NABIH YOUSSEF ASSOCIATES
STRUCTURAL ENGINEERS

UC Seismic Evaluation – Acosta Center, South

Date:	10/29/2020
UC Campus:	UCLA
Building Name:	Acosta Center - South
Building Address:	410 Charles E. Young Drive, Los Angeles, CA 90095
CAAN ID:	4223
Auxiliary Building ID[1]:	4223.1

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: 34.070477
Longitude: -118.447667

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

ASCE 41-17 Model Building Type[3]:
Longitudinal Direction: S2 and S2a – Steel Braced Frames w/ stiff and flexible diaphragms
Transverse Direction: S2 and S2a – Steel Braced Frames w/ stiff and flexible diaphragms

Number of stories:
Above grade: 2
Below grade: 0

[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: Uniform Building Code 1964 Edition
Retrofit Building Design Code and Year: Uniform Building Code 1997 Edition

Cost Range to Retrofit (if applicable)[4]: To be determined
"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:
Architectural drawings by "Athletic Department Shower and Locker Facility" dated 9/8/1966

Architectural drawings by Reibsamen, Nickels & Rex "Intercollegiate Athletic Weight Room", dated 11/7/1977

Structural drawings by Kesler, Allys & Associates "Memorial Activities Center Building "D" Expansion", dated 05/13/1981

Structural drawings by Martin & HLB Structural Engineers "Acosta Athletic Training Center Renovation and Expansion", dated 11/12/2001

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

Brief description of structure:

The Acosta Center was originally constructed in 1966 as a small shower and locker facility. The building has undergone multiple renovations and expansions in 1977, 1981 and 2001. The original 1966 structure, the 1977 expansion, and part of the 1981 expansion was demolished prior to the 2001 renovation. The 2001 renovation included expanding the remaining portion of the 1981 structure to the north and adding a seismically separated structure to the south. This Tier 1 evaluation only covers the southern structure.

The southern portion of the Acosta Center is a 2-story building with approximately 30,300 square feet. It is essentially rectangular in shape with only a small reentrant corner at the southwest corner of the structure and is seismically separated from the north portion of the building with a 6" joint.

Foundation System: The foundation system consists of reinforced concrete piles with tie beams connecting the pile caps. A 5" thick concrete slab on grade forms the first floor of the building.

Structural System for Vertical (gravity) loads: The roof consists of structural plywood spanning to wood joists which are supported by steel girders. The second floor consists of concrete fill on metal deck spanning to steel joists which are supported by steel girders. The steel girders at both the roof and second floor are supported by steel columns that are continuous to the foundation.

Structural System for Lateral (seismic/wind) loads: The structural plywood and concrete on metal deck act as structural diaphragms to transfer seismic forces to steel braced frames. The steel braced frames consist of tube braces in chevron and V-shaped configurations.

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

Site-specific Ground Motion Study? N

Site-modified Spectral Response (0.2s), Hazard Level BSE-1E, S_{XS}: 1.849

Site-modified Spectral Response (1.0s), Hazard Level BSE-1E, S_{X1}: 0.944

Estimated Fundamental Period (seconds):

- Longitudinal Direction: 0.28s
- Transverse Direction: 0.28s

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: Braced frame columns in compression, braced frame beams in flexure, and braced frame connections.

Comments and Additional Deficiencies:
LSP analysis and Tier 1 quick checks were performed. The results indicate that the braced frame columns, braced frame connections, and braced frame beams do not meet the BPOE performance objective. Additionally, the building does not meet the redundancy or overturning checks for high seismicity.

Seismic Retrofit Concept Sketches/Description (only if above-listed rating is V or greater): Due to the complexity of this structure and number of deficiencies found, it is recommended that a full Tier 3 evaluation be performed in order to better understand the expected behavior of the building in a seismic event.

Appendices:

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