Pier 70 Building Survey

Historic Buildings
Conditions and Assessment
Carey & Co. and OLMM, Inc
May 2008

Pier 70
San Francisco, California

Historic Building
Conditions Survey and Assessment
May 22, 2008

A. Introduction

The purpose of this report is to develop conceptual-level cost estimates for building reuse that can assist the master-planning team in determining order-of-magnitude construction costs for the selected historic structures at Pier 70. Carey & Co. worked with the M. Lee Corporation, cost estimators, and OLMM, structural engineers and to a limited extent the other Pier 70 consultant teams to prepare this assessment. For the building evaluations, OLMM analyzed structural systems, and Carey & Co. studied architectural, preservation, and conservation issues. Port staff, EPS, and Roma, have assisted in identifying appropriate adaptive re-use assumptions.

B. Methodology

Carey & Co. conducted field surveys in March and April of 2008 to inspect the fifteen buildings specified by the Port of San Francisco. Port staff provided escorts for Carey & Co., OLMM and the Martin Lee Corp. The Carey & Co. survey included an examination of historic site features around the individual buildings, internal and external finishes, and specific historic elements. Based on these surveys Carey & Co. has provided a set of recommendations that includes general instructions for rehabilitation and, where appropriate, a specific set of repair instructions to aid in cost estimation.

Each item surveyed by Carey & Co. received a generalized rating. These designations are meant to serve as shorthand for understanding the overall condition of specific architectural elements. The ratings range from:

Poor:	The space or component is missing or unserviceable and requires replacement or major repair
Fair:	The space or component is worn or deteriorated and requires repair
Good:	The space or component is intact and sound and requires minor repairs
Excellent:	The space or component is serviceable condition and requires minimal or no repair

The review of existing documents included the 1944 Bethlehem Steel Company plans and information binders on specific buildings made available by the Port Of San Francisco.

To facilitate cost estimation of individual buildings, Carey & Co. architectural reports and OLMM structural reports have been integrated into one building-specific report.

Building 101

Building 101 UIW Main Office/Administration Building
56,268 GSF
3 story with partial 4th story and penthouse and two basement levels
L shaped 140.5' x 52' 72' tall
Built 1917
Construction Type: Brick/concrete composite

Physical Description
Building 101 stands at the corner of 20th and Illinois Streets, marking the corner and the entry to the shipyard. An iron perimeter fence frames the entrance to this building and originally extended down both 20th and Illinois Streets; this fence is still partially intact. Designed by preeminent San Francisco architect, Fredrick H. Meyer and built in 1917, the building is Neoclassical in style.

This classically detailed, three-story building is "L" shaped in plan with a wide bevel at the outside corner of the "L". It measures 140'-6" long, by 51'-10" wide, by 72'-0" high, and contains 56,268 square feet (figure 39). Stucco clads the exterior, and is rusticated at the first floor. The roof is flat. At the beveled corner, granite steps lead to an elaborate, recessed entry. A keystone with egg and dart molding and an oval cartouche caps the entry arch. The primary window type on all elevations is one-over-one, double-hung, wood sash with lamb's tongue details and operable transoms. Windows on the first floor are paired. A wide string course encircles the building between the first and second floors, with projecting balustraded window sills over the entry and at both end bays of the street-facing facades. These window sills are supported by curved brackets with acanthus leaf ornamentation. Two-story fluted Doric pilasters ascend from the stringcourse, dividing the primary facades into bays. Set within each bay on the second and third floors,

windows are in threes, with ornamental spandrel panels between the second and third floors. As seen on the west façade, these spandrel panels originally were ornamented with low relief floral patterns, though all of these have been lost on the south façade. A wide, simple entablature tops the building, with a projecting cornice band and solid parapet.

This building has three approximately 11,000 square foot primary floors over a basement and sub-basement, with a partial 1,512 square foot fourth floor and penthouse. Double-loaded corridors access offices at the three primary floors and the basement.

