NABIH YOUSSEF ASSOCIATES
STRUCTURAL ENGINEERS

UC Seismic Evaluation – Morton Medical Building

Date:	11/20/2020
UC Campus:	UCLA – on campus
Building Name:	Morton Medical Building
Building Address:	200 Medical Plaza, Los Angeles, CA 90024
CAAN ID:	4344
Auxiliary Building ID[1]:	N/A

Summary of information provided by Evaluator:
Nabih Youssef Associates Structural Engineers

UCOP Seismic Performance Level[2] (or "Rating") based on ASCE 41-17 Tier 1 evaluation findings: V

Plan Image or Aerial Photo

Exterior Elevation Photo

Site location coordinates (decimal):
Latitude: 34.065298
Longitude: -118.446598

Is this a "Partial" Building (i.e., a single structure in a complex building? (Y or N): N

ASCE 41-17 Model Building Type[3]:
Longitudinal Direction: S1 – Steel Moment Frames (with stiff diaphragms)
Transverse Direction: S1 – Steel Moment Frames (with stiff diaphragms)

Number of stories:
Above grade: 6
Below grade: 2

[1] Applicable only for individual buildings that are structurally separate units within a building complex. Each auxiliary building shall be designated with the main building CAAN ID with a decimal number suffix (i.e. main building CAAN ID 5534; auxiliary building CAAN ID 5534.1). Auxiliary building ID is null for a single building or the main building in a building complex.
[1] The designated Seismic Performance Level shall be a Roman numeral associated with the most applicable performance description from Table A.1 in Appendix A of the UC Seismic Safety Policy.
[1] If a building has multiple building types in one story, the model building type should be designated based on engineering judgement as the lateral system that would have the most predominantly negative effect on the seismic behavior of the building in that respective direction.

Original Building Design Code and Year: 1979 Uniform Building Code
Retrofit Building Design Code and Year: N/A

Cost Range to Retrofit (if applicable)[4]: High
"Low" cost-range corresponds to a complete retrofit cost less than $50 per square foot (sf), "Medium" cost-range corresponds to a complete retrofit cost greater than $50 per sf and less than $200 per sf, "High" cost-range corresponds to a complete retrofit cost greater than $200 per sf and less than $400 per sf, and "Very High" cost-range corresponds to a complete retrofit cost greater than $400 per sf.

Building information used in this evaluation:
Original Structural drawings by Ross Wou/MBT Associates (Forell/Elsesser Struct Eng), dated 01/22/88

Scope for completing this form:
Reviewed as-built structural drawings for original construction and performed ASCE 41-17 Tier 1 Screening using Tier 1 Checklists.

Brief description of structure:

The 6-story medical office building has approximately 381,000 square feet of total enclosed space with 7,300 square feet of that in the penthouses, and 106,000 square feet on the below grade levels. The structure was built in 1988. The building is more or less rectangular in plan with some step backs in footprint for architectural design.

Foundation System: The foundation system consists of a deep foundation system with cast-in-place drilled piles with pile caps and grade beams supporting columns and walls.

Structural System for Vertical (gravity) loads: The roof and floor framing consist of Wx steel beams with concrete filled metal deck. At occupied floor levels the deck is 3" deep metal deck with 3-1/4" LWC topping and at roof levels the deck is 3" deep metal deck with 2-1/2" LWC topping. Steel Wx columns take the vertical loads down to the foundation or concrete perimeter walls.

Structural System for Lateral (seismic/wind) loads: The concrete filled metal deck diaphragms transfer seismic forces to steel moment frames that are distributed throughout the floor plates. The frames vary in configuration from single bays to all the way up to eleven bays. The frames transfer forces down the building to Level 1 where the Level 1 floor plate distributes the lateral loads out to basement concrete walls.

BACKGROUND INFORMATION

Site Information:
Site Class (A-F): D; Default

Geologic Hazards (Y or N):

- Fault Rupture: N; EZRIM Beverly Hills
- Liquefaction: Y; EZRIM Beverly Hills
- Landslide: N; EZRIM Beverly Hills

[4] Assume a complete retrofit conforming to the current UC Seismic Safety Policy. Note this range includes all construction costs, including code upgrades (e.g., ADA, fire and life safety, mechanical, electrical, plumbing) triggered by the seismic retrofit. No specific estimate is required to be supplied at this time (i.e., provide an approximate cost to retrofit using Low, Medium, High or Very High cost-range categories). It is acknowledged that such a cost range is assumed to be based only on the engineer's rough estimate and is not intended to require input from a professional cost estimator. For estimation purposes, CSEs may judgmentally determine an approximate cost range for seismic retrofits based on recent relevant experience, and then apply a multiplier to approximate total construction costs.

Site-specific Ground Motion Study? N

Site-modified Spectral Response (0.2s), Hazard Level BSE-1E, S_{XS}: 0.896

Site-modified Spectral Response (1.0s), Hazard Level BSE-1E, S_{X1}: 0.515

Estimated Fundamental Period (seconds):

- Longitudinal Direction: 1.24 s
- Transverse Direction: 1.24 s

Falling Hazards Assessment Summary: No major falling hazards appear to be present on the exterior of the building

Summary of Tier 1 Seismic Evaluation Structural Non-compliances/Findings Significantly Affecting Rating Determination:

Significant Structural Deficiencies, Potentially Affecting *Seismic Performance Level* Designation:

- ☒ Lateral System Stress Check (wall shear, column shear or flexure, or brace axial as applicable)
- ☐ Load Path
- ☒ Adjacent Buildings
- ☐ Weak Story
- ☐ Soft Story
- ☒ Geometry (vertical irregularities)
- ☐ Torsion
- ☐ Mass – Vertical Irregularity
- ☐ Cripple Walls
- ☐ Wood Sills (bolting)
- ☐ Diaphragm Continuity
- ☐ Openings at Shear Walls (concrete or masonry)
- ☒ Liquefaction (potential hazard mitigated by deep pile foundation)
- ☐ Slope Failure
- ☐ Surface Fault Rupture
- ☐ Masonry or Concrete Wall Anchorage at Flexible Diaphragm
- ☐ URM wall height to thickness ratio
- ☐ URM Parapets or Cornices
- ☐ URM Chimney
- ☐ Heavy Partitions Braced by Ceilings
- ☐ Appendages

Brief Description of Anticipated Failure Mechanism: Moment connections are pre-northridge type connections and the joint panel zones of the connections are also failing to comply with the Tier 1 checks.

Comments and Additional Deficiencies: The building has many bays of moment frame in each orthogonal direction which is a benefit, however there are some aspects of the lateral system that do not meet the Tier 1 checks for steel moment frame buildings. These should be further evaluated with a Tier 2 analysis to determine the full severity of the deficient item. There is a potential adjacency issue with the parking

structures on the east and west that can be better evaluated with Tier 2 work. The moment connections are pre-Northridge and should be further examined along with potential panel zone deficiencies flagged by the Tier 1 work. The lateral system has a geometry non-compliance due to a step back in the system between level 2 and 3 in one of the orthogonal directions.

Seismic Retrofit Concept Sketches/Description (only if above-listed rating is V or greater): A more in-depth Tier 2 analysis should be performed to fully determine the extent of the Tier 1 flagged deficiencies. The moment frame connections would be the most likely components to need retrofit work.

Appendices:

A. ASCE 41-17 Tier 1 Checklists
B. Quick Check Calculations