

Campus: [UCLA](#)  
Building Name: [LAB 1 Comm Hall](#)  
CAAN ID: [4400A](#)  
Auxiliary Building ID: [4400A.6](#)



UNIVERSITY  
OF  
CALIFORNIA

Date: [Oct. 28, 2020](#)

**FORM 1**  
**CERTIFICATE OF SEISMIC PERFORMANCE LEVEL**

- UC-Designed & Constructed Facility**  
 **Campus-Acquired or Leased Facility**

**BUILDING DATA**

Building Name: [Lab School 1: Community Hall](#)  
Address: [330 CHARLES E. YOUNG DRIVE, NORTH](#)  
Site location coordinates: Latitude [34.07538043](#) Longitudinal [-118.4441833](#)

**UCOP SEISMIC PERFORMANCE LEVEL (OR "RATING"): [V](#)**

ASCE 41-17 Model Building Type:

- Longitudinal Direction: [URM:Unreinforced Concrete Block Masonry Shear Walls with Flexible Diaphragm](#)
- Transverse Direction: [URM:Unreinforced Concrete Block Masonry Shear Walls with Flexible Diaphragm](#)

Gross Square Footage: [2700 sf](#)  
Number of stories *above* grade: [1](#)  
Number of basement stories *below* grade: [0](#)

Year Original Building was Constructed: [1950](#)  
Original Building Design Code & Year: [UBC-1946](#)  
Retrofit Building Design Code & Code (if applicable): [N/A, N/A](#)

**SITE INFORMATION**

Site Class: [C](#) Basis: [\(GeoCon West, Inc., {July 24, 2014}, Reference Page No. 7\)](#)  
Geologic Hazards:  
Fault Rupture: [No](#) Basis: [See Referenced Report](#)  
Liquefaction: [No](#) Basis: [See Referenced Report](#)  
Landslide: [No](#) Basis: [See Referenced Report](#)

**ATTACHMENT**

Original Structural Drawings: ([{Laboratory Elementary School}](#), [{Hillman and Nowell Structural Engineers}](#), [11/12/1948](#), Sheet Number [200](#)) or  
Seismic Evaluation: ([Lab School 1 Seismic Evaluation](#), [KPFF](#), [10/28/2020](#), [ASCE 41-17 Tier 1](#))  
Retrofit Structural Drawings: ([N/A](#), [N/A](#), [N/A](#), [N/A](#))



## CERTIFICATION & PRESUMPTIVE RATING VERIFICATION STATEMENT

I, [Mark Hershberg](#), a California-licensed structural engineer, am responsible for the completion of this certificate, and I have no ownership interest in the property identified above. My scope of review to support the completion of this certificate included both of the following (“No” responses must include an explanation):

- a) the review of structural drawings indicating that they are as-built or record drawings, or that they otherwise are the basis for the construction of the building:  Yes  No
- b) visiting the building to verify the observable existing conditions are reasonably consistent with those shown on the structural drawings:  Yes  No  
*Due to COVID-19 protocols, observations made of building exterior only.*

Based on my review, I have verified that the UCOP Seismic Performance Level (SPL) is presumptively permitted by the following UC Seismic Program Guidebook provision (choose one of the following):

- 1) Contract documents indicate that the original design and construction of the aforementioned building is in accordance with the benchmark design code year (or later) building code seismic design provisions for UBC or IBC listed in Table 1 below.
- 2) The existing SPL rating is based on an acceptable basis of seismic evaluation completed in 2006 or later.
- 3) Contract documents indicate that a comprehensive<sup>1</sup> building seismic retrofit design was fully-constructed with an engineered design based on the 1997 UBC/1998 **or later** CBC, and (choose one of the following):
  - the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1E (or BSE-R) and BSE-2E (or BSE-C) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 CBC **or later** for EXISTING buildings, and is presumptively assigned an SPL rating of IV.
  - the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1 (or BSE-1N) and BSE-2 (or BSE-2N) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 **or later** CBC for NEW buildings, and is presumptively assigned an SPL rating of III.
  - the retrofit project was not completed by the UC campus following UC policies, and is presumptively assigned an SPL rating of IV.

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<sup>1</sup> A comprehensive retrofit addresses the entire building structural system as indicated by the associated seismic evaluation, as opposed to addressing selective portions of the structural system.

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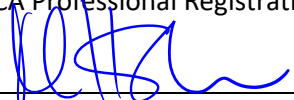
**CERTIFICATION SIGNATURE**

Mark Hershberg  
Print Name

Principal  
Title

S5078  
CA Professional Registration No.