The octagonal main lobby features cast stone walls over pink marble wainscoting and a pink marble floor. Centered on the coffered ornamental plaster ceiling is an octagonal bronze and glass pendant light fixture. The elevator, with Art Deco doors and a pink marble door surround, is along the south wall.

SITE

Fence
Condition: Fair
Description:
- Historic WWI-era iron fence mounted on stone base

Condition:
- Some minor rust on iron fence
- Mortar joints failed on 80% of stone base
- Stone base has shifted and is out of plane
- Significant damage on west wall from car crash

Recommendation:
- Rebuild Iron fence:
  1. Disassemble Iron Fence
  2. Reset stone base
  3. Anchor cut stone into concrete to prevent seismic movement
  4. Recover iron fence stored in Building 14 after car crash
  5. Reassemble Iron Fence
- Remove rust and repaint. Ferrous Metal Corrosion and Coating Treatments:
  1. Remove rust and most of the surrounding paint. Determine the extent of failure, corrosion and surface detailing before determining the removal method. Potential methods include wire brushing, grit blasting, or chemical methods. The presence of lead-based paint will also affect the choice of removal method.

2. Remove all loose, flaking and deteriorated paint and corrosion to bare metal.
3. Degrease surfaces and prime immediately.
4. Paint Selection:
   Option One: spot prime with industrial corrosion-inhibiting primer, followed by two coats of oil based paint.
   Option Two: high performance coatings, such as zinc-rich primers, and epoxy coatings should be considered to allow for longer lasting protection. Note: These coating typically require highly clean surfaces and special application conditions that can be difficult to achieve at some sites.

Sidewalk Arches
Condition: poor
Description:
- Sidewalk to main door supported by concrete arches in light wells

Condition
- Large structural cracks have fractured the arches

Recommendation
- Replace arches

EXTERIOR

Exterior Walls surface
Condition: Fair
Description:
- Cement plaster over brick masonry

Condition:
- Some de-bonded plaster
- Dirt and staining on cement plaster walls.

Recommendation:
- Replace 20% de-bonded cement plaster. Cement Plaster Repair
  1. Review laboratory reports on cement plaster to determine appropriate mix.
  2. Patch small cracks, less than 1/16" wide, with a thin slurry coat consisting of finish coat ingredients.
  3. For larger cracks, or holes, address underlying substrate deterioration problems first, then patch with new cement plaster to match surrounding material.
  4. Remove cement plaster as required to fully address underlying concrete or brick masonry substrate damage prior to patching.
  5. Undercut adjacent sound cement plaster to create a key for the new repair material.
  6. Following repairs, prepare and paint the building with a high-quality, non-epoxy breathable coating such as acrylic latex.

- Clean cement plaster walls. Cement Plaster Cleaning
    1. Determine type and source of stain. If the stain is ferrous metal corrosion, locate the metal and determine the cause of the corrosion. Staining may be the first clue that reinforcing rod within the wall is corroding. If the stain is efflorescence, determine and eliminate the source of water.
    2. Remove non-historic, non-functional metal attachments. Patch subsequent holes as described above under Cement Plaster Repair.
    3. Remove stains using the gentlest means possible. Test the area first to make sure the base material is not harmed and that significant painted materials are not affected. Begin using low pressure washing methods (100-300psi) with a fan tip and a natural bristle or nylon brush. Mild detergent or tri-sodium phosphate solutions should be tried next.

    4. Where the cement plaster is painted, the cleaning and stripping of paint will be required to make repairs. The presence of lead-based paint will also affect the choice of removal method.
    5. Use proprietary chemical cleaners designed for cement plaster only if necessary. For biological growth, the pressure wash may contain proprietary biocides. Non-liquid products such as "Peel-Away" may be preferred, since they have fewer environmental impacts.

