

## Psychology Building – Graduate Research Unit

**DATE: 10/30/2020**

**ASCE 41-17 Tier 1 Seismic Evaluation**

**Minimum Building Report Information**



### BUILDING DATA

Campus: [UCLA](#)

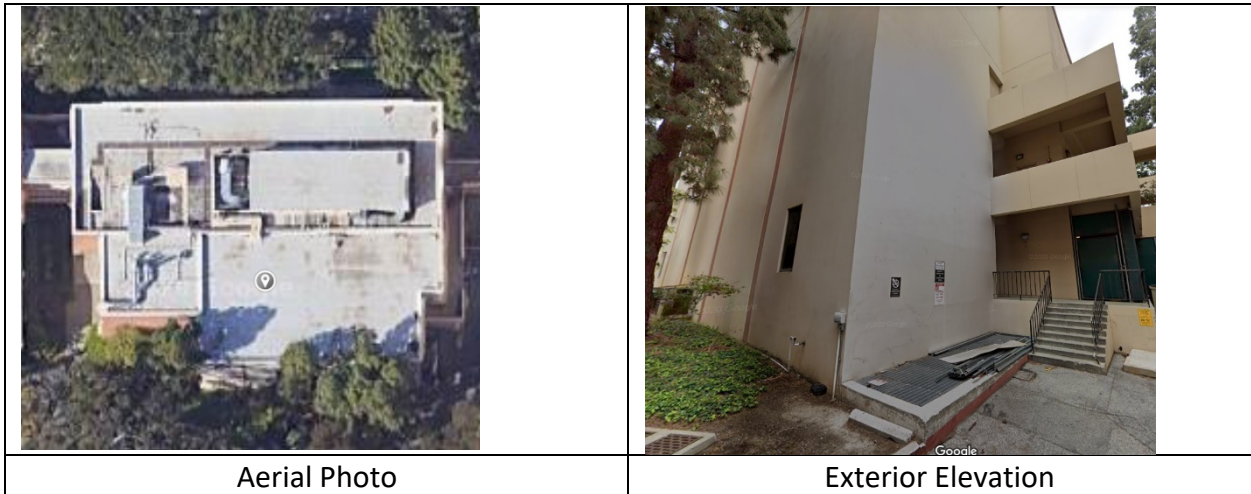
Building Name: [Psych Bldg. – Grad Rsrch](#)

CAAN ID: [4319A](#)

Auxiliary Building ID: N/A

Address: [504 Portola Plaza, Los Angeles 90095](#)

Site location coordinates: Latitude [34.069645](#) Longitudinal [-118.441313](#)



ASCE 41-17 Model Building Type:

- a. Longitudinal Direction: [C2: Concrete Shear Wall](#)
- b. Transverse Direction: [C2: Concrete Shear Wall](#)

Site-specific Ground Motion Study? [No](#)

Seismic Design Acceleration Parameters of Interest:

- a. For BSE-1E [0.867g](#) and [0.508g](#)
- b. For BSE-2E [1.535g](#) and [0.936g](#)

Estimated Fundamental Period (seconds)

- a. Longitudinal: [0.32s](#)
- b. Transverse: [0.32s](#)

Gross Square Footage: 27,852  
Number of stories *above* grade: 3  
Number of basement stories *below* grade: 2

Year Original Building was Constructed: Circa 1968  
Original Building Design Code & Year: UBC-1964  
Retrofit Building Design Code & Code (if applicable): N/A

### SITE INFORMATION

Site Class: D (Inferred)	Basis: L.R. Crandall & Associates - Ackerman Union, June 5, 1992, N/A
Geologic Hazards:	
Fault Rupture: No	Basis: L.R. Crandall & Associates - Ackerman Union, June 5, 1992, pg. 2
Liquefaction: No	Basis: L.R. Crandall & Associates - Ackerman Union, June 5, 1992, pg. 11
Landslide: No	Basis: L.R. Crandall & Associates - Ackerman Union, June 5, 1992, pg. 10

### BUILDING COMPLEX KEY PLAN

The Psychology Department complex is composed of multiple buildings. Each building is separated by several seismic separations allowing the different segments of the complex to act independently of one another. Shown below is a key plan of the complex along with the distribution of CAAN #'s at the complex and the various seismic separations.



Figure 1 Key Plan of the Psychology Department Complex

**UCOP SEISMIC PERFORMANCE RATING (OR “RATING”): V**

**“BALLPARK” RETROFIT COST (if applicable)**

- Minor (<\$50/sf)
- Moderate (~\$50-\$200/sf)
- Major (>\$200/sf)

**SUMMARY 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)
- Lateral System Detailing (reinforcement ratio, confinement, aspect ratio, etc)
- 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 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**

Due to insufficient lateral system length and potentially increased seismic forces due to a torsion irregularity it is anticipated that the concrete shear walls will be overstressed in a seismic event and could lead to failure of the lateral system as a whole.

Per the Tier 1 evaluation interior gravity columns do not have sufficient shear strength to develop the flexural capacity of the column. This could result to column shear failures due to the drift of the building under a seismic event and could lead to loss of vertical-load-carrying capacity and subsequently collapse.

Lastly it was found that the seismic separation between the Graduate Research Unit Building and the 1958 Franz Hall Expansion is less than the allowed limit per the Tier 1 evaluation. This could lead to the two buildings colliding in a seismic event providing unanticipated forces and damage to the lateral system.

### **COMMENTS AND RECOMMENDATIONS**

It is recommended for a Tier 2 evaluation to be done. A Tier 2 evaluation can help mitigate the various lateral system deficiencies revealed in the Tier 1 evaluation, such as the stresses in the lateral system, lack of shear strength in the interior gravity columns, and inadequate seismic separations.

### **POTENTIAL FALLING HAZARDS**

- Heavy ceilings, features or ornamentation above large lecture halls, auditoriums, lobbies or other areas where large numbers of people congregate.
- Heavy masonry or stone veneer above exit ways.
- Unbraced masonry parapets, cornices or other ornamentation above exit ways.
- Unrestrained hazardous materials storage.
- Masonry chimneys.
- Unrestrained natural gas-fueled equipment such as water heaters, boilers, emergency generators, etc.
- None of the above.

Due to current COVID-19 protocols, we did not verify in field that as-built documentation match current conditions or perform any condition assessment of the existing structure to identify falling hazards as required by the UCOP SSP.

### **Appendices**

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