

November 19, 2003

**Honorable Mayor and Members  
of the Hermosa Beach City Council**

**Regular Meeting of  
December 9, 2003**

**SUBJECT: DISCUSSION OF STRUCTURAL OBSERVATION PROGRAM**

**Recommendation:**

That City Council receive and file this report.

**Background:**

On October 14, 2003, the City Council directed staff to provide an overview of the structural observation program in building inspection.

**Analysis:**

Structural observation is a program of specialized inspection by the engineer or architect of record for certain structural elements of a building. The requirements for structural observation are established under Section 220 and Chapter 17 of the Uniform Building Code. The engineer or architect of record for a project typically designates the construction elements that need to be observed including: footings and stem walls, caissons, piles and grade beams and hillside anchors. Framing work subject to structural observation may include: steel moment frames, steel braced frames, concrete moment frames and masonry wall frames.

Section 220 of the U.B.C. defines structural observation as:

*A means of visual observation of the structural system, for general conformance to the approved plans and specifications, at significant construction stages and at completion of the structural system. Structural observation does not include or waive the responsibility for the inspections required by Section 108, 1701 or other sections of this code.<sup>1</sup>*

As provided in the above definition, a jurisdiction may require structural observation in addition to standard inspections typically required in the construction process. The City has required structural observation in this manner for many projects including seismic retrofits in the downtown, the renovation of the Bijou Building, column removal and replacement in the Hermosa Pavilion, grade beams and moment frames on residential projects and for the Pier and new lifeguard building. If plans are inadequately drawn or there is conflict between the project construction and the plans, the City has also utilized structural observation to sort out the inconsistency and ensure compliance with the engineered design. The engineer's report is certification of such compliance and takes precedence over the field inspector's observations or plan inconsistencies.

How the program works:

When required by the code, the engineer of record or the building official, the structural observation program utilizes the engineer of record in the inspection process to examine construction consistency with the engineered design. Section 1702 of the building code requires structural observation in Seismic Zone 3 or 4 (which includes all California) when one of the following conditions exist:

1. The structure is defined in Table 16-K as Occupancy Category 1, 2 or 3.
2. The structure is required to comply with Section 403 (Group B office buildings located more than 75 feet above the lowest level of fire department vehicle access, Type I or II F.R. with an approved automatic sprinkler system)
3. The structure is in Seismic Zone 4 as set forth in Table 16.
4. When so designated by the engineer or architect of record.
5. When so designated by the building official.

When any of the above conditions apply, the engineer or architect of record for a project is required to provide inspection to ensure that the engineered design is constructed pursuant to plan and specifications and fulfills the intent of the engineered design.

Structural observation is distinguished from special inspection or deputy inspection as provided for in Chapter 17 of the UBC. Structural observation is a requirement that the engineer of record participate in the inspection of particular seismic engineered design, whereas, the intent of special inspection as prescribed in Section 1701 is to provide continuous or special inspection which can only be satisfied by an inspector assigned to continuously monitor the project and which requires special expertise and quality control to assure code compliance. Special inspection is defined as inspections required by the engineer or architect of record to observe work assigned for conformance to the approved design drawings and specifications.<sup>2</sup>

Staff contacted 60 cities in the region (see attached survey) and no jurisdiction permits structural observation to stand in lieu of the standard inspection program of the city or which deviates from the provisions of Chapter 17 of the Building Code as mandated by the engineer or architect of record under Section 1702. Staff contacted Stuart Tom, Los Angeles Basin Chapter President of the ICC, Subcommittee Member of the LARUCP and Building Official for the City of Glendale who confirms that structural observation is an added inspection by the engineer of record to ensure that the building construction is executed pursuant to the engineered design and is not a substitute for municipal building inspection.

Staff also reviewed the structural observation program in the City of Manhattan Beach with Carol Jacobson, Building Official, on 10/14/03 to inquire about that city's experience with the program. Manhattan Beach uses the mandatory structural observation program outlined by the Building Code and the Los Angeles Regional Uniform Code Program (LARUCP) (Attachment No.1).<sup>3</sup> Manhattan Beach's structural observation program replaces a voluntary program that was discontinued on September 3, 2002 with adoption of new building code amendments in that city (Attachment No. 2). The prior program was voluntary and permitted the use of the engineer of record or architect for all structural inspections at the discretion of the builder in lieu of the City inspector. That program was eliminated when the City discovered that basic inspection items were being missed by the engineer conducting the inspections.<sup>4</sup> The new program is mandatory and a supplemental inspection to ensure compliance with all seismic strengthening requirements for projects under specified conditions. The new program does not waive regular City building inspector on-site inspection. (Attachment No. 3).

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Sol Blumenfeld, Director  
Community Development Department

Concur:

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Steve Burrell,  
City Manager

Notes:

1. Section 108-- Inspections-- is contained in the administrative provisions of Chapter 1 of the UBC and establishes the process, approvals required, required inspections and special inspections by the building official for all construction work for which a permit is required.
2. The types of work inspected by a special inspector include: concrete (taking test specimens and placing of reinforced concrete), bolts installed in concrete (prior to placing and during the placement of concrete around bolts when allowable stress tolerance are specified in the design), special moment-resisting concrete frame requiring continuous inspection of the placement of the reinforcement and concrete, reinforcing steel, structural welding, welding of reinforcing steel and special moment resisting frames (requiring non-destructive testing as specified in Section 1703 of the Building Code), high strength bolting, special structural masonry (masonry other than fully grouted open-end hollow masonry units, reinforced gypsum concrete (when concrete is being mixed and placed), insulating concrete fill, (during the application of insulating concrete when used as part of the structural system), spray-applied fire resistive materials, piling, drilled piers and caissons (during driving and testing of piles or construction of cast-in-place piles), shotcrete (during taking of test specimens, special earthwork excavations), smoke control systems and other work involving unusual conditions as prescribed by the code official.
3. Survey of surrounding jurisdictions participating in the Los Angeles Regional Uniform Code Program (LARUCP) an association of 89 cities in the region and all South Bay cities which has promoted uniform code adoption programs for the region including structural observation.
4. As reported by the Building Official, the voluntary program created chaos for many projects because of missed structural deficiencies found after approval by the engineer of record. This resulted in costly corrections and time delays since projects were required to remove covered items and correct deficiencies. This program created an atmosphere of adversity among all parties relating to the role and responsibility of the engineer and confusion about who should have caught deficiencies in the inspection process. The engineers of record were not conducting a complete structural inspection and refused to take 100% responsibility for the structural inspection.

Attachments:

1. Building Code Requirements for Structural Observation
2. City of Manhattan Beach Construction Observation Program.
3. City of Manhattan Beach Public Information Handout- Structural Observation Program, October 2003

P:/Structural Observation