NABIH YOUSSEF ASSOCIATES
STRUCTURAL ENGINEERS

UC Seismic Evaluation – Tiverton HSE

Date:	11/17/2020
UC Campus:	UCLA – off campus
Building Name:	Tiverton HSE
Building Address:	900 Tiverton Avenue, Los Angeles, CA 90024
CAAN ID:	4265
Auxiliary Building ID[1]:	N/A

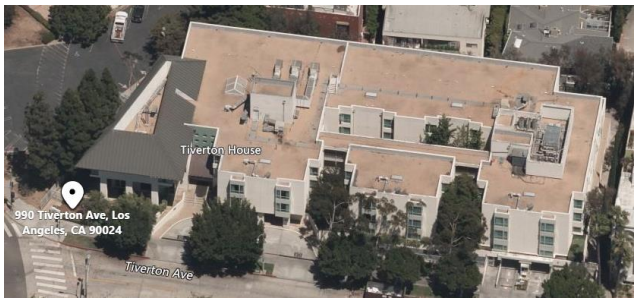
REGISTERED PROFESSIONAL ENGINEER
F. G. YOUSSEF
No. 2026
Exp. 9/30/21
STRUCTURAL
STATE OF CALIFORNIA

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 evaluation findings: V*
*Tier 2 deficiency-based evaluation is recommended to address all potential deficiencies identified in the Tier 1 evaluation.

Plan Image or Aerial Photo

Exterior Elevation Photo



Site location coordinates (decimal):
Latitude: 34.063080
Longitude: -118.442125

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]:
W1a – Wood Frames – Multistory, multiunit residential transferring to concrete flat slab and CMU and shear walls at the first level above grade.

Number of stories:
Above grade: 3
Below grade: 3
Original Building Design Code and Year: UBC - 1988 Edition
Retrofit Building Design Code and Year: N/A
Cost Range to Retrofit (if applicable)[4]: Low

[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.

"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:
Drawings by Urban Innovations Group, "UCLA Patient Family Guest House", dated 12/21/93

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

Brief description of structure:

The 3-story multi-unit residential building has an area of approximately 150,000 square feet and was built in 1993. The building includes 3 levels of below grade parking and is irregular-shaped in-plan with re-entrant corners.

Foundation System: The foundation system consists of shallow spread footings 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 above grade framing consists of wood frame construction supported by reinforced concrete flat slabs at the first level above grade and at all below grade levels. The conventionally reinforced concrete flab slabs span to perimeter retaining walls and concrete columns including drop panels of varying thickness.

Structural System for Lateral (seismic/wind) loads: The OSB floor and roof sheathing act as diaphragms to transfer lateral forces to distributed OSB nailed shear walls. At the first level above grade, the lateral forces are transferred through the concrete floor diaphragm to perimeter concrete retaining walls down to the continuous strip footing foundations. In addition, at the ground level and below grade, concrete floors distribute lateral forces to the perimeter retaining walls and down to the continuous strip footing foundations.

BACKGROUND INFORMATION

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

Geologic Hazards (Y or N):

- Fault Rupture: N; EZRIM Beverly Hills
- Liquefaction: N; CGS 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-2E, S_{XS}: 1.861s
Site-modified Spectral Response (1.0s), Hazard Level BSE-2E, S_{X1}: 0.947s
Site-modified Spectral Response (0.2s), Hazard Level BSE-2E, S_{XS}: 0.896s
Site-modified Spectral Response (1.0s), Hazard Level BSE-2E, S_{X1}: 0.516s

Estimated Fundamental Period (seconds): 0.29s

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

Brief Description of Anticipated Failure Mechanism: Shear failure and diaphragm chord failure at floor to shear wall connections.

Comments and Additional Deficiencies: The elevation of grade varies around the perimeter of the site. At the NW corner of the building, grade is aligned with the L1 entrance and at all other corners, grade is

mostly closely aligned with the P1 level; parking entrances are located at the NE and SW corners of the P1 level. Additional review of the L1 concrete diaphragm is recommended.

Seismic Retrofit Concept Sketches/Description (only if above-listed rating is V or greater): Selective strengthening of floor to shear wall and diaphragm chord connections, strengthening of CMU/concrete shear walls and wood structural wall panels, and additional evaluation of L1 diaphragm.

Appendices:

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