Exterior Walls Ornamentation

Condition: Poor

Description:

- Medallions and Pilasters

Condition:

- Ornamental elements with leading edges have suffered some cracking and chipping

Recommendation:

- Repair or replace 40% damaged ornament. Ornamental Cement Plaster Repair

1. Review laboratory reports on cement plaster to determine appropriate mix.
2. Determine level of deterioration in architectural ornament. Develop a work plan citing areas for repair or replacement.
3. Repair small and large cracks and holes as for flat cement plaster areas.
4. Where the concrete or brick masonry substrate, creating a sectional profile has deteriorated, re- build up the profile in like materials.
4. Where engaged (i.e. pilasters or medallions) ornament is missing, or severely deteriorated beyond repair, create molds for new plaster castings from existing original ornament.
5. Where full round (i.e. balusters or railcaps) ornament is missing, or severely deteriorated beyond repair, create molds for new castings from existing original ornament. Replacement materials may be in-kind or alternative, such as EFIS shapes clad with a cementitous slurry.
6. Following repairs, prepare and paint the building with a high-quality, non-epoxy breathable coating such as acrylic latex.



Exterior Wall pilaster capitals
Condition: Poor
Description:

- 30 cast stone capitals over pilasters
- Some capitals have undergone repairs

Condition:

- Cast stone chipping and spalling
- Some pilasters missing or damaged beyond recognition

Recommendation:

- 100% rebuild 12 capitals.
- Repair non-structural cracks and spalling on remaining 18 capitals.
- Ornamental Cement Plaster Repair:
    1. Review laboratory reports on cement plaster to determine appropriate mix.
    2. Determine level of deterioration in architectural ornament. Develop a work plan citing areas for repair or replacement.
    3. Repair small and large cracks and holes as for flat cement plaster areas.
    4. Where the concrete or brick masonry substrate, creating a sectional profile has deteriorated, re- build up the profile in like materials.
    4. Where engaged (i.e. pilasters or medallions) ornament is missing, or severely deteriorated beyond repair, create molds for new plaster castings from existing original ornament.
    5. Where full round (i.e. balusters or railcaps) ornament is missing, or severely deteriorated beyond repair, create molds for new castings from existing original ornament. Replacement materials may be in-kind or alternative, such as EFIS shapes clad with a cementitous slurry.
    6. Following repairs, prepare and paint the building with a high-quality, non-epoxy breathable coating such as acrylic latex.

Exterior Walls Balconies

Condition: Poor

Description:

- 7 cast stone balconies with balustrades

Condition:

- Significant cracking or spalling on all balconies
- 100% balustrades damaged or missing

Recommendation:

- Reconstruct 7 balconies
- Examine Exterior Insulation Finish System (EIFS) material option to reconstruct balconies. EIFS is a lightweight foam construction material that is substantially lighter and cheaper than cast stone.

Windows:

Condition: Good

Description:

- Wood double-hung windows

Condition:

- Some minor damage to sash
- Paint chipping and peeling

Recommendation:

- Remove graffiti from window panes
- Replace 5% window panes
- Replace 5% window sash
- Restore 95% wood windows:
  1. Survey existing condition of all wood windows.
  2. Remove all dirt, debris, and miscellaneous attachments.
  3. Remove paint to obtain clean surface.
  4. Replace deteriorated wood elements in kind as required.
  5. Restore window to proper operation.
  6. Install new hardware, where missing, to match original.
  7. Install new glazing where cracked or missing.
  8. Prepare wood surfaces, prime, and paint.
  9. Where wood windows are deteriorated, but repairable, remove the unit to a controlled shop condition for element replacement and / or epoxy consolidation.

ROOF

Membrane

Condition: poor

Description:

- Built-up tar roof over concrete structure

Condition:

- Poor – significant water penetration
- Evidence of ponding

Recommendation:

- Clear drains
- Install 100% new built-up roof

Skylights

Condition: Fair

Description:

- Covered in Tar Paper;

Condition:

- The skylights appear essentially intact under the tar paper.

