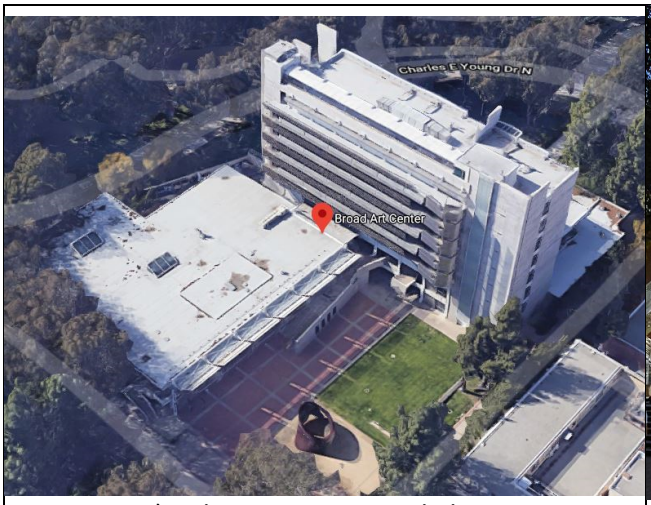
UNIVERSITY OF CALIFORNIA

BUILDING REPORT

1) UC Campus: UCLA
2) Building Name: Broad Art Center - Wight Wing
3) Building CAAN ID: 4206
4) Auxiliary Building ID[1]: 4206.1
5) Date of Evaluation: March 23, 2021
6) Evaluation by (Firm, Evaluator Name, Signature, Stamp): John A. Martin & Associates, Inc., JJ, JL
7) Seismic Performance Rating[2] and Basis of Rating: IV based on the University of California Seismic Safety Policy and ASCE 41-17 Tier 1 evaluation. Some shear wall segments exceeded the stress limits per the Tier 1 requirements for concrete and reinforced masonry walls. As-built detail drawings from the original construction showing the reinforcement in the shear walls were not available. Assuming the minimum required reinforcement ratio of 0.0007 for the existing masonry walls, a limited Tier 2 deficiency-based evaluation showed that the walls meet the required acceptance criteria. The reinforcement in the walls from the original construction should be verified with the missing detail sheets or by materials testing.

REGISTERED PROFESSIONAL ENGINEER JAMES K. LEE No. S6493 STRUCTURAL STATE OF CALIFORNIA

3/23/2021



8) Plan Image or Aerial Photo

9) Exterior Elevation Photo

10) Site Location
    (a) Latitude Decimal Coordinates: 34.07
    (b) Longitude Decimal Coordinates: -118.44

[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.
[2] The designated Seismic Performance Rating shall be a Roman numeral associated with the most applicable performance description from Table 1 of the UC Facilities Manual, UC Seismic Program Guidelines.

11) ASCE 41-17 Model Building Type and Description[3]
    (a) Longitudinal Direction: Building Type C2 (Concrete Shear Walls with Stiff Diaphragms) and RM2 (Reinforced Masonry Shear Walls with Stiff Diaphragms)
    (b) Transverse Direction: Building Type C2 (Concrete Shear Walls with Stiff Diaphragms) and RM2 (Reinforced Masonry Shear Walls with Stiff Diaphragms)

    The Broad Art Center at UCLA is comprised of two seismically separated structures – the Wight Wing and Dickson Tower. The Wight Wing is a two-story structure with a plan dimension of approximately 140'x156'. A partial basement exists below the building and is connected to the Dickson Tower basement. The Wight Wing is separated from the Dickson Tower with a 2" seismic joint. The gravity system of the Wight Wing primarily consists of 4½" one-way concrete slabs supported over concrete beams typically spaced at 10 feet and columns typically spaced at 20 feet along the longitudinal direction and 26 feet along the transverse direction. The roof above the auditorium consists of one-way concrete slabs spanning between steel framing. The Wight Wing utilizes a combination of reinforced concrete and reinforced brick masonry shear walls as its lateral force resisting system. The 2006 retrofit included removal of a half bay of existing masonry shear walls at two locations. To replace the stiffness removed, reinforced brick masonry shear walls were added at an open bay and shotcrete walls were applied to the interior face of the east elevation walls. All interior gravity columns were reinforced with fiber-wrap during the retrofit to satisfy deflection compatibility.