6/30/2021  
License Expiration Date

  
Signature

10/28/2020  
Date

KPFF Inc., (213) 418-0201, 700 S. Flower St., Suite 2100, Los Angeles, CA 90017

Firm Name, Phone Number, and Address

AFFIX SEAL HERE





**Table 1: Benchmark Building Codes and Standards**

| Building Type <sup>a,b</sup>  | Building Seismic Design Provisions |          |
|---|------------------------------------|----------|
|   | UBC                                | IBC      |
| Wood frame, wood shear panels (Types W1 and W2)                                 | 1976                               | 2000     |
| Wood frame, wood shear panels (Type W1a)  | 1976                               | 2000     |
| Steel moment-resisting frame (Types S1 and S1a)                                 | 1997                               | 2000     |
| Steel concentrically braced frame (Types S2 and S2a)                            | 1997                               | 2000     |
| Steel eccentrically braced frame (Types S2 and S2a)                             | 1988 <sup>g</sup>                  | 2000     |
| Buckling-restrained braced frame (Types S2 and S2a)                             | <i>f</i>                           | 2006     |
| Metal building frames (Type S3)   | <i>f</i>                           | 2000     |
| Steel frame with concrete shear walls (Type S4)                                 | 1994                               | 2000     |
| Steel frame with URM infill (Types S5 and S5a)                                  | <i>f</i>                           | 2000     |
| Steel plate shear wall (Type S6)  | <i>f</i>                           | 2006     |
| Cold-formed steel light-frame construction—shear wall system (Type CFS1)        | 1997 <sup>h</sup>                  | 2000     |
| Cold-formed steel light-frame construction—strap-braced wall system (Type CFS2) | <i>f</i>                           | 2003     |
| Reinforced concrete moment-resisting frame (Type C1) <sup>i</sup>               | 1994                               | 2000     |
| Reinforced concrete shear walls (Types C2 and C2a)                              | 1994                               | 2000     |
| Concrete frame with URM infill (Types C3 and C3a)                               | <i>f</i>                           | <i>f</i> |
| Tilt-up concrete (Types PC1 and PC1a)   | 1997                               | 2000     |
| Precast concrete frame (Types PC2 and PC2a)                                     | <i>f</i>                           | 2000     |
| Reinforced masonry (Type RM1)   | 1997                               | 2000     |
| Reinforced masonry (Type RM2)   | 1994                               | 2000     |
| Unreinforced masonry (Type URM)   | <i>f</i>                           | <i>f</i> |
| Unreinforced masonry (Type URMa)  | <i>f</i>                           | <i>f</i> |
| Seismic isolation or passive dissipation  | 1991                               | 2000     |

Note: This table has been adapted from ASCE 41-17 Table 3-2. Benchmark Building Codes and Standards for Life Safety Structural Performed at BSE-1E.

Note: UBC = Uniform Building Code. IBC = International Building Code.

<sup>a</sup> Building type refers to one of the common building types defined in Table 3-1 of ASCE 41-17.

<sup>b</sup> Buildings on hillside sites shall not be considered Benchmark Buildings.

<sup>c</sup> not used

<sup>d</sup> not used

<sup>e</sup> not used

<sup>f</sup> No benchmark year; buildings shall be evaluated in accordance with Section III.J.

<sup>g</sup> Steel eccentrically braced frames with links adjacent to columns shall comply with the 1994 UBC Emergency Provisions, published September/October 1994, or subsequent requirements.

<sup>h</sup> Cold-formed steel shear walls with wood structural panels only.

<sup>i</sup> Flat slab concrete moment frames shall not be considered Benchmark Buildings.



### UCLA Lab School 1 – Community Hall

DATE: 10/28/2020

ASCE 41-17 Tier 1 Seismic Evaluation  
Minimum Building Report Information



#### BUILDING DATA

Campus: UCLA

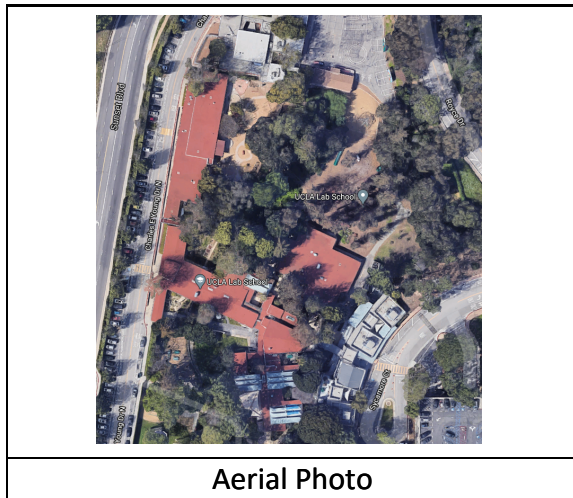
Building Name: Lab School 1 - Community Hall

