled to determine the distribution of forces.
7. A primary purpose of structural assessments is to verify that the exposed existing construction is as assumed in the design and that the construction fulfilled the design intent. If the existing construction differs from the design assumptions, the structure must be analyzed for its existing, in-situ condition.
8. The affected structural members are not only members with obvious signs of distress but also contiguous members and connections in the structural system
9. Structural assessments are required when damage, deterioration, structural deficiencies or behavior (distress) are observed during the Phase 1 assessment that are unexpected or inconsistent with available construction documents. Results of the condition assessment should also be reviewed to identify if potentially dangerous conditions are present. Potentially dangerous structural conditions include any instability, the potential for collapse of overhead components or pieces (falling hazards), or a significant risk of collapse exists under service load conditions.

iv. Define “Analysis”

1. The Analysis must include either an analytical evaluation of strength (computation) or a load test of each structural system.
2. The analytical evaluation (computation) must be based on the existing member dimensions, layout, and material properties, or a load test is carried out on each individual structural system.
3. The analytical computation of a structural system requires the following information, at a minimum:
    a. Member layout in order to determine location of all critical sections
    b. Dimensions of members shall be established at critical sections
    c. Continuity of materials and load path
    d. Congruence of in-field conditions with the theoretical strength equations, including adherence to all calculation limitations and requirements.
    e. Quality of Construction
4. A load test of a structural system is required in order for a structure to remain in service if a computational analysis cannot be conducted. A load test of each structural system must be carried out in order for the design professional to evaluate its strength and serviceability. Load tests shall be conducted in a manner that provides for safety of life and the structure during the test. Load tests must occur within each unique type of structural system, and load the critical members. A load test is comprised of loading the structure with a calculated load based on code requirements, and then measuring the resultant deflection and stresses. A load test is not intended to cause distress of the system and is to be halted if distress is observed during load application
    a. In the event that a load test can occur on a deteriorating structure, acceptance provided by the load test is, by necessity, limited in terms of future service life. When a deteriorating structure passes a load test, a periodic inspection program that involves physical tests and periodic inspections must be implemented in order to monitor and quantify the remaining service life of the structure. The length of the specified time period between inspections should be based on consideration of the nature of the deterioration, the environmental and load effects, the service history of the structure; and the scope of the periodic inspection program. At the end of a specified time period, further strength evaluation is required if the structure is to remain in service.

<u>Suggestion 2</u>: Define the Qualifications for Engineers that are able to perform Structural Assessments, and consider if it should be named/tracked as a Structural Building Assessment License/Specialty/Certificate/Inspector. The definition of the qualifications can be listed within the FBC Existing Building or suggested to Legislature to be defined within the Florida Statutes, similar to Threshold Inspectors.

The below suggestion considered qualifications we would expect from Structural Building Assessors. The range of qualifications below can be easily applied to existing engineers as well as future engineers, without forcing anyone to take an exam or get a Masters degree.

1. Potential Qualifications for Engineers to be able to perform Structural Assessments
    - **a. Professional Engineering License in the State of Florida for at least 4 years**
        - **i. <u>In addition to</u> at least three of the following criteria:**
            1. **Master's degree in Civil Engineering (must have emphasis in Structures) from a program that has an EAC/ABET-accredited program in Civil Engineering or Structural Engineering at the undergraduate or graduate level.**
            2. **Pass the NCEES 16-hour Structural Exam**
            3. **Structural Design Background Type A: EOR New Design**
                - *a. EOR for the structural design of at least 4 new construction buildings. See next section for detailed requirements.*
            4. **Structural Design Background Type B: EOR Repair/Renovation Design**
                - *a. EOR for the structural design for repair/renovation of at least 4 existing buildings, including one existing building which required the design of shoring in order to complete the repairs. See next section for detailed requirements.*
            5. **Structural Design Background Type C: Design Engineer New & Repair Design**
                - *a. Design Engineer of PE Level (non-EI), operating with an Engineer of Record, for the structural design of at least 4 new construction buildings AND structural design for repair/renovation of at least 4 existing buildings, including one existing building which required the design of shoring in order to complete the repairs. See next section for detailed requirements.*
            6. **Structural Assessment Background Type A: EOR Assessment**
                - *a. EOR for the structural condition assessment of at least 4 existing buildings, the following 3 criteria must be met [can be met within one project]. See next section for detailed requirements.*
                    - *i. One existing building which required destructive testing*
                        1. *Destructive Testing must have been specified, observed, and analyzed by the EOR.*
                    - *ii. One existing building which required design of shoring in order to complete the assessment.*
                        1. *Shoring must have been placed by and designed by the EOR.*
                    - *iii. One existing building which required repairs and shoring*
                        1. *EOR must have signed and sealed the resultant design plans for the repair, and inspected the site during such repairs for compliance with the construction documents.*
                        2. *Shoring must have been placed by and designed by the EOR.*
            7. **Structural Assessment Background Type B: Design Engineer Assessment**
                - **a.** *Design Engineer of PE Level (non-EI), operating with a Structural Assessment Type A EOR for the structural condition assessment of at least 8 existing buildings, with similar criteria as SA Type A. See next section for detailed requirements.*