Recommendation

- Reconstruct skylight curbs, flashing, cladding and glazing
- Restore skylights to functionality

INTERIOR

Light Fixtures

Condition: fair

Description:

- Various types of historic light fixtures throughout building

Condition:

- Most appear salvageable

Recommendation:

- Restore historic light fixtures
- General Light Fixture Repair
    1. Survey all light fixtures for deterioration, missing elements, operability and hazardous material content. Record the findings in a window survey log.
    2. Retain as many historic fixtures as possible. Repair for re-use if possible. If re-lamping is not possible, retain in place and add additional new lighting.
    3. Early fluorescent lights generally contain hazardous materials in their ballasts. If possible, retrofit the light fixtures for modern lamping, and dispose of ballasts as required by law.

Interior Ornamentation:
Condition: Good
Description:

- Neoclassical plaster ornamentation and detailing, primarily in octagon room at southwest corner of building

Condition:

- The ornamentation has experienced minimal cracking or spalling
- Some chipping paint

Recommendation:

- Repaint interior ornamentation:
  1. Remove flaking paint
  2. Prepare and prime surface
  3. Repaint

Ornamental Iron Stair Railing:
Condition:
Description:

- Ornamental iron railing around main stair

Condition:

- Significant portions of the railing have been stolen

Recommendation:

- Cast new ornamental railing components and rebuild ornamental iron railing. Ornamental Cast Metal Repair:
  1. Ornamental cast metal elements include the missing main stair railings
  2. Survey the area for missing or damaged elements. Map the quantity and location of areas to be treated on plans or interior elevations. Develop detailed drawings of existing elements, and based on existing adjacent design, reconstruct the missing elements.
  3. Retain the services of a foundry specializing in cast architectural ornament, to replicate missing stair railings. It may be necessary to de-mount an existing piece of railing for use as a pattern.

INTERIOR WALLS:

Elevator

Condition: poor

Description:

- Historic ornate elevator car

Condition:

- Fair – most of elevator interior ornamentation intact

Recommendation:

- Salvage elevator interior for re-installation in new elevator car

Hollow Clay Tile Walls

Condition: poor

Description:

- Hollow clay tile demising walls present in the rooms around the "L" at the southwest corner of the building.
- Because of the nature of this survey we were not able to discern the full extent of the Hollow clay tiles

Condition:

- Hollow clay tile walls represent a significant safety hazard because they can shatter during a seismic event

Recommendation:

- Remove 50% hollow clay tile partition walls
- Retrofit 50% hollow clay tile partition walls with seismic carbon-fiber wrap

Executive Office Wood Paneling

Condition: fair

Description:

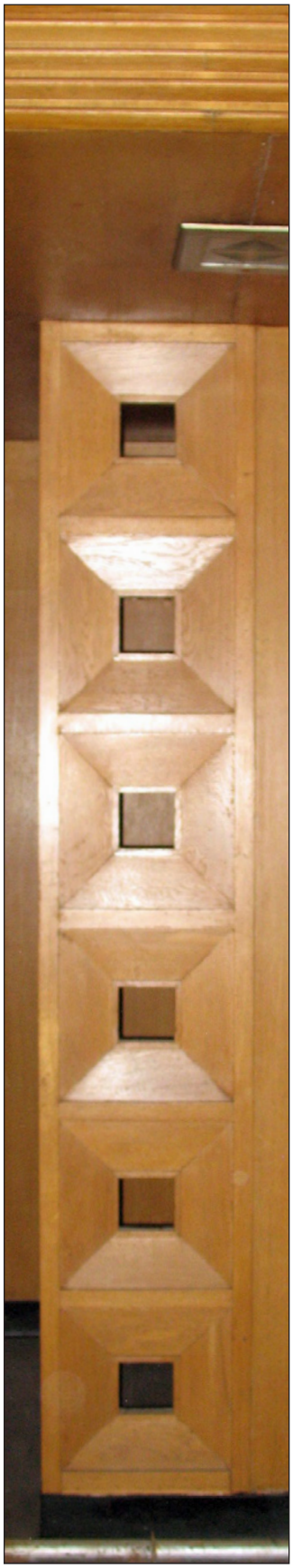
- Oak plywood wall covering

Condition:

- The plywood panels have raised grain and some weathering

Recommendation:

- Sand wood to remove raised grain
- Clean and shellac: Interior Wood Element Repair
    1. Survey the interior areas for missing or damaged elements. Where the damage is the result of water intrusion, repair the water intrusion source before making wood repairs.