CAAN ID: 4400A

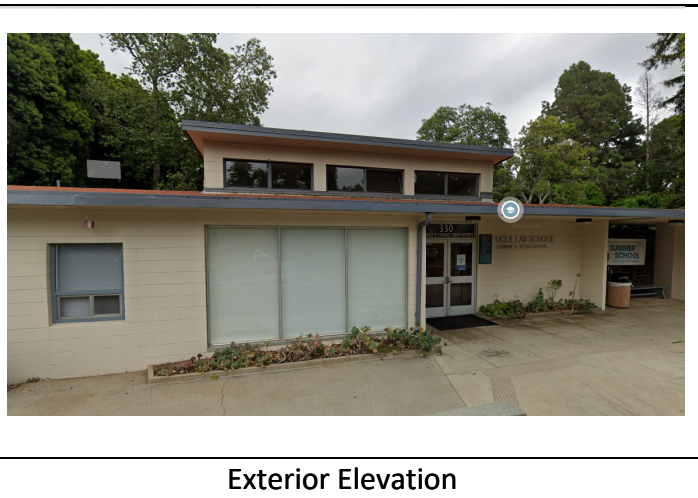
Auxiliary Building ID: 4400A.6

Address: 330 Charles E. Young Drive, North, Los Angeles, 90095

Site location coordinates: Latitude 34.07538043 Longitudinal -118.44418326



Aerial Photo



Exterior Elevation

ASCE 41-17 Model Building Type:

- a. Longitudinal Direction: URM: Unreinforced Masonry
- b. Transverse Direction: URM: Unreinforced Masonry

Site-specific Ground Motion Study? No

Seismic Design Acceleration Parameters of Interest ( $S_{Xs}$  and  $S_{X1}$ ):

- a. For BSE-1E 0.896g and 0.368g
- b. For BSE-2E 1.857g and 0.786g

Estimated Fundamental Period (seconds)

- a. Longitudinal: 0.18s
- b. Transverse: 0.18s

Gross Square Footage: 2,700 sf  
Number of stories *above* grade: 1  
Number of basement stories *below* grade: 0

Year Original Building was Constructed: 1950  
Original Building Design Code & Year: UBC-1946  
Retrofit Building Design Code & Code (if applicable): N/A, N/A

**SITE INFORMATION**

Site Class: C (Measured)      Basis: Geocon West, Inc. , 07/24/2014, Pg. 7  
Geologic Hazards:  
Fault Rupture: No              Basis: Referenced Geotechnical Report  
Liquefaction: No              Basis: Referenced Geotechnical Report  
Landslide: No                 Basis: Referenced Geotechnical Report

**BUILDING COMPLEX KEY PLAN**

The Lab School 1 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 Building ID's at the complex.



*Figure 1 Key Plan of the Lab School 1 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**

The Community Hall building’s reinforcement ratio did not meet the minimum requirement for a reinforced masonry building, and must be considered an unreinforced masonry building according

to ASCE 41-17. Also, the height-to thickness of the masonry walls does not meet the minimum requirements. Potential damage could be caused by out-of-plane forces that may result in falling hazards and potential collapse of the structure in addition to potential cracking and deformation that may occur around openings in the masonry walls.

The roof is supported by trusses with rafters spanning between the trusses. The diaphragm exceeds the maximum span requirements and the roof rafters do not have bridging or blocking between the members which may result in joist rolling. Also, the trusses are supported by the masonry walls and do not have independent secondary columns for the support of vertical loads. The loss of masonry capacity caused by seismic demands may cause potential failure of the gravity system.

Wood ledgers do not occur at typical wall panel to diaphragm connections. However, the atypical locations where they do exist within the building and along the canopy supports may be subject to connection damage due to cross-grain bending or tension in the wood ledgers.

### **COMMENTS AND RECOMMENDATIONS**

Based on the deficiencies identified in the Tier 1 evaluation, a rating of SPL V has been assigned. A Tier 2 evaluation is recommended to confirm whether the Tier 1 deficiencies require mitigation.

### **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.

### **Appendices**

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