2. Structural Design Background Types A-C and Structural Assessment Background Type A-B as defined below:
    a. **Structural Design Background**:
        i. **Type A**: Engineer of Record for the structural design of at least 4 new construction buildings.
            1. Each building must have been two or more stories, and located in the state of Florida.
            2. Design scope must have included the full load path, including all elements, connections, and foundations.
            3. Building Designs which included delegated design elements cannot be utilized.
            4. Building Designs which utilized computer analysis software for the main vertical and lateral system design (programs made by corporations, ie: someone other than the EOR) cannot be utilized.
            5. EOR must have been present on site during construction for each of the 4 buildings; the purpose of inspections to ensure that the design plans were adhered to.
            6. The 4 buildings should consist of at least 2 residential buildings and 2 commercial buildings.
        ii. **Type B**: Engineer of Record for the structural design for repair/renovation of at least 4 existing buildings, including one existing building which required the design of shoring in order to complete the repairs.
            1. Each building must have been two or more stories, and located in the state of Florida.
            2. Design scope must have included the full load path, including all elements, connections, and foundations.
            3. Repair Designs which included delegated design elements cannot be utilized.
            4. Repair Designs which utilized computer analysis software for the main vertical and lateral system design (programs made by corporations, ie: someone other than the EOR) cannot be utilized.
            5. Shoring must have been placed by and designed by the EOR.
            6. EOR must have been present on site during construction and/or repairs for each of the 4 buildings; the purpose of inspections to ensure that the design plans were adhered to.
            7. The 4 buildings should consist of at least 2 residential buildings and 2 commercial buildings.
        iii. **Type C**: Design Engineer of PE Level (non-EI), operating with an Engineer of Record, for the structural design of at least 4 new construction buildings AND structural design for repair/renovation of at least 4 existing buildings, including one existing building which required the design of shoring in order to complete the repairs.
            1. Each building must have been two or more stories, and located in the state of Florida.
            2. Design scope must have included the full load path, including all elements, connections, and foundations.
            3. Building/Repair Designs which included delegated design elements cannot be utilized.
            4. Building/Repair Designs which utilized computer analysis software for the main vertical and lateral system design (programs made by corporations, ie: someone other than the Design Engineer) cannot be utilized.
            5. Shoring must have been placed by and designed by the Design Engineer.
            6. Design Engineer must have been present on site during construction and/or repairs for each of the 8 buildings; the purpose of inspections to ensure that the design plans were adhered to.
            7. The 4 buildings should consist of at least 2 residential buildings and 2 commercial buildings for both design and repair (4 residential buildings, and 4 commercial buildings, total).

b. **Structural Assessment Background**:
    i. **Type A**: Engineer of Record for the structural condition assessment of at least 4 existing buildings,
        1. Of the 4 existing buildings, the following 3 criteria must be met [can be met within one project]:
            a. One existing building which required destructive testing
                i. Destructive Testing must have been specified, observed, and analyzed by the EOR.
            b. One existing building which required design of shoring in order to complete the assessment.
                i. Shoring must have been placed by and designed by the EOR.
            c. One existing building which required repairs and shoring
                i. EOR must have signed and sealed the resultant design plans for the repair, and inspected the site during such repairs for compliance with the construction documents.
                ii. Shoring must have been placed by and designed by the EOR.
        2. Each building must have been two or more stories, and located in the state of Florida.
        3. Assessment scope must have included the identification of the full load path, including all elements, connections, and foundations, as well as identification of isolation joints and transfer levels.
        4. Assessments which included delegated structural inspections or analysis do not qualify.
        5. Assessments which utilized computer analysis software for the main vertical and lateral system analysis (programs made by corporations, ie: someone other than the EOR) cannot be utilized.
        6. Assessments must have included the removal of interior non-structural items in order to view the condition of the structural system and elements.
        7. EOR must have been present on site during inspections and testing, for each of the 4 buildings; the purpose of inspections to ensure that the building's existing condition was properly inspected and tested.
        8. EOR must have drafted the Analysis portion of their Report without assistance other than internal Peer Review upon completion of the Report.
        9. The 4 buildings should consist of at least 2 residential buildings and 2 commercial buildings.
    ii. **Type B**: Design Engineer of PE Level (non-EI), operating with a Structural Assessment Type A EOR, for the structural condition assessment of at least 8 existing buildings,
        1. Of the 8 existing buildings, the following 3 criteria must be met [can be met within one project]:
            a. One existing building which required destructive testing
                i. Destructive Testing must have been specified, observed, and analyzed by the Design Engineer and checked & S&S by the SA Type A EOR.
            b. One existing building which required design of shoring in order to complete the assessment.
                i. Shoring must have been placed by and designed by the Design Engineer and checked & S&S by the SA Type A EOR.
            c. One existing building which required repairs and shoring
                i. Design Engineer and checked & S&S by the SA Type A EOR must have designed the resultant design plans for the repair, and inspected the site during such repairs for compliance with the construction documents.
                ii. Shoring must have been placed by and designed by the Design Engineer and checked & S&S by the SA Type A EOR.
        2. Each building must have been two or more stories, and located in the state of Florida.

3. Assessment scope must have included the identification of the full load path, including all elements, connections, and foundations, as well as identification of isolation joints and transfer levels.
4. Assessments which included delegated structural inspections or analysis do not qualify.
5. Assessments which utilized computer analysis software for the main vertical and lateral system analysis (programs made by corporations, ie: someone other than the Design Engineer) cannot be utilized.
6. Assessments must have included the removal of interior non-structural items in order to view the condition of the structural system and elements.
7. Design Engineer must have been present on site during inspections and testing, for each of the 8 buildings; the purpose of inspections to ensure that the building's existing condition was properly inspected and tested.
8. EOR must have drafted the Analysis portion of their Report without assistance other than internal Peer Review upon completion of the Report.
9. The 8 buildings should consist of at least 4 residential buildings and 4 commercial buildings.