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THRESHOLD INSPECTION

The design and construction of new structures is a complex matter involving many entities. Naturally, the degree of complexity increases as the construction techniques evolve and demand for fast paced schedules increases as well as the need for larger, higher structures. In the past decade, the construction industry experienced soaring demands for high-rise structures, particularly along the Florida coastline. Due to these and other factors, owners, architects, engineers, and contractors must coordinate and cooperate with each other for successful completion of their projects and to avoid mistakes that are costly and, in some cases, dangerous to the health and welfare of the public.

In 1983, the Florida Legislator passed the engineering construction oversight law, known as the Threshold Inspection Law, to provide guidance and define roles and responsibilities of owners, architects/engineers of record and contractors involved in the construction of "threshold buildings." Chapter 553, Section 71, of the Florida Statute defines threshold buildings as buildings that are greater than three stories or 50 feet in height or that have an assembly occupancy classification, as defined by the Florida Building Code, that exceeds 5,000 square feet in area and an occupant content of greater than 500 persons. Any building that falls under this definition must be inspected by a licensed architect or engineer certified as a Special Inspector under Chapter 471 or Chapter 481 to conduct inspections of threshold buildings. Structures that fall under this category may include mid- to high-rise condominiums, churches, hospitals, gymnasiums, cafeterias, stadiums, movie theaters, schools, and others.

The Special Inspector is a person certified, licensed or registered under Chapter 471 as an engineer or under Chapter 481 as an architect. Although the owner is required under the law to select and pay all costs associated with

employing a Special Inspector, the Special Inspector shall be responsible to, but not a substitute for, the enforcing agency. Mainly, the role of the Special Inspector is to substantiate that construction activities of load bearing elements are being performed in accordance with the permitted documents and project-specific structural inspection plan.

The selection of the Special Inspector should be made prior to commencement of the construction activities. Plans, drawings, specifications, and structural inspection (threshold inspection) plans must be furnished to the Special Inspector to become familiar with the inspection requirements. During the construction period, the Special Inspector may send his/her duly authorized representative to perform the necessary inspections.

To become familiar with the intent of the inspection process and threshold inspection plan, it is highly recommended that a threshold compliance meeting be held at the job site to include representatives of the owner, architect or engineer of record, independent testing agency, and contractor(s). This meeting should be held prior to commencement of any construction activities to establish communication channels, inspection requirements and procedures for report submittals, delivery and distribution. The Special Inspector will establish, maintain and update a "deficiencies" record to track construction activities that deviate from the permitted documents. Discussions should also include ways and means for responding to these deficiencies in a timely manner.

The structural inspection plan, which is prepared by the architect or engineer of record, must be submitted to the enforcing agency prior to issuance of a building permit.

The threshold inspection plan describes work required to comply with Chapter 553 of the Florida Statutes and provide requirements for inspection of the load-bearing elements (i.e., structural members that transmit loads to the ground). Upon completion of construction of the load-bearing elements and prior to issuance of the certificate of occupancy, the Special Inspector must file a signed and sealed statement (FS 553.79 (7)a) with the enforcing agency indicating that, to the best of his/her knowledge, the building was constructed in substantial compliance with the permitted documents.

Inspections performed by the Special Inspector should not serve as a surrogate in carrying out the responsibilities of the building official, the architect, or the engineer of record. The threshold inspection plan and the work of the Special Inspector should not be relied upon to replace a comprehensive quality control program established by the contractor. Therefore, the contractor's contractual or statutory obligations are not relieved by the presence or any action of the Special Inspector (FS 553.79 (5)a).

A brief description of items that may be inspected during the course of construction include, but are not limited to, the following:

Foundation: For deep foundation, the Special Inspector should review the pile logs prior to concrete placement in pile caps and grade beams; review pile surveys and confirm piles are installed within the specified tolerance; and check pile embedment, exposure, and clearance. Also, the Special Inspector should check configuration and placement of reinforcing steel and observe concrete placement in all type of foundations.

Reinforced Cast-In-Place Concrete: The Special Inspector should check size, quantity, grade, configuration, and splice length and location of reinforcing steel; verify that minimum concrete clearance is provided; and that reinforcing bars are clean and free of excess rust or other material that may adversely affect bonding with the concrete.

Columns, beams, slabs: The columns should be checked for reinforcing steel, tie spacing and location. Beams should be inspected for reinforcing steel, stirrup spacing and locations, as well as for location of hooked bars. The slabs should be inspected for reinforcing steel size, proper layering, temperature of steel, placement of hooked bars, etc.

Post-Tension Tendons: Prior to placement of concrete, check size, location, grouping (bundling) and proper anchoring of the tendons. Check chair height at various locations along the length of each tendon (particularly at cantilever sections); check that grease caps are installed and secured. A few days after concrete placement, verify that the concrete attained the minimum compressive strength required to stress the tendons. Review and verify that the tendon designer or engineer of record has reviewed and accepted the elongation measurements prior to cutting of the tendons.

Structural Steel: For buildings that include structural steel members, the Special Inspector should verify that satisfactory visual and non-destructive testing required by the project specifications have been performed as well as visually inspect welded and bolted connections. Confirm quality and quantity of shear-studs, puddle or TEK screws, and placement of any reinforcement on metal decking.

Note that threshold inspection plans are project-specific and should be developed and published by the architect or engineer of record, and the above should not be considered an inclusive or exhaustive list of items required for inspection on any given project.

Ellis & Associates, Inc. is currently providing threshold inspection services for various types of structures, including residential mid- to high-rise condominiums and movie theaters, as well as educational, religious, and medical institutions. Following is a list of some current or recent threshold projects:

- Mayo Clinic expansion, Jacksonville, FL
- Pier Point Condominiums, Jacksonville Beach, FL
- Hollywood Movies 14, River City Market Place Shopping Center, Jacksonville, FL
- Tournament Players Club (TPC), Sawgrass, Ponte Vedra Beach, FL
- La Jardin Condominiums, Palm Coast, FL
- Watersedge Condominiums, Atlantic & Intracoastal Waterway, Jacksonville, FL .