2. Where wood elements are split, splintered, or gouged, repair using a Dutchman patch of the same kind of wood with the same grain orientation. Finish to match the surrounding wood.
3. Where wood elements are attached to a failed substrate, catalogue and de-mount the wood finish materials, repair the substrate and reinstall the wood elements.
4. Where varnished wood finishes have failed from sun exposure or the presence of moisture, strip the damaged finish and refinish to match surrounding material.
5. Wood elements that are damaged or deteriorated beyond repair should be replaced to match the original sectional profile, wood type, grain direction, color, and finish.

Wet applied plaster over lath
Condition: fair
Description:
- Plaster over lath on second floor

Condition:
- Some water damage

Recommendation:
- Replace 20% of plaster & lath walls due to water damage

Marble Wainscoting:
Condition: Fair
Description:
- Marble panel wainscoting in hallways and offices primarily on first floor.

Condition:
- Some spray-paint graffiti

Recommendation:
- Restore marble wainscoting. Marble Floor and Wainscot Repair:

1. Survey the area for missing or damaged marble tiles or panels. Map the quantity and location of areas to be treated on plans or interior elevations.
2. Clean marble surfaces prior to making repairs.
3. Where marble cladding is attached to a failed substrate, catalogue and de-mount the marble, repair the substrate and reinstall the panels or tiles
4. Repair Minor cracks and holes in marble surfaces as follows:
   a. Remove all loose particles back to sound material
   b. Prepare surface to accept adhesive repair medium. Use repair materials specially formulated for marble repair. Custom tinting will be required.
5. If marble is damaged beyond repair or missing, replace with new marble matching the existing with respect to color, aggregate size, finish, veining and thickness.

INTERIOR FLOORS:

Vinyl Asbestos Tile (VAT) over concrete
Condition: fair
Description:

- Vinyl Asbestos Tile over concrete floor ubiquitous

Condition:

- Poor

Recommendation:

- Coordinate with Asbestos abatement recommendations
- Remove 100% VAT

Terrazzo Floors
Condition: excellent
Description:

- Terrazzo floors

Condition:

- Dirty

Recommendation:

- Terrazzo Floor Repair
  1. Survey the area for missing or damaged terrazzo floor surface. Map the quantity and location of areas to be treated on plans. or interior elevations.
  2. Clean terrazzo surfaces prior to making repairs.
  3. Repair Minor cracks and holes in marble surfaces as follows:
     a. Remove all loose particles back to sound material
     b. Prepare surface to accept repair medium. Use repair materials specially formulated for terrazzo repair and tint to match the predominant color.
  4. If the terrazzo is damaged beyond repair or missing, replace with new terrazzo matching the existing with respect to color, aggregate size, and finish. Replace brass divider strips if required using the same thickness as the surrounding strips.

Linoleum Floors
Condition: poor
Description:
- Linoleum over concrete floors

Condition:
- Linoleum cracked and peeling off floor surface

Recommendation:
- Replace 100% linoleum wherever present

Accessibility

Building 101 has an elevator to provide accessibility to all floors. The main front entrance has four steps which would make it inaccessible. Because of the grade change moving east, wheelchair users could enter the building either through an auxillary door on 20th street or through a door on the north elevation of the building.

Reuse Scenario:
- Continues as office use
- Basement for commercial opportunity with access from Illinois and 20th Streets

PORT OF SAN FRANCISCO · PIER 70 · BUILDING 101
SEISMIC REVIEW

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1.1 Introduction

This report summarizes the findings and recommendations of a qualitative seismic and structural assessment of the Port of San Francisco Building 101. The structural assessment included a site visit, review of available architectural drawings, available previous reports and structural/seismic assessment in accordance with Tier 1 of the ASCE/SEI 31-03. The purpose of this assessment is to note decay of existing structural materials (when readily visible), to identify potential seismic deficiencies, and to develop recommendations for further investigations, analyses and retrofit.

