NABIH YOUSSEF ASSOCIATES
STRUCTURAL ENGINEERS

UC Seismic Evaluation – Factor Health Sciences

Date:	05/04/2021
UC Campus:	UCLA – on campus
Building Name:	Factor Health Sciences
Building Address:	UCLA Medical Campus
CAAN ID:	4336
Auxiliary Building ID[1]:	N/A

REGISTERED PROFESSIONAL ENGINEER
F. G. YOUSSEF
No. 2026
Exp. 9/30/21
STRUCTURAL
STATE OF CALIFORNIA

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/Tier 2 evaluation findings: V
Tier 2 deficiency-based analysis addressed all potential deficiencies identified in the Tier 1 evaluation.

Plan Image or Aerial Photo

Exterior Elevation Photo

Site location coordinates (decimal):
Latitude: 34.06675112424088
Longitude: -118.44202781955303

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-S1A – Steel Moment Frames w/ stiff or flexible diaphragm(s)
Transverse Direction: S1-S1A – Steel Moment Frames w/ stiff or flexible diaphragm(s)

Number of stories:
Above grade: 15
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: 1976 Edition of the Uniform Building Code
Retrofit Building Design Code and Year: N/A

Cost Range to Retrofit (if applicable)[4]: TBD
"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:
Structural drawings by Erkel/Greenfield & Associates, "The Louis Factor Health Sciences Building", dated 08/31/1977.

Scope for completing this form:
Reviewed structural drawings for original construction and performed ASCE 41-17 Tier 1 and Tier 2 evaluation.

Brief description of structure:

The 15-story office building has an area of approximately 201,875 square feet and was built in 1981. The building is irregular-shaped in-plan with re-entrant corners.

Foundation System: The foundation system consists of both shallow spread footings and concrete caissons supporting columns and strip footings supporting walls. A 4" thick concrete slab forms the lower parking level.

Structural System for Vertical (gravity) loads: The roof and typical office floors consist of metal deck with light weight concrete fill spanning to rolled steel beams and girders. The steel floor framing is supported by steel wide flange columns that are continuous to the foundation. The lower parking levels are constructed of metal deck with light weight concrete fill and reinforced concrete slabs spanning to rolled steel beams and girders.

Structural System for Lateral (seismic/wind) loads: The metal deck and concrete fill roof and floors act as diaphragms to transfer seismic forces to distributed welded steel moment frames. At the lower parking levels, seismic forces are transferred from the steel moment frames to reinforced concrete shear walls.

BACKGROUND INFORMATION

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

Geologic Hazards (Y or N):

- Fault Rupture: N; EZRIM Beverly Hills
- Liquefaction: N; USGS
- 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-2E, S_{XS}: 1.861

Site-modified Spectral Response (1.0s), Hazard Level BSE-2E, S_{X1}: 0.948

Estimated Fundamental Period (seconds):

- Longitudinal Direction: 2.56s
- Transverse Direction: 2.54s

Falling Hazards Assessment Summary: None observed.

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
- ☐ 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

Moment frames utilize pre-Northridge welded connections.

Brief Description of Anticipated Failure Mechanism: Lateral torsional buckling of moment frame beams in transverse direction.

Comments and Additional Deficiencies:

LDP analysis and Tier 2 evaluation was performed. The results indicate that the moment frame columns, the moment frame beams, as well as connections, typically meet life safety and collapse prevention performance. However, select transverse moment frame beams and select moment frame connections do not meet life safety and collapse prevention performance. A Tier 3 nonlinear time history analysis is

recommended to get a more complete understanding of the expected performance of this building; particularly regarding the moment frame beam/connection performance and demands at moment frame column splices.

Appendices:

A. ASCE 41-17 Tier 1 Checklists
B. Quick Check Calculations
C. ASCE 41-17 Tier 2 Calculations