Campus: UCLA
Building Name: Fernald CTR
CAAN ID: 4370
Auxiliary Building ID: N/A

UNIVERSITY OF CALIFORNIA

Date: Nov 11, 2020

FORM 1
CERTIFICATE OF SEISMIC PERFORMANCE LEVEL
☒ **UC-Designed & Constructed Facility**
☐ **Campus-Acquired or Leased Facility**

BUILDING DATA
Building Name: Fernald CTR
Address: 320 CHARLES E. YOUNG DRIVE, NORTH
Site location coordinates: Latitude 34.07636829 Longitudinal -118.44363768

UCOP SEISMIC PERFORMANCE LEVEL (OR "RATING"): IV

ASCE 41-17 Model Building Type:
a. Longitudinal Direction: RM1: Reinforced Masonry
b. Transverse Direction: RM1: Reinforced Masonry

Gross Square Footage: 4,964
Number of stories *above* grade: 1
Number of basement stories *below* grade: 0

Year Original Building was Constructed: 1957
Original Building Design Code & Year: UBC-1955
Retrofit Building Design Code & Code (if applicable): N/A, N/A

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

ATTACHMENT
Original Structural Drawings: (UCLA Psychology Clinic School, University of California Campus Architects and Engineers, 02/03/1957, S-6) or
Seismic Evaluation: (Fernald CTR – CLSRM 4 Seismic Evaluation, KPFF, 10/28/2020, ASCE 41-17 Tier 1)
Retrofit Structural Drawings: (UCLA Psychology Clinic School, University of California Campus Architects and Engineers, 05/21/1971, S-6)

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 observation was made from the exterior of the building outside of security fencing 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[1] 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.

[1] 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.

CERTIFICATION SIGNATURE

AFFIX SEAL HERE

Mark Hershberg	Principal
Print Name	Title
S5078	6/30/2021
CA Professional Registration No.	License Expiration Date
Signature	11/11/2020 Date

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

Firm Name, Phone Number, and Address

Table 1: Benchmark Building Codes and Standards

Building Type[a,b]	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[g]	2000
Buckling-restrained braced frame (Types S2 and S2a)	[f]	2006
Metal building frames (Type S3)	[f]	2000
Steel frame with concrete shear walls (Type S4)	1994	2000
Steel frame with URM infill (Types S5 and S5a)	[f]	2000
Steel plate shear wall (Type S6)	[f]	2006
Cold-formed steel light-frame construction—shear wall system (Type CFS1)	1997[h]	2000
Cold-formed steel light-frame construction—strap-braced wall system (Type CFS2)	[f]	2003
Reinforced concrete moment-resisting frame (Type C1)[i]	1994	2000
Reinforced concrete shear walls (Types C2 and C2a)	1994	2000
Concrete frame with URM infill (Types C3 and C3a)	[f]	[f]
Tilt-up concrete (Types PC1 and PC1a)	1997	2000
Precast concrete frame (Types PC2 and PC2a)	[f]	2000
Reinforced masonry (Type RM1)	1997	2000
Reinforced masonry (Type RM2)	1994	2000
Unreinforced masonry (Type URM)	[f]	[f]
Unreinforced masonry (Type URMa)	[f]	[f]
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*.

[a] Building type refers to one of the common building types defined in Table 3-1 of ASCE 41-17.

[b] Buildings on hillside sites shall not be considered Benchmark Buildings.

[c] not used

[d] not used

[e] not used

[f] No benchmark year; buildings shall be evaluated in accordance with Section III.J.

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

[h] Cold-formed steel shear walls with wood structural panels only.

[i] Flat slab concrete moment frames shall not be considered Benchmark Buildings.

700 S. Flower St., Suite 2100 Los Angeles, CA 90017 213.418.0201 kpff.com

Fernald CTR

DATE: 11/11/2020
ASCE 41-17 Tier 1 Seismic Evaluation
Minimum Building Report Information

REGISTERED PROFESSIONAL ENGINEER
MARK A. HERSHBERG
S 5078
STRUCTURAL
STATE OF CALIFORNIA

BUILDING DATA

Campus: UCLA
Building Name: Fernald CTR
CAAN ID: 4370
Auxiliary Building ID: 4370
Address: 320 Charles E. Young Drive, North, Los Angeles 90024
Site location coordinates: Latitude 34.07636829 Longitudinal -118.4436377

Aerial Photo

Exterior Elevation

ASCE 41-17 Model Building Type:

a. Longitudinal Direction: RM1: Reinforced Masonry
b. Transverse Direction: RM1: Reinforced Masonry

Site-specific Ground Motion Study? No
Seismic Design Acceleration Parameters of Interest (S_{XS} and S_{X1}):

a. For BSE-1E 0.898g and 0.518g
b. For BSE-2E 1.858g and 0.947g

Estimated Fundamental Period (seconds)

a. Longitudinal: 0.12s
b. Transverse: 0.12s

Gross Square Footage: 4,964
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SITE INFORMATION

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

UCOP SEISMIC PERFORMANCE RATING (OR "RATING"): IV

"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

There are two exterior walls that are consist of several openings in lieu of brick masonry walls. Where these exterior walls occur, localized stress in the mullions could occur. However, since the seismic demand on the existing lateral system is found to be low, any increased local demands will be absorbed by the shear wall's residual capacity. In additon, the localized stress may result in potential cracking and deformation around window and door openings in the reinforced masonry walls.

Classrooms 1, 2 and 3 are connected to Classroom 5 via an arcade canopy without a seismic joint. Because the diaphragm of the canopy is flexible, it should allow for movement between the buildings. Potential damage during a seismic event may occur due to the simultaneous movement of each classroom building, causing canopy framing damage and/or connection failure.

COMMENTS AND RECOMMENDATIONS

The Tier 1 evaluation revealed that the building is adequate and meets the checks required.

All observations were made from the exterior of the building due to COVID-19 protocols in place at the time of evaluation.

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