1.2 List of Available Documents

1. "Rapid Structural Evaluation" by Uday Prassad, dated 5/3/2005.

2. Architectural Drawings (2 sheets), by Bethlehem Steel Co., Shipbuilding Division, San Francisco Yard, CA., dated April, 1945 with latest revision dated 11-1-77.

It should be noted that no structural drawings showing the member sizes, thickness, or connections were available. Soil report for the site was also not available.

1.3 Site Visit

A site visit of the building was performed on April 18, 2008. We were accompanied by the staff of Carey & Co. during this visit. The main purpose of the site visit was to visually assess the physical condition of the building and, in particular, focus on the lateral force resisting elements. Following items were assessed during the site visit:

1. Type and materials of building construction.
2. Presence of lateral bracing elements.

3. Visible cracks or distress in structure and signs of settlements

The site visit did not include any measurements, testing, or removal of finishes.

1.4 Basis of Assessment

The Standard ASCE/SEI 31-03, American Society of Civil Engineers, *"Seismic Evaluation of Buildings,"* 2003, was used as the basis of our qualitative seismic evaluation. There are two seismic performance levels defined in ASCE/SEI 31-03: Life Safety Performance and the Immediate Occupancy Performance. We have based our evaluation on the Life Safety Performance level which is typical for buildings of this type and which is defined as "the building performance that includes significant damage to both structural and nonstructural components during a design earthquake, though at least some margin against either partial or total collapse remains. Injuries may occur, but the level of risk for life-threatening injury and entrapment is low." The basic structural checklist from ASCE/SEI 31-03 for this building is attached as Appendix A.

1.5 Review of Existing Drawings, Reports and Site Observations

Building 101 is a three-story, unreinforced masonry (URM) shear wall structure. There are two basement levels. Building is L-shaped and measures 140'-6" long, by 51'-10" wide, by 72'-0" high.

The vertical load carrying system of building consists of cast-in-place concrete slab supported by the steel beams encased in concrete as seen in Photo 5, which are in turn supported on URM walls at the perimeter of the building. No major cracking was observed in the concrete floor slabs. Roof and floor slabs appear to be adequate to support existing dead loads and code minimum live loads.

The lateral force resisting system of the building consists of floor and roof wood diaphragms and URM walls at exterior. The exterior URM walls have many windows as shown in Photo 1 and 2, which result in narrow wall piers for seismic loads resistance. These may not be sufficient. The flexibility of URM wall piers can lead to significant building damage if they are subjected to strong seismic ground motions. The URM shear walls also do not appear to be adequately to resist out-of-plane loads. The consequences are that the heavy URM walls can pull away from the roof /floor framing, causing roof/floor framing to lose vertical support. No major cracking in exterior URM walls was observed.

Existing structural drawings are not available to show the type and size of the foundations for the building. There is also no soil report available for the building site. During the site visit we did not observe signs of settlement or cracking in the ground floor concrete slab. However, the building is located in San Francisco Bay margins known to be susceptible to soil liquefaction during strong ground shaking. Therefore, if the building is supported on shallow foundations, there is potential for damage due to liquefaction induced settlements.

Photo 1 Above: View of Southwest (Main Entry)

Photo 2 Below: View of South Side

1.6 Conclusions and Recommendations

Given the vintage of the building, many structural elements will not meet the provisions of the current building code. Main seismic deficiencies from our review are summarized below.

1. The exterior URM walls have many windows which result in narrow wall piers for seismic loads resistance. These may not be sufficient. The flexibility of URM piers can lead to significant building damage or partial collapse of the building during strong seismic ground motions.
2. The anchorage of the URM walls to the roof and floor diaphragms for out-of -plane load appears inadequate.