12) Number of Stories
    (a) Above grade: 2
    (b) Below grade: 1

13) Original Building Design Code & Year: 1961 Uniform Building Code

14) Retrofit Building Design Code & Year (if applicable): 1995 California Building Code with seismic base shear based on the 1961 Uniform Building Code force level.

15) Cost Range to Retrofit (if applicable)[4] (Low, Medium, High, or Very High): Low

Please assume a "Low" cost-range corresponds to a complete retrofit cost less than $50 per square foot (sf), a "Medium" cost-range corresponds to a complete retrofit cost greater than $50 per sf and less than $200 per sf, a "High" cost-range corresponds to a complete retrofit cost greater than $200 per sf and less than $400 per sf, and a "Very High" cost-range corresponds to a complete retrofit cost greater than $400 per sf.

[3] 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.
[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., accessibility, 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.

BACKGROUND INFORMATION

Site Information

16) Site Class (A – F) and Basis of Assessment: Site Class D (default site class per code; no geotechnical reports available)

17) Geologic Hazards
   (a) Fault Rupture (Yes, No or Unknown) and Basis of Assessment: No, based on "Fault Activity Map of California" from California Geological Survey.
   (b) Liquefaction (Yes, No or Unknown) and Basis of Assessment: No, based on "Earthquake Zones of Required Investigation Beverly Hills Quadrangle" map published by the California Geological Survey, dated January 11, 2018.
   (c) Landslide (Yes, No or Unknown) and Basis of Assessment: No, based on "Earthquake Zones of Required Investigation Beverly Hills Quadrangle" map published by the California Geological Survey, dated January 11, 2018.

18) Site-specific Ground Motion Study? (Yes or No): No

Seismic design acceleration parameters of interest:	
For BSE-2E	S_{XS}: 1.863g S_{X1}: 0.949g
For BSE-1E	S_{XS}: 0.898g S_{X1}: 0.518g

19) Estimated Fundamental Period (seconds)
   (a) Longitudinal
   Wight Wing: 0.26sec

   (b) Transverse
   Wight Wing: 0.26sec

20) Falling Hazards Assessment Summary: A structural observation could not be conducted as the campus is currently closed due to the Covid-19 pandemic.

21) Structural Non-Compliances/Findings Significantly Affecting Rating Determination Summary
Significant Structural Deficiencies, Potentially Affecting *Seismic Performance Rating* Designation:

   (a) Adjacent Buildings
   The as-built drawings specify a 2-inch seismic separation between the Wight Wing and Dickson Tower at the second floor and roof level of the Wight Wing, which is less than the required clear distance per the Tier 1 checklist. 3D analysis models were created for both the Wight Wing and the Tower. The BSE-2E level seismic drifts at the adjacent floors showed that the 2-inch separation is sufficient.

   (b) Shear Wall Stress Checks
   The average shear stress in some of the brick masonry and concrete shear walls in both orthogonal directions of the building exceed the shear stress limits per the Tier 1 checklist. As noted in Item

(7) above, the original as-built drawings showing the wall reinforcement were not available for this evaluation. Assuming the minimum reinforcement ratio of 0.0007 at the existing masonry walls and the concrete reinforcing specified in the retrofit drawings, a limited deficiency-based Tier 2 evaluation eliminated these deficiencies and showed that the existing walls meet the required acceptance criteria for concrete and masonry walls.

(c) Openings at Shear Walls (concrete and masonry)
Diaphragm openings adjacent to gridline A and gridline 11 are greater than 25% of the length of shear walls adjacent to the openings.

22) Brief Description of Anticipated Failure Mechanism
The reinforcement in the original masonry walls is unknown. Minimal reinforcement in the existing masonry walls may cause shear failure during a seismic event.

23) Seismic Retrofit Concept Sketches/Description (only required for buildings rated V or worse): N/A

Building Report Appendices

A) ASCE 41-17 Tier 1 Checklists (Structural only)
B) Quick Check Calculations