In our professional opinion any proposed renovation or modernization of the building should include the following:

Photo 3 Above: View of East Side

Photo 4 Below: Typical Framing at Basement

1. A detailed seismic evaluation of the building to quantitatively estimate the seismic deficiencies and to develop seismic retrofit measures.
2. Since structural drawings for the building are not available, the seismic evaluation would have to be preceded by detailed site measurements to prepare as-built structural drawings and geotechnical investigations to determine the existing soil conditions and recommendations for foundation support.
3. For preliminary planning and cost-estimating purpose, the seismic strengthening may consist of:

    - Strengthening the URM walls with shotcrete walls or add new steel braced frames to resist seismic forces in four sides.
    - New shotcrete walls or steel braced frames will require new foundations to provide adequate support for seismic loads.
    - Add new ties to connect roof /floor diaphragms and URM walls for out-of-plane seismic loads.

Photo 6 Above: Hollow Clay Partition

Photo 5 Below: Concrete Encased Steel

1.7 Limitations and Disclaimer

This report includes a qualitative seismic assessment of the building. It should be noted that no structural drawings for the building was available. Obvious seismic deficiencies identified visually during site visits or by review of available architectural drawings are summarized in this report.

However, users of this report must accept the fact that deficiencies may exist in the structure that could not be identified in this limited evaluation. Our services have consisted of providing professional opinions, conclusions, and recommendations based on generally accepted structural engineering principles and practices existing at this time.

Appendix A

Basic Structural Checklist for
BUILDING TYPE URM: Unreinforced Masonry Bearing Walls with Stiff Diaphragms (ASCE/SEI 31-03)
Tier 1 Assessment

Legend:

C: Complies
NC: Does not Comply
N/A: Not Applicable or Not Known

BUILDING SYSTEM

C✓	**NC**	**N/A**	LOAD PATH: The structure shall contain a minimum complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1)
C	**NC**	**N/A✓**	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3)
C✓	**NC**	**N/A**	WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80% of the strength in an adjacent story above or below for Life-Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1)
C✓	**NC**	**N/A**	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70% of the stiffness in an adjacent story above or below or less than 80% of the average stiffness of the three stories above or below for Life-Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2)
C✓	**NC**	**N/A**	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30% in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses. (Tier 2: Sec. 4.3.2.3)
C✓	**NC**	**N/A**	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)
C✓	**NC**	**N/A**	MASS: There shall be no change in effective mass more than 50% from one story to the next for Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5)
C✓	**NC**	**N/A**	TORSION: The estimated distance between the story center of mass and the story center of rigidity shall be less than 20 percent of the building width in either plan dimension for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.6)

(Tier 2: Sec. 4.3.3.4)

C✓	**NC**	**N/A**	MASONRY UNITS: There shall be no visible deterioration of masonry units. (Tier 2: Sec. 4.3.3.7)
C	**NC**	**N/A✓**	MASONRY JOINTS: The mortar shall not be easily scraped away the joints by hand with a metal tool, and there shall be no areas of eroded mortar. (Tier 2: Sec. 4.3.3.8)
C✓	**NC**	**N/A**	UNREINFOCED MASONRY WALL CRACKS: There shall be no existing diagonal cracks in the wall elements greater than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.11)

LATERALFORCE RESISTIGN SYSTEM

C✓	**NC**	**N/A**	REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1)
C	**NC✓**	**N/A**	SHEAR STRESS CHECK: The shear stress in the unreinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 30psi for clay units and 70 psi for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.5.1)

CONNECTIONS

C	**NC✓**	**N/A**	WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support shall be anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connection shall have adequate strength to resist the connection force calculated in Quick Check procedure of Section 3.5.3.7 (Tier 2: Sec. 4.6.1.1)
C	**NC✓**	**N/A**	TRANSFER TO SHEAR WALL: Diaphragm shall be connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the lesser of the shear strength of the walls or diaphragms for Immediate Occupancy. (Tier 2: Sec. 4.6.2.1)
C	**NC**	**N/A✓**	GIRDER/COLUMN CONNECTION: There shall be a positive connection utilizing plates, connection hardware, or straps between the girder and the column support. (Tier 2: Sec. 4.6.4.1)